

ASSESSING THE PSYCHOMETRIC PROPERTIES OF THE ADULT LEARNER SELF-DIRECTEDNESS SCALE

by

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DECLARATION

I, Jo-Anne Botha, student number 07722168, hereby declare that this thesis, entitled **Assessing the psychometric properties of the Adult Learner Self-Directedness Scale**, is my own work and that all the sources that I have used and quoted have been indicated and acknowledged by means of a complete list of references. I declare that the thesis was not previously submitted, in part or in whole for any other degree or examination at this or any other university.

I further declare that ethical clearance to conduct the research was obtained from the College of Economic and Management Sciences as well as the Research Permission Sub-Committee of SRIPDC of the University of South Africa. (Please see Appendix A for all ethics certificates). I took great care in ensuring that I adhered to the ethical obligations and principles of research ethics as prescribed by the Unisa Code of Ethics and Conduct, during all phases of the research process.

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ABSTRACT/SUMMARY

ASSESSING THE PSYCHOMETRIC PROPERTIES OF THE ADULT LEARNER SELF-DIRECTEDNESS SCALE

by

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DEPARTMENT : Human Resource Management
DEGREE : D Com Business Management

This research project examined the psychometric properties of the adult learner self-directedness scale (ALSDS). The study assessed the construct validity and reliability of the scale as a measure of adult learner self-directedness for diverse groups of adult learners in the South African open, distance and e-learning higher education (ODELHE) context. The study also assessed whether the factorial structure of the ALSDS was equivalent for adult learners across gender, race and age groups. Furthermore, the study assessed whether the various socio-demographic groups differed significantly on the sub-scale dimensions of the ALSDS; and explored whether a range of socio-biographical factors predicted adult learner self-directedness.

This doctoral study has extended the student's initial exploratory master's study on the development and factorial structure of the ALSDS that involved a stratified random sample (N = 1 102) of ODELHE adult learners. The secondary data set involved a random subsample of n = 747 of the original master's sample data set. Exploratory structural equation modelling (ESEM), exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) revealed a three-factor solution for the ALSDS, with 15 items loading onto the three factors. The results provided evidence of the construct (convergent and discriminant) validity and internal consistency reliability of the three-factor ALSDS, including the construct equivalence of the scale's factorial structure across the gender, race and age groups. Significant differences between age, race and gender groups were observed regarding the scale sub-dimensions. The study advances theory on adult learner self-directedness in ODELHE contexts and contributed evidence of the validity and reliability of a shortened version of the ALSDS as a useful measure of adult learner self-directedness. Psychometric shortcomings to be addressed in future research were also

highlighted. Practically, the study highlighted assessing adult learners' success orientation in ODeLHE, active academic activity and strategic utilisation of resources as aspects of enhancing their self-directedness. Support practices should be considered for especially females, black Africans and younger learner cohorts. ODeLHE practices should also consider learners' mark for English, gender, access to library, number of modules and who students support financially as factors influencing learners' level of self-directedness.

Key words: adult learning, adult learner self-directedness, open, distance and e-learning, workplace learning, success orientation in ODeLHE, active academic activity, strategic utilisation of resources, socio-demographic influences, psychometric properties of the ALSDS.

ABSTRAK/OPSOMMING

ASSESSERING VAN DIE PSIGOMETRIESE EIENSKAPPE VAN DIE SELFGERIGTE SKAAL VIR DIE VOLWASSE LEERDER

deur

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TOESIGHOUER : Prof M Coetzee
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GRAAD : DCom Sakebestuur

Die navorsingsprojek het die psigometriese eienskappe van die selfgerigheidskaal vir die volwasse leerder (ALSDS) ondersoek. Die studie het die konstruk-geldigheid en -betroubaarheid van die skaal geassesseer as 'n maatstaf van selfgerigtheid by volwasse leerders vir diverse groepe van volwasse leerders in die Suid-Afrikaanse ope, afstand- en e-leerhoëronderwyskonteks (ODELHE). Die studie het ook geassesseer of die fakulteitstruktuur van die ALSDDS gelykstaande was vir volwasse leerders oor geslags-, rasse- en ouderdomsgroepe heen. Verder het die studie geassesseer of die verskeie sosiodemografiese groepe beduidend verskil het op die subskaal-dimensies van die ALSDDS en ondersoek of 'n reeks sosiobiografiese faktore selfgerigtheid by volwasse leerders voorspel het.

Hierdie doktrale studie het uitgebrei op die student se aanvanklike verkennende meesterstudie oor die ontwikkeling en fakulteitstruktuur van die ALSDDS wat 'n gestratifiseerde ewekansige steekproef van ODELHE-volwasse leerders behels het (N = 1 102). Die sekondêre datastel het 'n ewekansige substeekproef behels van n = 747 van die oorspronklike meestersteekproef-datastel. Verkennende strukturele vergelykingsmodellering, verkennende faktorontleding en bekragtigende faktorontleding het 'n driefaktor-oplossing vir die ALSDDS onthul, met 15 items wat op die drie faktore gelaai is. Die resultate verskaf bewyse van die konstruk (konvergerende en diskriminerende) geldigheid en interne konsekwentheid en betroubaarheid van die driefaktor-ALSDDS, insluitende die konstruk-ekwivalensie van die skaal se fakulteitstruktuur oor die geslags, rasse- en ouderdomsgroepe heen. Beduidende verskille tussen ouderdoms-, rasse- en

geslagsgroepe is waargeneem rakende die skaalsubdimensies. Die studie bevorder teorie oor selfgerigtheid by volwasse leerders in

ODeLHE-kontekste en dra bewyse van die geldigheid en betroubaarheid van 'n verkorte weergawe van die ALSDS as 'n nuttige maatstaf van selfgerigtheid by volwasse leerders. Psigometriese tekortkomings wat in toekomstige navorsing hanteer kan word, is ook beklemtoon. Prakties gesproke beklemtoon die studie die assessering van volwasse leerders se suksesoriëntering in ODeLHE, aktiewe akademiese aktiwiteit en strategiese gebruik van hulpbronne as aspekte om hul selfgerigtheid te bevorder. Ondersteuningspraktyke moet oorweeg word vir veral vroue, swart Afrikaners en jonger leerderkohorte. ODeLHE-praktyke moet ook leerders se punt vir Engels, geslag, toegang tot 'n biblioteek, aantal modules en wie studente finansiële ondersteun, oorweeg as faktore wat leerders se vlak van selfgerigtheid beïnvloed.

Sleutelwoorde: volwasse leer; selfgerigtheid by volwasse leerders; ope, afstand- en e-leer; werkplek-leer; suksesoriëntering in ODeLHE; aktiewe akademiese aktiwiteit; strategiese gebruik van hulpbronne; sosiodemografiese invloede; psigometriese eienskappe van die ALSDS.

I-ABSTRACT/ISIFINYEZO

UKUHLOLA AMA-PSYCHOMETRIC PROPERTIES OF THE ADULT LEARNER SELF-DIRECTEDNESS SCALE

ngo

JO-ANNE BOTHA

USUPHAVAYISA: UProf M Coetzee
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Le projekthi yocwaningo, ihlola ama-psychometric properties of the adult learner self-directedness scale (ALSDDS). Ucwaningo luhlola i-construct validity nokuthembeka kwe-scale njengendlela yokukala i-adult self-directedness kumaqembu ehlukeni abafundi abadala kwisimo semfundo evulekile lapho abantu abafunda bekude esibizwa nge-South African open, distance and e-learning higher education (ODELHE). Ucwaningo lubuye lwahlola nokuthi ngabe isimo ngamaqiniso e-ALSDDS siyalingana yini kubafundi abadala kumaqembu obubili, bezinhlanga ezehlukene ngokwebala kanye nabantu beminyaka ehlukeni. Kanti futhi okunye, ucwaningo, luhlola ukuthi ngabe amaqembu emikhakha ehlukeni ngokwe-sociodemographic ehlukeni kakhulu maqondana nama-dimension e-ALSDDS acutshungulwayo ukuthi ngabe ama-range emibandela yama-sociodemographic abonelela noma aqagela inqubo ye-adult learner self-directedness.

Lolu cwawano lweziqu ze-doctoral study lubheke nocwaningo lokuqala lwabafundi be-masters ngentuthuko yesakhiwo se-factorial structure ye-ALSDDS ebandakanye amasampuli akhethwe nje ngaphandle kokukhetha noma ukubeka imibandela ethize, okwaziwa nge-stratified random sample ye (N = 1 102) yabafundi abadala be-ODELHE. Isethi ye-data yesekondari yona ibandakanya i-random subsample of n = 747 yesethi ye-data yabafundi bokuqala be-masters. I-Exploratory structural equation modelling, i-exploratory factor analysis kanye ne-confirmatory factor analysis eziveze izixazululo ezintathu ngama-ALSDDS kuma-ayithemu angu 15 afakelwe kuma-factor amathathu. Imiphumela iveza ubufakazi be-construct (i-convergent and discriminant) validity kanye ne-internal consistency reliability yama-factor amathathu e-ALSDDS abandakanya i-

construct equivalence ye-scale's factorial structure, ukunqamuleza kumaqembu ngobulili, izinhlanga ezehlukene ngokwebala kanye neminyaka yobudala ehlukeni. Umehluko osemqoka phakathi kweminyaka yobudala, izinhlanga ezehlukene ngokwebala kanye namaqembu eminyaka ehlukeni uye wabonakaka maqondana ne-scale sub-dimensions. Ucwangingo luqhubela phambili ithiyori kwizimo zabafundi zokuziqhuba ngokufunda ezibizwa i-adult learner self-directedness kwi-ODELHE, kanti futhi ithela esivivaneni kwi-reliability ye-version efinyezeziwe ye-ALSDS njengesikali esiwusizo kwi-adult learner self-directedness. Okuyizihibe nge-psychometric okufanele kubhekwane nakho ngocwangingo lwangekusasa, kuye kwavezwa kwagqanyiswa. Ngokubonakala ngendlela ebambekayo, ucwangingo lugqamisa ukuhlolwa kwempumelelo yabafundi abadala kwi-ODELHE, umsebenzi omatasatasa we-akhademiki kanye nokusetshenziswa ngendlela yamasu abambekayo kwemithombo njengengxenywe yokuthuthukisa i-self-directedness. Izinkambiso zokusekela kumele zibonelelwe, ikakhulukazi kwabesimame, abamnyama bama-Afrika kanye nabafundi abasebasha. Izinkambiso ze-ODELHE kumele zibonelele namamaki abafundi olimi lwesiNgisi (i-English), ubulili, ukufinyelela emalayibhrari, inani lama-module kanye nokuthi ngabe abafundi bondla obani ngokwezimali njengemibandela enomthelela kwinqubo yokuthi abafundi bakwazi ukuziqhubela phambili ngokwenqubo ye-self-directedness.

Key words (amagama abalulekile asetshenziwe): adult learning (ukufunda kwabadala); adult learner self-directedness (ukuziqhuba ngemfundo kwabadala); open, distance and e-learning (imfundo evulekile, okufundwa kuyo umuntu ekude ngokusebenzisa indlela ye-elektroniki); workplace learning (ukufunda abantu besemisebenzini); success orientation in ODeLHE (ugqozi lwempumelelo kwi-ODELHE) active academic activity (umsebenzi wokuba matasatasa kweze-akhademik); strategic utilisation of resources (ukusetshenziswa kwemithombo yosizo ngendlela yokubonelela okusemqoka); sociodemographic influences (imithelela kumaqembu abantu bemikhakha ehlukeni); psychometric properties of the ALSDS.

CONDENSED CURRICULUM VITAE

STUDENT NUMBER: 07722168

FOR THE DEGREE: DCOM (BUSINESS MANAGEMENT)

FULL NAMES & SURNAME: JO-ANNE BOTHA

Birth Date:

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I declare that I have completed the following tertiary qualifications:

Tertiary qualifications	Year of Completion	University
National Diploma: Personnel Management	1987	Pretoria Technicon (now Tshwane University of Technology)
B Com (Business Management)	1997	UNISA
B Com Honours (Business Management)	2002	UNISA
M Com Business Management (Cum Laude)	2014	UNISA

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I am a lecturer in the Department of Human Resource Management at Unisa, where I have been lecturing in human resource development since 2006.

Responsibilities entail but are not limited to:

- Developing learning material in the form of study guides and tutorial letters for ODeLHE adult learners.
- Providing the required learner support.
- Setting and marking assessments.
- Providing feedback on formative assessments.
- Moderating examination papers and answer scripts from other tertiary institutions.
- Publishing research articles in accredited academic journals.
- Mentoring new lecturers in HRD.
- Quality representative for the department at College level.
- Contributing to academic and subject matter text books.
- Presenting papers at conferences.

Signature: _____ **Date:** _____

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CHAPTER 1: SCIENTIFIC ORIENTATION OF THE RESEARCH

In this chapter, a brief outline is provided of the context, purpose and objectives of this research study as well as the research methodology that was followed. There is a paucity of research on adult learner self-directedness, in South Africa and on the African continent as a whole. The research study aimed to make a significant and unique contribution to the assessment of adult learner self-directedness in the open, distance and e-learning (ODEL) tertiary education context by investigating the psychometric properties of the Adult Learner Self-Directedness Scale (ALSDDS) (Botha, 2014). The investigation of the psychometric properties of a scale is an essential first step in the verification process to be followed in scale development.

1.1 BACKGROUND AND MOTIVATION OF THE STUDY

The context of this research is adult learning in the open and distance e-learning higher education (ODELHE) environment. The study built on master's research conducted by Botha (2014) that explored the development and initial factor structure of the ALSDDS. This doctoral study extended the master's study by further and advanced investigation of the psychometric properties (structural validity and structural equivalence of the scale for age, gender and race groups) of the ALSDDS for the purpose of further refinement of the scale. In addition, the doctoral study investigated whether a range of socio-demographic variables of specific relevance to the ODELHE environment significantly predict the ALSDDS variables. The following variables were investigated in this subsequent study: employment status, occupation, socio-economic situation, being depended upon financially, access to a library, access to a computer, proficiency in English, number of modules for which the learner was enrolled, and who was funding the learner's studies. These aspects were not investigated in the master's study and were therefore regarded as crucial to applying the scale in ODELHE practice, *inter alia* because the variables would provide valuable information on the socio-economic circumstances of the participants.

The research adds new insight and knowledge, extending the research on the measurement of adult learner self-directedness in the South African ODELHE context. The findings of the study regarding the psychometric properties of the ALSDDS may potentially stimulate cross-validation studies on the ALSDDS in other higher education contexts. Chen (2017) describes adult learners in tertiary education as a "neglected diversity" because they do not fit the accepted profile of undergraduate students. Francis and Flanigan (2012) as well as Vu and Shah (2016) consider adult learner self-directedness

to be a vital competence in the 21st century, particularly because it implies individual agency and proactive learning, which are vital requirements for lifelong learning. Candy (1991) believes that adult learner self-directedness is closely linked to critical thinking, which also influences decision-making and enhanced comprehension. Candy's (1991) work is reported *inter alia* by Alghamdi (2016). Self-directed learning is essential in order to achieve significant and valuable educational results (Alghamdi, 2016; Garrison, 1997). Adult learner self-directedness can be briefly described as the capacity of an adult learner to agentically take responsibility for and drive his or her own learning, from conception to completion of a formal or informal course of study (Cassidy, 2011; also refer to Botha, 2014; Garrison, 1997; Knowles, 1975; Vu & Shah, 2016). Learner agency includes self-regulation and both the capability and willingness to direct the learning journey actively (Botha, 2014). Adult learner self-directedness is influenced by personality characteristics, learning context and socio-cultural factors, but very little is known of adult learner self-directedness in the South African ODeLHE context (Botha, 2014; Botha, Coetzee & Coetzee, 2015). Socio-cultural variables refer to the customs, traditions and beliefs of different societal groups (Cambridge Dictionary Online, 2018). As socio-cultural variables, learning context and personality characteristics all influence adult learner self-directedness, a thorough study of the construct and its constituent parts is a vital step in building the body of knowledge in the South African ODeLHE situation (Botha, 2014).

Learning in the new millennium is increasingly focusing on online or blended delivery and study, which requires of learners to be more self-directed in their learning (Artino & Jones, 2012; Vu & Shah, 2016). As it may be difficult for self-directed adult learners to autonomously manage individual learning journeys within the structured sphere of higher education, it is necessary to recognise the influence of university teaching techniques as well as individual differences on adult learners' capacity to be self-directed (Bourdeaux & Schoenack, 2016; Francis & Flanigan, 2012). Adult learners' emotional and academic capacity to cope with the rigours of ODeLHE, their ability to comprehend fully the learning material if it is presented in a language other than their home language, and the challenges of their personal circumstances may all influence their capacity for self-directed learning (Bourdeaux & Schoenack, 2016). The peripheral and inherent situations that students experience may lead to frustration, loss of confidence in their capacity for success, dissatisfaction and anxiety (Bourdeaux & Schoenack, 2016; Francis & Flanigan, 2012). Lin, Szu and Lai (2016) found that Taiwanese students with high levels of self-regulation who were studying in an online environment were more inclined to participate in assessment activities and request assistance than did students with low levels of self-regulation. The finding indicates that students with high self-regulation are more capable of and willing to adapt their learning strategies to the learning context than those with low self-regulation. Self-regulation forms part of self-directedness in learning (Du Toit-Brits & Van Zyl, 2017b). Alghamdi (2016) reported that Saudi-Arabian English foreign language learners who were more self-directed in

their learning were also more successful in learning English as a foreign language. Since students with low self-direction tend to be less successful, tertiary institutions should concentrate on developing self-directed learners who are capable of managing their own continued learning. The provision of the relevant teaching context is paramount in this situation (Havenga, 2015; Jabbour, Bakeman, Robey, & Jabbour, 2017).

Frambach, Driessen, Chan and Van Der Vleuten (2012) found that certain fundamental cultural values such as uncertainty, hierarchy and achievement created challenges for students from Asian and Middle-Eastern cultures who were engaged in self-directed learning activities, while students from a Western-based culture were not affected in the same way. According to these authors, this does not mean that self-directed learning would not be appropriate in diverse cultural settings, but rather that educators and trainers should be aware of the possibility of challenges. Atkinson (2017) emphasises that adult education settings can affect the socio-cultural confidence of participants – specifically diverse adult learner populations. As South Africa is a diverse nation situated on a continent with unique challenges, it has become imperative to assess adult learners' capacity for self-directed learning in order to ensure that instructional strategies act as enablers and not disablers in the learning process (Botha, 2014; Khiat, 2015).

Adult learners in ODeLHE face unique challenges, such as the asynchronous nature of their academic work, which means that they may find it difficult to request assistance from either their peers or the university lecturer when they encounter difficulties (Bourdeaux & Schoenack, 2016; Heagney & Benson, 2017). The net effect may be that students have to spend more time on an online module than on a paper-based one (Moeglin & Vidal, 2015). Variances in educational backgrounds, cultural identity, socioeconomic status and feelings of (dis)empowerment all affect adult learners' social confidence and consequently their behaviour as learners (Atkinson, 2017). Socioeconomic factors relate mainly to differences between groups in a society based on their financial circumstances (Oxford Dictionary Online, 2018). Furthermore, the motivational orientations of adult learners affect their interest and performance in ODeLHE studies (Ng, 2017). Adult ODeLHE learners are usually older than 24 and involved in multiple life roles, such as being a spouse or parent, an employee, a student, a breadwinner and/or having a career (Bourdeaux & Schoenack, 2016; Khiat, 2015; McCray, 2016). Adult learners may be fearful of failure and factors such as the design of the learning material and interaction with peers and lecturers may adversely affect their learning engagement and success (Bourdeaux & Schoenack, 2016; Green, Kelsey & Zilloux, 2015). In addition, adult learners function in their role as learners within significant financial, professional, social, time and role constraints (Bourdeaux & Schoenack, 2016; Dernova 2015). The worldviews of the learners about their individual roles as active learners and the academics as university teachers

influence their interpretation of the learning context and their interactions with the academic staff and their peers (Atkins, 2017). In order to ensure that they function effectively in an ODeLHE context, adult learners expect clarity of communication and instruction from academic staff, as well as course content and tuition practices that enable the adult to learn effectively and efficiently (Bourdeaux & Schoenack, 2016).

Conversely, adult learners usually see learning opportunities as vehicles towards personal or professional goal achievement or problem solution. Adult learners possess a wealth of life experiences that can be used productively in their learning journey, they are excellent problem solvers. In addition, adult learners are more independent in their thinking compared to recent school leavers (Heagney & Benson, 2017; Salleh, et al., 2014). Adult learners also have a well-developed capacity for critical reflection and are more actively involved in the learning process (Heagney & Benson, 2017; also refer to Green, et al., 2015; Grover, Miller, Swearingen, & Wood, 2014). In addition, adult learners have diverse expectations of and ideas about ODeLHE (Bourdeaux & Schoenack, 2016). Adult learners appreciate the flexibility offered by ODeLHE and the drive towards self-directed learning that ODeLHE provides, although all adult learners may not necessarily be capable of autonomous learning (Bourdeaux & Schoenack, 2016; Jabbour, et al., 2017). However, tertiary institutions should focus on cultivating learners' capacity for self-directed learning in order to prepare them for the lifelong learning that is expected of the new millennium workforce (Jabbour, et al., 2017).

Self-directedness in learning is equally important in the workplace, especially for knowledge workers (Gu, 2016; Jabbour, et al., 2017; Littlejohn, Milligan, Fontana, & Margaryan, 2016). In the post-modern work context, where individual employees are held more accountable for their own learning and human resource development (HRD), departments are responsible for facilitating learning opportunities, self-directedness is a vital competence (Fontana, et al., 2015; Gu, 2016; Van Dellen & Cohen-Scali, 2015). Workplace learning opportunities do not only provide occasion for improving knowledge and skill, but can also allow employees to explore and cultivate their learner identities, thereby fostering their self-directedness (Gu, 2016; Van Dellen & Cohen-Scali, 2015). Sales employees have been found to be more open to self-directed learning projects when they perceive that the organisation supports their efforts (Boyer, Artis, Fleming & Solomon, 2014). Conversely, Jabbour and others (2017) found that surgical residents were unsure of their capacity for self-directed learning and required a measure of guidance from their instructors in order to learn efficiently. Consequently, it is vital for HRD practitioners to be able to ascertain their learning participants' level of self-directedness and to create an environment that is conducive to self-directed workplace learning (Boyer, et al., 2014).

Given the need for quality education in Africa in order to address the needs of the continent, and the socio-economic disadvantages that beset the majority of ODeLHE students in South Africa, the investigation of factors that may contribute to and nurture learner success is vital (Chinyamurindi, 2016; Mpofo, 2016). The dearth of findings based on South African ODeLHE research is a testament to the vital need for research in the broad field of ODeLHE. Kahu and Nelson (2017) indicate that student engagement, one of the vital requirements for ODeLHE success is a dynamic relationship between the adult learner's personality, personal circumstances and personal background on the one hand, and the tertiary institution and its policies, practices and background on the other. As so little is known in South Africa of the real influences of individual students' situations on their academic success, it may be difficult to determine which interventions would best serve the needs of the students, the ODeLHE institutions and the country (Mpofo, 2016). Mpofo found that race, social stratification, and gender significantly influenced student progress in higher education, but since the study focused on students at a residential university it may be difficult to extrapolate the result to ODeLHE without further investigation. However, Mpofo (2016) declares that social inequality based on race has been stubbornly present in the South African higher education debate since the foundation of the new democratic era after 1994, indicating that a solution to the problem still evades higher education management.

Botha, et al. (2015) reported a significant relationship between ODeLHE students in the economic and management sciences' self-reported self-directedness and their perceived employability attributes. Geduld (2016) found that higher achievers in a South African ODeLHE context showed higher levels of self-regulation in their learning strategies. Botha and Coetzee (2016) reported significant differences in the self-directedness of various gender, race and age groups in ODeLHE students. In earlier research, De Bruin (2007), De Bruin and Cornelius (2011), and De Bruin and Hughes (2012) investigated the association between personality traits and self-directedness, as well as self-directedness and career decision-making and self-directedness and career self-efficacy, but De Bruin's studies focused on students at residential universities. Matoti (2011) focused on studying the self-efficacy of students at a residential university. Other South African studies concentrated on various aspects of student performance and student success (Pretorius, Prinsloo & Uys, 2009; Prinsloo, Muller & Du Plessis, 2010, Subotzky & Prinsloo, 2011). Very little is known of the levels of adult learner self-directedness in South African ODeLHE and the influence of socio-biographical factors on adult learners' self-directedness (Botha 2014). The investigation of the influence of the various relevant socio-biographical variables will consequently add valuable new insights to the field of adult learning research in the contexts of ODeL tertiary and workplace learning.

The socio-biographical variables that will be investigated in the current study are the following: adult learners' employment status, occupation, socio-economic situation, being depended upon financially, access to a library, access to a computer, proficiency in English, number of modules for which the learner was enrolled, and who was paying for the learner's studies. Reported research has indicated that socio-demographic variables such as financial situation, proficiency in the language of instruction at a tertiary institute, pressure to earn a living while studying and time pressures affect adult learner's success in tertiary study (Subotzky & Prinsloo, 2009; also see Mpofu, 2016). The question to be answered in the current study was whether the variables also had an influence on adult learner self-directedness. In addition, the number of modules (courses) for which the learner was enrolled would be investigated in order to assess whether the variable affect adult learner self-directedness, since little research exists on the effect of this variable on adult learner self-directedness.

The ALSDS (Botha, 2014; Coetzee, 2014) assesses the four crucial factors of adult learner self-directedness in an ODeLHE context, namely (1) the strategic utilisation of traditional, officially provided resources; (2) engaged academic activity; (3) success orientation for ODeL; and (4) academically motivated behaviour. The strategic utilisation of officially provided resources describes when and how active adult learners use the official resources provided by the tertiary institution (Botha, 2014). The strategic utilisation of officially provided resources is contextual by nature; focusing firstly on the learning context created by the ODeLHE provider and secondly how active students choose to interact with the learning context. Engaged academic activity describes the deliberate learning behaviours applied by adult learners in order to advance in their studies or improve their competence (Botha, 2014). This factor focuses on the behaviours of adult learners that specifically relate to their efforts in engaging with the provided learning material. Success orientation for ODeL describes the beliefs and behaviours of adult learners, including individual self-belief, self-confidence and active pursuit of success in their ODeLHE studies (Botha, 2014). This factor focuses on the affective beliefs of adult learners that drive their agentic behaviours related to challenges in the learning milieu. Botha (2014) argues that agentic behaviours should not be confused with resource utilisation or engaged academic activity, because adult learners who are confronted with challenges that cannot necessarily be addressed by resource utilisation or engaged academic activity display agentic behaviours. Academically motivated behaviour describes the behaviour of adult learners that indicate a motivational orientation (either extrinsic or intrinsic) to their study-related actions (Botha, 2014). Academically motivated behaviour focuses on the motivational beliefs of adult learners that drive their agentic behaviours, irrespective of challenges that may occur in their learning journey.

The four sub-scales of adult learner self-directedness categorise the motivational aspects, study behaviours and contextual preferences of adult learners in the ODeLHE context and taken together provide an indication of the level of self-directedness in ODeLHE studies reported by the participants. Botha (2014) evaluated various scales and identified a lack of scales relevant to adult learner self-directedness in the South African ODeLHE milieu. The various existing scales have been researched widely, and used for the assessment of self-directed learning in higher education settings. However, no scale exists that is (1) explicitly for use in ODeLHE settings, (2) used for determining the presence of or degree of self-directed learning of adult learners; and (3) aimed at the South African learning environment, where socio-economic and historical factors may influence adult learners' self-directedness. The lack of a South African scale indicates a clear paucity of research on adult learner self-directedness.

A thorough investigation of the psychometric properties of the ALSDS is an essential initial step in the validation of the scale as a valid and reliable measure of adult learner self-directedness in South African ODeLHE. The imperative for increasing student throughput at higher education level without compromising quality indicates that those aspects that may significantly influence the academic success of higher education adult learners should be identified and researched rigorously in order to produce best practice guidelines for facilitating the success of adult learners in their higher education studies (Letseka & Pitsoe, 2014). Aspects such as the socio-biographical variables that were investigated in the current study will contribute to the existing body of knowledge on adult learner self-directedness and the various socio-biographical variables that may affect adult learner self-directedness in the South African ODeLHE context.

Cassidy (2012) posits that individual differences significantly influence adult learner engagement and academic success; consequently, facilitators of adult learning in both the workplace and tertiary education environments should be aware of the possible influence of individual differences in the learning experience in order to create learning contexts that facilitate adult learning success. Crowther, McLachlan and Tett (2010) support this view as well as Yoo and Huang (2013). Both age and gender seem to affect academic achievement positively, with older female students apparently achieving higher academic achievement in the North American context (Cassidy, 2012). Akala and Divala (2016) as well as Van Zyl (2016) argue that women from previously disadvantaged groups (related to race and socio-economic background) are still marginalised when it comes to higher education access, support and success. In the current neo-liberated context, many female students fail to achieve success in higher education as defined by graduation (Akala & Divala, 2016; Van Zyl, 2016). In addition, for female students from poor socioeconomic backgrounds, who were also marginalised in education because of their gender, the hope offered by access to tertiary education

through ODeL may have to be offset by the financial and personal costs involved in the endeavour. The costs involved in higher education would be a consideration if the possibility exists that the female graduate will struggle to find a well-paid job related to the achieved qualification (Akala & Divala, 2016; Van Zyl, 2016). As the student profile of the institution where the study was conducted indicates that the majority of students are women, a specific focus on gender as it relates to adult learner self-directedness in the study was required (Botha, 2014).

South Africa has traditionally been a racially divided country, with a concomitant adverse effect on the socio-economic development of the biggest race group, namely black South Africans (Mpofu, 2015, Van Zyl, 2016). Although race provides only a crude socio-cultural indicator of adult learner self-directedness, the diverse nature of South African society and the past inequalities in the economy indicate that race could provide an indication of general beliefs in and attitudes toward adult learner self-directedness in ODeLHE. The cross-cultural characteristics, including race, that shape adult learner self-directedness have not been adequately researched particularly in the South African context, yet race and culture may play significant roles in an individual's view of him- or herself as an active agent in the learning journey (Ahmad & Majid, 2010; Botha, 2014). Cultural competence, which relates to socio-economic background and race, had an effect on the academic success of students in higher education in Australia and in North America (Devlin, 2013; Young, et al., 2013).

Culture shapes human behaviour at a subconscious level, resulting in an assimilated value system and concomitant behavioural patterns related to the members of a particular culture (King & McInerney, 2014). Ahmad and Majid (2010) found that socio-cultural values and beliefs might influence learning behaviours of adult learners, specifically those learning behaviours associated with self-directed learning. King and McInerney (2014) supported the findings, emphasising that collectivist cultures may attribute different weights to aspects of student motivation such as autonomy and external motivational factors. Yet, culture is a nebulous concept and for the purposes of this study, the word 'culture' was taken to mean subjective culture. Subjective culture is what individuals learn from those around them in terms of what is acceptable and unacceptable, appropriate, and true. Subjective culture influences individual values, generally accepted beliefs and consequently individual behaviours (King & McInerney, 2014). Many students who enrol for tertiary education in South Africa lose hope because of life circumstances related to their socio-economic background over which they have little or no control, or because of cultural incongruity in the context of the academic environment (Matsolo, Ningpuanyeh & Susuman, 2016; Smit, 2012).

A paucity of research on the socio-cultural influences on higher education student self-directedness requires a detailed investigation into the possible influences of socio-cultural aspects on the self-directedness of adult ODeL students (Mpofu, 2015). Mpofu (2015) found that poor educational

background, race and matric (grade 12) performance are robust indicators of the academic success of those students who are the first in their family to progress to tertiary education (pioneer students). Socio-economic factors (indicated by race and class) influence the capacity of students to find work while studying, as well as the type of work that students have access to (Mpofu, 2015). In addition, a deficit-style of thinking on the part of higher education institutions focuses the attention on what students from historically disadvantaged backgrounds (also called 'at-risk students') lack or need to develop (Mpofu, 2015). If curriculum development activities and tuition strategies can be adapted in order to nurture the required study competencies in students, higher education may be able to provide the kind of support the disadvantaged students require in order to be successful (Mpofu, 2015; Smit, 2012). The ability to establish students' self-directedness levels could assist in the curriculum development, learning material development, tuition and learner support strategies in order to inculcate the required academic competencies (Botha, 2014). The 'at-risk' student may then be perceived as a 'promising' student who is communicating from, studying in and learning from a different situation social cognition. If one accepts that learning and studying as well as communication are socially embedded activities, the deficit type of thinking focusing on what students may lack may be changed. Seeing the student as promising will require of academics and their institutions to think of students as human beings, engaged in being – it necessitates a focus on ontology as it pertains to the adult learners in higher education (Smit, 2012).

Knowles (1975) proposed, and Botha (2014) found that adult learner self-directedness was closely related to age, and that older students showed higher levels of self-directedness in their learning. In order to ensure that the ALSDS provides a valid and reliable assessment of adult learner self-directedness in an ODeLHE context with a diverse student population, it is necessary to investigate the differences that may exist between gender, race and age groups before further validation studies are implemented. In addition, South African legislation on employment equity requires that all psychometric assessment measures should be unbiased and administered fairly to all employees (Laher & Cockcroft, 2014). As Botha (2014) found that adult learner self-directedness positively predicts employability, the scale should be proven to be unbiased in order to provide for its efficient use in learning contexts related to both higher education and the workplace.

Variables such as employment status, occupation, socio-economic situation, being depended upon financially, access to a library, access to a computer, proficiency in English, number of modules for which the learner was enrolled, and who was paying for the learner's studies may all contribute to the socio-economic background of university learners in South Africa (Van Zyl, 2016). The past policy of racial division and its concomitant adverse consequences (such as lack of job opportunities for black people, and a great division in the investment of the basic education of black school children as

opposed to investment in Indian and white school children) created historical socio-economic inequalities that may not necessarily have been addressed in the past twenty years of democracy (Coetzee, 2014). As relationships have been reported between socio-economic backgrounds and reading ability in the language of instruction and academic success in higher education, research on further possible influences in addition to gender, race and age on the adult learner self-directedness of ODeLHE students in the South African context is vital.

The capacity to function effectively in the language of instruction influences residential students in North America's academic success (Young, et al., 2013). In addition, the capacity to read fluently with comprehension is a vital learning tool in the ODeL tertiary education environment, which relies heavily on the rich resources of printed material available in the 21st century. In addition, a student's socio-cultural context influences individual attitudes towards the act of reading, which in turn influence literacy levels (Dubas & Toledo, 2015; Pretorius, 2002; Uccelli, et al., 2015). Pretorius (2002) states that capacity to read and the capability to comprehend what was read in order to read-to-learn are two different concepts, while Dubas and Toledo (2015) warn that struggling to read with comprehension at tertiary education level may lead to a learnt helplessness that affects the students' motivation to learn. Motivation is a vital element in adult learner self-directedness (Du Toit-Brits & Van Zyl, 2017b). In two studies performed at a residential university in South Africa, Pretorius (2002) found that reading ability, proficiency in the language of teaching (English) and academic performance were closely related, with reading ability strongly predicting academic performance. Coetzee, Shumailian & Kotze (2014) found that the socio-economic background of higher education accounting students had a direct effect on their willingness to engage in communication in languages other than their home language (both oral and written) at a residential university in South Africa. Van Dyk, Van der Poel and Van de Slik (2013) found that the ability to read academic texts influenced the academic success of students at a residential university, and that secondary-school performance in general was a good predictor of academic success in residential higher education. Coetzee, et al. (2014), as cited above, reported a significant difference in the willingness to communicate in English between accounting students from different race groups, as well as between the two gender groups in a residential university in South Africa. English as the main language of tuition in the ODeLHE context in South Africa may also inhibit the academic success of students whom are English second language learners coming from a background where languages other than English were the home language (Coetzee, et al., 2014).

Simultaneously, Coetzee and others (2014), as cited above, caution that culture should not only or necessarily be linked to race, but rather to socio-economic background, as students from traditionally poor schools showed a higher reluctance to communicate in English than those from traditionally

more affluent schools, irrespective of race (Coetzee, et al., 2014). In addition, research across residential universities in South Africa indicates that the ability of the average student to read in order to learn is below the required expectation for academic success (Van Dyk, et al., 2013). In addition, Van Dyk., et al. (2013) found that secondary school performance positively predicted academic success at a residential university. However, the study focused on average Grade 12 performance and not specifically on the performance in English. Research has shown that socio-cultural background does indeed affect achievement in pre-tertiary education (Agirdag, Van Avermaet & Van Houtte, 2012) but once again, there is a paucity of research on the influence of socio-cultural background and performance in English on the self-directed learning of adult learners in the African milieu. As reading ability is described as a learning tool related to learning behaviour, it is imperative to assess the capacity of ODeLHE students to be successful academically, by using their primary school performance in English as a benchmark.

In addition, the years that students have already studied in the ODeLHE environment may influence their interaction with the mostly Eurocentric learning environment because of experience or lack thereof in the exceptionally complex ODeLHE learning milieu (Coetzee, et al., 2014). The number of modules for which students register during a tuition period may influence the overall time available for them to study all their modules in order to ensure academic success. Students from more advantaged socio-economic backgrounds are familiarised (enculturated) with specific cultural capital components (assumptions, values and expectations) from childhood, while those from poor socio-economic backgrounds have not developed the same cultural competence in academic situations (Devlin, 2013). More advantaged students have built up a stock of resources that facilitate integration into the academic environment and a willingness and ability to engage with and assimilate academic texts, views and expression (Devlin, 2013). According to Van Zyl (2016), a university and a student enter into a psychological contract. A psychological contract is a tacit agreement between the relevant parties where certain behaviours, beliefs and commitment from both parties are assumed and accepted without being discussed or explicitly agreed upon (Van Zyl, 2014). Part of the psychological contract consists of the capacity of the student to achieve success after registration. However, the specifics in the psychological contract may differ for a student from a socio-economically disadvantaged background who does not necessarily have the required educational competence to be successful in the academic context. It is possible that cultural incongruity is more pronounced in the ODeLHE milieu, as students do not automatically have a familial, peer or student body support system as is present in residential universities.

The ability to realise how much time should be set aside for ODeLHE study for a student who is the first in the family to continue to higher education may be underdeveloped. The number of modules

for which students register may influence the time they have available to invest in their studies in order to ensure academic success. Devlin (2013) reports a difference between students understanding their role as students and mastering that role, with a related difference between students' academic skills and actual capacity and their cultural capital and demonstrated capacity. Socio-cultural background and cultural capital influence students' capacity to grasp the tacit requirements relevant to the psychological contract in academia (such as the time required to engage in active learning to achieve success) and their capacity to display the required student behaviours, irrespective of their actual capacity (Van Zyl, 2016). The implicit expectations of the university and the tacit understanding of students are foundational to academic success at university. Students from more disadvantaged socio-economic backgrounds are frequently unaware of the implicit expectations of academic staff (Devlin, 2013; Van Zyl, 2016).

In the socioeconomic context, the living conditions of many students currently enrolled for ODeLHE in South Africa indicate that any research on improving the academic success of such students should take into account a variety of socio-demographic variables. Variables such as where learners reside (urban or rural areas), their source of income (if any), how many people depend financially on them, their access to the newest technology (such as a computer and the internet) and their access to a suitable library may influence the academic achievement, persistence and study behaviours of these vulnerable students (Van Zyl, 2016). As the access systems to higher education in South Africa make specific provision for students from disadvantaged backgrounds, universities face the reality that students from disadvantaged socioeconomic backgrounds are part of the usual stream of new entrants. Insight into the life situations of learners and how socioeconomic and socio-cultural context contribute to the academic behaviour of adult learners in ODeLHE will provide significant information for student support purposes. Informed and well-thought out support will facilitate the creation of equality in education, instead of the equality as seen by the number of people from disadvantaged socio-economic backgrounds entering higher education (Van Zyl, 2016).

In conclusion, employed adults often practise lifelong learning by enrolling for management-related tertiary qualifications at ODeLHE institutions (Boeren, 2017). Lifelong learning requires the ability to manage personal learning journeys agentically. Correspondingly, competency-based human resource management requires employees that are capable of managing their own learning and development autonomously (De Vos, De Hauw, & Willemse, 2015). In the competency-based era, where the focus is on employee competencies and how competencies contribute to organisational sustainability and success, organisations and HRD departments specifically could fruitfully use a valid instrument that reliably allows for the determination of employees' levels of self-directedness (De Vos, et al., 2015). Student success is of the essence in South Africa's tertiary institutions as well as for

employers (Karakas & Manisaligil, 2012; Prinsloo, 2009; Prinsloo, Muller, & Du Plessis, 2010; Pretorius, Prinsloo, & Uys, 2009; Shillington, et al., 2012). In addition, universities are increasingly compelled to enhance student success and throughput while simultaneously sustaining globally accepted standards in education (Prinsloo & Slade 2014). Adult student self-directedness in the context of ODeLHE has not been adequately explored in the South African tertiary environment (Botha, 2014). Specifically, the role that adult learner self-directedness plays in student success should be researched rigorously in order to produce a framework for academic staff for the creation of learning environments that facilitate the cultivation of academic self-directedness in adult students. Devlin (2013) indicates that a cultural incongruity exists between tertiary institutions and students from a traditionally lower socio-economic background.

The unique demands made on students by ODeLHE imply the necessity for an instrument aimed specifically at assessing the self-directedness of ODeLHE students. Possible cultural differences between tertiary education students in diverse cultures suggest the necessity for a scale that accommodates diverse social backgrounds and previous learning experiences (Botha, 2014). The lack of an instrument to measure the academic self-directedness of adult students enrolled at an African ODeL tertiary institution led to the development of the Adult Learner Self-Directedness Scale (ALSDS) that formed part of a Master's degree study (Botha, 2014). However, as previously stated, the structural validity and structural equivalence of the scale for age, gender and race groups have not yet been established for the sample population investigated by Botha (2014) in the South African higher education ODeL context. The present research intended to address this gap in the research literature.

Worldwide, employers demand a regular flow of agile employees who are capable of functioning effectively and independently in a fluctuating business environment (Blaschke, 2012; Karakas & Manisaligil, 2012). Globally, tertiary education institutions are required to produce graduates that are responsive and capable of thriving in a fluid business milieu (Blaschke, 2012). In such an environment, the imperative for a higher education that inculcates agentic behaviour in successful students cannot be overemphasised. The development of interventions that academic staff can employ to advance the autonomous functioning and success of adult learners in an ODeLHE milieu is of particular consequence (Blaschke, 2012; Coetzee, 2014; Shillington, et al., 2012). Successful students could contribute to a more advanced knowledge-based society (Coetzee, 2014; Teo, et al., 2010), and to business success through their enthusiasm for and active pursuit of lifelong learning experiences (Blaschke, 2012; Coetzee, 2014; Ellinger, 2004; Karakas & Manisaligil, 2012). According to Coetzee (2014), Ellinger (2004), and De Bruin and De Bruin (2011), employees who have the capacity to learn can contribute significantly to organisational success, and specifically self-directed

learning can be used effectively to ensure that a business maintains its competitive advantage (Karakas & Manisaligil, 2012). Furthermore, self-directed learners are more likely to learn from situations other than formal learning interventions. In addition, self-directed learners are more likely to create personal learning networks that enable them to harness the knowledge of others in their own growth and development. Furthermore, self-directed learners are more likely to share their knowledge with others and therefore contribute to organisational growth (Beitler & Mitlacher, 2007; Ellinger, 2004; Karakas & Manisaligil, 2012). According to Beitler and Mitlacher (2007), the competitive advantage that employees deliver to organisations will not be maintained by creating the capacity in employees to learn, but rather by fostering an environment where self-directed employees who learn are motivated and capable of sharing their learning with the broader working environment, *inter alia* with computer and communication technology. In this regard, organisations and higher education institutions that are responsible for preparing the adult learner for the world of work need to know how to incubate and foster learner self-directedness by offering learning opportunities other than the traditional, classroom-based learning interventions (De Bruin & De Bruin, 2011; Guglielmino, Guglielmino, & Long, 1987; Karakas & Manisaligil, 2012).

The unique milieu of distance education and the associated challenges that ODeLHE students are faced with present significant obstacles to academic success in the ODeLHE context (Boeren, Nicaise, & Baert, 2012; Koper, 2015; Wang, Peng, Huang, Hou, & Wang, 2008). The most obvious of these challenges is the distance that exists both physically and psychologically between the students and faculty, and between the student cohorts. In addition to this challenge, ODeLHE students may experience a cultural distance between what they expect from tertiary education studies and what the education provider provides and expects from them. Cultural distance exists when a student enters an institution with a vastly different cultural framework to which the student is accustomed (Boern, et al., 2012). Adult learners from disadvantaged backgrounds may struggle with access and capacity to utilise modern computer and communication technologies successfully. In addition, adult learners from poor socioeconomic backgrounds may lack the required academic skills, may struggle with time management, may have a host of other obligations and demands on their time and may experience financial constraints (Koper 2015; Mbatha, 2014; Prinsloo, 2009; Wang, et al., 2008). Adult learners' motivation to study may be affected by their willingness to become immersed in the learning experience, willingness to participate in student life, their previous, and emotional barriers to successful learning (Botha, et al., 2015; Gravani, 2015; Salanova, Schaufeli, Martínez & Bresó, 2010; Wang, et al., 2008). The massification of higher education which has created a heterogeneous student cohort, as regards age, race, gender and home language, but also in terms of diverse issues such as cultural beliefs, preparedness for higher education, family history of higher education and preference profiles in ODeLHE study. The heterogeneous nature of students in

ODELHE indicates a need for best practice guidelines to facilitate the greatest success of the greatest number of students while leaving as few incapacitated as possible in the combat zone of higher education (Boelens, Voet & De Wewer, 2018; De Courcy, 2015; Prinsloo & Slade, 2014).

The context of the current study is the academic self-directedness of adult learners in an ODeLHE environment in South Africa. Adult learners who engage in ODeLHE studies are mostly employed and pursue ODeLHE studies in order to establish and maintain their employability as active agents in a life-long learning journey (Botha, et al., 2015; Coetzee, 2014). In order to research the self-directedness of adult learners, it is necessary to know adults as learners. However, 'adult learner' as a concept is multifaceted and challenging to define (Botha, 2014; Gravani, 2015). The concepts of adult learner, adult learner self-directedness and models of learner self-directedness are discussed in Chapter 2 – as set within the meta-theoretical context of the contemporary business world, and in Chapter 3 – within the context of ODeLHE.

1.2 RESEARCH PROBLEM

Recently reported research indicates the possibility of a positive relationship between adult learner self-directedness, educational success and the active practice of lifelong learning (Converse, Pathak, De Paul-Haddock, Gotlib, & Merdebone, 2012; Du Toit-Brits & Van Zyl, 2017a). The lack of student success in higher education programmes specifically in South Africa has a knock-on effect on the labour market, leading to the dichotomous situation of having at the same time high unemployment rates and a skills shortage (Botha, 2014). Botha (2014) indicated a gap in research instruments to measure adult learner self-directedness in the ODeLHE context and for this purpose developed the ALSDS. However, the psychometric properties of the ALSDS need further investigation, specifically in relation to diverse socio-biographical factors influencing the self-directedness of adult learners in the SA ODeLHE context

Research into the measurement of adult learners' self-directedness will contribute not only to the formulation of guidelines and best practice principles but also, and most importantly, to understanding the milieu and internal convictions that most usefully facilitate the successful learning journey of adult students (Botha, 2014; Gravani, 2015). Researchers agree that self-directedness in learning is a critical factor in academic success in the ODeLHE milieu, but little research exists on the assessment of academic self-directedness of adult learners involved in ODeLHE and little reported research could be found on the self-directedness of adult ODeLHE learners in Africa. The numerous factors affecting student success in distance education has been widely researched (Prinsloo, et al., 2010, Botha, et al., 2015) but insufficient research is reported on adult learners' self-directedness in the South African

ODELHE context. As a contribution to the body of knowledge on student success in distance education in the South African environment, the Adult Learner Self-directedness Scale was developed (Botha, 2014). However, the scale still has to be validated in the South African ODeLHE context. The present research intends to address this gap in the research literature by examining the psychometric properties of the ALSDS developed by Botha (2014).

The most well-known scale assessing the self-directedness of adult learners is the Self-Directed Learning Readiness Scale (SDLRS) developed by Guglielmino (1977). The SDLRS was developed for use in residential universities and assesses a participant's readiness for self-directed learning, not the actual presence of self-directedness in learning. The scale utilises an assessment by the academic staff involved as well as a self-report questionnaire technique, consequently its usefulness in an ODeLHE setting is questionable. Furthermore, questions have been asked about the validity, psychometric integrity and cultural transferability of the SDLRS in an African context (Botha, 2014; De Bruin & De Bruin, 2011; Stockdale & Brockett, 2011). These challenges precluded its use in a South African higher education ODeL context.

The Bartlett-Kotrlik Inventory of Self-Learning (BKISL) (Bartlett & Kotrlik, 1999) was developed for use in workplace learning settings, but supportive research on its validity, psychometric integrity and cultural transferability to the South African ODeLHE context is lacking, which precluded its use in the proposed study. Furthermore, the Learner Self-Directedness in the Workplace Scale (De Bruin & De Bruin, 2011) was developed for assessing the self-directed learning of adults in the work environment in South Africa. The scale focuses exclusively on the self-responsibility of the adult learner in the work environment and thus zooms in on self-directedness as a personal disposition (De Bruin & De Bruin, 2011). However, adult learner self-directedness is a multi-faceted concept that includes personal disposition, external environment, the adult learner's interaction with the external environment, and motivational beliefs (Botha, 2014). Consequently, the scale was considered to be inappropriate for use in the exceptionally complex ODeLHE learning environment in which the majority of South Africa's adult learners have to survive, even though the majority of the sample and respondents of the initial study are also employed.

Stockdale and Brockett (2011) developed the Personal Responsibility Orientation to Self-Direction in Learning Scale (PRO-SDLS). The PRO-SDLS is based on the Personal Responsibility Orientation for Self-direction in Learning developed by Brockett and Hiemstra (1991). The PRO-SDLS consists of four sub-scales, namely initiative, control, motivation and self-efficacy. A coefficient α of .91 is reported for the scale (Stockdale & Brockett, 2011). Although the scale makes a good contribution to the assessment of learner self-directedness, it was developed for use in a residential higher education milieu and was consequently not suitable for the proposed study.

A primary and a secondary research problem were identified for the present study, as indicated below.

The primary research question: Do the structure and psychometric properties of the ALSDS provide a valid measure of academic self-directedness in ODeLHE for diverse groups (age, race and gender) of adult students?

The secondary research question: Do the diverse socio-demographic characteristics (as identified by their age, race, gender, employment status, occupation, socio-economic situation, being depended upon financially, access to a library, access to a computer, proficiency in English, number of modules for which the learner was enrolled and who was paying for the learner's studies) of adult students enrolled in ODeLHE significantly predict adult learners' academic self-directedness?

The initial, exploratory master's study by Botha (2014) did not address these aspects that are regarded as essential for the application of the scale in practice and for further cross-validation studies of the ALSDS on other population and occupational groups. The current research is seen to address an important research gap on the ALSDS.

If answers to the two research questions can be found and adult learner self-directedness can be both assessed in a valid and reliable manner and cultivated at tertiary education level, the possibility exists that learners' educational success will improve and that students as adult learners will cultivate the capacity for lifelong learning required in the modern world of work. The structural validation of the ALSDS and identification of those person-centered characteristics that directly or indirectly influence adult learner self-directedness will contribute to the body of knowledge of learner success in tertiary milieus, as well as to the creation of best practice guidelines for inculcating learner self-directedness in both tertiary and workplace learning environments. Empirically, the availability of a valid scale that can reliably assess adult learner self-directedness in the South African ODeLHE milieu will make a unique contribution to the body of knowledge on research in the South African educational environment. Given that Botha (2014) found a strong positive relationship between student self-directedness and employability attributes, the ability to reliably assess higher education students' self-directedness should contribute to the inculcation of employability attributes in higher education students, thereby delivering potential employees who are capable of managing their own career and lifelong growth within the work environment (Botha, 2014). In this regard, the study findings may potentially contribute to the field of business management (HRD) by providing new insights about the measurement of the self-directedness of adult learners who are pursuing further education studies as part of their lifelong learning.

1.2.1 Research questions

The general research question for the proposed study is as follows:

What are the psychometric properties (structural validity and internal consistency reliability) of the ALSDS and is the structure equivalent for age, gender and race groups and do diverse socio-biographical factors predict the self-directedness of adult learners?

The specific research questions for the study are described below.

1.2.1.1 Research questions with regard to the literature review

In terms of the literature review, the following specific research questions were addressed in the study:

- How is adult learning conceptualised in the context of the contemporary business environment in the literature?
- How is the self-directedness of adult learners in human resource development initiatives in the business environment conceptualised in the literature?
- How is adult learner academic self-directedness in an ODeLHE context conceptualised in the literature?
- What are the implications of measuring adult learner academic self-directedness for human resource development in business and for ODeLHE teaching practices?

1.2.1.2 Research questions with regard to the empirical study

In terms of the empirical study, the following specific research questions were addressed:

- Are the structure and psychometric properties (factorial structure and internal consistency reliability) of the ALSDS valid for measuring adult learner academic self-directedness in an ODeLHE scenario for diverse groups of adult learners?
- Is the factorial structure of the ALSDS equivalent for diverse groups of adult learners in ODeLHE as regards their gender, age and race?
- Do the various socio-demographic groups (gender, age and race) differ significantly regarding the sub-scale dimensions of the ALSDS?
- Do the socio-demographic variables such as employment status, occupation, socio-economic situation, being depended upon financially, access to a library, access to a computer, proficiency in English, number of modules for which the learner was enrolled and who was

paying for the learner's studies significantly predict adult learner self-directedness in ODeLHE?

- What conclusions can be drawn, and what recommendations can be made for future research, HRD in business and tertiary ODeL teaching practice?

1.2.2 Research objectives

In general terms, this study set out to achieve the following objectives:

- To assess the psychometric properties (structural validity and internal consistency reliability) of the ALSDS.
- To determine whether the structure of the ALSDS was equivalent for gender, race and age groups.
- To establish whether diverse socio-biographical factors predict the self-directedness of adult learners in an ODeLHE context

The results were used to make recommendations regarding the application of the ALSDS in practice based on the findings of the study as an aspect of employability and lifelong learning (human resource development) as well as ODeLHE teaching practices in a knowledge-driven society.

1.2.2.1 Specific objectives of the literature review

The specific objectives of the literature review were as follows:

Research aim 1: Conceptualise adult learning in the context of the contemporary business environment as discussed in the literature.

Research aim 2: Conceptualise adult learner self-directedness in HRD initiatives in the workplace context as discussed in the literature.

Research aim 3: Conceptualise adult learner self-directedness in an ODeLHE context as discussed in the literature.

Research aim 4: Conceptualise the implications of the measurement of adult learner self-directedness for human resource development in the workplace and tertiary ODeL teaching practices.

1.2.2.2 Specific objectives of the empirical study

The specific objectives of the empirical study were as follows:

Research aim 1: To assess the psychometric properties (factorial structure/construct validity and internal consistency reliability) of the ALSDS as a valid and reliable instrument for measuring adult learner self-directedness in ODeLHE for diverse groups of adult learners.

Research aim 2: To assess whether the factorial structure of the ALSDS is equivalent for diverse groups of adult learners as regards their gender, race and age.

Research aim 3: To assess whether the various socio-demographic groups (gender, race and age) differ significantly regarding the sub-scale dimensions of the ALSDS.

Research aim 4: To explore whether the various socio-demographic variables such as employment status, occupation, socio-economic situation, being depended upon financially, access to a library, access to a computer, proficiency in English, number of modules for which the learner was enrolled and who was paying for the learner's studies significantly predict adult learner self-directedness in ODeLHE.

Research aim 5: To formulate recommendations regarding the use of the ALSDS in both organisational HRD and ODeLHE teaching and learning practices, and furthermore to indicate what further research may evolve from the findings of the study.

1.3 STATEMENT OF SIGNIFICANCE

The research study contributes to the body of knowledge on the measurement of adult learner self-directedness in various ways as explained below.

1.3.1 Potential contribution on theoretical level

There is a paucity of research on the measurement of adult learner self-directedness in both the South African business environment and the ODeLHE context. A lifelong learning orientation is assumed to be essential in the new millennium workplace (De Bruin & De Bruin, 2011). Coetzee (2014) reports on the existence of a theoretical relationship between academic self-directedness and learner graduate attributes with specific reference to learners' lifelong learning orientation, yet little research exists that focuses specifically on the academic self-directedness of adult learners in ODeLHE in South Africa (Botha, 2014, De Bruin & De Bruin, 2011). On the theoretical level, the research study has assessed the published research on adult student self-directedness and assimilated the research in order to establish the relevance of published research to the South African business and ODeLHE environment. The research study, being the first of its kind to be conducted in South Africa, should contribute significantly to the extension of the theory on self-directed learning

in an ODeLHE context with specific focus on an African (instead of a Western) perspective. The theoretical research was anchored in the business milieu, contributing to the body of knowledge available on self-directedness of adult learners in HRD interventions in the contemporary business environment. Given the imperatives of the National Skills Development Strategy III, knowledge on adult learners and the conceptualisation of adult learner self-directedness in the research literature is vital in order to contribute to skills development and the national development goals in the long term (Coetzee & Botha, 2013).

1.3.2 Potential contribution on empirical level

The proposed research study will make a significant empirical contribution if the structure and psychometric properties of the ALSDS can be validated as an instrument for measuring adult learners' self-directedness in ODeLHE for diverse groups of adult learners. Such findings will enable the provision of the first instrument developed specifically for the South African ODeLHE context for the reliable assessment of adult learner self-directedness (Botha, 2014). Further, if the factorial structure of the ALSDS is equivalent for various gender, race and age groups, the instrument will be valid and reliable for use in the diverse South African ODeLHE milieu. Knowledge of whether various socio-demographic variables such as employment status, occupation, socio-economic situation, being depended upon financially, access to a library, access to a computer, proficiency in English, number of modules for which the learner was enrolled, and who was paying for the learner's studies significantly predict adult learner self-directedness will contribute to the body of knowledge of success in ODeLHE milieus in South Africa. Lastly, assessing whether the various socio-demographic groups differ significantly as regards the sub-scale dimensions of the ALSDS will further strengthen the use of the ALSDS and contribute to the knowledge about adult learner self-directedness in ODeLHE contexts. Conducting advanced research on the psychometric properties of the ALSDS will enable further refinement of the scale developed by Botha (2014), implying that the ALSDS could be used with greater confidence in cross-validation studies of the scale.

1.3.3 Potential contribution on practical level

Assessing the self-directedness of adult learners in a valid and reliable manner by means of the refined ALSDS may contribute to practices focusing on enhancing the self-directedness of adult learners in higher education and organisational context. The majority of students in South Africa study through ODeLHE. In addition, within the context of the skills development imperatives created by the National Skills Development Strategy III (Tshilongamulenzhe, 2010), contributions in the form of recommendations and best practice guidelines in the design and delivery of online learning in both the tertiary and workplace learning environments that result from reported research may significantly

enhance the practice of both tertiary and workplace learning and development through HRD interventions.

1.4 PARADIGM PERSPECTIVE OF THE RESEARCH

A research paradigm is not easily defined (Harrits, 2011). One can view the concept from two different perspectives, namely the ontological-epistemological on one hand and praxis on the other. The ontological-epistemological perspective focuses on those beliefs that humans share about the world and what is currently known or still to be known about the world. The praxis perspective focuses on accepted research practice and process in a discipline (Harrits, 2011). Diverse research paradigms guided the literature review and the empirical study. For the literature review, the research was guided by the humanistic-developmental paradigm, while the positivist research paradigm guided the empirical study. Educational research is mostly based in the humanistic-educational research paradigm (Shakirova & Valeeva, 2016). The literature on adult learner self-directedness is mostly found in educational journal, which indicated the use of the humanistic-educational research paradigm for the literature review. The business management discipline favours the positivist research paradigm (Antwi & Kasim, 2015), which indicated the use of the positivist research paradigm for the empirical research. Furthermore, the Master's study, from which the doctoral study flowed, was grounded in the positivist research paradigm.

1.4.1 The literature review

The literature review was presented from the humanistic-educational (developmental) perspective. The humanistic-educational perspective focuses on the study of human beings in their entirety. The principal assumption is that human behaviour is purposeful and value-based (Huitt, 2009). The humanistic perspective of education posits five fundamental objectives of education, namely to cultivate positive self-direction and independence, to inculcate the capacity to be personally accountable for learnt content, to nurture creativity, to nurture curiosity, and to propagate affective capacity (or emotional intelligence) (Huitt, 2009). Thematically, the investigation of the psychometric properties of a scale to assess adult learner self-directedness contributed to achieving the five aims of education as described by Huitt (2009). The purpose of the ALSDS is to assess the self-directedness of adult learners in an ODeLHE learning environment, in order to provide academic teachers in these environments with an effective tool to assess the self-directedness and agency of their students. Such information facilitates the development of learner v cAr support strategies specific to the needs of individual learners or groups of learners, in order to expedite their learning journey for

the mastery of discipline-specific competence and for the mastery of agentic, self-directed behaviours in their life and work context (Bolkan, 2015; Bourdeaux & Schoenack, 2016).

1.4.2 The empirical study

The empirical study was conducted within the realm of the positivist research paradigm. The positivist research paradigm has a scientific basis, focusing on measuring independent facts on a particular, logical, rational certainty or truth (Krauss, 2005). Observation per se does not influence the data observed. The purpose of the positivist research paradigm is to elucidate the facts being observed with no active participation in the context within which those facts are present (Howell, 2013; Krauss, 2005). The underlying principle behind this approach is comprehension of the environment under observation in order to predict and manage it (Howell, 2013; Krauss, 2005). The positivist research paradigm hypothesises that, as commonly shared rules guide social experiences and exchanges, illuminating these mutual rules will facilitate the prediction and regulation of societal phenomena (Howell, 2013; Krauss, 2005). Thematically, the study related to the positivist research paradigm in the desire to accumulate sufficient information on the assessment of adult learner self-directedness in the ODeLHE context. The information could be used to provide suggestions for the development and facilitation of higher education and workplace learning experiences that could inculcate in the adult learners the capacity to initiate and manage their own lifelong learning journeys.

1.5 MARKET OF INTELLECTUAL RESOURCES

1.5.1 Meta-theoretical statements

In this section the meta-theoretical statements, conceptual descriptions, central hypothesis, theoretical assumptions and methodological assumptions relevant to the proposed study are briefly explained.

Research in the broader sense can be used to answer questions that arise about a certain discipline, to interrogate existing questions, and to raise questions in that discipline. More importantly, in a business context, research can be utilised to contribute to the body of knowledge in the discipline by suggesting new or improved practices and procedures (Coetzee, 2010). This research study is situated in the field of business management, specifically the discipline of HRD as a part of the whole of human resource management, which formed the definitive boundary of the study and explains the particular approach that was followed in the research study. The specific focus of the current research study was employed adult learners who were pursuing ODeLHE in South Africa in the field of economic and management sciences.

1.5.2 Conceptual descriptions

The following core constructs are relevant to the research study:

An **adult learner** is commonly accepted to be someone who is more mature than the 'traditional' tertiary education student, and who engages in ODeLHE learning experiences in order to ensure continued employability in a fluid work context (Botha, 2014; Coetzee, 2014).

Adult learner self-directedness is the individual's capacity and willingness to autonomously initiate and drive a personal learning journey to a successful conclusion in order to achieve a personal goal (Botha, 2014; Knowles, 1975).

Open and distance e-learning higher education (ODELHE) is learning that is offered to adult learners who simultaneously pursue careers and who enrol for open distance tertiary education, where the tuition is facilitated by communication and computer technology and supported by online teaching and assessment (Coetzee & Botha, 2013; Prinsloo, 1990).

1.5.3 Relevant theory

The basis of this research project is adult learning theory. Adult learning is a theoretical perspective of learning that posits that the learning of adults differs from that of children and that facilitators of learning should create learning experiences that positively engage the adult learners in order to create major learning benefits for the adult learner (Blashke, 2012; Botha, 2014, Gravani, 2015; Knowles, 1975). The concept of adult learning is addressed in chapter 2.

1.5.4 The measurement scale that was used

The measurement scale that was used in this study is the Adult Learner Self-Directedness Scale (ALSDS) (Botha, 2014). The ALSDDS (Botha, 2014) assesses the self-reported self-directed learning behaviours and orientation of adult learners in an ODeLHE milieu. The ALSDDS (Botha, 2014) is explained in chapter 3. The four factors that are assessed using the initial ALSDDS developed by Botha (2014) are as follows:

- The utilisation of officially provided resources involves how active adult learners use the resources provided by the tertiary institution in their studies in order to facilitate academic success.
- Engaged academic activity involves how active adult learners immerse themselves in the learning material in order to further their academic studies.

- Success orientation for ODeL (ODeLHE) relates to the self-supportive beliefs that enable active adult learners to manage their learning agentially in an ODeLHE context by finding solutions to problems they may encounter, and by managing their own learning.
- Academically motivated behaviour relates to the motivational orientations (intrinsic or extrinsic) that inform the academic behaviours of adult learners in an ODeLHE milieu.

1.6 CENTRAL HYPOTHESIS

The central hypothesis of the research study was as follows:

The ALSDS is a valid and reliable measure that has structural equivalence (metric, configural and scalar invariance) for age, race and gender groups; diverse socio-biographical variables predict the self-directedness of adult learners in an ODeLHE context.

1.7 THEORETICAL ASSUMPTIONS

The lack of a scale that reliably assesses the self-directedness of adult learners in the South African ODeLHE context indicates a gap in the body of knowledge on adult learner self-directedness and specifically on adult learner self-directedness in ODeLHE. Academic self-directedness is related to student graduate attributes (Coetzee & Botha, 2014). Advanced investigation of the initial factorial structure established by Botha (2014) in order to establish the structural validity and reliability of the ALSDS in terms of diverse groups of the sample population is essential for further refinement of the ALSDS and use of ALSDS for measuring adult learner self-directedness in the ODeLHE context. The findings may be used to inform future cross-validation studies of the ALSDS on other population and occupational groups and for developing interventions that may contribute to the success of students as adult learners in the higher education and workplace contexts. It is further assumed that socio-biographical factors such as adult learners' employment status, occupation, socio-economic situation, being depended upon financially, access to a library, access to a computer, proficiency in English, number of modules for which the learner was enrolled, and who was paying for the learner's studies predict the self-directedness of adult learners, and therefore need to be investigated in the ODeLHE context.

1.8 METHODOLOGICAL ASSUMPTIONS

The empirical study consisted of a cross-sectional quantitative study on the psychometric properties of the ALSDS (Botha, 2014). Qualitative research aims mainly to improve the general comprehension of a phenomenon, while quantitative research uses mathematical information to elucidate a variable (Coetzee, 2010). A cross-sectional research design includes different groups of research subjects (e.g. men and women, different age groups and/or different race groups) with the aim of identifying and possibly explaining differences between the groups related to the variable(s) being investigated in the research study at a specific point in time (Salkind, 2016). The current research study was aimed at assessing the psychometric properties of a quantitative measure of adult learner academic self-directedness for a diverse group of students at a specific point in time and of the differences between the groups regarding their academic self-directedness. The variables in question had a concrete and tangible value through statistical science and techniques. The quantitative research design is professed to be objective, involving phenomena or circumstances that are not only free of individual thought but also distinctive to all observers at a specific moment in time (Leedy & Ormrod, 2005; Salkind, 2016). The limitations of cross-sectional research designs should be kept in mind in the context of the study. Cross-sectional designs provide information on differences between groups, but the information they provide is only relevant for that specific time. Cross-sectional designs consequently do not provide information about the way the individuals involved in the study change over time. In addition, the results of a cross-sectional research study cannot be generalised, since it is relevant only to the sample in question and for the data that were gathered for the study (Salkind, 2016).

1.9 RESEARCH DESIGN

A research design is a strategy for conducting a research study (Coetzee, 2010; Salkind, 2016). The research question to be answered will largely determine the research design to be implemented. In the case of the current research study, a non-experimental research design was followed. A non-experimental research design is usually descriptive, aiming to explain a variable or set of variables and/or any relationship that may exist between the variables (Coetzee, 2010). A quantitative, cross-sectional survey design with a focus on descriptive, correlational and inferential statistical analyses was used to realise the empirical research objectives. A survey research design examines the potential relationships between two or more variables at a specific moment in time (Salkind, 2016). The quantitative survey research design is well suited to the study of a large population, such as in the current research study (Salkind, 2016). Surveys are administered to a sample of a population; consequently, the information obtained may be generalised to the whole population if a representative

sample is involved. In this survey, a self-report approach was used, no control group was involved and all the variables were measured simultaneously.

As stated earlier, descriptive and explanatory research are only intended to describe and/or illuminate an existing situation (Salkind, 2016). The focus is on identifying the features of an observable fact, or exploring the existence of a possible relationship between phenomena (Salkind, 2016). On the other hand, correlational statistics can determine and/or explain the association between two variables as well as the strength of the association (Salkind, 2016). In the current study, inferential statistics were used to analyse statistically based hypotheses by drawing inferences from the data obtained from the sample and, based on probabilities, generalising them for a specific population. Explanatory research is used to provide explanations of one or more variables and/or any relationship(s) that may exist between variables, using research data (Coetzee, 2010; Salkind, 2016).

1.9.1 The validity of the research study

The validity of an instrument or research study quantifies the ability of the instrument to assess the constructs it propounds to assess, and as such, it is noteworthy in research design and implementation (Salkind, 2016). The validity of an instrument or research study is assessed on its results. Nevertheless, the concept of validity is not easily identified and is not absolute – an instrument or research study is not either simply valid or simply invalid, as the results should be construed and comprehended within the framework of the goal of the study or instrument (Salkind, 2016). Valid research designs require both internal and external validity. The research decision-making process, which includes the making of knowledgeable decisions about the research purpose, the theoretical paradigms surrounding the research, the research framework and the data collection and analysis techniques, aims to endorse both internal and external validity.

The internal validity of a research study is established through the accuracy and validity of its research findings (Salkind, 2016). The degree to which the research findings in a study could be attributed to the controlled, independent variable instead of to uncontrolled factors is an additional indication of internal validity (Salkind, 2016). A research study is considered to be internally valid when the construct(s) to be studied are distinct, measured and examined employing relevant methods, and lead to deductions that are well supported by the data. The principal leitmotif of the current research study is the rigorous assessment of the psychometric properties of the ALSDS (Botha, 2014). The secondary leitmotif is the influencing role of employment status, occupation, socio-economic situation, being depended upon financially, access to a library, access to a computer, proficiency in English, number of modules for which the learner was enrolled, and who was paying for the learner's studies on adult learners' academic self-directedness in ODeLHE. In the current study internal validity

was ensured by choosing models and theories relevant to the research topic, problem statement and research aims and by assessing the instrument (ALSDS) for factorial and construct (convergent and discriminant validity); as well as structural validity (equivalence for gender, race and age groups).

The external validity of a research study is determined by the extent to which the research results can be generalised to larger groups and environments, given the research context and data (Terre Blanche, Durrheim, & Painter 2006; Salkind, 2016). The sampling techniques applied, the time and place of the research, and the circumstances surrounding the research all influence external validity (Salkind, 2016). The external validity of the current research study was ensured by using a sample, which is representative of the total population (Terre Blanche, et al., 2006; Salkind, 2016). The formulation of credible opposing research hypotheses and rejection of their impact contributed to the design validity of the research study. The relevance of the research results of the research study to undergraduate ODeLHE adult students in the economic and management sciences field only contributed to the external validity of the study. Conversely, aiming to include the entire population of undergraduate ODeLHE adult students in the economic and management sciences field at one ODeLHE institution facilitated the generalisability of the research results to the target population. Randomised, proportional stratified sampling was used in the research study and standard instructions were provided to all participants.

The validity of the data-gathering instrument was ensured as follows:

- The initial factorial structure (face validity and content validity) of the ALSDS had already been established (Botha, 2014; Botha, et al., 2015). The present study focused on establishing construct (divergent and discriminant) validity of the ALSDS through the application of various statistical procedures.
- The data that was used in the study was secondary data gathered for a related study (Botha, 2014). Efforts were made to ensure that the data collected for the initial study was accurate, accurately coded and appropriately analysed to ensure content validity.
- The processing of statistics was carried out by an expert and by using the most recent and sophisticated computerised statistical analysis packages.
- The researcher ensured that the findings of this research study were based on the data analysed to ensure content validity.
- The results were reported and analysed according to standardised procedures.
- The researcher ensured that the final conclusions, implications and recommendations were based on the findings of the research.

1.9.2 Construct validity and factorial validity

Various types of validity may be assessed in a research study, but in the current study, the focus was on factorial (construct) validity and structural (factorial, metric, configural and scalar) equivalence. Factorial (structural) validity is a type of content validity that is established by interrogating the correlations of a scale. The correlations between the items of a scale provide evidence that the scale is assessing a single construct. Factorial validity is determined through the factor analysis. Cross-cultural empirical research frequently utilises tests for mean differences between groups, where it is possible that similarity across diverse groups will be incorrectly assumed (Byrne & Van De Vijver, 2010). Equivalence revolves around assumptions that both the assessment scale and the construct being assessed functions in exactly the same way across all the cultural groups included in the sample (Byrne & Van De Vijver, 2010). Specifically, assumptions may be incorrectly made about structural equivalence of the assessment scale construct and scale items (equality of the construct dimensionality and, if multi-dimensional, about the relationships between the construct dimensions) (Byrne & Van De Vijver, 2010). Consequently, in the current research study structural equivalence was established.

1.9.3 The reliability of the study

The reliability of a research study or instrument is an indication of its ability to yield the same results when repeatedly applied or used in similar conditions (Coetzee, 2010; Salkind, 2016). To ensure that research results are both generally applicable and reliable one obtains more than one comparable measurement for a sample (Salkind, 2016). When the research results are stable, regardless of when the measuring instrument was applied, by whom it was applied and/or the form in which it was applied, the results are generalisable (Salkind, 2016). In order to ensure the reliability of the ALSDS (Botha, 2014), Cronbach's alpha coefficients, inter-item correlation coefficients and composite reliability statistical assessments were used (Salkind, 2016). Correlation coefficients measure the existence and/or strength of a relationship between two or more variables, while composite reliability is generally accepted as being a less biased estimate of reliability than the Cronbach's alpha coefficient (Salkind, 2016).

1.9.4 Unit of research

The unit of analysis in a research study differentiates between the characteristics, conditions, orientations and actions of individuals, groups, organisations and social objects (Salkind, 2016). In individual measurement, the unit of analysis is the individual, while the group will also represent the analysis of data. In this study the researcher focused on the self-directedness of the individual adult student in ODeLHE as measured by the ALSDS (Botha, 2014), while the purpose of the study was

to determine whether the internal structure and psychological constructs of the measurement instrument are valid. In terms of investigating the differences between socio-demographic groups, the unit of analysis was the relevant sub-groups (Salkind, 2016).

1.9.5 The variables

The variables investigated in a research study can be either dependent or independent. The dependent variable is usually the variable being studied, while the researcher controls the independent variables. Adult learner self-directedness was the dependent (outcome) variable in the current study, while the following were the independent (predictor) variables:

- gender
- race
- age
- employment status
- occupation
- socio-economic situation
- being depended upon financially
- access to a library
- access to a computer
- proficiency in English
- number of modules for which the learner was enrolled
- who is paying for the learner's studies

All the variables that were explored in this research study – as indicated above – were related to the socio-economic background of the participants in the initial study. Various studies have proven that socio-economic background influences academic success at residential universities (Coetzee, et al., 2014; Van Zyl, 2016). A paucity of research on the effect of socio-economic background on adult learner self-directedness in an ODeLHE context necessitated a study that would include as many socio-cultural variables as possible in order to establish the vulnerabilities of adult learners in ODeLHE as accurately as possible. As indicated in the sample, the majority of the students who enrol for ODeLHE at the relevant college of the institution are adult women of over 30 years of age (Botha, 2014). As South Africa's society was traditionally divided among racial lines, and since gender inequality remains a fact in the current democratic society (Akala & Divala, 2016), data on the differences in self-directedness between the two gender groups and between the four identified race groups will contribute to the body of knowledge on adult learner self-directedness in the ODeLHE context.

1.9.6 Delimitations

The study will use secondary data already gathered from a related research study by Botha (2014). The data was readily available and the researcher had full access to the data required. As secondary data was used, research participants were not directly involved. Only one instrument was assessed in terms of its psychometric properties (content, construct, structural, divergent and discriminant validity and internal consistency reliability) as core focus of the study. The criterion (predictive) validity of the ALSDS (Botha, 2014) in terms of other adult learner constructs was not assessed in this research.

1.9.7 Ethical considerations

The researcher applied for the required ethical clearance from the relevant responsible bodies in the university. As the study would utilise secondary data gained from a previous study and would involve students, the departmental, college and senate committees tasked with the provision of ethics clearance had to provide ethics clearance and permission to utilise the data for the doctoral research. The relevant ethics clearance certificates are attached in Appendix A.

The ethical guidelines and standards of the university as outlined in the Research Ethics Policy formed the basis on which this research study was conducted. The research was conducted within the ambit of the ethical requirements and procedures of Unisa, consequently the research ethics procedures of the institution were followed at all times. Informed and voluntary consent was obtained from the participants in the original study and all information, data and results will remain confidential. The personal information of participants was protected in line with the principles of the POPI Act. The research was designed in such a way that individuals, organisations and the community would benefit from it while there would be no harm inflicted on any individual involved in the research process (Lefkowitz, 2008). The researcher, under the guidance of the research supervisor, strove to remain objective and to conduct the research with integrity. The principles of ethics in research, as indicated in the institutional Research Ethics Policy (Unisa, 2014), are as follows:

- The fundamental right to academic freedom and freedom of scientific research
- Integrity in research that encompasses the competence and accountability of the researcher
- Acting responsibly and striving for excellence in research
- Not contravening the institutional Policy on Research Ethics
- Obtaining approval for research involving human participants
- Undertaking research that will benefit society
- Making the research findings available in the public domain
- Guiding against harmful or undesirable consequences of the research

- Honesty with regard to individual actions and responses to the actions of others
- Not committing plagiarism, piracy, falsification or fabrication of results
- Accurately and truthfully reporting the results of the research
- Protecting the personal information of respondents in line with the principles of the POPI Act
- Reporting to the relevant Ethics Review Committee when requested to do so.

1.10 RESEARCH PROCESS

The research was conducted in two stages, stage 1 being the literature review and stage 2 comprising the empirical study.

1.10.1 Literature review

The literature review addressed the research aims 1 to 4, namely conceptualising the following as discussed in the literature:

- Adult learning in the context of the contemporary business environment
- Adult learner self-directedness in the workplace context
- Adult learner self-directedness in the ODeLHE context
- The implications of adult learner self-directedness for HRD and ODeLHE teaching practices

1.10.2 Empirical study

The empirical research was conducted using nine steps. The empirical research process is illustrated in Figure 1.1 below. The nine steps of the research process are discussed in chapter four.

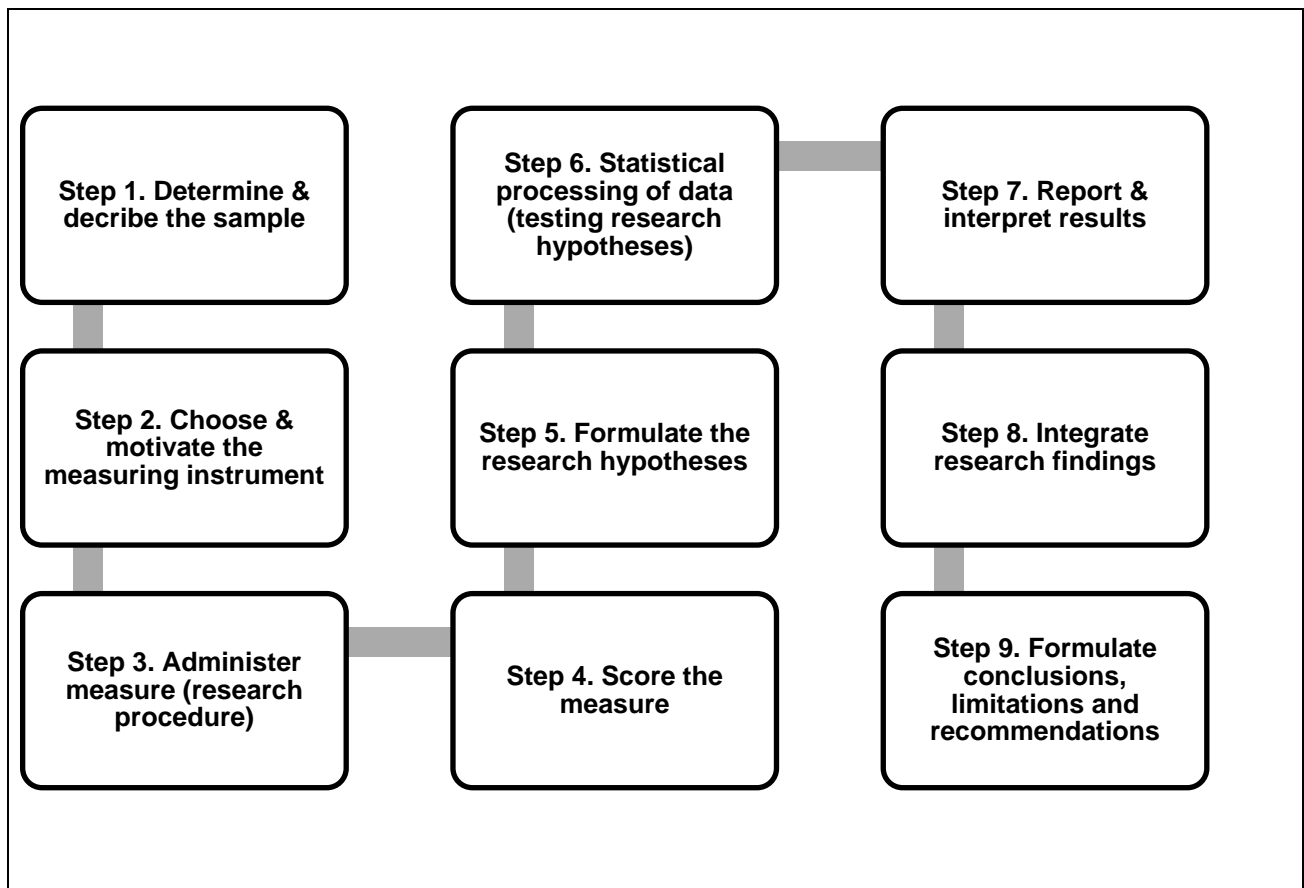


Figure 1.1 *The empirical research process*

1.11 CHAPTER LAYOUT

The chapters are presented in the following manner:

CHAPTER 1: SCIENTIFIC ORIENTATION OF THE RESEARCH

Chapter 1 focuses on explaining the purpose and rationale of the research study, briefly defining the research problem and giving a broad outline of the research process to be followed.

CHAPTER 2: META-THEORETICAL CONTEXT: ADULT LEARNING IN THE CONTEMPORARY BUSINESS WORLD

Chapter 2 addresses the first literature research aim, conceptualising the construct of adult learning in the contemporary business environment. The aim of this chapter is to conceptualise the construct of adult learning in the world of work, with specific emphasis on knowledge work and the inculcation of a lifelong learning orientation in employees in a knowledge-based society. In addition, the effect of the following socio-biographical factors on adult learners' self-directedness are explored: gender,

race, age, employment status, occupation, socio-economic situation, being depended upon financially, access to a library, access to a computer, proficiency in English, number of modules for which the learner was enrolled, and who was paying for the learner's studies.

CHAPTER 3: ADULT LEARNER SELF-DIRECTEDNESS IN ODeLHE

Chapter 3 addresses the second literature research aim by conceptualising adult learner self-directedness in the ODeLHE context, including the psychometric properties of the ALSDS (Botha, 2014), namely the strategic utilisation of officially provided resources, engaged academic activity, success orientation to open, distance and e-learning, and academically motivated behaviour.

CHAPTER 4: RESEARCH METHOD

Chapter 4 focuses on the empirical study included in the research methodology used in the study. Firstly, an overview of the study's population and sample is presented. The measuring instrument is discussed and its choice justified. The discussion is followed by a description of the data gathering and data processing. Finally, the research hypotheses are formulated.

CHAPTER 5: RESULTS AND DISCUSSION

Chapter 5 discusses the statistical results of the study and integrates the empirical research findings with the literature review. The statistical results are reported in terms of descriptive, correlational and inferential statistics. The limitations of the study are explained and recommendations made for the field of HRD and for open, distance and e-learning teaching practices. Chapter 5 concludes with a summary and integration of the research results

CHAPTER 6: CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

Chapter 6 is the final chapter in which the research results are integrated and the conclusions reached. The limitations of the study are explained and recommendations are made for the fields of HRD and ODeLHE teaching, both applied and in terms of further research, thereby achieving the fifth and final research aim. The chapter culminates with concluding remarks aimed at integrating the research study.

1.12 CHAPTER SUMMARY

The background to and motivation for the research, problem statement, research objectives, meta-theoretical framework, research design and research methodology of the study were discussed in this chapter. The motivation for this study was based on the principle that the rigorous analysis of the

psychometric properties of a scale to assess adult learner self-directedness in ODeLHE settings may aid HRD practitioners and ODeLHE teachers in designing and delivering learning programmes at all levels. Programmes can be designed that will not only utilise but also enhance the participants' self-directedness attributes, thereby contributing to their ability to take responsibility for their own tertiary and workplace learning and development.

CHAPTER 2: META-THEORETICAL CONTEXT: ADULT LEARNING AND ADULT LEARNER SELF-DIRECTEDNESS IN THE CONTEMPORARY BUSINESS WORLD

Chapter 2 addresses the first and second literature research aim, namely conceptualising the construct of adult learning in the contemporary business environment and conceptualising adult learner self-directedness in human resource development (HRD) initiatives in the workplace context. The contemporary business environment is discussed from a global (macro), African (meso) and South African (micro) perspective. The organisational context is explained, with specific emphasis on an exploration of the demands made on employees as adult learners and the inculcation of a lifelong learning orientation in employees in a knowledge-based work milieu. The influence of socio-biographical factors on the capacity of adult learners to adopt a lifelong learning orientation is briefly discussed. The contribution made by HRD interventions to organisational sustainability and success is explored. Lastly, the demands of employers on employees to develop their own capacity to stay abreast of technological and environmental changes independently and continuously, and the attendant influence on the provision of learning opportunities, both in the workplace and in higher education, are discussed. Figure 2.1 provides an illustration of the topics that will be addressed in chapter 2, and the interrelationships between these topics.

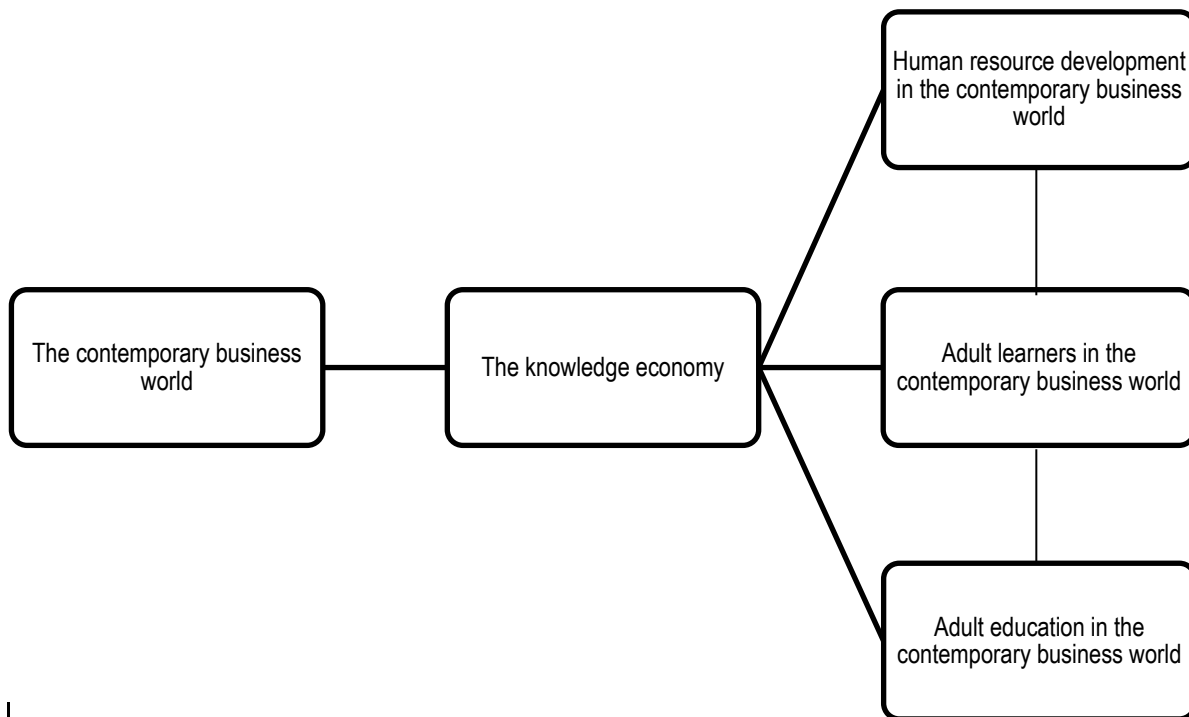


Figure 2.1 A graphical lay-out of the chapter

2.1 THE CONTEMPORARY BUSINESS WORLD

The current business world is epitomised by complexity (Barnett, Bowes, White, & Zaib, 2017). Business organisations face numerous challenges and have to create supportable long-term growth, while also chasing short-term profits in order to satisfy their shareholders. In addition, shareholders are no longer the only stakeholders in a business organisation (Barnett, et al., 2017). Further to these challenges, employees and business organisations have to function impeccably in a culturally heterogeneous, constantly changing and challenging business context (Blaschke, 2012; Caudill, 2015; Solomon & Steyn, 2017). In the post-millennium business climate, every employee is expected to be a (potential) lifelong learner, able and willing to manage individual learning in order to remain competitive and employable in the 21st century (Botha, et al., 2015; Cascio, & Boudreau, 2016). Lifelong learning may be described as a continuous process driven by cognitive engagement with the physical, social and psychological environment, which leads to changes in cognition, attitudes and behaviours (Billett, 2010b; Boeren, 2017; Coetzee, 2016). Lifelong learning experiences and the resulting learning that ensues are therefore subjective by nature (Billett 2010b; Boeren, 2017). Lifelong learning requires the inculcation of learning behaviours that can facilitate the capacity for action required in lifelong learning. In addition, employers require employees to display positive learning behaviours in order to be effective and efficient in a constantly changing global business environment (Cascio, & Boudreau, 2016). However, individuals can only be skilled in an action or behaviour when they have had sufficient practice opportunities to develop a robust long-term memory of what is required for the behaviour to be successful (Domjan, 2015; Kirschner, Sweller, & Clark, 2006). As self-directed learning is accepted to be a vital prerequisite for lifelong learning, the development of self-directed learning in all adult learners has become imperative in the post-millennium work context (Balasubramanian, Thamizoli, Umar, & Kanwar, 2010; Coetzee, 2016). In addition, autonomous, self-directed learning behaviours are essential in an increasingly technology-driven learning environment (Botha, et al., 2015; Kormos & Csizér, 2014).

Conversely, Billett (2010b) warns against assuming that individual imperatives to learn are necessarily aligned with business imperatives to encourage employees to learn. Besides, an individual's sense of self influences the capacity and willingness to engage actively in whatever learning opportunities are provided in the workplace (Billett, 2010b; Cascio, & Boudreau, 2016). Earlier negative learning experiences may influence the adult learner's learning identity and consequently affect the individual's disposition to actively engage in lifelong learning, or cultivate the capacities that facilitate lifelong learning (Billett, 2010b). A belief that all employees wish to engage in; and possess the capacity for lifelong learning may consequently be mistaken (Billett, 2010b; Cascio & Boudreau, 2016). Employers who require of employees to be self-directed lifelong learners

may have to first attempt to assess whether their employees possess the required capacities. Furthermore, the workplace itself may influence the capacity to engage in lifelong learning. In the modern-day workplace, where employees are constantly under pressure to do more with less, finding the time to engage effectively in lifelong learning practices may be a very real obstacle for many employees (Wilkinson & Walsh, 2014). Further to this, Billett (2010b) indicates that the context in which adult learners may wish to learn and to develop their capacities should not be restricted to either formal educational or workplace settings, but should also include social learning contexts, as the learning acquired in all situations contributes to more effective workplace functioning.

Although work environments remain places focused on performance, learning has become a strategic imperative for most business organisations (Kim, Kim, & Bilir, 2014; Manuti, Pastore, Scardigno, Giancaspro, & Morciano, 2015). Workplace-based learning has to be understood within the wider context of the organisation, which includes the global, economic and social environment within which the business organisation functions. The impact of workplace-based learning aims to build sustained development interventions for individuals in order to facilitate the growth and development of the organisation as a whole, essentially creating a learning organisation (Kim, et al., 2014; Manuti, et al., 2015). Furthermore, the modern workplace encompasses more than a physical structure. The modern workplace includes values, concepts, meanings, customs and outlooks, which all contribute to a rich resource for learning (Manuti, et al., 2015). In this regard, Kim, et al., (2014) found that the physical work environment has the highest impact on workplace learning experiences. As communication is critical to any learning experience, the physical environment can facilitate or hinder spontaneous communication between employees, and thereby influence any informal or incidental learning that may occur. In a technological work context, the capability for self-directed learning may influence the ability of adult learners to exploit all learning opportunities to which they are exposed, whether technology-based or incidental (Kim, et al., 2014; Kormos & Csizér, 2014).

2.1.1 The contemporary business organisation

A business organisation is an economic organism driven by the imperative to survive in the local, continental and global economic ecosystem. In the 21st-century business context, business organisations interface with the various business environments or habitats within which their business is conducted (Becker, 2014; Dess, Lumpkin, Eisner, & McNamara, 2012; Harrison, 2014; Reeves, Levin, & Ueda, 2016). Consequently, the illumination of the various interfaces between a business organisation and its immediate and broader habitats was imperative in this study in order to simplify the review of the diverse influences of the greater business environment on the management of a business organisation (cf. Becker, 2014; Harrison, 2014). The business environment entails a variety

of multifaceted adaptive systems, comprising diverse fundamentals that function autonomously in an interconnected fashion. Therefore, business organisations can be managed as autonomous entities interacting with other autonomous yet interrelated entities (Harrison, 2014). In short, the business environment, both global and local, is heterogeneous and hyper-complex and has a direct impact on how business organisations are run (Harrison, 2014). In the current business context, globalisation, swift technological progress, ease of access to and collaboration possibilities created by information and communication technologies (ICTs) and the worldwide growth in service industries resulted in an employment environment where competencies become obsolete quickly. Consequently, employees have to take responsibility for their own continued development in order to remain sought after by employers (Cascio, & Boudreau, 2016; Gakure, Keraro, Okari, & Kiambati, 2012; McGraw, 2014).

Business organisations are configurations of people agreeing to work together to achieve certain objectives. Like people, business organisations are continuously evolving (Mullins, 2013; Mullins, Brandes & Dharvadkar, 2016; Page-Tickell, 2014). Business organisations exist within societies and function in an interconnected fashion with their environments. The foundational components of a business organisation consist of the fundamental operations, fundamental support, functional support and management (Mullins, 2013; Mullins, et al., 2016). Fundamental operations are those technical processes that are the central reason for being of the organisation, such as the mining of coal, the assembly of parts to form a complete machine or the provision of a service such as tuition. Fundamental support revolves around the provision of support directly related to fundamental operations, such as technical maintenance of operational equipment and quality control of processes, goods and process flows. Functional support provides support services to the whole organisation, but is not directly related to fundamental operations, such as employee assistance services, marketing and publicity work and HRD (Mullins, 2013; Mullins, et al., 2016). Management is involved in the strategic as well as the day-to-day running of the business organisation, ensuring that fundamental operations are carried out within the prescribed environmental parameters and aimed at achieving the business organisation's key goals. Management include both senior and middle management (Mullins, 2013; Mullins et al., 2016). The people employed in the organisation, in whatever capacity, are the heart and soul of the organisation. Consequently, for the business organisation to progress and flourish, its people should be enabled to progress and flourish (Page-Tickell, 2014).

In the 21st century employees are expected to be self-directed lifelong learners who autonomously ensure that they remain up to date on new technologies and requirements of the business context, thereby ensuring their employability (Boyer, Edmondson, Artis & Fleming, 2014; Kim, et al., 2014; Manuti, et al., 2015). However, as previously stated employers may erroneously assume that all employees wish to be adult lifelong learners and are willing and able to manage their own continued

learning journey autonomously in order to ensure continued employability (Billett, 2010b; Cascio, & Boudreau, 2016). The capacity to establish the self-directedness of adult learners could enhance the learning opportunities offered to employees in order to inculcate the desire to engage in lifelong learning (Botha, 2014). As Africa and South Africa face unique challenges in the global competitiveness milieu, including education at all levels, an instrument to determine the self-directedness of adult learners in the African and South African contexts would make a valuable contribution to the body of knowledge from an African perspective (Botha, 2014; World Economic Forum, 2015a, 2015c, 2016b). The large number of employees and future employees who are essentially unskilled or under-skilled, and consequently less likely to have access to the necessary development opportunities to enable them to start on the journey to lifelong learning, underline the necessity to find an access route to human capacity development opportunities in South Africa (World Economic Forum, 2015a, 2015b, 2015c).

2.1.2 The global business landscape

Because human beings evolve and progress, the contexts within which they do business also adapt and change. Consequently, one can assume that 'change' is the most palpable characteristic of the global business context in the 21st century (Becker, 2014; Des, et al., 2012; Harrison, 2014). Sometimes the transformation is slow – an evolutionary change that allows individuals and organisations to adapt gradually to the changes with minimum disturbance. At other times, the change is revolutionary – disruptive, quick and sometimes even unexpected. All environments contain factors that push for change and factors that pull away from change; no change is ever fluid and unopposed (Becker, 2014). In the following paragraphs, changes in various facets of the greater business milieu are discussed. The discussions indicate that one cannot attempt to single out one specific facet of the business environment as being the most important driver or catalyst for transformation in the broader business context, as they are all interrelated. Technological advances may drive political transformation, while political transformation in one country may lead to entry into the global business world, while also having a significant impact on the economies of other countries. The only clarity exists in agreeing that these facets, to a greater or lesser extent, influence the way business organisations do business in the 21st century (Becker, 2014; Des, et al., 2012; Harrison, 2014). In this hyper-complex, unpredictable employment environment, employees have to be and continuously remain employable, seamlessly interacting with changing demands of employers, whether the employing business is global or based in Africa or in South Africa (Botha, et al., 2015). The various contexts of business organisations and the influences on them determine the requirements placed on the employees in terms of employability, flexibility and learning. In essence, employees have to

inculcate the capacity to view the business organisation and their workplace in a different way (Bowerman & Reich, 2016). In addition, employees are also required (and assumed to possess the capacity) to take a topical approach to their careers and continued learning.

2.1.2.1 Global political evolution

The rise in the economic power of China and the switch to a market economy system in the former communist union countries are the main observable outcomes of global political transformation for the past few decades (Becker, 2014; Des, et al., 2012; Harrison, 2014; Tongo, 2012). In addition, the emergence of the Asian Tiger economies and growing impact of Latin American states such as Brazil, Mexico and Argentina should not be disregarded (Becker, 2014; Des, et al., 2012; Harrison, 2014). The historical political and socio-economic principles that are at the root of national economies form the background for the study of economic and political change in countries (Becker, 2014). Historically, both China and the communist union countries (such as Russia) embraced the socio-economic principles of communism, but in the near past, these two entities chose diverse paths towards a market-driven economy, and the economic and political modifications effected were not always implemented gradually. China followed a slow and steady path towards an economic philosophy of dualism, combining state-initiated and managed development activities with the simultaneous encouragement of entrepreneurial and network activities at the lowest levels of the economy (Becker, 2014). In Russia, on the other hand, an economic switch closely followed political liberalisation to a market-driven economy (Becker, 2014). In both Brazil and India, although the economies have grown following greater political certainty in both countries, various economic and social inequalities still exist, although to a lesser degree in Brazil than in India (Becker, 2014). The political and economic changes in South Africa as one of the BRICS countries are discussed in more detail in section 2.2.4 of this chapter. The BRICS countries refer to Brazil, Russia, India, China and South Africa. The evolutionary change in the political and economic systems of the countries discussed here have had a marked effect on the global economy, which in turn influences the requirements business organisations place on their employees (Becker, 2014).

2.1.2.2 An interconnected world

In an interconnected world, increased international trade, international flow of capital, collaborative work across countries and nations and an increased capacity for international travel mean that barriers between countries and business organisations are permeable (Des, et al., 2012; Harrison, 2014; Reeves, et al., 2016). In practice, globalisation may imply that formally localised business organisations may now be competing not only locally, but also globally for employees, resources and

customers, placing more demands for flexibility and employability on their employees (Des, et al., 2012; Harrison, 2014; Reeves, et al., 2016). An interconnected world creates interdependence between nations, which emphasises that some nations or countries are more powerful and others less powerful. The difference in power highlights the 'dependent' status of some (usually the poorly developed or developing countries) and the power of others (usually the economically more developed and stable countries). These apparent inequalities raise concerns about ethics, politics and economic well-being in the more dependent or less powerful nations (Des, et al., 2012; Harrison, 2014). The new millennium business organisation has to function in an environment that is almost diametrically opposite to that of the 20th century. Outsourcing, alliances, consolidations, network organisations, environmental considerations, cultural diversity and changing employee attitudes to work all influence organisational strategies, decisions and systems and the expectations of employers that employees should be able to remain productive and positive members of the organisation within these uncertain and undefined environments (Gakure, et al., 2012). Rogerson and Rogerson (2010) as well as Nel and Rogerson (2016) indicate that local economic development is an essential strategy for ensuring eventual global participation of underdeveloped and developing economies in the global economy, which would require specific capacities by employees in these underdeveloped countries to act autonomously in their learning.

In a globally connected world, the possibilities of business opportunities are magnified, but so are the risks. According to the World Economic Forum (2016b), a global risk is described as an uncertainty that can cause a severe negative impact for any of the role players or participants in the world economy for at least a decade. Economic growth crises, specifically fiscal crises in key economies, are a major global risk that may have an adverse effect on developing and dependent economies, as well as on the employability of the resident employees. The effect of the global banking crisis of 2008–2009 is an example of such a global risk. Some developing economies are still struggling to recover from its effects. The global banking crisis of 2008–2009 is discussed in Section 2.2.2.4 of this chapter.

2.1.2.3 Technological advances

Although technologies such as transport, communication and production technologies are not necessarily new, the configurations in which they can be and are utilised to drive businesses forward may be new (Des, et al., 2012; Harrison, 2014). Computer technologies in one way or the other influence almost all business organisations in the 21st century. Communication technologies make it possible for a small, previously localised business to function globally. Employees can do their work remotely, thereby reducing the cost of running a business, but complicating employee relations and the legal frameworks within which a business is run, and placing new and possibly unfamiliar

demands on employees with regard to autonomous functioning, learning and employability (Des, et al., 2012; Harrison, 2014). Business processes and the delivery of goods and services have undergone significant changes in the wake of technological advancement (Des, et al., 2012; Harrison, 2014). These changes have given rise to the notions of 'knowledge workers', 'knowledge work' and the 'knowledge economy' (Carmody, 2013; Tongo, 2012). The knowledge economy, knowledge workers and knowledge work are discussed more fully later on in section 2.3 of this chapter.

2.1.2.4 The global banking crisis of 2008–2009

The 2008–2009 global banking crisis was precipitated by the very globalisation and technological advances described above (Harrison, 2014). Lending practices originating in the USA eventually tied in the assets of banks globally to unsupported debts. The result was that banks across the world found themselves in financial difficulty, sometimes to the extent that they had to be rescued by their respective governments or went into liquidation (Harrison, 2014). In turn, the government rescue schemes put pressure on the financial resources of governments, which eventually led to a world-wide recession where countries experienced either slower or negative economic growth, which required of employees to be agile, autonomous and vigilant in their learning and management of their own employability (Harrison, 2014; World Economic Forum, 2015b). The 2008–2009 global banking crisis is arguably the best example of the interdependence of the various autonomous entities of the global business environment that can be found in current literature.

2.1.2.5 Political-legal factors

Political-legal factors determine the legislative environment within which a business organisation conducts its business, and the enabling and disabling factors created by that environment (Becker, 2014; Rosenbaum, Ahearn, Rosenbaum & Becker, 2016). According to accepted practice, a stable political-legal environment is at least characterised by accountability, transparency in policymaking and the inviolability of the rule of law (Groşanu, Boţa-Avram, Răchişan, Vesselinov, & Tiron-Tudor, 2015). Government policies and procedures can influence the market mechanisms that dictate whether an organisation will be economically viable and continuously successful. Government policies and procedures may also influence the labour market positively or negatively, thereby influencing the employment and employability of individuals in the labour market. Influences on interest rates, international trade agreements and international trade partners are just some of the factors governments control that influence business organisations (Becker, 2014). However, the imperative on businesses to become corporate citizens has blurred the edges of political control. Big

businesses are increasingly influential in economic policy and policy decisions, which affect employees and prospective employees (Rajwani & Liedong, 2015).

A measure of conformity is displayed in the macro-economic policies of the world's largest economies (Becker, 2014; Harrison, 2014; Rosenbaum, et al., 2016). The apparent conformity may be ascribed to the growing influence of international economic institutions such as the International Monetary Fund, the World Bank and the World Trade Organization, which all contributed to similar economic strategies between their affiliate countries (Harrison, 2014). In essence, the larger world economies, and even some developing countries, seem to expound a management practice of prudent macro-economic policy instead of high rates of inflation and high public debt (Harrison, 2014). Nevertheless, little consensus exists between countries in terms of micro-economic policy. Some countries, such as the UK and the USA, adopt a free-market approach, while countries such as Germany and France propound a social market micro-economic approach (Becker, 2014; Harrison, 2014). The global nature of the current business environment has considerably increased the complexity of organisational governance (Doh, McGuire, & Ozaki, 2015). Macro- and micro-economic policy and organisational governance and the requirements placed by global business leaders on employees consequently influence what is required of employees at the global, continental and local level (Doh, et al., 2015).

2.1.2.6 Corporate social responsibility

In the 21st century, business organisations are expected to be socially responsible in the way they conduct business (Ackers, 2017; Des, et al., 2012; Harrison, 2014). Examples of social responsibility include the United Nations Millennium Development Goals and the expectation that business organisations should take responsibility for the impact of economic activity on the natural world. The responsibility is not limited to business organisations, but also includes national governments and industry regulators who are tasked with regulating economic activities (Harrison, 2014). Social development, employment opportunities and levels, poverty and diverse forms of inequality can also be grouped together in this facet of the external global environment (Becker, 2014). The efforts made by global businesses to be socially responsible affect the development and employability of employees in underdeveloped and developing nations (Ackers 2017; Andreasson, 2011). Organisational responsibility for the natural environment should not be ignored either.

A thorough comprehension of the socio-political context of corporate governance is an essential foundation for understanding political and economic change (Ackers 2017; Andreasson, 2011). Understanding corporate governance is of specific importance to emerging economies that, as

followers instead of leaders in the global economic field, are more exposed to the vicissitudes of global economic fluctuations and risks, specifically risks affecting education, employment rates and employability (Ackers 2017; Andreasson, 2011). There are two broadly held views on corporate governance, namely the shareholder and the stakeholder view. The shareholder view postulates that a business organisation belongs to its shareholders and is consequently only responsible to the shareholders. According to the shareholder view, the business organisation is driven mostly by profitability motives (Ackers, 2017; Andreasson, 2011).

The stakeholder view hypothesises that the business organisation is a social being that is accountable to all stakeholders and not only the shareholders (Ackers, 2017; Andreasson, 2011). According to the stakeholder view, the business organisation is a social entity operating in a larger socio-economic environment. Consequently, the organisation should be held accountable for its actions and the impact of its activities by more stakeholders than only the shareholders. The stakeholder view propounds an inclusive approach to corporate social responsibility. In addition to the two opposing views on the concept of corporate governance, there are also diverse approaches to regulating corporate governance, ranging from a highly regulated, legalistic approach, as one finds in the USA, to the less prescriptive approach one finds in the UK (Ackers, 2017; Andreasson, 2011).

Globally, business organisations face pressure to reduce their impact on the environment, specifically as regard clean air, water and energy supplies (Becker, 2014; Rosenbaum, et al., 2016). Emerging economies are especially at risk, as many smaller emerging economy countries are already more polluted than their more developed counterparts are (Becker, 2014; Rosenbaum, et al., 2016). The main causes of the higher levels of pollution seem to be coal-powered electricity generators and increased motor vehicle traffic in countries with emerging economies. Water pollution in emerging economies is an additional cause for concern. Industrial development, poor governance and poor sewerage infrastructure and management are the main causes of pollution in these countries (Becker, 2014; Rosenbaum, et al., 2016).

Business organisations have to justify their financial performance to their shareholders, but they also have to rationalise the impact the business has on the economy, society and the environment (Ackers, 2017). The purpose is to ensure the sustainability of the business organisation as well as the environment in order to safeguard the capacity of future generations to sustain themselves economically while also preserving the environment for their descendants. Thus, corporate social responsibility has a future orientation that is more far reaching than the organisation's current strategy (Ackers, 2017). In this regard, stakeholders become more active in insisting that business organisations should take the broader interests of the community into account in their business activities. Business organisations on the other hand are required to report on the impact of their

activities on the broader environment (Ackers, 2017). Some organisations may also adopt a corporate citizenship approach, which is a broader approach to business sustainability. Corporate citizenship indicates a willingness of the organisation to undertake activities that drives the progression of the collective agenda further than the minimum legal requirements (Ackers, 2017). According to Boadi, He, Darko & Abrokwah (2018), one of the problems with corporate citizenship projects is the disjuncture between the business organisations' purpose with the project and the expectations and perceptions, needs and expectations of the immediate community. The solution offered is to have a process for community stakeholders to communicate directly with the business organisation. (Boadi, et al., 2018).

2.1.2.7 Socio-cultural diversity

In an interconnected global business world, business organisations cannot ignore the socio-cultural factors that contextualise their employees, their customers and the broader community within which they operate (Becker, 2014; Rosenbaum, et al., 2016). Socio-cultural diversity includes socio-economic conditions, employment rates, cultural values and beliefs. International travel and the easy availability of information via communication technologies have broadened the worlds of many individuals, who are vicariously or in practice exposed to diverse cultural beliefs, attitudes and practices (Harrison, 2014). The permeability of geographical and cultural borders may lead to mergers and evolutions of cultures that are not necessarily welcomed by all involved. While geographical and cultural intermingling opens up choice in terms of consumer goods and products, it may also lead to greater complexity in the global and local business context (Harrison, 2014). In addition, economic integration at the macro level may not necessarily benefit everyone equally, as has already been stated. According to the World Economic Forum (2015d), the richest people in the world are now nine times richer than the poorest. Inequality in the distribution of wealth adversely affects economic growth; consequently, it is to any country's advantage to ensure that wealth is more equally distributed (World Economic Forum, 2015d). Inequality seems to be rising in the emerging economies of the world, specifically in China and Russia (Becker, 2014; Rosenbaum, et al., 2016). Gender inequality is of particular importance in China, India and South Africa. In this regard, socio-cultural factors seem to play a role, with women overall being valued less in the traditionally more paternalistic societies of these three countries than in the more European/Western societies (Becker, 2014; Rosenbaum, et al., 2016). Interestingly, social spending as a percentage of government spending in most of these countries is also low, resulting in a system where little support is provided for those who are most disenfranchised (Becker, 2014; Rosenbaum, et al., 2016).

2.1.2.8 Critical evaluation of the global business landscape and its influence on adult learners

From the above discussion, it seems clear that the global business landscape is hyper-complex, driven by various interconnected factors that shape the environment in which businesses operate (Barnett et al., 2017; World Economic Forum, 2015b). Globally, in developed countries, the services sector employs more people than the manufacturing sector, indicating that developed countries rely more heavily on knowledge-based business organisations. The move towards a service economy has created organisations that are less hierarchical and bureaucratic, and capital now includes people and innovation, not only land and resources. In addition, the nature of work has changed from a list of documented duties (job descriptions) to loosely described complex collaborations (role descriptions) (Cascio & Boudreau, 2016). The interconnected influencing factors provide opportunities but also pose threats for each business, irrespective of whether it functions globally or locally (Cascio & Boudreau, 2016; World Economic Forum, 2016a). Businesses wishing to be successful in the hyper-complex global context require global competence – competence that stems from organisational systems, leadership and talent.

Business organisations in the 21st century realise that global competence also exists within employees who can fully utilise global connectedness and technologies to their personal advantage and to the advantage of the business organisation (Cascio & Boudreau, 2016). The capacity to maintain employability through adopting a lifelong learning orientation contributes to employees' global competence. According to the World Economic Forum's Human Capital Report (2015c), human capital or talent is the most significant element for innovation and economic advancement in the new millennium. Conversely, according to Billett (2010b), the assumption that all employees desire to adopt lifelong learning and wish to engage in all learning opportunities, whether formal, informal or incidental, is erroneous. The conundrum for business organisations therefore is how to maintain their global competitive advantage through their human capital, and how to inculcate a lifelong learning orientation in all employees. On the other hand, Cassio and Boudreau (2016) advocate a focus on 'pivotal' talent or roles in the business organisation, instead of following a broad-based development approach for all employees.

2.1.3 The African business context

The African continent is widely considered the foundation of civilisation, as traces of the earliest humans have been found in Africa (Harrison, 2014). Africa north of the equator was one of the first areas globally where land was cultivated in an organised manner. In addition, Africa has some of the richest mineral resources such as oil, diamonds and gold, while also hosting spectacularly beautiful natural resources, including the Victoria Falls, the Fish River Canyon, the Nile River, Lake Malawi, various wildlife reserves and beautiful beaches (Harrison, 2014). Unfortunately, not all these natural

resources have served as an inclusionary measure in the greater world economy to any significant extent. Africa is experiencing a growth in population numbers, which creates the potential for a large economic contribution via human resources from Africa (World Economic Forum, 2015a). However, with the current economic conditions not apparently showing potential for change and with more and more young people in Africa entering the labour market, the biggest challenge for the continent is to become more productive while at the same time increasing the number of available quality jobs. Although the continent is urbanising rapidly, most of the population for the near future will continue to live in rural communities; consequently, high levels of investment in economic centres and secondary cities are an additional economic imperative (World Economic Forum, 2015a).

According to the World Economic Forum's Africa Competitiveness Report (2015a), Africa's biggest asset is its people. The annual population growth in Africa provides the continent with a predominantly young emerging labour force, as well as with a hefty and developing consumer market (World Economic Forum, 2015a). However, lack of quality education and the fact that most of Africa's population still rely on existence farming for survival are obstacles to Africa's economic development as a whole (Mohamedbhai, 2011; World Economic Forum, 2015a). The New Vision for Education: Fostering Social and Emotional Learning through Technology (World Economic Forum, 2016b) indicates that learners in the 21st century need more than only academic learning. Learners should be able to collaborate, communicate and solve problems effectively. In addition, African economies should focus on higher value-added activities that will unlock quality employment opportunities for its growing workforce to lay the foundation for sustained economic growth (World Economic Forum, 2015a).

Therefore, the demand for higher education in Africa is growing steadily because it is viewed as the door to economic growth and prosperity (Mohamedbhai, 2011; Glewwe, Maïga, & Zheng, 2014; Teferra & Altbach, 2004). However, as the quality of basic education in Africa remains persistently lower than that of the developed world, the capacity to be successful in higher education may not be present in all students in Africa who enrol for higher education (Drape, Rudd, Lopez, & Radford, 2016). African countries face two specific challenges, namely shortages of the relevant competencies in the labour market and an ongoing brain drain (Kaplan & Höppli, 2017; Mohamedbhai, 2011; Teferra & Altbach, 2004). The use of ICTs and the adoption of an ODeL approach to higher education on the continent are proposed as two solutions to the challenges facing higher education in Africa (Jegede, 2012). Higher education per se and ODeLHE specifically require students to be self-directed, autonomous adult learners, capable of taking responsibility for their own learning (Blaschke, 2012). As the complexities of higher education in Africa are multiplying along with the demand, it has become essential to equip all learners with the necessary competencies to be successful in order to produce

employees with the skills demanded both in Africa and globally (Karakas & Manisaligil, 2012; Karakas, Malisaligil & Sarigollu, 2015).

2.1.3.1 Political evolution in Africa

The continent of Africa has a history of colonialism and human rights abuses that stem from the time when slaves were captured on the continent and sold abroad (Becker, 2014; Rosenbaum, et al., 2016; Harrison, 2014). In addition, lack of infrastructure, unreliable and inferior education, poor health services and weak or corrupt government institutions contribute to the continent's poor competitiveness statistics (World Economic Forum, 2015a). Interestingly, Africa's socio-economic growth path seems to be bypassing the traditional economic evolution process (moving from an agrarian economy via manufacturing to the service sector). Approximately 25% of the 'working-age' population in Africa is employed in the services sector, indicating that Africa may bypass the industrialisation component of socio-economic growth (World Economic Forum, 2015a). Although the economies of African countries rely mostly on agriculture, the low productivity in the agricultural sector leads to the strange situation that Africa has to import large quantities of foodstuffs to feed the rapidly growing population and, even with the imports, the population of this continent runs the highest risk of undernourishment (World Economic Forum, 2015d). Stable government institutions contribute to increased competitiveness. Stable institutions include efficient public administration, the rule of law and open, reliable decision making, among other aspects (World Economic Forum, 2015a). African government institutions, like those in Brazil, Russia and India, show some of the highest ratings of corruption and instability in the world (Becker, 2014; Rosenbaum, et al., 2016).

2.1.3.2 Africa in a globally connected world

According to the World Economic Forum's Africa Competitiveness Report (2015a), Africa as a whole is one of the least competitive continents globally. Almost 50% of the continent's populace live in extreme poverty and, despite the huge potential locked up in the growing African population, productivity levels are among the lowest in the world (World Economic Forum, 2015a). More than 60% of the poorest countries globally are in Africa south of the Sahara (Harrison, 2014). These countries are largely dependent on foreign aid and receive little foreign direct investment. Most of the foreign direct investment is channelled towards mining or mineral and oil resources. In the 21st century, African economies still depend almost exclusively on the revenue generated from mineral resources and on agricultural product exports, such as coffee, tea, tobacco and cotton (Becker, 2014; Harrison, 2014). In a time when business organisations can access resources globally, the heavy dependence on an agrarian economy and primary products in most African economies, coupled with

the low productivity with which the continent is plagued, has left the continent hostage to the vicissitudes of commodity prices in world markets (Becker, 2014; Harrison, 2014; World Economic Forum, 2015a). In fact, Africa has been described as technologically underdeveloped and dependent (Asongu & Asongu 2017; Carmody, 2013). In a connected world, driven by communication technology, Africa is lagging behind and may be seen as a 'dependent country', as described previously, and may not be in an equal power relationship with its economic trade partners (Asongu & Asongu 2017; Carmody, 2013).

2.1.3.3 Technological advancement in Africa

Carmody (2013) indicates that the proliferation of cellular phones in Africa does not automatically propel the continent into the knowledge economy, but merely indicates that Africa may be an information society participating in a knowledge-based economy. An information society is one where information is freely available, used, disseminated and manipulated. On the other hand, a knowledge economy comes into being when information is harnessed to create valuable knowledge and innovation. While reigning arguments indicate that Africa should join in harvesting the profits from ICTs, the reality looks very different. The dependence in Africa on mostly primary products such as minerals, oil and agricultural goods indicates that the economies of Africa, although participating in information sharing, may at most be knowledge-based economies and not knowledge economies at all (Asongu & Asongu 2017; Carmody, 2013). Africa is largely a consumer of knowledge, while contributing little in terms of innovation (knowledge creation and harnessing) and is therefore losing out on the profits to be gained from technological advances (Asongu & Asongu, 2017; Carmody, 2013; Moahi, 2012). Conversely, there are those who argue that Africa boasts a rich heritage of indigenous knowledge that should be valued and harnessed in Africa's economic development in order to propel it into the knowledge economy (Moahi, 2012).

Indigenous knowledge is all-inclusive in that it comprises both the physical and the spiritual elements of life (Boamah & Liew, 2016; Moahi, 2012). As such, indigenous knowledge is applied in diverse life activities, for example for providing solutions to problems. As indigenous knowledge is tacit by nature, it seems to be marginalised in the industrial development process because little value is bestowed upon it, but the collective nature of the creation of all knowledge seems to be ignored when the differences between indigenous and 'Western' (or valuable) knowledge are discussed (Boamah & Liew, 2016; Moahi, 2012). Because of the tacit nature of indigenous knowledge, its contributions to the documented and widely accessible knowledge available through ICTs are largely ignored (Boamah & Liew, 2016; Moahi, 2012). However, valuable knowledge consists of both tacit and explicit components and therefore one can argue that, although tacit indigenous knowledge may not

necessarily be documented, it is probably utilised in the creation of valuable innovations and therefore inherently valuable.

The questions are: Who benefits from this utilisation of tacit indigenous knowledge and where does tacit knowledge end and explicit knowledge begin? Who owns tacit and explicit knowledge? These questions seem to highlight the conundrum around the value of indigenous knowledge. Tongo (2012) indicates the existence of a 'knowledgeable' person whose tacit knowledge resources can be harnessed to create a competitive advantage for the organisation. In addition, Tongo (2012) postulates that one finds the pre-industrialised person in a pre-industrialised economy. Given the description of the economy of the African continent, at large one may not be far wrong in arguing that, with some notable exceptions, in Africa one will probably find largely pre-industrialised people functioning as the users or consumers of the products of a knowledge-based economy. This description seems to ignore the tacit indigenous knowledge of the pre-industrialised people inhabiting the pre-industrialised economy. Weber (2011) reports that Western-based knowledge acquisition; knowledge systems and science seem to be universally accepted as 'true' knowledge and science, while the indigenous knowledge and science systems of the underdeveloped countries of the world are largely ignored. There seems to be a world-wide belief that, even though one should be able to accommodate diverse points of view, the knowledge generated locally should feed into the 'Western' knowledge systems – in fact, a kind of distortion of local knowledge in order to serve the 'Western' knowledge production mill. In such a context, the continued 'Western' approach to university education seems to increase social inequality and poverty (Weber, 2011).

In addition, while it was historically believed that foreign direct investment universally affects the economic development of developing economies positively, Silajdzic and Mehic (2015) argue that the technological competence inherent in the local (developing) economy also plays a role in the effectiveness of foreign direct investment in emerging economies. Silajdzic and Mehic (2015) found that foreign direct investment had a strong positive effect on economic growth when the investment was focused on technology intensive industries. This type of investment creates absorptive capacity in the industry, which may eventually spill over to the economy at large. Absorptive capacity is the ability of a business organisation or a country to effectively identify and exploit knowledge from the environment in order to create a sustained competitive advantage. Africa will only benefit from foreign direct investment when technology-intensive industries start flourishing on the continent (Silajdzic & Mehic, 2015).

Conversely, if Africa seems to be following the unusual growth path of moving from a mostly agrarian economy towards a service economy; and knowledge is paramount in the service industry, would an

investment in technology and the nurturing of knowledge resources not improve Africa's ability to compete globally (Barile, Saviano, & Simone, 2015; World Economic Forum, 2015a)?

2.1.3.4 Africa's socio-cultural dilemmas

The reasons for Africa's relative poverty in the face of significant resources are varied and difficult to summarise, but in this section, a few salient issues are discussed. North African countries such as Egypt, Morocco, Tunisia, Libya and Algeria are historically sea-faring nations with ancient links to Mediterranean and southern European countries. As a rule, North African countries are economically more successful compared to their Southern counterparts (Becker, 2014; Harrison, 2014). Sub-Saharan Africa experiences common problems, such as poor access to education, poor access to clean water and reliable clean sanitation, poor housing conditions, little access to health provision and a low to declining standard of living. The presence and prevalence of serious life-threatening diseases such as HIV/AIDS, malaria, cholera and Congo fever, to name but a few, also contribute to poor economic progress. Poor governance by the political and public officials of many African countries exacerbates all the natural constraints to economic development (Harrison, 2014; World Economic Forum, 2015a). Despite its wealth of natural resources, Africa has fallen behind in the global economy. Where African countries may appear to possess a comparative advantage, for example in the production of coffee or diamonds, productivity is lower than that of world competitors, thereby compromising any economic gains African countries may expect from these commodities (Harrison, 2014; World Economic Forum, 2015a).

2.1.3.5 Critical evaluation of Africa's competitiveness globally and the effect on adult learners in Africa

Apart from the challenges posed by the global business context, Africa faces additional challenges, specifically focused on poor-quality education, poor economic growth, poor productivity and socio-economic and gender inequalities (Harrison, 2014; World Economic Forum, 2015a). Conversely, economic growth is closely tied to higher levels of education. However, the role of inequalities, specifically income inequalities, should also be considered in economic growth analyses (Akanbi, 2016; World Economic Forum, 2015d). When economic growth does not include a reduction of inequalities, specifically income and social inequalities, a decrease in poverty does not necessarily also lead to a decrease in inequalities (Akanbi, 2016). Since Africa is moving towards a service economy, the lack of quality education and access to technology, particularly ICTs may lead to the exclusion of the majority of Africans from the opportunities offered by the service industry (World Economic Forum, 2015a).

Access to distance education, particularly technology-enhanced distance education, may be the answer to Africa's poor competitiveness profile, despite the poor access to technology relative to other countries (Adekanmbi, 2015). However, prospective employees and adult learners should be able to cultivate the capacities required for academic success in an open distance and e-learning education context (Adekanmbi, 2015).

2.1.4 South Africa's business conditions

South Africa has created the second biggest, most varied and most internationally incorporated economy of all African countries (Besada & Tok, 2015; Harrison, 2014; World Economic Forum, 2015a). Although South Africa boasts a modern commercial sector, past inequalities still prevail in terms of political and economic power between the various race groups, as well as high levels of social inequality among the previously disadvantaged groups in the country (Harrison, 2014). Social inequality goes hand in hand with poor access to education and quality jobs (Akanbi, 2016). The South African government has been attempting, to various degrees of success, to address the issues of poor educational opportunities, poverty and unemployment through the occupational learning system (OLS), in which institutions of higher learning play a prominent role (Tshilongamulenzhe, 2010). Cloete (2014) indicates a rise in the progress to higher education in South Africa, but no concomitant increase in graduation rates. As South Africa faces the persistent challenge of a skills gap, greater success in higher education for participating students is a necessity. Letseka and Pitsoe (2014) attribute the poor uptake of and success in tertiary education in South Africa to lack of access to the personal social networks where tertiary study competencies can be developed. Unisa, South Africa's biggest provider of ODeLHE, faces specific challenges related to student support, which influence student academic success (Letseka & Pitsoe, 2014). As the majority of learners in South African ODeLHE are working adults, an exploration of what is expected of adult learners both in ODeLHE and in South African business organisations is required. Lifelong learning is a national imperative in South Africa; consequently, the expectations made on adults as learners and their capacity to meet those expectations should be thoroughly explored (Tshilongmulenzhe, 2010b; Tshilongamulenzhe & Coetzee, 2014).

2.1.4.1 South Africa in a geographically connected world

In 2015, South Africa was ranked 49th in the World Competitiveness Index (World Economic Forum, 2015b). The rise in competitiveness is attributed mostly to increased usage of ICTs and improvements in innovation. South Africa boasts a competent transport infrastructure, a world-class financial market,

robust institutions and a vigorous and autonomous legal framework. Conversely, corruption, lack of security, unreliable electricity supply and high levels of corruption are restricting South Africa's growth potential (World Economic Forum, 2015b). In comparison to Africa, South Africa is relatively rich, having an economy almost twice the size of Egypt, and more diverse than Nigeria, which relies almost exclusively on oil exports as the basis of its economy (Becker, 2014). Nonetheless, on the world economic stage, South Africa has negligible influence (Becker, 2014). Some interested parties may believe that South Africa, as arguably the most economically powerful country in Africa, may deliver advantages to its close neighbours from its participation in the BRICS membership, but this may in fact not be the case (Besada & Tok, 2015). As the biggest need in Africa as a whole is investment in infrastructure, quality education and healthcare, the possible benefits from expanded global markets, increased tourism and increased investment may not meet the real needs of the continent. As most of the economies in Africa are agrarian, access to global markets may stunt possible industrial growth, conceivably increasing the already high levels of income and poverty inequality on the continent (Besada & Tok, 2015).

2.1.4.2 South Africa's political/economic revolution and context

In South Africa, socio-political and economic change coincided in the period following the first democratic elections in 1994 (Becker, 2014). In 1994, South Africa was one of only a few countries who managed to negotiate a peaceful transformation after a turbulent and often violent political history. Regrettably, the struggle for unification between the various race groups slowed down the economy, and government interventions to enhance economic growth have not had the desired effect (Harrison, 2014). For example, from 2004 to 2006, the South African gross domestic product (GDP) indicated a slow growth pattern, but from 2007 it slowed down into negative figures until 2010 (Becker, 2014). A similar trend is evident in the exports as percentage of GDP, with the figure growing between 2004 and 2006, but declining between 2007 and 2010. The share in world exports of merchandise has remained constant from 2004 to 2010, but the share in world exports of services fluctuates (Becker, 2014). Unfortunately, in terms of poverty alleviation and the decrease of inequality, the South African socio-economic landscape has not changed notably over this period (Becker, 2014). Over the same period, India's GDP grew between 2004 and 2007, declined slightly in 2008 and 2009 and grew strongly again in 2010. India's exports of services also steadily increased over the same period. Similar trends are evident in the economies of Brazil, China and Russia (Becker, 2014).

South Africa's economy finds itself in a situation where capital investment by business organisations has led to an overall decline in the demand for low-skilled jobs, while the raising population rates and poor education have created an increased supply of poorly qualified workers (Nattrass, 2014).

Concomitant to a more capital-intensive business strategy, the state's laws and regulations governing the economy and labour practice seem to be in direct opposition to one another, creating a situation of perpetual conflict between the drivers of the economy and the drivers of the labour market. The result was a decline in employment coupled with a rise in real average remuneration over the period 1990 to 2010 (Nattrass, 2014).

The political alliance between the African National Congress (ANC), the South African Communist Party (SACP) and the Confederation of South African Trade Unions (COSATU) has led to a mismatch of often opposing economic and legislative approaches that have not successfully alleviated the country's most pressing problem – that of unemployment (Nattrass, 2014). The Broad-based Black Economic Empowerment (BBBEE) strategy, aggressively driven by the ANC government, has divided the society once again along racial lines and, instead of decreasing economic and income inequalities, the strategy has resulted in an increase in inequality, with the more affluent Africans benefiting to the cost of the poorer-educated and disenfranchised masses (Becker, 2014).

2.1.4.3. Technological advances in South Africa

Technological innovations improve business processes and consequently business services and products (Des, et al., 2012). Technological advancement may even create new industries and products, such as cellular phones and the additional services and products that are available via cellular phone providers and network administrators. In the South African context, technological advances have led to an increase in capital expenditure on technology-intensive production at the expense of employing costly human labour (Bohlman & Breitenbach, 2016). In addition, South Africa boasts some of the limited innovative capacities on the African continent and is in fact the most innovative country in Africa (Carmody, 2013; World Economic Forum, 2015a). In order to reap the benefits of these innovative capacities fully, the lack of skills in the current workforce will have to be addressed. The Human Resource Development Strategy for South Africa (HRDSSA) 2010–2013 is aimed at addressing these skills shortages (Tshilongamulenzhe, 2014). The HRDSSA attempts, through a complex system of legislative and regulatory bodies, to address the lack of skilled employees and prospective employees available in the broader South African labour market.

2.1.4.4 South Africa and the global banking crisis of 2008–2009

The global banking crisis of 2008–2009 did not pass South Africa by. South Africa's economy, being largely dependent on exports from mining concerns and agriculture, is still struggling to recover from the 2008–2009 international banking crisis (Bohlman & Breitenbach, 2016). A negative effect on both

imports and exports was experienced during that time. Although imports quickly recovered, exports are slow in their recovery, have not yet reached the pre-2008 rates, while 2011 imports matched the 2008 import rate, and have been steadily increasing since (Bohlman & Breitenbach, 2016). The 2008–2009 banking crisis had a concomitant effect on the employment rate, and job losses continue as business organisations struggle to shake off the unexpected slump in the world economy created by the crisis (Bohlman & Breitenbach, 2016).

2.1.4.5 South-Africa's political-legal context

There is a strong relationship between the governance of a country and its economic prosperity and growth (Groşanu, et al., 2015). In addition, the local economy affects business organisations to varied degrees (Des, et al., 2012). Policies and legislation provide the boundaries and guidelines within which business organisations can legally conduct business (Des, et al., 2012). Legislations such as the Employment Equity Act, the Skills Development Act and amendments, the Skills Development Levies Act, the Labour Relations Act and amendments, and the Protection of Personal Information Act are only some of the legislative requirements that govern South African organisations. Politically powerful, institutionalised trade unions affect economic growth, as is evident in the continued rise in real wages over the past decade, which contributed considerably to the unemployment crisis in South Africa, but seems to have had little effect on poverty alleviation, even possibly contributing to increased social inequality (Nattrass, 2014). Added to this is the view of South Africa held by other African nations – South Africa is viewed as a 'Trojan horse', a meddler and a protectionist country bent on protecting its own interests at the cost of its neighbours' well-being. The continued xenophobic incidents in South Africa add to this negative view of South Africa in Africa (Adebayo, 2007).

2.1.4.6 Corporate social responsibility in South Africa

South Africa's urgent need to establish equality on many fronts in its society requires a strong corporate governance imperative (Ackers, 2017; Andreasson, 2011). In this regard, the requirement to report on the triple bottom line advocated in the King II report may be a step in the right direction. The Johannesburg Securities Exchange's 2004 adoption of not only triple bottom line reporting but also the Socially Responsible Investment Index as requirements in its listing standards is considered to be a ground-breaking initiative in an emerging economy (Ackers, 2017; Andreasson, 2011). The initiatives in corporate governance may have created a 'hybrid' or 'African' approach to corporate governance, namely an approach where the 'shareholder' and 'stakeholder' views are combined with the *ubuntu* approach expounded by South Africa's government (Ackers, 2017; Andreasson, 2011).

Arguably, the most commonly used phrase in South Africa today in political and business circles is the term '*ubuntu*'. *Ubuntu* is understood to be an African point of view that emphasises the interests of the broader community above that of the individual and human interaction with others as most important. It is a broadly held concern for one another's well-being and implied support of others as an expression of society's humanity (McDonald, 2010; Van Norren, 2014). The concept or philosophy of *ubuntu* has grown in use in South African business and management literature, in an attempt to make capitalism acceptable to the population, whose political leaders had for many years propounded communism/socialism as the political ideal in South Africa. Specific examples of the integration of *ubuntu* into corporate governance come from the King II report (King, 2006), where specific mention is made of the 'African worldview and its significance in the governance and management of business organisations. The imperative of *ubuntu* is also evident in the Batho Phele Principles governing the service delivery of public administration departments (McDonald, 2010; Van Norren, 2014). In each context, the fundamental principle is to put people first, supported by the creation and maintenance of harmony and equal treatment of all.

The question is: Are these commendable principles evident in the corporate governance practices of business organisations in South Africa? According to McDonald (2010), South African corporate governance is more concerned with keeping pace with international standards and requirements than with the principles of *ubuntu*. Taking into consideration the vast differences between the economy of South Africa, which is mostly dependent on primary products, and those of the world economic leaders, one has to consider whether corporate governance norms and standards adopted from more developed economies are supporting or detracting from sound corporate governance practices in South Africa. On the other hand, according to the World Economic Forum (2015c), inequalities are better addressed by more inclusive business strategies. In such a context, *ubuntu* may be a business philosophy that businesses that are more corporate should adopt (McDonald, 2010, Van Norren, 2014).

2.1.4.7 South Africa's socio-cultural diversity

People demographics in the business environment include aspects such as the general age of the population, the geographical distribution of people in the country, the general affluence, disparities in income and the ethnic composition of the population (Des, et al., 2012). Socio-cultural influences include the values, belief systems and lifestyles of the population of a country (Des, et al., 2012). The socio-cultural influences are, among others, indicated by the level of education of women in a country, the number of women in the workforce, the number of temporary employees in an economic sector, environmental concern displayed by the population, an interest in a generally healthier lifestyle and

family planning (Des, et al., 2012). South Africa is characterised by inequality in income, education and land ownership. Simultaneously, relative rises in GDP seem to have little effect in terms of alleviating these inequalities (Akanbi, 2016).

Akanbi (2016) found a bi-directional causality between economic growth (increased GDP) and income inequality (poverty). This implies that while economic growth may have a significant effect on alleviating income inequality, the existence of income inequality also affects South African economic growth. In addition, Akanbi (2016) found a positive relationship between poverty and educational inequality, indicating that poorer people have substantially less access to quality education with concomitantly poorer opportunities to escape the poverty trap. These findings do not bode well for the South African economy in terms of establishing equality in a socially and culturally diverse country. In addition, South Africa's ranking as 92nd in the World Economic Forum's Human Capital Report (2015c) is a definite warning to our country. The Human Capital Index provides a picture of the capabilities of a country to develop the talent required for economic growth and sustainability. The index takes into account educational prospects, human capacity and employment figures as well as demographics. In the 21st-century business environment, labour markets are increasingly influenced by technological, economic, geopolitical and demographic influences and it is imperative for countries who want to expand economically to ensure that their populace is equipped with the competencies to play an active role in the global labour market. In addition, nurturing in the people of a country the capacity to grow and develop is a social responsibility and ethical requirement of the political powers at the head of the relevant economy (World Economic Forum, 2015c).

2.1.4.8 Critical evaluation of the South African business context in Africa and globally, and its effect on adult learners

Even though South Africa is perceived as a 'technological hub' with an excellent financial system, it still struggles to compete successfully in the global marketplace (World Economic Forum, 2015a). The biggest hurdle South Africa faces in its growth to a developmental economy is the poor participation in and output of graduates with employable competencies from post-secondary learning institutions (Coetzee & Esterhuizen, 2010; Kraak, 2013a). In addition, South African faces widespread economic and social inequality, which flows over to the education system and the capacity of graduates to find jobs and maintain their own employability.

Pioneer students (the first in the family to go on to tertiary education), may not possess the academic literacies and social support to facilitate academic success. Further to this, many black (previously disadvantaged) students feel alienated in the general academic culture of South African universities (Letseka & Pitsoe, 2014).

On the other hand, the creation of sufficient jobs to provide employment for graduates continues to be a challenge in South Africa. In addition, the competencies required in the labour market create barriers to entry for newly qualified inexperienced graduates, which amplifies the rising rate of graduate unemployment (Baldry, 2016; Coetzee & Esterhuizen, 2010; Tshilongamulenzhe, 2012).

Investment in human capacity enhances economic growth. In order to invest in human capacity, South African needs graduates with the required competencies to fill positions. On the other hand, individual employees should be capable of taking responsibility for their own continued learning and employment.

2.2 THE KNOWLEDGE ECONOMY

In the global, African and South African contexts, adult learners have to be able to take responsibility for their own continued learning and employability (Andrés, Asongu & Amavilah, 2015; Coetzee, 2014; Muñoz, et al., 2013; Tongo, 2012). In the knowledge economy, knowledge is an intangible resource that has become essential for ensuring sustained business survival and growth (Tongo, 2012). Whereas the tangible production factors (such as natural resources, labour and land) are subject to the economic law of diminishing returns, the intangible production factor of knowledge seems to marginally increase organisational performance as knowledge is added or more knowledge is utilised (Tongo, 2012). As knowledge can become obsolete quickly, it is imperative for working adults to be self-directed lifelong learners in order to prepare themselves for the unexpected and unpredictable changes that await the individual just around the next corner, so to speak (Andrés, et al., 2015; Braimoh, 2010; Edwards, 2010).

The notion of a knowledge economy is not new. From the 1940s onwards, academics from various disciplines have noted, analysed and commented on changes in specific entrenched propensities in the business environment (Andrés, et al., 2015; Peters, 2010). In what is broadly called the post-modern global economy, the move towards an economic system that focuses more strongly on the production and utilisation of knowledge as a business activity is widely described in economic, business and social contexts (Andrés, et al., 2015; Peters, 2010). The concept of 'knowledge economy' can be described as evolving as time passes, as the hyper-complex, interconnected and global nature of the contemporary business context and the speed of technological advances mean that the concept is currently defined and viewed from various perspectives, such as the economic, technological, socio-economic, creative and learning perspectives (Andrés, et al., 2015; Peters, 2010).

The knowledge economy is largely driven by the embeddedness of ICT in the societies of the new millennium and the worldwide growth in service industries (Carmody, 2013; Harrison & Rooney, 2015; Tongo, 2012). Communication technology makes large information sources easily accessible to most people with access to a communication device such as a smartphone, tablet or computer. The ease of interaction, through the communication devices mentioned, makes it possible for employees to collaborate more easily on projects and to share their knowledge. Employees do not only have access to a huge amount of information, but can also interact with knowledgeable people (sages) globally (Barile, Saviano & Simone, 2015; Carmody, 2013). The access to information sources and collaboration possibilities combined with the creative utilisation of knowledge for innovation that employees bring to an organisation create human capital that contributes to and sometimes even creates the organisation's competitive advantage (Carmody, 2013; Hansen, Winther, & Hansen, 2014). In effect, the organisation utilises its intellectual capital effectively to ensure its survival. In the hyper-complex business context, creativity and subsequent innovation, which are the productive harnessing of information and knowledge, can probably be described as the organisation's DNA. Just like the DNA of living things is depicted as a double helix that is studied continuously and of which we still, after years of research, know very little, organisations in the knowledge economy utilise creativity and innovation to ensure a sustained competitive advantage, but the 'how' of the utilisation of creativity and innovation is not easily described and duplicated. The competitive advantage lies in how the knowledge is harnessed through learning to nurture creativity and innovation (Peters, 2010).

2.2.1 Information and knowledge

In order to grasp fully the concept of 'knowledge' and its impact on economies and business organisations, it may be necessary to distinguish between information and knowledge as concepts. Information is fragmented pieces of data, which have not yet been assimilated into a comprehensive whole, consequently possessing no discernible value (Holmén & McKelvey, 2013; Ojanpera, Graham, Straumann, De Sabatta, & Zook, 2017). On the other hand, knowledge is structured, assimilated information that can be utilised in various contexts and amalgamations, hence it is undeniably valuable (Carmody, 2013; Holmén & McKelvey, 2013; Ježić, 2012).

Knowledge generates a sustained competitive advantage for an organisation when the knowledge (or its application) is original, innovative and difficult for rivals to acquire or reproduce, and is by its individual nature a scarce resource (Carmody, 2013; Holmén & McKelvey, 2013). The process of organisational evolution is an organisational learning journey, where knowledge is continuously utilised in various formations to solve problems and incrementally contribute to or create innovation. Hence, not only do employees in an organisation create knowledge and provide competitive

advantage, but the organisation as an entity also learns and creates its competitive advantage by cultivating and nurturing its own knowledge sources and utilising all the knowledge sources available to create a sustainable advantage (James, et al., 2013; Ojanpera, et al., 2017).

Knowledge has been described as commonly virtuous – it disregards the economic scarcity principle that governs other production factors, as it cannot be consumed and is perceived to be inclusive rather than exclusive (Peters, 2010). Knowledge can be distributed digitally at no additional cost to the organisation. Unlike other production factors, the distribution and sharing of knowledge would add to the value rather than reduce it (Peters, 2010). The assumptions made about the nature of knowledge and its liberal qualities may not be true for Africa in general and South Africa specifically. Access to the knowledge and ICT resources that is implied in the description of the common virtue of knowledge as a factor of production and driver for economic advancement is not universal in either Africa or South Africa. Sadly, access to the technology and resources that are required to be a player in the global knowledge economy is largely restricted in most African countries, including South Africa, to those who can afford the ICT devices and the internet connectivity to mine the information sources on it (World Economic Forum, 2015a).

2.2.2 The knowledge economy and the knowledge-based economy

With regard to knowledge in economic terms, Carmody (2013) distinguishes between a knowledge-based economy and a knowledge economy. A knowledge-based economy is one where well-harnessed knowledge enhances the value created in sectors such as mining and manufacturing in an industrial economy. In a knowledge-based environment, experts create possible solutions to new, unidentified or unexpected problems by using their existing knowledge to link the new problems to ones they had already encountered and solved. On the other hand, a knowledge economy creates knowledge, such as patents, or uses existing knowledge in new ways or permutations to create knowledge-enhanced manufacturing, production and/or organisational processes (Bano & Taylor, 2015; Hansen, Winther & Hansen, 2013).

The knowledge-based economy is poorly defined, and mostly described through its various components (James, et al., 2013; Ojanpera, et al., 2017). The components of the knowledge-based economy appear to be the following: knowledge industries, knowledge workers, knowledge assets and knowledge services. Knowledge industries include those where technology-enhanced manufacturing processes are used, or those that use scarce knowledge sources, such as communication technologies, pharmaceuticals and the electronics industry. Knowledge workers are employees who are qualified at tertiary education level, or in professional positions. Knowledge

assets include investment in innovation, research and development. Lastly, knowledge services include the value of trade in knowledge industries, such as mobile telecommunications (James, et al., 2013; Ojanpera, et al., 2017).

The knowledge-based economy can also be described as a holistic concept, aimed at socio-economic restructuring through the dissemination of knowledge creation and information processing throughout the economy as its catalyst (James, et al., 2013; Ojanpera, et al., 2017). The holistic perception of a knowledge-based economy is founded on the development and creation of infrastructure for information and communication technologies; increasing investment in mathematics, engineering, science and technology education; and increased numbers of employees with a tertiary education (James, et al., 2013; Ojanpera, et al., 2017). Conversely, more than half of the world's population live in areas where there is either very limited, or no, access to ICT and networks. Therefore, the belief that ICTs are ubiquitously available and being used, and that ICTs and the wide availability of online knowledge sources can lead to large-scale enfranchising of the disadvantaged, is a fallacy (World Economic Forum, 2015b).

The inherent characteristics of the knowledge economy can be briefly described as follows (Barile et al., 2014):

- The success of business organisations depends more and more on their capacity to mine knowledge resources instead of physical resources. The value added by the organisation is manifest in its design, research and development, customer relations and novelty of its products and services.
- Organisations increasingly compete in the global market place. Organisations need to position themselves in such a way that they seamlessly fit into the global industry as regard the whole business process, including customers.
- The lines between industries are not so apparent. ICTs, multitasking, the utilisation of advanced materials and adaptive processes mean that competencies, knowledge and skills are cross-fed between sectors and industries, creating a hyper-complex, hyper-integrated global industry environment.
- Intangible assets such as knowledge, creativity, flexibility and integration, as well as economies of scale, are vital to organisational innovation, growth and survival.

Conversely, there is an argument against the novelty of the knowledge economy. Adelstein and Clegg (2014) argue that knowledge was historically applied extensively in pre-industrial and industrial societies in order to fuel innovation and facilitate human development. Therefore, the existence of knowledge work and a knowledge economy is disputed in favour of a belief that knowledge is the

main ingredient in the formation of civilization. Hansen, et al., (2014) support this view. They found that knowledge work is prevalent in low-technology contexts and that little correlation exists between the utilisation of human capital or knowledge workers and high-technology organisations. It is becoming more and more evident that more inclusive, holistic global development requires a thorough assessment of knowledge and expertise contributions from both the developed and the developing societies of the world (Besada & Tok, 2015).

Whether one supports the systems view of the business organisation, the organisational learning or the high-performance work practice view of organisations, the knowledge inherent in the employees of the business organisation seems to play a vital role in its continued profitability and existence. Knowledge and its effective use for human and organisational advancement have been the theme of human development through the aeons (Adelstein & Clegg, 2014; Barile, et al., 2015; Peters, 2010). The swiftness at which knowledge diffuses among the people of a society depends on societal processes and the availability and integration of communication technologies within that society (Barile, et al., 2015). Advanced economies enjoy a powerful, close relationship with knowledge and can harness it successfully in innovative ways. Irrespective of whether knowledge has been the foundation of human development throughout history, in the 21st century, those business organisations that can harness and effectively utilise knowledge in the creation and supply of innovative products and services are the successful ones and economies with a host of such resourceful enterprises can be called knowledge economies (Barile, et al., 2015). The creation and sustainability of a knowledge economy require enthusiastic investment in fundamentals such as infrastructure, research and human capital by both political and industry leaders (Ornston, 2012).

Barile, et al., (2015) postulate that tertiary education delivers graduates that possess an in-depth knowledge of a specific field, but that the contemporary business environment requires employees that can move freely across disciplines in order to achieve a business organisation's goals. The authors call such professionals 'T-shaped professionals'. T-shaped professionals possess the required discipline-specific competencies, and in addition, they are capable of transversing the discipline in order to use discipline-specific competence to address cross-discipline challenges (Barile, et al., 2015). T-shaped professionals can also become innovators, specifically because they possess the capacity to cross boundaries in a fluid environment, making them the ideal employees in the 21st-century business context. Creativity, innovative capacity and the ability to transverse disciplines imply that employees should invest in lifelong learning (Ježić, 2012). Bolkan (2015) indicates that intrinsic motivation and eagerness to learn appear to result in creative thinking, which is what is primarily, required from today's knowledge workers. In addition, learning transpires from engagement with innovative and worthwhile learning programmes (Harju, Pehkonen, & Niemi, 2016).

Meaningful learning experiences that engage students may stimulate the need for autonomy in learning, which is a prerequisite for adult learner self-directedness (Bolkan, 2015; Harju, et al., 2016).

2.2.3 The learning economy

The 'learning economy' is a fundamental component of the knowledge economy (Peters, 2010). In the learning economy, the position of business organisations, industries and even countries on the global economic playing field increasingly depends on the capability to learn and adapt. The learning economy is based mainly on the ability to learn through informed and thoughtful participation in a process. In such a learning scenario, employees transfer not only discipline-specific knowledge to their peers, but also the tacit knowledge that is difficult to categorise and document (Peters, 2010). In training and development terms, this is called on-the-job learning, where employees learn a job by watching an expert performing the various tasks related to the job, and then perform the tasks under the watchful eye of the expert employee. Consequently, the learning economy does not depend only on the capacity to master discipline-related knowledge in a formalised environment such as that offered by a tertiary education institution. More comprehensively, it can be argued that the learning economy revolves around the processes responsible for the production of useful knowledge (Peters, 2010).

The rapid dissemination and obsolescence of knowledge in the post-modern society are the cornerstones of the learning economy. As innovative, successful business organisations have to anticipate the rapidly changing knowledge world, and its concomitant effect on business processes and requirements, organisations and their employees have to continuously learn and adapt (Peters, 2010). Learning is simultaneously the nexus of innovation and its handmaiden (Peters, 2010). In this scenario, the traditional offerings of tertiary education, focusing on inculcating in-depth discipline-based knowledge, does not create the graduates the business world needs (Peters, 2010). Instead, the discipline-based offering of the tertiary education providers should be fused with educational philosophies that include collaborative learning, interdisciplinary agility and active engagement with real-life challenges in order to develop graduates that are capable of solving novel problems through innovative thinking and the utilisation of transdisciplinary competence (Peters, 2010).

The more adventurous academic thinkers propound the idea that the world at large is moving from an industrial to a 'creative economy'. Creativity and innovation form the core of the knowledge economy and are inextricably intertwined in the creative economy (Peters, 2010). In the creative economy, ideas and intellectual property are more valuable than perceivable, touchable factors of production. The intertwining of creativity and innovation denotes a clear link between education and

the nurturing of creativity (Peters, 2010). The primary requirement of employees in the knowledge economy is the capacity to engage in lifelong learning, which requires the capacity to manage one's ongoing learning experiences autonomously, both at the workplace and in educational settings. The inculcation of self-directed learning capacity seems to be of particular importance for sustainable economic development (Melnikas, 2010).

2.3 HUMAN RESOURCE DEVELOPMENT IN THE ORGANISATIONAL CONTEXT

Jacobs (2013) distinguishes between HRD, adult education and workforce development. HRD focuses on improving individual work performance in order to improve overall organisational performance and sustainability. Adult education adopts a more integrated definition, focusing on all the learning activities that are deliberately designed to stimulate learning for adults. Proponents of adult education indicate that diverse goals such as social justice, individual self-development, and preparation for participation in the workforce as well as individual and organisational improvement are served through adult education. Workforce development focuses on the harmonisation of public and private sector strategies and platforms that afford individuals the prospect of sustained gainful employment and facilitate the achievement of suitable organisational goals that are acceptable in the broader societal context (Jacobs, 2013).

Adults learn not only in formal education environments, but also, according to some researchers, in informal and non-formal contexts, such as the workplace (Billett, 2010b). In addition, the individual capacity to manage one's own learning autonomously as an adult is considered essential in enabling business organisations to maintain a competitive advantage in the 21st-century socio-economic environment (Billett, 2010b). However, as stated previously, the assumption that individual employees' personal goals and wishes of necessity coincide with their employers' goals may be erroneous, and consequently influences employees' willingness to autonomously drive and engage in ongoing workplace-related learning opportunities of whatever nature an employer wishes to provide (Billett, 2010b). Further, an individual employee's perceptions of the self as it relates to personal autonomy, including the effect of the social context, influence the individual's capacity to be an autonomous agent in individual learning (Billett, 2010b). Consequently, the assumption should not be made that all employees will enthusiastically engage in lifelong learning, nor should it be assumed that all employees possess the required capacity for self-directed learning (Billett, 2010b). The complex nature of individual self-directedness in learning, coupled with the move in business organisations away from structured learning experiences, increases the need for a South African instrument that can reliably assess the self-directedness of adult learners (Botha, 2014).

2.3.1 Conceptualising the concept of human resource development within the business organisation

Human resource development (HRD) is a complex, multi-disciplinary field comprising education, training and development, knowledge management and the learning organisation, in an interrelationship with organisational leadership and culture (Garavan, McGuire & Lee, 2015; Woodall, 2001). Organisational leadership and culture both influence and are influenced by HRD and the approach to and impact of HRD are influenced by organisational leadership and culture. In a similar fashion, the organisation's overall business strategy influences and is influenced by HRD (Coetzee & Botha, 2014). Some definitions of HRD adopt a broad perspective, indicating that HRD is for societal advancement, while others adopt a narrower stance, zooming in on organisational or individual progression (Garavan, et al., 2015; Woodall, 2001). HRD focuses on three main areas, namely the individual, organisational groups and the organisation as a whole. Consequently, HRD interventions utilise a varied mixture of training, career development, management development and organisational development initiatives to achieve its goals (Garavan, et al., 2015). Training focuses on the development of technical (or job-related) competencies for a current or future job, mainly in order to enhance individual or work group job performance. Career development initiatives are aimed at preparing employees for further career advancement, either horizontally or vertically, in order to broaden their capacities and prepare them for future changes in organisational goals and strategies. Management development is about the cultivation of superior management capacities in organisational managers and those earmarked for future management positions. Organisational development initiatives utilise the principles of behavioural science to augment employee well-being and fulfilment, subsequently positively influencing organisational success (Coetzee & Botha, 2014).

The broader purpose of HRD efforts in the organisation is usually to improve organisational performance by somehow increasing individual job performance, irrespective of the interventions applied in specific situations or to address particular organisational issues,. One can conclude that HRD has a performance focus, not a learning focus. The utilisation of performance management information in the development of HRD interventions may underline this belief (Garavan, et al., 2015). Yet, according to the learning organisations perspective, the most effective organisations are those where learning is inculcated in the culture and where healthy interaction exists between the organisational culture and practices on the one hand, and HRD on the other hand. Organisations in which learning is an accepted business imperative seem to outperform their counterparts. In the former organisations, HRD would focus on the expansion of work-related knowledge and the intellectual capacity of employees (Garavan, et al., 2015; Zavyalova & Kosheleva, 2013).

Excellent HRD is universally understood to mean HRD that offers comprehensive, quality learning and development opportunities for all employees, while also being aligned with the organisation's strategic priorities (Gibb & Wallace, 2014). Employee job performance is influenced by two main variables, namely the nature of the job and the comparative value created for the organisation because of differences or fluctuations in job performance (Cascio & Boudreau, 2011). The nature of the job can be briefly described by its complexity – the amount of individual autonomy it provides and individual discretion the incumbent is allowed to use in the execution of the duties related to the job (Cascio & Boudreau, 2011). According to Cascio and Boudreau (2011), the impact of improved job performance has to be seen in the context of the value any differences in job performance may create for the organisation. Therefore, not only is the nature or complexity of a job essential in the determination of value, but also the impact of a change in job performance on the value of the organisation. In effect, the question that should be answered is at which point in the organisational processes the development of employee competence would lead to the most significant difference in organisational success.

Business organisations are variously viewed from the open-systems, learning organisation or high performance work practice (HPWP) perspective. These three perspectives of the organisation are now discussed briefly, as the underlying philosophy of the organisation's business practices directly influences the role of HRD in the organisation.

2.3.2 The open-systems (or strategic) perspective of human resource development

Most descriptions of business organisations portray them as existing as open systems within other open systems, indicating an interaction between the various systems (Mullins, 2013). In the open-systems model, inputs are received from the environment and then converted and reverted to the environment in the form of goods and/or services. As was described previously, the external environment influences the business organisation in complex ways, and the business organisation affects the environment in a complex manner (Mullins, 2013). From the standpoint of the open-systems approach to organisations, those business organisations that fit seamlessly into their external environment are most effective and efficient (McShane & Von Glinow, 2013). An effective organisation manages to align with and adapt to its external environment because resources are utilised effectively. Organisational agility allows such organisations to adapt their subsystems and processes to changing environmental conditions and requirements fluidly and proactively (McShane & Von Glinow, 2013). Efficient business organisations are sufficiently resourceful to transfer their inputs into outputs more proficiently than their competitors are. HRD in the systems view of the organisation is a subsystem of the organisation and can be a subsystem of the greater human

resources function. As a subsystem, HRD influences and is influenced by the organisation as a whole. Specific influences on HRD can be seen in the imperative to contribute to strategic goal achievement and continued sustainability of the broader organisation by proactively, strategically providing learning and development opportunities to employees. This view of HRD is often called strategic HRD (McShane & Von Glinow, 2013).

In the strategic HRD view of HRD in the business organisation, the HRD department is responsible for supporting the implementation of the organisation's overall business strategy through the HRD strategy (vertical and horizontal alignment). The HRD department should proactively provide opportunities to inculcate and foster the capacity for new ideas, technologies and employee work performance clarifications. Constant vigilance in the HRD department is vital, as the external environment has such a significant influence on organisational competitiveness, as do the human resources of the organisation. Proactive initiatives that ensure the continued professional development of cutting-edge competencies and capacities require HRD staff to stay abreast of all changes in the external environment that could influence the strategy implementation of the organisation (Botha, & Coetzee, 2016).

Alignment with organisational strategies raises the question whether HRD would be affected by the vicissitudes of the external environment. McGraw (2014) found that over the past decade in Australian businesses, investment in HRD decreased, while simultaneously HRD practices contracted, specifically in the manufacturing industries. Overall, planning and evaluation of HRD initiatives have grown in significance. McCarthy and Sheehan (2014) indicate that the relationship between economic uncertainty and investment in HRD is complex. While economic turbulence may adversely affect HRD investment in certain business organisations, other businesses may decide to invest more in HRD efforts in times of uncertainty. McCarthy and Sheehan (2014) advise that investment in HRD should be sustained over periods of economic fluctuation in order for it to contribute to a sustained competitive advantage. In this regard, viewing HRD efforts as an investment instead of a cost to the business will make a positive contribution to continued financial investment in HRD efforts.

2.3.3 The organisational learning (or learning organisation) perspective of human resource development

From the point of view of organisational learning, the effective and efficient use of knowledge to create and maintain a competitive advantage is the main imperative in organisational competitiveness. Those organisations who manage the knowledge created, shared and productively used in their organisations will possess a competitive advantage (McShane & Von Glinow, 2013). The knowledge

prevalent in organisations is called intellectual capital. The competence of organisational employees is one type of intellectual capital, and is called human capital. As the human capital of a business organisation vests in its employees, human capital simultaneously presents a competitive advantage and an organisational risk. When employees leave organisations, they take their unique knowledge with them. When an organisation depends on its human capital for a sustained competitive advantage, organisational processes should be effectively utilised to retain the human capital (McShane & Von Glinow, 2013). Structural capital, which consists of the knowledge that exists in the business organisation's systems and structures, is the second type of intellectual capital apparent in organisations. Knowledge-management initiatives are focused on creating, sharing and storing structural capital for the organisation. Relationship capital, which is the value of the relationship with organisational stakeholders, is the third type of intellectual capital business organisations possess. In this regard, corporate social responsibility and good governance play a role in building and sustaining relationship capital. This approach to HRD is often depicted as the human capital approach.

Business organisations foster intellectual capital by creating, obtaining, distributing, utilising and guarding their significant knowledge (McShane & Von Glinow, 2013). Knowledge is obtained from the external environment by acquiring knowledgeable organisations, employing knowledgeable people and learning from the peripheral environment. In addition, knowledge can be cultivated inside the business organisation through innovation and creative experimentation (McShane & Von Glinow, 2013). Knowledge distributed throughout the organisation, either through informal learning and communication or via ICT networks, fosters intellectual capital. The utilisation of knowledge in creative, innovative ways to create value for the organisation requires a supportive milieu where employees are given the autonomy to be innovative and creative. In such a milieu, employees can make mistakes in a safe environment that nurtures learning (McShane & Von Glinow, 2013). Creative, innovative and agile employees who operate within a learning climate by acquiring, creating and sharing their unique knowledge contribute to organisational success in the 21st century (McShane & Von Glinow, 2013). Employees who thrive in a creative, innovative context should possess the capacity to take charge of their own learning – they should be self-directed, autonomous learners who can manage their own learning and nurture their human capital in order to enhance their value in the organisation and in the labour market at large. In the learning organisation perspective of the organisation, the HRD component focuses on talent and knowledge or human capital management. The HRD activities focus on creating, sustaining and utilising talent and knowledge-management processes, systems and procedures to support continued professional development of key talent and knowledge workers in the organisation in order to foster and sustain creative innovation for competitive advantage.

2.3.4 The high performance work practices perspective of human resource development

High performance work practices (HPWS) focus on subsystems within business organisations that contribute to organisational efficiency (McShane & Von Glinow, 2013). HPWP builds on the belief that human capital contributes to organisational competitive advantage by identifying employee job involvement, job autonomy, employee competence and performance-/competence-based rewards as the essential HPWPs that positively contribute to organisational effectiveness (McShane & Von Glinow, 2013). Employee competence was of specific importance to this research study. The HPWP approach propounds that competent employees who possess the capacity to adjust to diverse work tasks and unfamiliar situations routinely and seamlessly are more efficient in 21st-century business organisations. The role of HRD in an HPWP organisation is one of supporting the continued development of employee competence by continuously assessing employee competence and proactively as well as re-actively providing continued professional development opportunities. The HRD activities are based on the use of individual performance indicators to determine the 'best practices' displayed by top performers, and to provide development opportunities to those who do not fall into the top performer category in order to develop those best practices. In the HPWP milieu, the HRD function works closely with line managers and compensation experts to create the high-performance work culture (McShane & Von Glinow, 2013).

2.3.5 The stakeholder perspective of human resource development

The stakeholder perspective of HRD provides a more contemporary insight into the influence of HRD in the organisation (Baek & Kim, 2014). According to the stakeholder perspective, HRD impacts not only on employees and business organisations, but also on the wider society in which the business organisation functions, giving the stakeholders approach to HRD a foundation in the drive towards ethics in organisational management (Baek & Kim, 2014; Coetzee & Botha, 2014). Stakeholders in the HRD context are divided into three broad groupings, namely internal stakeholders, value chain stakeholders and external stakeholders. Internal stakeholders include the employees, managers and shareholders of the business organisation, who have a direct and personal link with the business organisation. Value chain stakeholders include suppliers and customers, who have a direct but impersonal link with the business organisation. External stakeholders include the broader community, government and the media, who have no direct link with the business organisation (Baek & Kim, 2014).

In the stakeholder view of HRD, the efforts and interventions planned and carried out by the HRD department in a business organisation should not only focus on improving the capacities of its employees, but also on incorporating development opportunities for the various stakeholders. Evidence of such an approach can be found in the customer information/training interventions provided by many banks to inform customers of new initiatives launched by the bank, such as online or internet banking, or the use of automatic teller machines (Coetzee & Botha, 2014). In the South African milieu, another form of intervention would be to provide learnerships and apprenticeships to unemployed people not currently in the employ of the business organisation in order to contribute to the upliftment of the skills of the broader South African population (Coetzee & Botha, 2014). The enhancement of the employability of previously disadvantaged individuals is a further example of how the stakeholder view of HRD manifests in South Africa. Employability is about more than being prepared for a specific job – it encompasses the nurturing of capacities to cope with fluctuations in the labour market and changed conditions in the workplace (Coetzee & Botha, 2014). All these initiatives evident in the South African milieu are essential in addressing employment equity considerations.

In the stakeholder approach to HRD, the primary focus of the HRD department is to create value for all the relevant stakeholders in order to prove its own value to the organisation as a whole (Coetzee & Botha, 2014). The relevant stakeholders determine value; consequently, the process of HRD commences with establishing the goals, needs and requirements of the various stakeholders, which may be diametrically opposed, in order to create significant value for all its stakeholders. As stakeholders include those with and without direct ties to the organisation, the creation of discernible significant value for all stakeholders may prove to be a difficult undertaking. HRD offerings should be aligned with the requirements of the organisation's various stakeholders, and also ensure that the HRD staff are at the forefront of all HRD developments by providing and giving credit for continued professional development opportunities for all HRD staff (Coetzee & Botha, 2014).

Whichever organisational management philosophy and subsequent HRD perspective is prevalent in a business organisation, the facts tell the same story: Crucial talent or human resources have a greater-than-average impact on organisational success and continued sustainability (Cascio & Boudreau, 2011).

2.3.6 Influences of the contemporary business milieu on human resource development

In addition to the general external environment within which businesses function, a specific industry environment can also be observed. The industry environment is characterised broadly by three

factors, namely turbulence, competitiveness and growth (Mithas, Smith, Tafti, & Mitchell, 2013). Industry turbulence concerns irregular industry vicissitudes, such as firms exiting or entering the industry; structural instability because of fluctuating participants; enhanced innovations; and unpredictable actions by business rivals within and from outside the industry. Industry competitiveness concerns the keenness of the rivalry in an industry (the number of businesses available to supply the product or service), while industry growth refers to augmented demand for the products or services of an industry (Mithas, et al., 2013). The more turbulent an industry, the more competition within the industry and the more growth within the industry, the more it requires employees who are flexible, knowledgeable and capable of delivering, creating and/or sustaining a continued competitive advantage. The number of organisations within the industry determines industry competitiveness. When fewer organisations operate in an industry, there is a lower level of competition and consequently a greater opportunity for business organisations to imitate one another's strategic imperatives. The opposite is true in an industry where more businesses compete for the same market share. In a growth industry, the competition for market share and enhanced profits is lower, while business organisations can more easily maintain higher profit levels. Where the growth in an industry has levelled out, competition can be extreme and investment in key resources may be a requirement for business success (Mithas, et al., 2013). Therefore, in turbulent, highly competitive industries, organisations are compelled to invest in and retain the resources that enable them to maintain a competitive advantage. In such an environment, the organisation would have to decide whether increased expenditure on HRD initiatives would be to the organisation's advantage.

Cascio (2014) indicates that global economic uncertainty after the global financial crisis of 2008–2009 adversely affected employment worldwide, and labour markets are slow to recover from the crisis. In addition, global interconnectedness between countries and business organisations has created a global labour market, enabling talented individuals to seek work globally. Competition for talented employees has now been elevated to the global labour market. A global labour market and the permeability of country borders create enhanced diversity in workforces, which create challenges and opportunities for HRD (Cascio 2014). Income inequalities have wide-reaching effects on the availability of and access to education and learning opportunities for women as well as certain ethnic and class groups (Manuti, Scardigno, Giancaspro, & Morciano, 2015; Matsolo, Ningpuanyeh & Susuman, 2016). Women continue to experience barriers to access to learning opportunities, maintaining gender stereotypes and limiting the development potential for all genders in the workplace, while ethnic and class biases contribute to the lack of learning opportunities for disadvantaged individuals. Those in higher-level positions routinely have more and better access to a variety of learning opportunities both inside and outside the work environment than those in lower-level positions (Manuti, et al., 2015; Matsolo, et al., 2016). In addition, an ageing workforce presents

its own unique challenges to modern HRD (Manuti, et al., 2015; Matsolo, et al., 2016). Furthermore, the structure of the global labour market has changed, with more employers making use of temporary employees. Employers are less likely to invest in the development of temporary employees and prefer to focus on the development of their permanent talent pool, even if those employees are not employed locally, but internationally in the same business (Cascio, 2014).

The HRD function in the organisation is confronted with the same technological challenges as the business organisation as a whole. HRD managers have to decide whether, to what extent and in which circumstances to adopt mobile, social and internet options in the provision of learning opportunities (Cascio, 2014; Lee & Lai, 2012; Noe, Clark, & Klein, 2014). In addition, business organisations should make HRD decisions that support the development of their human capital, as human capital provides the source for competitive advantage in the 21st century (Lee & Lai, 2012; Noe, et al., 2014). Traditionally, business organisations focused on providing formal, face-to-face training and development opportunities for the improvement of their human resources, but the movement is towards a bigger focus on virtual HRD (McWhorter, 2014). The easy availability of technological resources in most organisations is changing the nature of many jobs, and is leading to reductions in workforce, as technological support allows employers to accomplish more with fewer, but more highly skilled, employees (Cascio, 2014). The movement towards virtual HRD implies that HRD should be involved in the design and implementation of learning-related technology infrastructure (McWhorter, 2014).

In the current business environment, the traditional offering by HRD may no longer be relevant. Budgets are constrained and employees may be geographically dispersed, driving towards the increased utilisation of technologically enhanced learning opportunities, such as e-learning, online learning and mobile learning (Lee & Lai, 2012; Noe et al., 2014). However, HRD professionals may also have to take a broader view of learning, moving towards the adoption of a 'continuous learning' strategy in its offerings. Continuous learning encompasses informal learning, deliberate practice, incidental learning, workplace learning and self-development (Noe, et al., 2014). Informal learning involves behaviours and cognition. Informal learning is based on learning through self-reflection, from others and expert sources such as books and online material accessed individually and voluntarily. Employees acquire the knowledge and skills they need without leaving their workplace and while remaining involved in their day-to-day tasks (McWhorter, 2014; Noe, et al., 2014).

The responsible approach to HRD includes concerted efforts by HRD to harvest, nurture and transfer the tacit knowledge of organisational experts to new employees through knowledge sharing. Knowledge sharing can be facilitated by providing for face-to-face interaction, or by making expert organisational knowledge available online (Lee & Lai, 2012; Noe, et al., 2014). HRD may be moving

towards the adoption of the active learning model and social learning model. The active learning model focuses on individual learners as active agents in their own learning, implying the ability to be self-directed learners that can explore their own learning, reflect on their mistakes and are emotionally in control of themselves and their self-driven learning. The social learning model highlights the social milieu in which individual knowledge construction occurs – learning is essentially a social undertaking where knowledge is shared so that individual learning can occur (Lee & Lai, 2012; Noe, et al., 2014). Technology is ideally suited for the provision of active and social learning opportunities. The caveat is that technologically enhanced development opportunities are not inherently more effective than face-to-face training and development. The attraction of technology-enhanced learning is the possible cost savings created by less time spent travelling to facilitate and/or attend face-to-face training opportunities, and less time away from the job. Employees anywhere can access technology-enhanced HRD, at any time and in almost any place. The caveat is that the development costs for technology-enhanced training and development are high, as are the costs of acquiring and maintaining the technological infrastructure to host the learning opportunities (Noe, et al., 2014).

Both the learning content and the delivery method are changing in HRD. Learning content no longer has to be prescribed by an instructional designer or facilitator of learning. The easy availability of information via ICTs broadens the scope of available resources for both the learner and the facilitator of learning (Li, 2013). All the stakeholders in the HRD process have access to richer content. Consequently, learning experiences that engage learners actively can be created, accessed and utilised by the relevant stakeholders. In addition, the evaluation of the effectiveness of any offering from HRD may have to change. There may be a need to move away from the traditional approach of evaluating the return on investment of training to evaluating the popularity of a specific online offering by the number of views (Li, 2013). Just-in-time learning offerings that can easily be accessed by employees when they need them is another trend in the future of HRD interventions in the workplace. HRD professionals should harness the knowledge resources of the organisation to develop and make available online those learning opportunities that will be needed by employees at various levels in the workplace, at the time that they are needed. Inherent in the just-in-time approach to training and development is the need on the part of HRD professionals to be proactive and have sound knowledge of the organisation's operational processes, employee needs and strategic objectives by analysing the organisational data sources effectively (Li, 2013).

Furthermore, the concept of learning in the workplace is highly contested and better described as pliable. The workplace can be seen as a place for learning (where the learning opportunities are mostly formally structured to achieve certain needs and takes place away from the job). The workplace can be a learning milieu (where learning is planned and formal but takes place on the job).

Conversely, working and learning can be viewed as intimately interconnected, consequently defying separation. In the third instance, learning is continuous and a natural outflow of and inflow into work – in effect, the workplace facilitates the concept of ‘learning how to learn’ (Manuti, et al., 2015). All three of the views of business organisations described earlier assume that the workplace is a physical environment. However, this assumption may not be true for the new workplace, where employees may be dispersed in time and place, and may even work remotely from any location.

The above discussion clarifies the need for individuals in business organisations to be self-directed learners capable of utilising the learning opportunities offered by the organisation, contact with peers and information resources available on the internet. Botha (2014) found a strong, positive relationship between adult learners in an ODeLHE context’s employability and self-directedness, suggesting that self-directedness in adult learners can predict their employability attributes. Specifically, there was a notable correlation between self-directedness and a lifelong learning orientation (Botha, 2014). In the post-21st-century work context, employers who know more about the self-directedness of their employees could use the information fruitfully to establish whether the employees would be able to sustain their employability through continuous self-development.

In the light of a constantly adapting competitive environment driven by revolutionary communication technology, business organisations have to balance carefully the imperative to change their HRD philosophies, contexts and offerings with the capacity of the adult learners to agentically engage in and manage their own business-oriented learning (Yourks & Barto, 2015). As employers in the knowledge economy often expect employees to possess the capacities the organisation needs to ensure continued success, previously disadvantaged individuals who may historically not have been exposed to the principles of learner self-directedness may be further disadvantaged by the newest approaches to HRD (Yourks & Barto, 2015). For individuals who were enculturated to the philosophy that an individual exists within a social context and not apart from it, collaborative learning opportunities could be the most appropriate way to learn. Organisations can explore approaches such as ‘learning in organisations’ (LIO) and ‘learning by organisations’ (LBO) which utilise ‘organisation learning mechanisms’ (OLMs) (Barile, et al., 2015; Yourks & Barto, 2015). The successful utilisation of OLMs requires an organisational culture focused on adult learning principles where both adaptive and transformative learning can take place. Adaptive learning focuses on adjusting to changes in the environment by changing current processes, practices, products and services to altered competitive conditions (Yourks & Barto, 2015). Transformative learning focuses on building the capacity to question the status quo, starting with individual assumptions about the world that inform individual perceptions and actions (Mezirow, 1997). In transformative learning, individuals link new knowledge, experience and learning with existing knowledge and competency frameworks, thereby gaining fresh

insights and transforming personal philosophies and practice (Mezirow, 1997). In the 21st century, employers need both the capacity to change current processes as well as the ability to use current knowledge to generate innovations in order to remain competitive (Barile, et al., 2015). The capability to engage in self-directed learning is an essential component of both adaptive and transformative learning (Blaschke, 2012; Yourks & Barto, 2015).

2.3.7 Critical reflection on the knowledge economy and human resource development in the organisational context.

Widespread access to and use of ICT in societies and the resultant growth in service-based industries have created a new economy, called the knowledge economy. Globally, business organisations have accepted the concept of the knowledge economy as the 21st century's primary driver of business organisations. The belief is that the access to ICT also empowers employees and prospective employees to drive their own learning agentically. In South Africa, the access to technology is not as widespread and equally accessible to all individuals as is the globally accepted norm. Socio-economic and cultural variables affect the capacity of learners to access and make use of technology in order to improve their socio-economic circumstances. In a knowledge economy (or knowledge-based economy), employees and prospective employees need to be able to agentically manage their continued learning and professional development in order to ensure their employability. Investing in the continued development of human resources is an essential contributor to sustained business success. In order to improve the capacity of employees to access knowledge resources and agentically manage their own continued development, they should be self-directed learners. The contemporary business environment requires that HRD professionals should create learning environments and learning experiences where employees can manage their own learning as and when they find it necessary. However, since not all employees or prospective employees have equal access to ICT, the role of the HRD professional is two-fold. On the one hand, the HRD professionals should inculcate in employees the capacity for self-directed learning, and on the other hand, HRD professionals should provide opportunities for continued workplace learning. Since South Africa has a historically disadvantaged population who struggle with access to technology, it is imperative for business organisations to know more about adult learner self-directedness in order to put measures in place to inculcate self-directedness in their employees.

2.4 ADULT LEARNING IN THE CONTEMPORARY BUSINESS CONTEXT

Adult learning is vital for boosting organisational innovation and individual growth and employability (Beblavy, Thum, & Potjagailo, 2014). On the other hand, adult learning is a complex, cyclical process driven by the agentic individual, and transpires within the context of lifelong learning (Boeren, 2011; Slev & Pop, 2012). Candy (2000) describes lifelong learning as all aspects of learning that occurs throughout one's life, regardless of where it takes place or how or by whom it is organised. Lifelong learning is correspondingly seen as the result of human thinking and action that evolves into a continuous process of learning – we live and do, therefore we learn (Billett, 2010b). Lifelong learning is considered vital for economic and individual development in the 21st century (Boeren, 2011). Conversely, Billett (2010b) argues that the common assumption that continued learning activities by adults (lifelong learning) are universally good for both business organisations and society may not be true, as the subjective perspective of the individual is apparently ignored. An individual's subjective notions of knowledge need and motivation would influence the desire for and subsequent participation in lifelong learning activities; however, individual desires may not necessarily correlate with the demands of the employer or the current labour market (Billett, 2010b). Not only would individual preference shape the desire to engage in learning activities, it would also shape the choice between various learning activities and the actions taken by the individual during those learning activities. Billett (2010b) consequently requests an acknowledgement that the individual interacting in and with the working world should form a central tenet of adult workplace learning.

2.4.1 Description of adult learning

Adult learning can be briefly described as all the formal, non-formal and informal learning interventions adult learners utilise after entering employment to update their knowledge and skills and remain employable in an ever-changing employment context (Muñoz, et al., 2013). Formal learning relates to the learning that takes place within the formal education system, and which is recognised via officially recognised and accredited certification. Non-formal learning is organised education that comes about outside the formal education system and focuses mainly on the needs of special groups of adult learners, such as women. Non-formal learning usually does not lead to officially recognised or accredited certification, even when offered in the formal education context. Non-formal learning includes workplace-based learning. Informal learning is the learning that takes place while adult students live their lives. Informal learning is usually not organised and tends to be incidental in nature, although it is the result of an intentional decision to learn. Some authors describe informal learning as planned, self-directed learning activities that take place outside the formal education system. Informal learning can take place through conversation, by studying printed or online materials and through television and radio broadcasts (Boeren, 2011).

Kasworm (2008) describes adult learning as 'an act of hope', adopting a more poetic but probably more accurate description of adult learning from the point of view of the learner. Irrespective of the personal antecedents of individual adult learners, all adults who engage in learning experiences later in life do so with the underlying belief that the learning will create a changed, improved future (Kasworm, 2008). As learning occurs in diverse settings, is not easily defined and continues throughout life, whether one is conscious of it or not, one cannot restrict the provision of learning opportunities to one set of providers only (Braumoh, 2010). In addition, a distinction is made between learning while employed (associated with learning experiences offered to employees while they are away from their jobs) and learning while working (which is associated with informal learning experiences produced by discussion with colleagues, accessing information needed while completing a task, observing what others do and asking questions) (Mauti, et al., 2015). Conversely, Billett (2014) postulates that discourse on adult learning should evolve from a distinction between formal and informal learning towards an intensive investigation of the workplace structures, practices, values and norms that facilitate opportunities for learning.

Houle (1961) describes three types of adult learners, defined according to the motivational drivers of their participation in the learning experience (Brockett & Donaghy, 2011). According to Houle (1961), goal-driven learners are mostly encouraged by external reasons such as obtaining a degree, being promoted or qualifying for a better job. Learning content-driven learners are inherently fascinated by the learning content, while activity-driven learners are compelled by complex motives such as the need for social contact, interpersonal interaction, social expectations, status needs or a desire to make a difference in society (Brockett & Donaghy, 2011). Knowles (1975) believes that adult learners are individuals who perceive themselves as agentic, self-directed and largely independent in their learning and lives, rather than less self-directed or more dependent. However, Knowles (1975) also laments the fact that most adults assume a dependent attitude in educational situations, driven by exposure to traditional (pedagogical) teaching methods. In addition, Knowles (1975) believes that adult learners possess well-developed and diverse sets of life experiences that can be utilised productively in all learning interventions. Adult learners mostly engage in learning experiences because they want to master a task or solve a problem and they are prepared to learn precisely because they want to master the task or solve the problem (Gravani, 2015; Knowles, 1975). Knowles (1975) indicates that adult learners are usually intrinsically motivated, for example by curiosity. It is apparent that the core of adult learning for Knowles is the capacity for self-direction. There is some similarity in the descriptions of Houle (1961) and Knowles (1975) in terms of the motivation or reason to learn, but also differences in terms of the role of previous experiences and self-directedness. Adult learners are assumed capable of self-direction in their learning (Botha, 2014; Knowles, 1975). According to Brookfield (1985), an adult learner is one who can engage successfully in critical

reflection. Critical reflection starts out with a capacity to question popularly accepted knowledge and progresses towards the capacity to be healthily sceptic about popularly accepted societal 'truths'. The progress is based on a developed capacity to find and cultivate alternate foundations of knowledge, thereby nurturing different views of a situation or context (Chen, 2014). Conversely, Kuhn and Pease (2006) found that age is not necessarily related to what they call 'executive learning' (metacognitive learning).

Learning as a concept can be briefly described as a transformation in comprehension (closely related to the transformative learning theory of Mezirow (1997)). From an early age, people develop 'knowledge scaffolds' in order to make sense of what they see of the world and the way people interact in and with the world – called inductive learning. When new information becomes known for the individual, the knowledge scaffold is revised, and it is in or through the process of revising the knowledge scaffold that the real learning takes place (Kuhn & Pease, 2006; Kuhn, 2016). The general assumption in adult learning is that increased metacognition comes with age – older people are more likely to engage in metacognitive learning than younger people. Metacognitive learning is learning related to how individuals think about what they learn and what that means for society and the way the world is perceived. Two precepts of learning need to exist for learning to take place, namely (i) a specific level of existing comprehension (existing evidence) and (ii) exposure to new knowledge of existing comprehension (new theory). If it happens that new information alters existing comprehension (or knowledge scaffolds), but the process of altered comprehension is not consciously controlled by the individual, the learning cannot be classified as metacognitive. The heart of metacognitive learning is that the individual is aware of both the existing knowledge scaffold (existing evidence) and the new knowledge (new theory), and actively manages the process of transformation to a higher level of comprehension by consciously incorporating the new theory into the existing evidence through a process of reflection (Kuhn & Pease, 2006; Kuhn, 2016). Conversely, when a learner has an underdeveloped capacity for metacognitive thinking, coupled with a well-developed, thorough, intricate, intense and personally powerful knowledge scaffold (existing evidence), supported by a familiar context, it is more difficult to assimilate new knowledge (new theory) through the application of critical thinking processes. In short, the requirement to think critically about new information (new theory) for assimilation into an already strong and emotionally grounded knowledge scaffold that is supported by a familiar context (existing evidence) is confusing for the individual if the capacity for metacognition is poorly developed (Kuhn & Pease, 2006; Kuhn, 2016). Nevertheless, it seems that adult learners on average do possess a better capacity for metacognitive thinking than children, but this result can in no way be generalised, as some children do show the capacity for metacognitive thinking, while some adults show a lack thereof (Kuhn & Pease, 2006; Kuhn, 2016).

2.4.2 Adult learning principles

There are many interfaces between the principles of adult learning and the learning models traditionally used in tertiary institutions, the most important of which is the student's development of the concept of knowledge (Chen, 2014). In most pedagogical models, the student's progress is from the belief that knowledge is simple, uncomplicated and concrete (knowledge is something that comes from outside, resides in the brain and is to be used to pass an examination or test) towards a comprehension of knowledge as fluid, abstract, relative and personally constructed (Anderson, Johnston, & McDonald, 2014; Chen, 2014). At some crucial point, a change occurs within the student and learning moves from being externally focused (use knowledge to pass an examination) to an internal focus (use knowledge to grow personally). Only in this final stage is knowledge considered personally meaningful – once again supporting Mezirow's (1997) theory of transformative learning. Adult learning principles propound that learning should be personally meaningful to the participants, that learning should lead to personal development and that there are multiple world views, therefore knowledge is not cast in stone (Knowles, 1975). Furthermore, reported research suggests that adult learners should be progressively exposed to more control and self-direction in their learning journey the further they progress on this journey, in order to inculcate metacognition and self-regulation as precursors to the development of epistemological capacity (Anderson et al., 2014). Self-direction in learning focuses on the capacity and willingness to be an active agent in one's own learning, actively managing the process in order to achieve some personal learning goals (Botha, 2014; Knowles, 1975).

However, there are also significant differences in the learning approaches of adult learners, which include the following (Chen, 2014):

- Adult learning focuses on personal growth and transformation as necessary for developing a social consciousness and concomitant action on the learning.
- Life experiences are vital to adult learning – linking learning interventions with life experiences makes the learning real to adult participants and increases their willingness to participate fully.
- Adult learning propounds student self-directedness.
- Adult learning experiences revolve around the solving of significant personal problems or achieving significant personal goals.
- Adults have a well-developed capacity for critical reflection.

James et al. (2013) found that adult learning in the work milieu can be conceptualised as being interactive, occurring along a scale or continuum and consisting of component knowledge (knowledge

of a specific organisational system) and architectural knowledge (knowledge of the entire organisational system). Within the workplace context, adult learner self-directedness can be described as the personal ability to manage personal learning and development agentially, by planning individual learning, implementing those plans and eventually evaluating the learning experience (Knowles, 1975; Firat, Sakar, & Yurdakul, 2016; McCray, 2016). Knowles (1975; Blashke, 2012; Firat et al., 2016) indicates that self-directedness consists of internal states and observable behaviours.

When adults participate in learning experiences, certain specific characteristics of the learners should be carefully considered in order to facilitate successful learning. Adults who participate in lifelong learning experiences do so within significant social, time, professional, competence and financial constraints, since adult learners have various roles to fulfil, only one of which is that of a student. (Dernova, 2015). Adult learners can more easily create connections between what they learn, their personal context and their work context because they are better able to engage in deep learning. Consequently, adult learners possess a well-developed capacity for critical reflection (Green et al., 2015). Conversely, adult learners may not necessarily possess the competence they require to be successful in their learning journey, as the habits inculcated through previous learning experiences may be difficult to break. The influence of previous, possibly negative learning experiences also affect adult learners' willingness to participate in lifelong learning opportunities (Firat et al, 2016; Knowles, 1975; McCray, 2016). Adult learners' motivation is affected by a variety of factors, such as personal desires and fears, the behaviour of the learning facilitator, the structure and content of the learning material and characteristics of the learning milieu (Green et al., 2015).

In South Africa, the notion of lifelong learning, particularly formal learning is uncharted territory for most adult learners, as they are often the first in their family to embark on this journey (pioneer students). In the light of the challenges faced by adult learners, and the principles of adult learning, an argument can be made for a flexible approach to the design and presentation of learning experiences for adult learners (Cornelius, Gordon & Ackland, 2011). The idea is to allow adult learners to control their own decisions, to create individual connections between new knowledge and individual professional activities while simultaneously emerging as a member of a community of learners – in effect, to inculcate the concept of adult learner self-directedness in both workplace and tertiary education contexts (Cornelius et al., 2011). As little research is reported in the South African milieu on the notions of control, choice, agentic learning behaviour or self-directed learning, a need exists to delve into the unknowns of adult learners' capacity and willingness to take agentic control of their own learning journeys.

When discussing the concept of adult learning, one should also consider the opportunities offered to and utilised by adult learners for participating in learning experiences, whether formal, informal or non-formal. Beblavy et al. (2014) report that in European countries, the participation rate in adult learning opportunities, specifically by low-skilled adults, is strongly influenced by the economic and social support initiatives of the specific country. The European countries that present the lowest levels of socio-economic inequality are those countries with a coordinated market economy and strong socio-economic support (also for adult learners), while countries with under-developed market economies that provide strong socio-economic support have low participation in adult learning. In the latter countries, labour market demands seem to describe participation in adult learning opportunities more accurately than do labour supply; consequently, government-led policies that endorse the participation of low-skilled labour market participants in adult development opportunities seem to be essential (Beblavy et al. (2014).

Beblavy et al. (2014) found that in more economically developed countries, younger labour market participants (age group 25–29) tended to make more use of adult education opportunities than older labour market participants (age group 50–54), with a general increase overall in adult learning participation. The study also found a slight decrease in all age groups in participation in adult learning opportunities in 2010, which corresponds with the global banking crisis of 2008–2009. In addition, Beblavy and others (2014) found that, in general, older adults in more developed market economies are less likely to attain higher qualifications later in life, while the opposite happens in countries with emerging market economies. In European countries, women tend to show increased participation in adult learning opportunities. Conversely, Kolawole (2011) found that fewer women (35.3%) than men (64.7%) participated fully in an adult literacy project in Nigeria. Domestic responsibilities and farm work were the two main reasons the participants gave for not being able to participate fully in the project. On the positive side, the participants reported favourably on their social inclusion and the opportunities the project opened up for them (Kolawole, 2011). As little research could be found from Africa on the participation and success of various gender, race and age groups in further education studies, a clear gap exists in the documented research. A similar situation can be found in South Africa, where only approximately 6% of adults progress to tertiary education (Department of Higher Education and Training [DHET], 2013). A paucity of research in the uptake of and success in adult education in South Africa requires analysis and the production of best practice guidelines in the field of adult learning, specifically because South Africa struggles with socio-economic inequalities even after 20 years of democracy.

2.4.3 Workplace self-directed learning

Workplace learning is a vital component of 21st-century business organisation success (Yourks & Barto, 2015). Workplace learning is relevant to the interactions of employees with each other and their physical, social and cultural work contexts. Since workplace learning is often embedded in everyday work practices, it is frequently non-formal or informal (Lundgren, et al., 2017). However, workplace learning can also be formal, in that gaining practical work experience can form part of the completion of a qualification. In addition, HRD professionals can implement workplace-learning opportunities in order to develop the organisation's capacity to adapt easily and creatively to fluid external environments. Workplace learning can consequently be described as being embedded in the workplace and embodied in the employees, since it requires cognitive and affective engagement from the participants (Lundgren, et al., 2017).

As stated previously, self-directed learning is the capacity and willingness to take responsibility for personal learning and development (Knowles, 1975; Tan, 2017). Self-directed learners usually set personal learning goals, identify and implement suitable learning strategies, keep track of their progress and adjust their learning strategies where appropriate. In addition, self-directed learners utilise various resources in their learning and manage their time effectively. However, self-directedness in learning is not a ubiquitous characteristic.

Individuals can either choose, or be empowered to take responsibility for their learning journey in one situation, while adopting dependency as a learner in another (Knowles, 1975; Tan, 2017). In addition, self-directed learning may manifest in formal, informal and non-formal learning milieus (Knowles, 1975; Stebbins, 2017). Self-directed learning revolves around knowledge and competence acquisition and creation in order to continue learning and developing throughout an individual's lifetime. As stated earlier, adult learners usually engage in continued learning in order to achieve a personal goal. Consequently, self-directed learning cannot be divorced from lifelong learning. The inculcation and nurturing of self-directed learning orientations are therefore vital in the stimulation and management of lifelong learning (Stebbins, 2017; Tan, 2017).

When viewed in the light of adult learning principles, self-directed learning focuses on the learning context. According to Knowles (1975), adult learning is enhanced when adult learners are empowered to make decisions about what, how and when to learn. Consequently, the facilitator of learning should cultivate and nurture a learning environment where adult learners are given at least some control over their learning experiences (Park, Robinson & Bates, 2016). However, self-directed learning is a multi-faceted concept that includes motivational orientation, agentic learner behaviour, and self-reflection on learning beliefs, behaviours and strategies in order to adjust them where necessary

(Tan, 2017). In addition, self-directed learning can exist on a continuum, and can develop over time (Botha, 2014; Knowles, 1975; Tan, 2017).

Gijbels, Raemdonck and Vervecken (2010) found a significant positive relationship between adult learner self-directedness and workplace learning. Adults who both work and study who report high levels of self-directedness are likely to engage actively in workplace learning. Reported research indicates that positive associations exist between adult student self-directedness and personal as well as academically related concepts such as creativity, curiosity, academic achievement and satisfaction with life (Boyer, Edmondson, Artis, & Fleming 2014). Specifically, Boyer and others (2014) found a significant, positive correlation between self-directed learning and self-efficacy (supporting the finding of Botha [2014] that success orientation for adult learner self-directedness had the strongest influence on self-directedness).

Although Boyer et al., (2014) also reported a positive relationship between self-directed learning and internal locus of control, motivation and support, as well as academic performance, the relationship was not as strong as the one between adult learner self-directedness and self-efficacy. The value of this study is that it proves that students who engage in self-directed learning are more successful academically (Boyer, et al., 2014). The inculcation of adult learner self-directedness in academic institutions is consequently of vital importance in order to effectively prepare students as future or current employees for the 21st-century workplace. However, the study of adult learner self-directedness per se is not sufficient. Studies on the socio-demographic variables that affect adult learner self-directedness would make a more positive contribution to university teaching practice and workplace learning facilitation in a diverse country such as South Africa.

In a Korean study, Cho, Ellinger and Hezlett (2006) found that no significant differences presented between the different gender groups and readiness for self-directed learning as measured by the Self-directed Learning Readiness Scale (SDLRS) and the Bartlett-Kotrlík Inventory of Self-learning (BKISL). This result differs from the result found by Botha (2014), which indicated significant differences between men and women as regard self-directedness (as measured by the ALSDS). Cho, et al., (2006) found that students at a higher grade level in tertiary education showed a higher propensity for self-directedness, which could be interpreted as a difference between age groups and self-directed learning, which supports Botha's (2014) finding of significant differences between self-directedness and age groups. Cho, et al., (2006) further found that students who performed better academically showed a greater propensity for self-directedness.

In a Taiwanese study focused specifically on adult learners and their internet self-efficacy, Chu and Tsai (2009) found that readiness for self-directed learning has a significant effect on adult learners'

inclination for intellectually challenging learning tasks and activities, but a lower preference for reviewing the information provided to them. According to Chu and Tsai (2009), the latter finding may be explained by a difference in the inculcation of critical reflection in students from Western and East Asian cultures. In addition, it may be possible that adult students will not feel a similar need to younger students to interact with their peers in the educational situation (Chu & Tsai, 2009). Chu and Tsai (2009) found that the higher the levels of readiness for self-directed learning in adult students, the bigger their need to create their own concepts find solutions to problems and discover innovative ways to complete learning activities. Chu and Tsai (2009) indicate that the capacity for self-directed learning is not equally developed in all adult learners; consequently, the tertiary education field should inculcate the cultivation of self-directed learning in its educational offerings. No information could be found to either support or refute the research in the South African context.

Yoo and Huang (2013) reported significant differences in intrinsic motivation between men and women participating in online learning in education. Women appear to present with higher levels of internal motivation than men do, but no significant differences were reported in extrinsic motivation. Intrinsic motivation is considered a vital element of self-directedness in learning (Yoo & Huang, 2013). Differences were also reported between various age groups, with the age groups in their 20s and 40s reporting stronger short-term external motivation and the age groups in their 20s and 30s reporting stronger long-term external motivation.

Kim and McLean (2014) propound that workplace learning cannot be investigated when it is divorced from cultural outlooks, since the cultural context of both the developer and the receiver of learning experiences influence the development, implementation, evaluation and utilisation of the learning experience. Cultural contextual influences are especially apparent in informal learning in workplaces. In addition, the capacity to be a self-directed learner is propounded as an essential competence in order to remain competitively employed and employable in the 21st century workplace (Kim & McLean, 2014). Kim and McLean (2014) found that workplace are effective learning environments for managerial staff, and that self-directed learning practices effectively contribute to the learning of such employees.

Adult learning contexts require the inculcation of capacities such as job-specific competence as well as the capacity to learn effectively and to think critically about individual learning (Blaschke, 2012). In the light of the above, and taking into account the apparent (possible) differences in inclination for self-directed learning between various race, age and gender groups, a South African study on the psychometric properties of a self-directedness scale developed specifically for the South African ODeL context could make a valuable contribution to the existing body of knowledge on adult learner self-directedness.

2.4.4 Adult education

According to Boeren, Nicaese and Beart (2012), adult education is a function of the individual learners, the education providers and the regulatory powers of government. Participation in adult learning opportunities is consequently not only dependent on the initiative or agency of the individual learner (De Greef, Verté, & Segers, 2015). Globally, educational institutions are held more accountable than in the past for the quality of the graduates, they deliver to the labour market and the quality of the qualifications offered (Aili & Nilsson, 2015). In addition, the increased requirement of accountability, cuts in funding and, specifically in South Africa, the demand for free higher education led by the #FeesMustFall campaign, have placed severe financial pressure on tertiary institutions that are already being pressured to fill the demand for specialised competence (Bothale, 2015; Dhlamini, 2016). South Africa's government-funded higher education sector receives only 1.4% of the GDP, which is considered low in comparison to Africa, according to Minister Blade Nzimandi, the South African Minister of Higher Education and Training (Nkosi, 2015).

The massification of tertiary education, with more and more students registering at higher education institutions worldwide, is viewed as proof that knowledge economies show increased demands for higher-level skills in their workforces (Alfonso & Garcia, 2016; Jonck, 2014). On the other hand, the explosion of the demand for tertiary education has created a conundrum for the strategic direction and management of institutions of higher learning who are struggling to cope with the increased demand (Aili & Nilsson, 2015; Bathmaker, 2016). The increased demand for higher education is inextricably linked with a decrease in throughput and higher dropout rates (Jonck, 2014). The throughput rate is the ratio of the number of students who enrol for a specific qualification to the number of students who eventually successfully complete the qualification within the required (prescribed) timeframe. Even for successful graduates, the outcome may not be positive, as an increased supply of graduates to the labour market has a negative effect on the employment opportunities of new graduates (Jonck, 2014). In order to promote the accessibility of education, the concept of open distance education was coined (Peters, 2010).

Open distance learning is commonly described as education that delivers learning material and learning opportunities to student participants who are geographically dispersed, inter alia by using ICTs (Peters, 2010). ODeLHE is perceived to be an economical way to expand access to quality higher education, while at the same time being sufficiently flexible to serve the needs of working adults (Letseka & Pitsoe, 2014). ODeLHE is largely based on the notion that ICTs would advance the participation in education of those traditionally excluded from tertiary education because of economic or geographical imperatives (Kang & Yang, 2016). In addition, the provision of open learning material

via the 'open courseware' option, the later movement to massive open online courses (MOOCs) and the addition of 'gamification' features in online offerings have attempted to democratise tertiary education. Furthermore, ODeLHE is creating spaces where students can participate in collaborative learning in order to nurture the required competencies to ensure employment after graduation (Peters, 2010). Moore (1989) indicates that distance learning activities are characterised by interaction of the learner with the following: (i) the study material (learner–content interaction), (ii) the university teacher (learner–teacher interaction) and (iii) the peers or fellow students (learner–learner interaction). Moore (1989) believes that optimal interaction (combining all three types) allows students to cultivate the learner autonomy necessary for success in distance education.

Later researchers identified further types of interaction, namely the interaction of the learner with the interface (Hillman, Willis, & Gunawardena, 1994), university interaction with the content, university teachers interacting with one another and learning content interacting with other learning content (Anderson, 2003, Anderson & Garrison, 1998). In addition, Sutton (2001) identified vicarious interaction. Watson (2013) investigated the interactions of postgraduate ODL students in postgraduate qualifications in Australia with people other than their fellow students and teachers, and found that some students had widespread exchanges with others in their lives, while some students had minor interactions. The number of interactions in which the students seem to engage seems to be related to the level of overlap between their studies and work milieus, their social units, their personal preferences to interact with others about their studies and the design of the programme. The students who initiated the most interaction with others were involved in study programmes directly related to their current jobs and in social and work situations where they had contact with knowledgeable people to which they could productively relate, were enrolled in learning programmes where the design required them to create associations between the content and their worlds, and were inclined to share their learning experiences (Watson, 2013). Watson (2013) found that the interactions students initiated with others in their life space contributed significantly to their learning, specifically to the acquisition of conceptual knowledge and metacognitive capacity. In support of Moore's (1989) beliefs and Watson's (2013) findings, open distance education has been epitomised as the driver of the development of creative, innovative thinking in its graduates (Ivala, 2011).

Conversely, it should not be assumed that the utilisation of technology, in whatever form, in the provision of learning materials necessarily creates an environment for collaborative learning and the development of the higher-order and critical thinking skills required of university graduates in the 21st century (Ivala, 2011). The use of technology only indicates a different or additional delivery method of the learning material. The instructional approaches used in the development of the relevant learning material create learning experiences that have the capacity to form rich learning, but they do

not necessarily lead to rich learning (Ivala, 2011). In support of the positive effects of online learning, Halabi, Essop, Carmichael and Steyn (2014) report a positive relationship between online participation and academic performance in an entry-level tertiary education course, which may indicate that active online participation may increase academic success. However, Halabi, et al., (2014) also caution that adoption of online media in higher education may further marginalise those who are economically disadvantaged. Kang and Yang (2016), on the other hand, found that life factors (such as time available, place to study, resources for study and study skills) was a solid negative predictor of two types of online interaction between African-American learners, namely interactions between the learners and the university teacher and interactions between the learners and the study content. On the other hand, the same study found that a robust positive predictive relationship existed between life factors and interactions between peers (learners). The caveat is that the study was not conducted within the South African milieu and can therefore not necessarily be generalised to South African ODeLHE students.

There is a historical connection between ODeLHE and adult learning (Aluko & Shonubi, 2014). The link between adult learning and ODeLHE is significant in South Africa, where most of the users of ODeLHE are working adults (Aluko & Shonubi, 2014; Botha, 2014). In South Africa, education and training are connected through the skills development legislative framework, which provides for the improvement of the skills of both employed and unemployed people through various interventions, such as workplace learning, vocational programmes and formal educational contexts (Tshilongamulenzhe, 2012). Furthermore, education and training are seen as commercial facilitators for successfully competing in the knowledge economy (Jonck, 2014). Learning can be conscious or unconscious, take place in formal, informal and non-formal settings and can be planned or accidental. Consequently, the investigation of adult learners' study habits, study competencies and preferred study environments cannot be confined to one context only, but should take into account both the education of adult learners and the workplace learning of adult lifelong learners (Braumoh, 2010). The ODeLHE environment in South Africa provides a unique opportunity to involve both the workplace learning and formal higher education learning processes of adult learners, as most of the adults enrolled in higher education at the largest ODeLHE institution in South Africa are working adults (Botha, 2014).

2.4.5 Open Distance e-Learning in South Africa

In South Africa, the ODeLHE landscape is complicated by various policies and political ideals. After the 1994 democratic elections, ODeLHE in South Africa had the mandate to provide access to education for those working adults who were marginalised in the past as regard access to tertiary

education opportunities (Letseka & Pitsoe, 2014). The post-apartheid government wished to bring about not only political change, but also social change (through creating pathways to social equity) by implementing the relevant policies of social, political and economic change simultaneously and not sequentially (Badat, 2009), creating a complex web of incompatible goals for higher education in general (Cloete, 2014; Letseka & Pitsoe, 2014). One of the pathways to social equity is through tertiary education, which has led to an explosion of the demand for tertiary education in South Africa (Badat, 2009). Unfortunately, increased access has not necessarily led to higher success rates. This is due to divergent factors such as under-preparedness for the rigours of tertiary education, the fact that many university entrants are the first of their family to enrol in higher education, lack of access to technology and social networks to support them in their studies and poorly developed higher-level thinking skills due to poor basic education (Cloete, 2014; Letseka & Pitsoe, 2014). Most South African students in higher education lack skills such as the ability to read and write proficiently in English, which is the main language of instruction at most institutions (Kane, Lear, & Dube, 2014). When it is considered that adult learners at any higher education institution are engaged mostly in learning activities that revolve around reading, a lack of skills in reading comprehension could indicate that their capacity to understand academic texts fully would be negatively influenced by their poorly developed reading capacity. In an ODeLHE environment, students read almost exclusively – either online or printed materials in addition to prescribed books (textbooks), as well as interactions with other students via an online medium. An inability to read fluently can adversely affect a student's capacity to cope with the rigours of tertiary education (Kane, et al., 2014). Furthermore, South African students display a consistent inability to rate or predict their own academic achievements accurately – most students over-estimate their own performance. Academically poor students are specifically unable to predict their performance accurately (Kane, et al., 2014).

Metacognition, which is the individual capacity to reflect on one's thinking (and learning) processes, is a vital requirement for effective ODeLHE (Kane, 2014). Only when students are capable of metacognitive thinking are they able to identify the gaps in their own knowledge scaffolds and to find the relevant material to fill those gaps. Students who over-estimate their own capacities have not yet cultivated the ability to identify the gaps in their knowledge accurately. Metacognition is further viewed as essential for the application of theoretical knowledge to practice and vital to self-directed learning (Kane, et al., 2014). The unique context and mandate of ODeLHE in South Africa creates exceptional challenges for ODeLHE institutions, such as the provision of relevant, timely learner support along with tuition material, while at the same time striving towards increasing the number of graduates without compromising on standards (Letseka & Pitsoe, 2014). The ODeLHE environment requires students to be highly self-directed in their learning, to the extent that they can manage to learn effectively, either alone or by organising themselves into study groups, and can manage to be

successful in their learning with minimal help and support from the academic teacher (Letseka & Pitsoe, 2014). Knowledge of the capacity of students for self-directed learning when they enrol for tertiary education can contribute to the design and delivery of learning materials and the creation of learning milieus that progressively inculcate in adult learners the capacity to manage their own learning journey agentially (Botha, 2014).

Globalisation has affected tertiary education in South Africa in two ways, namely by a distinct growth in the private provision of higher education programmes and through the changing nature of academic work (Weber, 2011). The growth in private tertiary education has created a context where state-funded higher education institutions, which used to dominate the provision of tertiary education in South Africa, now face intense competition at a time when state subsidies are tied to more stringent performance requirements (Weber, 2011). Academic work is no longer viewed, as valuable in itself; nowadays, academics and academic institutions have to account for their use of public money by reporting on 'commercial' issues such as effectiveness, efficiency and accountability – quantitative measures of university performance are now paramount. In addition, the academic programmes offered are subject to scrutiny as regard the validity of the offering, subject matter, teaching processes, customer satisfaction and reliability of assessments (Weber, 2011). Academic freedom is also not the inviolate convention it once was. A general belief exists that knowledge is not only of scientific value, but should also be measured by practical applicability. This is in direct opposition to the traditional and accepted way of knowledge generation in academic institutions, where hypotheses are formulated and statistical measures utilised to analyse the data collected in a research study to produce research results that are eventually reported on in scholarly journals (Weber, 2011). The drive towards diversification of the staff profile of state-funded tertiary institutions in South Africa affects higher education institutions (Joubert & Martins, 2014). Apart from the organisational culture implications, universities are also faced with a demand to appoint people representative of the various race groups in South Africa from a small pool of individuals with the required talent in terms of qualification and experience (Joubert & Martins, 2013).

Technological advances have had an impact on higher education, similar to the impact on contemporary business organisations (Tierney, 2014). Twenty years ago, people mostly read printed books, newspapers and magazines. These days, many young people read online publications. In the previous century, bookstores and libraries were the keepers of the books; nowadays, one can order almost any kind of book online. In the past, mail was delivered via the post office; these days one can immediately receive an e-mail or instant message using any smart device as long as one can afford to purchase both the device and the data necessary for continued connectedness. In the 21st century, people want news and information immediately; they are not content to wait (Tierney, 2014). The

global imperative to 'go online' has affected South African higher education in a similar fashion. However, in the South African context there are a few caveats.

The universal belief that ICTs are accessible and affordable globally may create the impression that all students at tertiary institutions prefer to study online, given the flexibility online study seems to afford. Conversely, as was described previously, in the African context, ICTs are neither universally available nor affordable (Letseka & Pitsoe, 2014). In Africa, post offices still deliver the post (although not necessarily efficiently), and people still read newspapers or listen to the news bulletins on broadcast radio to get the latest news. In Africa, the number of students with access to the ICTs required to study online is limited (World Economic Forum, 2015). South Africa may be a hub of economic and technological advances, but social and income inequalities still persist even after 20 years of democracy, which has disenfranchised many people in terms of ICTs and their capacity to open up new sources of information and education (Letseka & Pitsoe, 2014; Minnaar, 2011; World Economic Forum, 2015d). Nevertheless, most South African tertiary institutions are moving into the world of online learning (Minnaar, 2011). Conversely, Minnaar (2011) found that students should be judiciously chosen for online learning, they should feel comfortable in the online environment and they should possess the necessary technical acumen to work effectively online. In addition, reliable and stable technological and electrical infrastructures on the side of both the institution and the student are essential requirements. Africa as a whole currently struggles with unreliable technological infrastructure and electricity supply, which adversely affect the online learning possibilities that may exist (Minnaar, 2011).

A further demand made on higher education in South Africa is awareness of the domestic and global skills requirements of the labour market, which creates pressures to expand social outreach or community engagement initiatives as well as responsiveness to labour market fluctuations (Letseka & Pitsoe, 2014; Weber, 2011). While the demand for higher education is increasing rapidly, business organisations are arguing for more vocational-oriented qualifications to support the competencies that businesses require (Aili & Nilsson, 2015). In addition, graduates are not only expected to master the fundamental knowledge, principles, theories and beliefs of their subject discipline, but also to display and develop related competencies, such as networking, collaboration in learning, an ethics framework and the capacity to be active agents in their own continued learning (respectively called 'adaptive' and 'extended' professional learning) (Aili & Nilsson, 2015). The decrease in graduate employment over the past two decades in South Africa underlines the expectations of employers that graduates should possess more than subject-specific knowledge (Jonck, 2014).

The immediate effect of an expansion of higher education access is the decrease of the demand for and value of lower-level skills in the relevant labour market. In such a labour market, the skills

premium increases (Jonck, 2014). The skills premium is the difference in the income earned by skilled labour market participants as opposed to unskilled labour market participants (Jonck, 2014). The dichotomy in South Africa, which has high levels of unemployment, increasing levels of graduate unemployment and a shortage of relevant skills in certain economic sectors (reportedly, engineering, science and technology), creates a complex context of demand for the skills actually required by employers (but not adequately supplied by tertiary institutions) (Jonck, 2014). The way that labour demand and supply are conceptualised and reported creates a dislocation between labour demand and supply, as the demand for skills seems to be focused on the science and technology sectors, where there are relatively few vacancies, while employers report an inability to adequately fill vacancies for managers, engineers, practitioners of law, medical staff and financial staff (Jonck, 2014). In order to address the workplace requirements of employers, quality, valid and reliable work experience in some form or other has to be inculcated in the higher education curriculum (Jonck, 2014).

In contrast, some scholars argue that it is not the role of universities to prepare graduates for a specific mode of earning a living, but rather to inculcate the capacity in graduates to apply critical thinking autonomously and utilise their constructed knowledge appropriately in diverse situations (Aili & Nilsson, 2015). Professionals should not only know how to apply the principles of their profession in practice, but should be able to practise them successfully in order to be professionals. It may be true that some tertiary preparation is necessary for specific occupational contexts, but much of the application of work techniques is absorbed in the workplace. Consequently, some advocates call for professional bridging programmes such as internships, work placements and work-integrated learning, which many tertiary institutions are supplying (Aili & Nilsson, 2015). This is however a difficult goal to achieve in the ODeLHE environment, where most of the adult students are already working, and where student numbers and geographic distribution of the students may hinder an effective work placement or work-integrated learning scheme.

Research reports that significant differences exist between the various gender, race and age groups as regard adult learner self-directedness, as well as participation in adult learning opportunities (Beblavy, et al., 2014; Botha, 2014). Conversely, an adult student's socio-economic situation may influence the student's willingness to participate in, persist and achieve success in adult education opportunities (Boeren, et al., 2012; De Greef, et al., 2015). In addition, some socio-biographic factors that may also affect adult students' success in learning endeavours have not yet been researched in South Africa, for example adult learners' employment status, occupation, socio-economic situation, being depended upon financially, access to a library, access to a computer, proficiency in English, number of modules for which the learner was enrolled and who was paying for the learner's studies.

A thorough study of the socio-biographical variables mentioned will contribute to a better understanding of adult learners in the South African ODeLHE milieu, the challenges they face and the measures that can be employed to ensure academic success. Given that HRD and adult education have become interlinked in the 21st century, the development of adult learners should not be the focus of only educational institutions or only employers. Rather, adult learner development should be a triangular relationship between the individual, the employer and education institutions, since each has a unique and specific role to play in the overall growth of the person and subsequently the organisation (Yourks & Barto, 2015).

2.4.6 The socio-biographic influences on adult learning

Gender, race, age and other socio-demographic variables strongly affect participation in adult learning opportunities (Boeren, 2011; De Greef, et al., 2015). Even in developed economies where little socio-economic inequalities are recorded, women are still expected to accept most of the responsibility for household activities and child rearing patiently (Boeren, 2011). The role expectations of women create barriers for participation in lifelong learning opportunities in an era where it is presumed that individual learners will take a more agentic approach to their own lifelong learning (Boeren, 2011). In a country such as South Africa, where socio-economic and gender inequalities are rife, the barriers would presumably be all the more unsurmountable. In addition to gender, race, age, marital status, the number of children in a family and employment status seem to predict social exclusion or social inequality (De Greef, et al., 2015). De Greef, et al., (2015) found that race and marital status positively influence adult learners' perceptions of social inclusion in the Netherlands. A paucity of South African reported research in the adult education milieu requires further investigation of this topic. What can be agreed upon is that lifelong learning requires from adult learners the capacity to be self-directed, active agents in their own learning in order to cope with the vicissitudes of life and work (Siivonen, 2016).

Adult learners in European countries who feel positive about their learning experiences, specifically in tertiary education, are more likely to persist in their educational endeavours and achieve superior outcomes (Boeren, et al., 2012). The improved participation and results relate strongly with the adult learning principles of reason to learn and readiness to learn that were explained earlier. On the other hand, vulnerable adults who come from socially disadvantaged backgrounds have more trouble with persisting in adult learning experiences (Crowther, Macklachlan, & Tett 2010). Conversely, students who have been empowered to clarify their own learning goals, were encouraged to persist in their studies, were provided with timely and constructive feedback and who personally recognised increased individual self-efficacy were more likely to persist with their academic endeavour. In

addition, working from a strengths point of view instead of a weaknesses point of view in terms of the individual's capacity to learn supports the development of self-efficacy beliefs in vulnerable adult learners (Crowther, et al., 2010). In addition, the socio-economic and emotional features of the adult learners should be closely aligned with the features of the learning environment, the administrative aspects of the course and the tuition philosophy, such as course content and assessment methods (Crowther, et al., 2010).

Adult education is acknowledged to be a primary driver for social and economic development, but can also inadvertently contribute to the perpetuation of social and economic disparities, since the outflows of adult education may be disproportionately dispersed among the beneficiaries (Cincinnati, De Wever, Van Keer, & Valcke, 2016). As South Africa as a whole has to deal with great socio-economic disparities that are disproportionately concentrated on previously disadvantaged individuals from poor socio-economic backgrounds, it is imperative to ensure that the educational resources are utilised effectively and efficiently to contribute to the socio-economic development of the most needy citizens (Frempong, Reddy & Kanjee, 2011). According to Cincinnati, et al., (2016), younger adults who are well qualified and employed are more likely to participate in adult education, which indicates that the many students in South Africa who do not have the resources to pursue full-time study may also be disadvantaged by participation in ODeL higher education. The view is supported by Knipprath and De Rick (2015). In order to mitigate the possible knock-on effect of unfair disadvantage, information on how individual differences influence adult learner self-directedness in ODeLHE is vital for the existing body of knowledge. In addition, studies on student success indicate that socio-economic factors, cultural factors, language ability, student motivation and student study behaviour all affect student academic success, but appear to have a negligible effect on student self-directedness (Oliviera & Simões, 2006). However, since the contexts of students in Africa differ from those abroad, and since Botha (2014) did find significant differences in various gender, race and age groups' self-directedness, there is a need to explore the influences on student success specifically as it relates to student self-directedness in the South African milieu (Zepke, Leach & Butler, 2010).

2.4.6.1 Individual differences in learning

Cassidy (2012) describes individual differences as regards learning as the individual attributes, dispositions, proclivities and capacities of learners that may influence their learning journey. Individual differences may influence the assimilation of information and learning behaviours of students positively or negatively. Gender, age, culture, ethnicity, previous experience and cognitive capacity are examples of the individual differences in learning that have been studied as they relate to academic success (marks or grades). The individual difference variables that relate to adult learner

self-directedness that have been studied include dispositions, values, motivations, awareness, and emotions (Cassidy, 2012). Reported research indicates that psychological factors directly influence self-directedness of tertiary education students, whereas socio-demographic factors appear to have an indirect effect. However, the stated research focuses on European and American students, excluding cultural contexts such as the African context.

Students grow into competent, self-directed learners. Social cognitive theory propounds that the growth process is affected by differences in language comprehension, existing knowledge scaffolds and the individual ability to make social comparisons and gauge ability (Moseki, & Schulze). Adult learner self-directedness is not only a function of students' internal convictions, learning behaviour and learning context, but of the students' habitus and habitat. Habitus is described as the entrenched habits, attitudes and competencies that inform and form life experience (Bourdieu 1997). Habitat is the environment in which individuals live, grow and flourish. Habitat therefore encompasses time, space and historical context (Välismaa & Nokkala, 2014). Time, space and historical context influence the cultural and economic environments of social systems and in consequence influence individual behaviour (Välismaa & Nokkala, 2014). Moseki and Shultze (2010) report that time management and utilisation are related to student success. It would therefore be a grave mistake to use historical, cultural, social and economic contexts merely as causal clarifications of human behaviour without bringing careful consideration of the cultural nuances to the research project in order to appreciate the influences of habitat on habitus in ODeLHE learning (Välismaa & Nokkala, 2014).

2.4.6.2 Time management

Time management seems to be a concern for adult students in ODeLHE (Anderson, et al., 2014; Thibodeaux, Deutsch, Kitsantas, & Winsler 2017). It appears that adult learners not only struggle to schedule sufficient time to study, but also struggle to gauge how much time should be spent studying each subject or course. Geduld (2016) reports that for low achieving students at a residential university specific time management actions such as scheduling and utilising the best time to study were challenge, while these aspects of time management were not a problem for high achieving students. In an American study of first year students, both planned and actual academic hours engaged in studies related to higher self-regulated learning and proposed grade point average (Thibodeaux, et al., 2017). No information is available in the South African ODeLHE context. Perceptions of time and how time is planned and utilised are particularly relevant to the African milieu in general. In certain cultural contexts, time is cyclical, not linear. In addition, time, person and place are interlinked. No person can be in more than one place at one time. When we move we are progressing in time as well as in place or space (Välismaa & Nokkala 2014).

The interlinked concept of time, place and person is illustrated in the African worldview, where the person is linked to everything and everyone else and lifelong learning is ingrained in the very existence of individuals and communities (Avoseh 2012). According to Avoseh (2012) the purpose of education in the African context is to 'build and active citizen' who finds an equilibrium between knowledge and natural ability while also ploughing the harvest of schooling back into the broader community in order to plant the seeds for further education. The transfer of knowledge in the African context relies heavily on oral communication, supported by shrewd observation of the surrounding context. Consequently, basing the study of student self-directedness purely on western preoccupations with knowledge generation, communication and transfer, and western beliefs about education could prove a grave error in judgement. A focus on the use of time in ODeLHE, specifically the time available for study and how time is used, may therefore contribute insight into students' approaches to ODeLHE studies in the African context.

2.4.6.3 Cultural influences on learning

The support that adult learning principles, self-directed learning and transformative learning theory have enjoyed may create the impression that the principles expounded in the theories are ubiquitous, relevant to all individuals in all circumstances (Cassidy, 2012; Ntseane, 2011). However, that may not be the case and a thorough investigation of the various socio-economic and cultural influences on the capacity of adult learners in different circumstances to engage in self-directed learning are needed (Arko-Cobbah, 2004; Zepke, 2011). The caveat may be supported by Bourdieu (1997) who indicates that societies are hierarchical. The divisions between the various societal hierarchies are grounded in the ownership of various cultural, social and economic resources. Economic resources are easily conveyed into money, while cultural resources consist of the dispositions that inform individual and group practices (*habitus*); objective reflections of culture such as art, music and books, and lastly cultural competence that has received an official sanction, such as a tertiary qualification (Bourdieu, 1997). Furthermore, according to Bourdieu (1997), social station is interconnected with cultural capital and transferred from parents to children as well as via the educational system. Although the family context is the primary incubator for social capital, the educational milieu selectively reinforces the social capital inherited from the family. *Habitus* determines educational practices, and *habitus* is a product of social standing. Educational practices may also reinforce the *habitus* of the leading social and economic class, which advantages the individuals from the leading class and may disadvantage the individuals who are outsiders to the leading class. The leading class are in a better position to acquire economic capital because of their social and cultural capital (Bourdieu, 1997).

On the other hand, DiMaggio (1982) believes that cultural capital is more malleable and only partially influenced by social and cultural context, consequently the effect of social and cultural capital on educational practices is not as pervasive as proposed by Bourdieu (1997). Cultural capital can in effect provide a means of moving from one social level to the other, thereby indicating that both a contextual and an agentic perspective (Dumais & Ward, 2010) could inform cultural capital. Cincinato and others (2016) report that the cultural capital model propounded by Bourdieu (1997) has limited practical application when used to explain differences in individual participation in adult education, and that cultural capital is more pliable, as propounded by DiMaggio (1982). Furthermore, the authors found that readiness to learn has a limited effect on participation in adult education (Cincinato, et al., 2016). Conversely, Knipprath and De Rick (2015) found that human capital has a greater effect on participation in non-formal learning opportunities than social capital. However, the effect differs for those who have no higher education qualification (Knipprath & De Rick, 2015).

Furthermore, critical race theory rejects the assumption that the experiences of white (or western) nations are the accepted standard in educational contexts (Allen, 2016; Closson, 2010). In South Africa, socio-economic background is seen as a contributing factor in student achievement specifically in languages and mathematics at primary and secondary school level (Frampong, et al., 2011). However, little information can be found on the influence of socio-economic background on adult education and adult learner self-directedness in ODeLHE contexts.

A limited African perspective is provided by Ntseane (2011; 2012), who indicates that transformative learning theory specifically should be applied in a culturally aware fashion, in order to include the way that Africans tend to accumulate, acknowledge and transfer knowledge. According to the broadly African perspective of knowledge, Ntseane (2011) argues that the communal character of knowledge construction and knowledge acquisition in African precludes the assumption of 'absolute knowledge'. Ntseane (2011) further maintains that the context of knowledge in the African milieu is complex, since it is influenced by spiritual values closely tied into the metaphysical domain. Since social change is informed by collective responsibility, knowledge in Africa is communal not individual. In addition, gender roles and expectation affect knowledge processing and assimilation (Ntseane, 2011). Merriam and Ntseane (2008) found that transformative learning practices in Botswana lead to a greater sense of interconnectedness between individuals and their communities, instead of a more highly developed sense of autonomy. Apart from race or ethnicity, the educational attainment of students' parents likewise influences cultural capital in the tertiary education context (Dumais & Ward, 2010).

2.4.6.4 Pioneer students

First-generation students (whose parents have no tertiary qualification) are badly off in terms of cultural capital, specifically as regards the information seeking for learning and knowledge of the prevailing learning ethos. The mere wish to complete the tertiary education successfully does not ensure success, but cultural capital alone cannot explain success or failure in the Western context. In addition, the 'teachers' (who are often of the Western persuasion in African tertiary education) are perceived as the 'gatekeepers' of access to the academic culture and its concomitant secrets (Dumais & Ward, 2010). In the context of cultural influences on academic success, Gaddis (2012) found that habitus (the personal dispositions of individuals) had a stronger influence on the academic achievement (as measured by marks or grades achieved) of disadvantaged students than cultural capital. Daniels and Damons (2012) indicate that race and gender may lead to alienation and reduced personal agency in students who attend what they term 'traditionally white institutions' of learning in South Africa. In addition, many previously disadvantaged students in South African Universities

struggle to approach academic staff for assistance – both academic and adjustment or coping in the university context (Daniels & Damons, 2011).

Frambach, et al., (2012) report that Middle Eastern, Asian and Western European students found variable cultural factors that relate to the internalisation of self-directed learning principles challenging. Factors such as uncertainty, tradition, hierarchy and achievement were to various degrees challenging for both the Asian and Middle-Eastern students, while they proved to be less challenging for the Western European students. In consequence, we can accept that certain cultural factors influence the inculcation of self-directed learning. In addition, a variety of contextual elements, such as exposure to traditional secondary school teaching methods, a focus on knowledge acquisition, dependence on the power figure (academic teacher) and a focus on examination results influenced the adoption of self-directed learning behaviours of the students in the study. The longer the students in the study were exposed to self-directed learning practices, the more they developed a capacity for self-directed learning, but also to varying degrees (Frambach, et al., 2012). Shogren (2011) and Shogren and Wehmeyer (2017) reports support for these findings, indicating that autonomous individual behaviours vary from culture to culture.

2.4.6.5 Race

Akala and Divala (2016) point out that black women in South Africa still have trouble with access to and success with quality tertiary education. The challenges experienced by women who want to access tertiary education are ascribed to the socio-economic circumstances of families, difficulties with English, complex contexts and the embedded academic cultures and practices of tertiary institutions (Akala & Divala, 2016). De Bruin and Hughes (2012) found that both white and black female students at a residential university displayed relatively high levels of self-directedness, while black students overall displayed a higher level of self-directedness than white students (race explained approximately 5% of the variance in self-directed learning). De Bruin and Hughes (2012) expressed surprise at this result, indicating that an opposite result had been expected since the habitus of black students tended to be focused on social interaction and interdependence rather than on independence and agency as expounded by self-directed learning theory. According to De Bruin and Hughes (2012), independence and other-directedness may not be exclusive in the context of self-directed learning. On the other hand, Makoe (2006) reports that black students overall experience cultural difficulties when studying via ODeLHE. The cultural difficulties are not related only to lack of cultural capital as regards tertiary education studies but also to lack of understanding and support from the community (Makoe, 2006). McLean (2015) found that adult learners tend to be both socially

anchored and autonomous, but neither strongly in either one or the other, indicating that the two concepts are interrelated.

2.4.6.6 Proficiency in the language of instruction

In the 21st century, many universities are adopting the policy of English as language of instruction (Hughes, 2008). However, the adoption of such a policy may marginalise the already marginalised in South Africa (Desai, 2016). According to Mwaniki (2012), language in South African tertiary education perpetuates social injustice, since language (specifically the languages of instruction in tertiary institutions) result in social inclusion of some and social exclusion of others. The capacity to understand and utilise English efficiently in the learning journey affects student academic outcomes at both basic education and tertiary education level. Language is fundamental for learning. Language allows students to form a conception of the world, understand the input received from the world (including the educational context) and to express their comprehension in the form of participation and assessment tasks (Ardasheva, Wang, Adesope & Valentine, 2017; Desai, 2016). However, a 'foreign' language (that is to say a language that is not sufficiently familiar for the student to learn in) creates obstacles to successful learning (Heugh & Skutnabb-Kangas, 2010). Desai (2016) considers English as a language of instruction in schools as a 'foreign' language for most African students, since the students are not rendered sufficiently familiar with and comfortable in English to successfully assimilate new knowledge and relate that knowledge in academic work. Wong Fillmore (1991) designates that the successful assimilation of a second language is dependent on three circumstances, all of which should be present for successful acquisition of a 'foreign' language. The three circumstances are as follows: (1) learners who acknowledge the need to learn the second language and are motivated to do so; (2) interaction with proficient speakers of the second language who can support the students effectively in the acquisition of the second language; and (3) a social setting which allows for sufficient contact between the learners and the proficient speakers of the second language to facilitate effective acquisition.

Coyle, Hood and Marsh (2010) indicate that the relationship between learners' competence in the 'foreign' language and their cognitive capacities is crucial. The likelihood of a similarity between each student's cognitive capacity and language proficiency is negligible, creating a troublesome disjuncture. When the language level used in the tuition material is too high, effective learning is impossible, while learning is restricted when the cognitive level of the material is lowered to match the language capacity. In addition, a certain level of cognitive and academic competence is required in tertiary education assessments (Coyle, et al., 2010). Witt and Lill (2014) report a strong correlation between language proficiency in the language of tuition and academic achievement at a residential

university in Estonia. Witt and Lill (2014) indicate that poor proficiency in the language of tuition creates a disadvantage to students. In the South African ODeLHE milieu, Kilfoil (1998) found a correlation between achievement in science and English language proficiency, and specifically indicates that the Grade 12 grade mark for English is one of the predictors for success in tertiary level mathematics at a South African ODeLHE institution. In addition, Pretorius (2002) found a positive relationship between English reading ability, English language comprehension and academic achievement in mathematics at a South African ODeLHE university.

2.4.6.7 The South African perspective

Hay and Beyers (2011) report that the inclusive education model adopted in South Africa theoretically supports quality education based on social justice, but the various influences of habitus and habitat on student academic success need to be explored fully in order to ensure that the social justice benefits of inclusive education reaches the most needy students. The reported research on adult learner self-directedness is mostly based on Western cultural context and to a limited degree on Eastern contexts. In addition, the reported research is by no means conclusive on the effect of various habitus and habitat variables on adult learner self-directedness. Consequently, the investigation of the visible indicators of cultural capital and habitus in the African context is vital. The examination should provide information on the effect (if any) of the socio-cultural variables on adult learner self-directedness in the ODeLHE milieu. The specific socio-cultural indicators to be utilised in this study are: gender, race, age, employment status, occupation, socio-economic situation, being depended upon financially, access to a library, access to a computer, proficiency in English, number of modules for which the learner was enrolled, and who was funding the learner's studies.

In South Africa in the ODeLHE milieu, Botha (2014) found that adult students enrolled for business-related qualifications reported high levels of belief in their capacity to complete their qualifications successfully, but the Indian male students tended to have the highest belief in their capacity for success, while African women tended to have the lowest belief in their capacity for success. As the study focused only on differences in the four aspects of adult learner self-directedness in ODeLHE as described by Botha, and only on significant differences in gender, race and age groups between the four aspects, further research is required in order to produce best practice guidelines that can be used fruitfully in ODeLHE tuition and learner support. In addition, as significant differences were found between the various gender, race and age groups in the study, further investigation of socio-biographical factors that may influence the four elements of adult ODeLHE learner self-directedness is required. In a South African study, De Bruin and Hughes (2012) found that black female students reported higher levels of self-directedness than male students at the same South African tertiary

institution. The study was conducted at a residential university using the SSDL (De Bruin, 2008). Botha (2014), on the other hand, reported that black women possessed the lowest levels of self-directedness in an ODeLHE milieu.

2.4.7 Reflection on adult learning

Adult learning principles indicate that learning should take into account that adults have well-established worldviews and that adults learn that which is personally important to them. Adult learning includes all learning that takes place in adulthood, formal, informal and non-formal. Adult learning is a continuous process, which is not necessarily planned and formal. Informal learning frequently takes place in workplace contexts, while formal learning in the South African contexts is the learning that leads to a qualification. Consequently, academics involved in the tuition of adult learners in tertiary institutions should be conversant with the principles of adult learning (including adult learner self-directedness) and design and implement learning material that include adult learners' world views and life experiences. In the workplace, HRD professionals should take into account that all employees do not necessarily want to be lifelong learners. In addition, both academics involved in adult education and HRD professionals should keep in mind that some employees might be disadvantaged by the implementation of technology-based and self-managed learning opportunities. Furthermore, socio-demographic and individual differences affect the capacity of individuals to take responsibility for their own learning. On the other hand, individual agency and self-directedness can be inculcated and nurtured in adult learners.

2.5 EVALUATION AND SYNTHESIS

Business organisations are complex, but robust systems that are affected by what happens in their immediate environment. In the global economy, business organisations are no longer isolated, but affected by what happens in the broader global context. The strong impact of the 2007, 2008 global financial crisis on the South African economy is testament to the effect of global incidents on local economies. Economic growth in developing countries such as those found in Africa may increase the existing socio-economic inequalities in a country. In addition, on the technological progress front, Africa as a continent is lagging behind the rest of the world. The cumulative effect of historical socio-economic inequality and lack of access to technology in Africa as a whole may create further disadvantages for an already disadvantaged populace. The effects are specifically noticeable in education, sustainable employment and lifelong learning opportunities.

The poor education and lack of technological advantages, coupled with historical socio-economic disadvantages in South Africa creates a dilemma for those involved in adult learning. South African adult learners may not be capable of taking advantage of the technologically provided learning opportunities that are gaining favour globally. In addition, South African adult learners may not possess the capacities to manage their own learning and development in a self-directed manner. HRD professionals consequently have a dual role – one is to create effective and easily available learning experiences for those who can access and utilise technology-based and e-learning opportunities effectively. The other is to create learning contexts where economically disadvantaged adults can inculcate the necessary capacities to become self-directed lifelong learners. However, HRD professionals should also take account of individual motivations and desires, since not all employees wish to engage in lifelong learning opportunities.

In addition to the historical disadvantages that are aggravated by lack of adequate access to technology, South African adults tend to choose not to continue to higher education. Furthermore, pioneer students struggle to fit into and cope effectively with the academic culture and requirements of tertiary institutions, affecting the academic success and throughput of students from tertiary institutions. Academics in ODeLHE institutions tend to assume the presence of self-directedness in the learners who do enrol for ODeLHE. Since socio-economic circumstances and cultural environments affect adult learner self-directedness, it is imperative that academics responsible for teaching adults in tertiary institutions become conversant with the concept of adult learner self-directedness in order to inculcate the characteristic through ODeL tuition and assessment practices. The socio-demographic variables that may affect successful adult learning should also be taken into account in the design and delivery of adult learning opportunities, whether these are formal, informal or non-formal.

2.6 CHAPTER SUMMARY

Chapter 2 addressed the first and second literature research aims, namely conceptualising the construct of adult learning in the contemporary business environment and conceptualising adult learner self-directedness in HRD initiatives in the workplace context. The contemporary business environment was explained, focusing on the global, African and South African perspective, as significant differences exist between the global and African perspective, as well as between the African and South African perspective of the business environment. The knowledge economy, as a driver for lifelong learning but not necessarily in the South African context, was investigated. The four perspectives of the organisational context, namely the open-systems, organisational learning, high performance work practices (HPWP) and the stakeholder view of the organisation, were discussed

and the role of HRD in each of the organisational contexts was explained. The influences of the contemporary business world on HRD were explored and the demands on employees to remain employable and continue learning in a knowledge-based work milieu were clarified. The importance of adult learning in the 21st century was elucidated, and the influence of socio-biographical factors on the capacity of adult learners to adopt a lifelong learning orientation was briefly summarised. As very little South African research is published on the influence of socio-biographical factors that affect lifelong learning, investigation of these factors should be promoted as a matter of urgency. Lastly, the interface between adult learning and adult education and the challenges faced by higher education in the global and South African contexts were briefly described. In Chapter 3, adult learner self-directedness will be contextualised in ODeLHE. The chapter explains the various models on adult learner self-directedness and the diverse instruments available for assessing adult learner self-directedness, including the ALSDS (Botha, 2014), which was developed specifically for the South African ODeLHE context.

CHAPTER 3: ADULT LEARNER SELF-DIRECTEDNESS IN OPEN DISTANCE AND E-LEARNING HIGHER EDUCATION

In Chapter 3, the third and fourth literature research aims are addressed. Adult learner self-directedness is conceptualised in the open distance and e-learning higher education (ODELHE) context and the implications of measuring adult learner academic self-directedness for human resource development (HRD) in business and for ODeLHE teaching practices are highlighted. In addition, the psychometric properties of the ALSDS (Botha, 2014), namely the strategic utilisation of officially provided resources, engaged academic activity, success orientation for ODeL and academically motivated behaviour, are comprehensively discussed. Existing gaps in the research are highlighted, the variables influencing adult learner self-directedness in an ODeLHE context (both in the tertiary education and workplace-learning context) are explored and the implications for HRD and ODeL teaching practice are described.

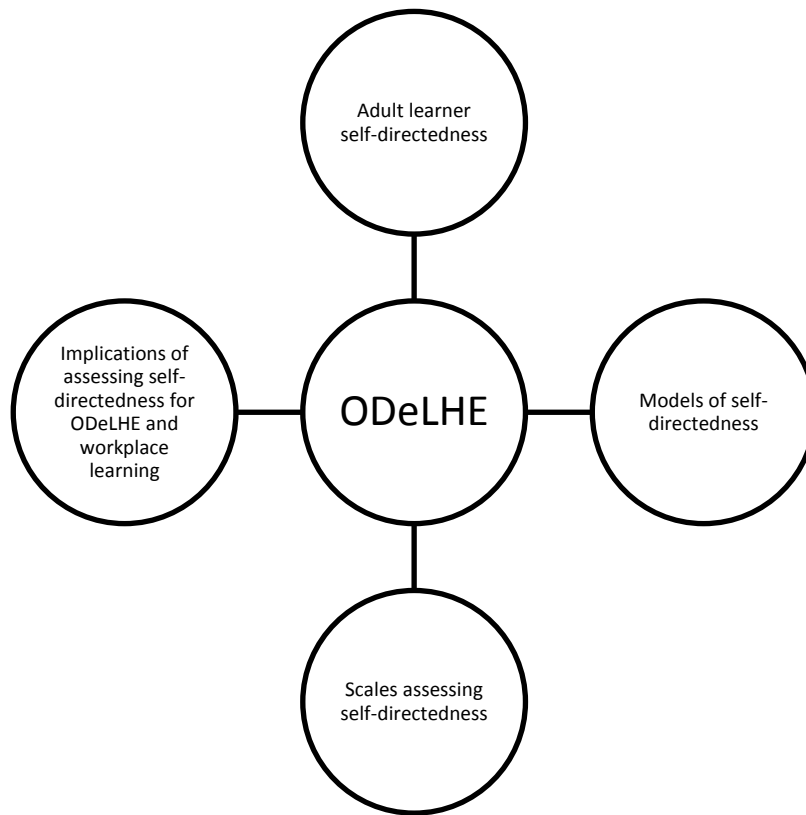


Figure 3.1 A graphical layout of the chapter

More and more universities in the 21st century are using ODeL in order to increase access to higher education (Chawinga & Zozie, 2016). As education is described as a vital component of human advancement, Africa hopes to increase its global competitiveness through increasing access to quality higher education (Onyenemezu, 2012). In the South African and the wider African higher education landscape, ODeL seems to be the most viable option to address the increasing demand for quality higher education, in spite of the technological difficulties faced by many African countries, as described in Chapter 2 (Van Antwerpen, 2015).

Reported research indicates that adult student self-directedness influences online learning behaviours, specifically in terms of engaging in voluntary interaction and help-seeking behaviours in the online context (Lin, et al., 2016). In addition, students who possess higher levels of self-directedness are more likely to adapt their learning behaviours to the learning context (Lin et al., 2016). Furthermore, tertiary institutions are expected to prepare their alumni for a life of continuous learning. Some scholars believe that the characteristics related to self-directed learning are crucial to effective professional practice (Bernhardsson, Vallo Hult, & Gellerstedt, 2017). As discussed in Chapter 2, South Africa and Africa in particular face both technological and socio-biographic challenges in the advancement of human growth (Asongu & Nwachukwu, 2016). Universities and the education they provide are seen as one of the vehicles to advance society at large (Bunney, Sharplin, & Howitt, 2015). Given the existing paucity of research on adult learning self-directedness in the African ODeLHE context, a study investigating the properties of an adult learner self-directedness scale could make a significant contribution to the existing body of knowledge on self-directedness in adult learners.

3.1 ADULT LEARNER SELF-DIRECTEDNESS: CONCEPTUALISATION

According to Knowles (1975; Firat, et al., 2016; McCray, 2016), adult learner self-directedness is the individual capacity to autonomously manage one's learning experience, from conception through implementation, and ending with evaluation of the learning experience, which should then lead to possible adaptations in learning behaviour. Knowles (1975; Blashke, 2012; Firat, et al., 2016) indicates that self-directedness consists of internal states and observable behaviours). Self-determination (not self-directedness) is described in terms of autonomous decisions about motivated behaviour (Benita, Roth, & Deci, 2013; Deci, Olafsen, & Ryan, 2017; Liu, Ye, & Yeung, 2015; Olafsen, Niemiec, Halvari, Deci, & Williams, 2017).

Individuals choose self-determined or independent behaviours, while controlled behaviours are in some way compulsory for the person. The important distinction here is that, although a specific behaviour may not be overtly compulsory, the learners may be aware that there is a form of coercion in the transaction. For example, allowing a student to choose between two options for a mandatory assessment may create a situation where the adult learner experiences the imposition of the assessment as mandatory even though a choice can be made between two options (Benita, et al., 2013; Deci, et al., 2017, 1994; Liu, et al., 2015; Olafsen, et al., 2017). Only if the student can choose not to participate at all in that assessment, without any detrimental effects, can the option to submit a completed assignment be experienced as an independent decision (Benita, et al., 2013; Deci, et al., 2017; Liu, et al., 2015; Olafsen, et al., 2017). When a student independently chooses to complete the assessment, internal control or reasoning mechanisms drive the student's behaviours.

Initially, Deci and Ryan (1994) believed that self-determined actions were closely associated with intrinsic motivation, but later research indicated that extrinsically motivated behaviours can be perceived as self-determined if they are 'internalised' and 'integrated' (Liu, et al., 2015; Olafsen et al., 2017). Internalisation is the adoption of external controls of behaviour as self-controls, while integration flows from internalisation and is the assimilation of incorporated (internalised) self-regulation into the individual's self-perception (Deci, et al., 2017; Liu, et al., 2015; Olafsen, et al., 2017). Deci and Ryan (1994; Liu, et al., 2015; Olafsen, et al., 2017) consequently describe self-directedness in terms of autonomous decision making and self-regulatory control of deliberate actions similar to Knowles's internal states and observable behaviours.

The theory of transformative learning takes a diverse perspective, focusing on how questioning universally accepted 'truths' can develop the capacity for autonomous thinking in adult learners (Baran, Coreia, & Thompson, 2011; Biniecki & Conceição, 2015; McCray, 2016; Mezirow, 1997, 2000). In fact, according to Mezirow (1997, 2000), transformative learning is the essence of adult education. Adults as autonomous empowered individuals are able to control their own lives, free to make their own decisions and emancipated from the limiting societal conventions that guide their thinking (Baran, Correia & Thompson, 2011; Biniecki & Conceição, 2015; McCray, 2016). The theory of transformative learning is based on the premise that adults must first realise and accept that they are autonomous beings capable of making independent decisions, reflecting on their experiences and their learning and to defend an argument or decision rationally (McCray, 2016; Mezirow, 1997, 2000). For Mezirow (1997, also see McCray, 2016), the realisation and acceptance of autonomy come before the actions or behaviour of self-direction. In this regard, Mezirow (2000) differs from Knowles (1975), who believed that self-directedness could exist on a continuum and would develop throughout an individual's lifetime.

Guglielmino (1977) echoes Knowles's (1975) description of self-directedness. Guglielmino (1977) and Mello (2016) describe student self-directedness as a learning process actively managed by the learner who plans, implements and evaluates individual learning endeavours. Garrison (1997) and Rana, Ardichvili, and Polesello (2016) define self-directed students as those who are self-motivated, self-managing and self-monitoring. Students who are motivated will be willing to engage in a learning task; once engaged, they will actively manage and control their learning. Only students who display all three behaviours can grow into self-directedness (Garrison, 1997; Rana, et al., 2016). Garrison (1997) consequently views self-directed learning as an amalgamation of all three facets described, contrary to Knowles (1975), who believes that adult learner self-directedness exists on a continuum and is related to age.

On the other hand, Grow (1991) and Rana, et al. (2016) describe students as moving through four phases in their learning, and indicate that the learning facilitator or academic lecturer could actively influence the student's progress through the phases towards self-directed learning. Grow (1991) contends that students start out their learning journey as dependent learners, move towards interested and then involved learners, depending on how the learning experienced is managed by the facilitator, and lastly become self-directed learners. According to Grow (1991) and Rana, et al. (2016), student self-directedness is therefore mostly within the sphere of control of the facilitator.

Candy (1991) and Gu (2016) believe that self-directedness in learning involves the individual capacity to see oneself as an autonomous person (a personal disposition, not a behavioural trait), the willingness to manage one's learning, the capacity to personally control one's learning behaviours and actions, and lastly the independent pursuit of personal learning goals (autodidaxy). For Candy (1991), learner self-directedness includes both personal dispositions and observable behaviours, and, like both Mezirow (2000) and Cassidy (2012), the realisation and acceptance of one's autonomy is seen as the linchpin of self-directedness (see Gu, 2016; Rana, et al., 2016). According to Zimmerman (2002), Van Wyk (2017) and Zhao & Zeng (2014), self-directed students are proactive, aware of their strengths and weaknesses, reflect on their own learning and can utilise relevant learning strategies to achieve personally determined goals.

Cassidy (2011) and (Gu, 2016) explain that adult self-directed learners view themselves as active agents in their own learning who can positively affect their academic success by dynamically practising their own learning strategies. Cassidy (2011), just like Mezirow (2000) and Candy (1991), consequently believes that the conviction of autonomy precedes the observable behaviour of self-directedness in learning. In a similar vein, Bowen (2011) and Van Wyk (2017) describe self-directed learners as those who have grown into self-directedness through learner autonomy, and as a result

have the capacity to make independent decisions, solve problems in other than academic contexts, and have developed an awareness of their responsibility to the broader community.

The emphasis Bowen (2011) places on accepting responsibility for the broader community and for the consequences of individual actions is aligned with Mezirow's (2000) idea of transformative learning. In addition, according to Bowen (2011), self-directed learners possess many of the qualities that will facilitate successful functioning in the business world and the world at large. The qualities include the ability to drive their own learning and development, make self-regulated decisions, while at the same time being conscious of their personal accountability for their decisions (Van Wyk, 2017). Moreover, self-directed learners possess capacities related to transformative learning theory, namely the capability to accept responsibility for the broader community and to transfer their knowledge to situations other than the theoretical or well known (Bowen, 2011; Van Wyk, 2017). Descriptions of self-directedness tend to focus on individual capacity and independent learning, but West (2011) and Firat, et al. (2016) indicate that independent learning does not preclude social learning, which correlates with Mezirow's (2000) emphasis on the individual's acceptance of a personal role in a wider social context. Ntseane's (2011) finding, that transformative learning in an African context may create a situation of more well-developed social interaction and integration instead of more well-developed individual agency may support the contention.

Although it is almost impossible to find one overarching definition of the concept of adult learner self-directedness (Van Wyk, 2017; Zou, 2011), it is clear that three broad themes exist in the various definitions. These three broad themes are individual self-motivation, proactive management of the learning context (both individual and social) and metacognitive management of learning beliefs, behaviours and strategies (Botha, 2014; Kasworm, 2011; Van Wyk, 2017; West, 2011). In the context of the three broad themes, the issues of self-motivation and proactivity in the African milieu are of particular significance, as the social frameworks within which students' identities are formed influence their capacity for agency, proactivity and self-motivation (Faircloth, 2012; McCray, 2016; Rienties & Tempelaar, 2013; Shogren, 2011; Shogren & Wehmeyer, 2017).

Online learning environments can facilitate the development of autonomy, metacognition, self-motivation and self-efficacy (Cassidy, 2012; McCray, 2016; Zou, 2011). The research reported to date gives a description of how adult learner self-directedness is conceptualised in the learning contexts of developed economies. Conversely, even in developed countries, not all students will possess the capacity of self-directedness (Kaufman, 2015). The question is: would the accepted descriptions and models of adult learner self-directedness be relevant in the African context? Furthermore, would African adult learners possess the capacity to reap the various benefits of online learning fully, given the historical lack of access to the sophisticated learning environments and tools

available for online learning (Braimoh, 2010)? Chu and Tsai (2009) posit that older adult learners would be more likely to be disadvantaged in online learning contexts. In South Africa specifically, it is usually the older adult learners who learn through ODeL (Van Wyk, 2017). In addition, pioneer students, who are the first in their family to enter higher education, struggle to understand what is required of them, particularly those students who come from a socio-cultural background different from the mostly westernised or European approaches used in tertiary settings (Daddow, 2016).

Current research on adult learner self-directedness in Africa relies mostly on the use of the Self-Directed Learner Readiness Scale (SDLRS) developed by Guglielmino (1977) (see De Bruin, 2007; De Bruin & Hughes, 2012; Matoti, 2011). The SDLRS (Guglielmino, 1977) assesses students' readiness for self-directed learning, and not their current capacity for self-directed learning. The scale was developed for use in residential universities in the USA, not for the ODeLHE context. The SDLRS has been used through the years in various studies in residential universities in Western, Eastern and Asian contexts (Ahmad & Majid, 2010; Bagheri, Ali, Abdullah, & Daud, 2013; Kirwin, Lounsbury, & Gibson, 2014; Malta, Dimeo, & Carey, 2010). The SDLRS has also been used in some African contexts (De Bruin, 2007), but no evidence could be found that the SDLRS is valid in heterogeneous socio-demographic milieus such as the ones found in South African ODeLHE. In addition, questions have been raised on the validity and reliability of the scale (Brockett, 1985; De Bruin & De Bruin, 2011; Hoban, Lawson, Mazmanian, Best & Seibel, 2005).

Adult learners who come into ODeLHE bring with them individual and diverse frameworks of competencies, influenced by social factors, previous academic experiences, existing competency and emotional capacities. Adult learners also have personal goals, characteristics and ambitions related to their future, and ideas of how achieving a qualification will lead them to their goals (Mahlangu & Fraser, 2017). The academic institution engages with the adult learners through a sequence of interactions between the learner, the academic educator, their peers and other personnel employed at the university. Consequently, all the experiences of adult learners studying through ODeLHE reshape and modify their individual goals and intentions, as well as their life experiences and knowledge scaffolds because of their interactions with the institution (Mahlangu & Fraser, 2017).

Reported research indicates that socio-cultural elements influence factors such as identity formation and agency beliefs, which are pivotal to adult learner self-directedness (Faircloth, 2012; King & McInerney, 2014; Mello, 2016; Rienties & Tempelaar, 2013; Shogren, 2011; Shogren & Wehmeyer, 2017). Consequently, the reliability of the scale in the South African ODeLHE milieu is questionable (Botha, 2014). The possibility of socio-cultural and socio-demographic influences on the elements of adult learner self-directedness in the African context should be thoroughly investigated in order to inform both workplace learning and ODeLHE teaching practice (Botha & Coetzee, 2016; Du Toit-

Brits, 2015b). As most Africans rely on ODeLHE to further their studies, adult learner self-directedness in the context of ODeLHE should be rigorously researched (Chinyamurindi, 2016; Du Toit-Brits, 2015b). The dearth of research on the self-directedness of adult learners in the African ODeLHE milieu points towards a need to (1) explore the concept of adult student self-directedness in African ODeLHE and (2) develop a model that describes adult learner self-directedness in ODeLHE in the African setting (Botha, 2014; Botha & Coetzee, 2016). The ALSDS (Botha, 2014) was developed specifically for use in the South African ODeLHE milieu and was consequently considered most useful for this research study.

3.2 THEORETICAL MODEL: ADULT LEARNER SELF-DIRECTEDNESS SCALE

Botha (2014) describes adult learner self-directedness in the ODeLHE context as the synergy between the adult learners' directing of and immersion in the formal learning context created by the officially provided learning resources, and individual internal suppositions (including self-efficacy, self-confidence, resilience and persistence) and how individual internal suppositions drive (influence) their learning motivation, study behaviours and study-related problem-resolution strategies. Adult learner self-directedness in ODeLHE consequently has three components – the learning milieu, the learners' learning behaviour and the learners' internal convictions and beliefs.

Daddow (2016) indicates that cultural programming may either advantage or disadvantage adult learners in higher education milieus, depending on their individual socio-economic frameworks. The cultural programming of students from disadvantaged socio-economic contexts leaves them at a disadvantage in an academic environment where they do not necessarily comprehend or assimilate the inferred expectations and resultant implicit and explicit messages sent by the academic milieu as a whole (Daddow, 2016). Frequently, when adult students misinterpret or misunderstand the inferred expectations, the academic institutions classify them as shortcomings on the part of the adult learners, or inadequacies in their preparedness for tertiary education. The most pronounced example of such deficit thinking on the part of academic institutions is to refer to adult learners as 'non-traditional students' (Daddow, 2016). The implication seems to be that the status quo in institutions of higher learning is the accepted convention or norm and those who fail to fit in consequently lack some essential competence (Daddow, 2016).

One of the conventional expectations in ODeLHE is that students should and do possess a well-developed capacity for self-directed learning (Bourdeaux & Schoenack, 2016; Firat, et al., 2016). In the South African context of ODeLHE, Botha (2014) found that adult learner self-directedness consists of four psychosocial components, namely strategic utilisation of officially provided resources,

engaged academic activity, success orientation for ODLHE and academically motivated behaviour. The ALSDS (Botha, 2014) assesses these four facets of ODeLHE academic self-directedness (Botha, 2014, Botha, et al., 2015). Botha (2014) found that various gender, race and age groups scored differently on the four psychosocial components, indicating that socio-cultural factors may influence academic self-directedness in the South African ODeLHE milieu, however, the structural equivalence of the ALSDS for gender, race and age groups have not been established (Botha, et al., 2015). In order to do further research in this regard, it is crucial to assess the psychometric properties of the ALSDS rigorously (Botha, 2014).

The ALSDS assesses the following four dimensions of adult learner self-directedness in ODeLHE:

- (a) Strategic utilisation of officially provided resources focuses on how and when active adult learners use the academic resources provided by the tertiary institution (Botha, 2014; Botha, et al., 2015; Coetzee, 2014).
- (b) Engaged academic activity focuses on the intentional learning activities adult learners implement to advance their academic studies or cultivate subject-specific competence (Botha, 2014; Botha, et al., 2015; Coetzee, 2014).
- (c) Success orientation for open distance learning focuses on the self-confidence, self-efficacy beliefs and resilience orientations adult learners possess in order to be successful ODeLHE students (Botha, 2014; Botha, et al., 2015; Coetzee, 2014).
- (d) Academically motivated behaviour focuses on the intrinsic or extrinsic motivational orientations of adult learners in ODeLHE contexts (Botha, 2014; Botha, et al., 2015; Coetzee, 2014).

The way in which adult learners use the academic resources provided by the higher education institution may provide an early indication of their adeptness at self-managing their learning actions (Botha, et al., 2015; Jabbour, et al., 2017). Students' academic motivation is influenced by their individual attributes as well as their participation in the various elements of the learning milieu (Bordeaux & Schoenack, 2016; Francis & Flanigan, 2012). Furthermore, study behaviours affect academic outcomes (Brown & Murdolo, 2016). Adult higher education's learners' reports on the strategic utilisation of officially provided resources indicates how, when and for what purpose academically active adult learners use the scholastic resources provided by the tertiary institution (Botha, 2014; Botha, et al., 2015; Coetzee, 2015). The feedback on academic efforts provided by the institution, and how students utilise the feedback are of specific significance, as feedback has a vital effect on learner achievement (Vallance & Towndrow, 2016). Bordeaux and Schoenack (2016) found

that adult learners expect the design of the learning material and the overall learning environment to express the requirements (both implicit and explicit) of the course and the academic environment clearly, and transparency as to expectations and the concomitant actions required of students. Consequently, adult learners should be provided with transparent learning materials that give a realistic picture of what is expected of them (Bordeaux & Schoenack, 2016; Hart, 2012).

Active engagement in the learning journey is paramount for meaningful learning (Alghamdi, 2016; Harju, et al., 2016; Tseng, Liu, & Nix, 2017). Students' active commitment to and immersion in their learning journey are significant predictors of academic performance (Maguire, Egan, Highland, & Maguire, 2016). Self-directed learners are usually proactive and actively engaged in their learning endeavours (Lin, et al., 2016; Tseng, et al., 2017). A continuous dynamic commitment to active participation in the learning process requires concerted and positive action from the adult learner (Harju, et al., 2016). Conversely, learning becomes concrete for students when they are capable of and allowed to personally associate with the learning material and environment (Sturm & Carter, 2015). Engaged academic activity assesses adult learners' calculated, decisive study activities to advance their academic studies or cultivate subject-specific competence (Botha, 2014; Botha, et al., 2015; Coetzee, 2015).

Adult learners' self-beliefs, self-confidence and attitude affect their academic motivation and eventual academic success (Alt, 2015; Seabi, 2011). Self-directed learners are inclined to be confident in their ability to be successful in their learning endeavours. In addition, students appear to be aware of the influence of their learning strategies on the quality of their learning (Nguyen & Ikeda, 2015). Self-directed learners have to create and effectively use a self-initiated feedback link through which they monitor the effectiveness of their learning strategies and successfully adapt strategies that do not deliver the desired results (Ardasheva, Wong, Adesope, & Valentine, 2017). Tan (2017) believes that a cultivation of the self is an indispensable component for successful self-directed learning. Conversely, self-cultivation is a result of continued, disciplined study (Tan, 2017). Success orientation for ODL measures adult learners' self-reported self-confidence beliefs in their ability to be successful ODL students (Botha, 2014; Botha, et al., 2015; Coetzee, 2015).

Academic motivation (or motivation to learn) drives self-directed learning (Alghamdi, 2016; Bolkan, 2015; Du Toit-Brits & Van Zyl, 2017b). Self-directed learners appear to possess higher levels of academic motivation and to be more successful in tertiary education (Nguyen & Ikeda, 2015). Academic motivation is vital to adult learners' engagement with the learning material and success in their learning (Bolkan, Goodboy, & Kelsey, 2016; Rothes, Lemos, & Gonçalves, 2017). Mostert, Theron and De Beer (2017) posit that new learners in higher education should proactively utilise self-directedness in order to creatively solve their own problems and facilitate their assimilation into the

academic environment. In addition, self-directed learners are attentive to their academic work and willingly invest time and effort in initiating and managing their learning (Ardasheva, Wang, Adesope, & Valentine, 2017). Inadequate motivation could negatively influence self-directed learning (Du Toit-Brits & Van Zyl, 2017b). Academically motivated behaviour assesses the self-reported behaviour of adult learners that relate to intrinsic or extrinsic motivation in an ODeLHE milieu (Botha, 2014; Botha, et al., 2015; Coetzee, 2015).

The theoretical basis for the ALSDS (Botha, 2014; Coetzee & Botha, 2013) is existing research on adult learner self-directedness conducted during the past five decades. Specifically, Knowles's (1975) principles of andragogy, Candy's (1991) and Garrison's (1997) models of self-directedness and Song and Hill's (2007) model of online self-directedness contributed foundational principles to the ALSDS (Botha, 2014; Firat, et al., 2016; Gu, 2016; McCray, 2016; Mello, 2016; Rana, et al., 2016; Van Wyk, 2017; Zhao & Zeng, 2014). It should be kept in mind that the ALSDS was developed specifically for the ODeLHE milieu, because learning in an ODeLHE environment is a particularly complex undertaking (Balfour, Van Der Walt, Spamer, & Tshivhase, 2015; Gravani, 2015).

3.2.1 Theoretical foundation of the ALSDS: Andragogy and heutagogy

The self-regulation or self-management of students in tertiary education has been much researched (Alghamdi, 2016, Botha, et al., 2015; Cloete, Botha, & Breytenbach, 2012; Du Toit-Brits & Van Zyl, 2017a; Mostert, et al., 2017). However, insufficient information is available on the self-directedness of adult learners in ODeLHE settings, specifically in African ODeLHE contexts (Botha, 2014; Botha, et al., 2015; Botha & Coetzee, 2016; Coetzee & Botha, 2013). The point of departure for the ALSDS model is previous reported research on student self-directedness, starting with the principles of adult learning as advocated by Knowles (1975). The principles can briefly be summarised as follows:

- (1) **Principle 1:** Adults are inclined to be self-directed learners (Aziz, Sulaiman, & Zahari, 2016; Botha, 2014; Firat, et al., 2016; Gravani, 2015). According to Knowles (1975), adults are capable of self-direction. Consequently, adults realise and accept that they are the autonomous directors of their own lives (Blashke, 2012; Firat, et al., 2016). As a result, self-directed adults expect to be dealt with by others as autonomous beings even when their learning behaviours suggest the contrary (Botha, 2014; Firat, et al., 2016; Gravani, 2015).
- (2) **Principle 2:** Adult learners' abundant life experiences can be utilised to good effect in the learning environment and learning content (Aziz, et al., 2016; Botha, 2014; Firat, et al., 2016; Gravani, 2015). Adult learners' entire previous history accompanies them into learning

situations. The life experiences provide ample opportunities to personalise adults' learning experiences (Aziz, et al., 2016; Botha, 2014; Firat, et al., 2016; Knowles, 1975).

- (3) **Principle 3:** Adult learners have an underlying desire to understand the reason for learning new concepts. This desire to understand 'why' will influence their willingness to become immersed in any learning experience (Aziz, et al., 2016; Botha, 2014; Firat, et al., 2016; Knowles, 1975).
- (4) **Principle 4:** Adult learners' preparedness to learn may vary significantly (Aziz, et al., 2016; Botha, 2014; Firat et al., 2016; Gravani, 2015; Knowles, 1975). Preparedness to learn (willingness to immerse the self in the learning) is notably influenced by personally experienced or perceived problems adults wish to solve (Aziz, et al., 2016; Botha, 2014; Firat, et al., 2016; Gravani, 2015; Knowles, 1975).
- (5) **Principle 5:** Adult learners' orientations to learning are highly individualised, closely associated with their reasons for learning and vary between task-oriented, problem-oriented or life-oriented (Aziz, et al., 2016; Botha, 2014; Firat, et al., 2016; Knowles, 1975).
- (6) **Principle 6:** Adult learners' motivational states towards learning vary from extrinsic to intrinsic (Aziz, et al., 2016; Botha, 2014; Firat, et al., 2016; Knowles, 1975). Despite the fact that individual motivational states and drivers and their effect on human behaviour are complex, they should not be ignored in learning contexts (Aziz, et al., 2016; Botha, 2014; Firat, et al., 2016; Gravani, 2015).

Knowles (1975) presented a comprehensive framework for planning and executing adult learning, encompassing not only the learning environment, but also, significantly, some of the psychosocial constituents vital to successful adult learning (Aziz, et al., 2016; Firat, et al., 2016). The main contribution made by Knowles (1975) is that adult learners are influenced by their previous life and learning experiences. Adult learners' past life and learning experiences may affect new learning experiences either positively or negatively (Botha et al., 2015; Knowles, 1975). Furthermore, Knowles (1975) propounded that adult learners prefer to be treated as self-directed active agents in their learning endeavours, with a give and take of information, instead of passive recipients, even when their displayed behaviours indicate otherwise (Aziz, et al., 2016; Botha, 2014; Botha & Coetzee, 2016; Firat, et al., 2016; Hagen & Park, 2016). Consequently, it is incumbent on those involved in adult learning experiences to take note of and incorporate Knowles's (1975) contributions into the design and execution of adult learning opportunities, inter alia to propagate and sustain the competence of self-directed learning in the participants (Alghamdi, 2016; Cox, 2015). Conversely, Knowles underestimated the prominence of self-reflection in the adult learner's learning journey (Botha, 2014).

One can therefore not rely only on the principles of adult learning as put forward by Knowles (1975) in the design and implementation of adult learning opportunities, but should also incorporate the principles of other researchers (Aziz, et al., 2016). Furthermore, Knowles did not consider or pronounce on the emancipatory or empowering effect that learning may have on adults (Galloway, 2017). Although one may consider that the emphasis Knowles placed on the willingness of adults to engage in learning because the learning may achieve a personal goal indicates a reference to emancipation and empowerment, the long-term effect of learning, either formal, informal or non-formal, is not explored in Knowles's principles (Galloway, 2017). Lastly, although Knowles clearly stated that adult learners should be active agents in their learning, he also provided a list of requirements for the learning environment, clearly stating that it is the learning facilitator's responsibility to ensure that the learning environment is conducive to adult learning. This implies that the facilitator of learning remains in control of the learning context and the adult learners are only allowed to function as active agents within that context (Hagen & Park, 2016).

The principles of andragogy are frequently used in workplace learning contexts, although little used in tertiary teaching practices, where the prevalent term used to describe the tuition philosophy remains 'pedagogy' (Bolkan, et al., 2016; Bourdeaux & Schoenack, 2016; Bowerman & Reich, 2016; Du-Toit-Brits & Van Zyl, 2017b). In the ODeLHE context, where adult learners abound, thought should be given to adopting the principles of andragogy in the teaching model (Botha, 2014; Botha & Coetzee, 2016; Firat, et al., 2017). Moreover, the principles highlighted by Knowles (1975) are seemingly similar to those propounded in the modern pedagogical literature as 'student-centred learning' and/or 'assessment for learning' (Baran, et al., 2011; Du Toit-Brits & Van Zyl, 2017b; Havenga, 2015; Kahu, Stephens, Leech & Zepke, 2013; Lewis & Vialleton, 2011; Willis, 2011). Specifically, principles 2 to 6 are explored in various ways in writings on tertiary tuition and assessment, with the focus on the creation of learning milieus and assessment experiences that foster deep learning and the construction of new knowledge scaffolds (Du-Toit-Brits & Van Zyl, 2017b; Havenga, 2015). Deep learning is learning for comprehension and application instead of memorisation (Havenga, 2015; Du Toit-Brits & Van Zyl, 2017b; Hewings & Seargeant, 2014). The underlying theme in the six principles propounded by Knowles (1975) indicates a specific focus on the adult learner's internal states (such as motivation and self-efficacy), coupled with specific observable behaviours (such as approaches to learning), and how they principally relate to formal or structured learning situations. The way that individuals' internal states and observable behaviours influence the learning experience and the quality of individual learning are also identifiable in the principles (Botha & Coetzee, 2016; Bourdeaux & Schoenack, 2016; Bowerman & Reich, 2016; Hagen & Park, 2016).

Further reflection on the principle of self-direction raises the caveat that not all adult learners may possess agentic beliefs and exhibit self-directed behaviours, and also that not only adults may be self-directed learners (Alghamdi, 2016; Botha, et al., 2015; Botha & Coetzee, 2016). Knowles (1977) himself mourned the evident dependent behaviours often displayed by adults in learning contexts and attributed these behaviours to exposure to basic education situations where learners are frequently seen as dependent on the superior knowledge of the teacher, and subsequently assimilate passive behaviours related to learning situations (also see Alghamdi, 2016, Botha, et al, 2015). Adult learners consequently become passive recipients in the learning situation instead of active participants. However, Knowles did not consider the effect of socio-cultural factors on the capacity of adult learners to be self-directed. It is especially the evidence of life experiences and the assumed self-directedness of adult learners that anchor the six principles in the domain of adult learning (andragogy) instead of pedagogy, which is usually associated with the learning discourse of the school environment (Alghamdi, 2016; Blashke, 2012; Botha, et al., 2015).

Conversely, according to Blashke (2012) and Breunig (2017), the principles of andragogy, along with those of pedagogy, are outdated and of little relevance in the learning landscape of the new millennium. The assumption by Blashke (2012) that the principles of andragogy are outdated in all learning contexts may not be correct, because of the vast socio-cultural differences that may exist between the various learners participating in ODeLHE offerings (King & McInerney, 2014). In addition, one essential aspect of lifelong learning – the capacity for self-reflection and metacognition – is conspicuously absent from Knowles's (1975) principles (Botha, 2014). Breunig (2017), on the other hand, proposes an experiential approach to tuition and learning, focusing on learning by means of experience, an idea partly supported by Chen (2017), who propounds competence-based education for adult learners, based on their experiences. In the African context, Higgs (2016) calls for an educational philosophy that is not Eurocentric in nature, but instead uses transformative academic debates to produce a tuition philosophy that is uniquely African in nature. Higgs (2016) proposes that such an Africanised tuition philosophy should be based on indigenous theories of knowledge and knowledge transfer (also referred to in Chapter 2), and should focus on emancipating African academics, educators and learners from the shackles of Eurocentric education. In addition, African academics, educators and learners should cultivate pride in how they exist and prosper in the world at large (Higgs, 2016; Olivier, 2016). Where technology is concerned, Vallance and Towndrow (2016) indicate that technological advances have mostly been added on to traditional tuition practices, while consideration should be given to a new approach to tuition philosophy and practice, which inculcate the competences associated with life-long learning.

Blashke (2012) advocates the principles of heutagogy. Self-determined learning (heutagogy) proposes the development of a learning milieu that cultivates accomplished learners, capable of learning autonomously and competent in a specific discipline (Blashke, 2012; Olivier, 2016; Vallance & Towndrow, 2016). Learner autonomy and self-directedness are assumed to be inherent in the heutagogical approach to teaching, and specifically to distance education teaching. Heutagogy hands responsibility for the learning in its entirety over to the learner. The learner is an active agent in the learning process and controls what and how to learn. In fact, the facilitator surrenders control of the learning milieu and learning content to the active learner and provides merely a supporting element in the learning process (Blashke, 2012; Olivier, 2016; Vallance & Towndrow, 2016). Reflection on learning and how new knowledge influences learners' value system and behaviours is of specific significance in self-determined learning (heutagogy) (Olivier, 2016). The constructivist approach to tuition advocates that learners should construct their own learning within an environment created by the institution, academic or facilitator (Vallance & Towndrow, 2016). However, Vallance and Towndrow (2016) also explain that heutagogy in the learning context develops through active participation in learning and the solving of real problems.

The question that can be asked is whether the heutagogical approach would be effective for all adult learners in all learning milieus (Olivier, 2016). Bolkan, Goodboy and Griffin (2011) advocate for 'teacher leadership' or transformational leadership by the academic as teacher in the higher education context, specifically in residential tertiary education because of the capacity of teachers as leaders to inspire students to stretch themselves and achieve more than what they usually expect from themselves. Teacher leadership focuses on the substantial role the academic plays in the learning milieu, inter alia with the creation of learning activities and an environment that encourages critical thinking. The notions of 'stretch' goals and difficult but achievable learning activities are closely associated with the cultivation of internal motivation. In addition, research found that the propagation of autonomous thinking is associated with a deep (learning content-oriented) approach to studying (Bolkan, et al., 2011). Further to this discussion is the dilemma of the poorly developed self-directedness of many learners and the need to first cultivate self-directedness before adult learners can be expected or encouraged to be completely self-driven in their learning (Li, Lee, & Kember, 2000). On the other hand, Olivier (2016) indicates that it is incumbent on higher education tuition in South Africa to move away from past practices and towards an approach where learners are enabled to think and do innovatively, instead of only repeating what has come before. Specifically, industrial-age higher education learning theories, practices and principles should be thoroughly investigated and adapted to the post-industrial era (Olivier, 2016; Steyn & Van Tonder, 2017).

Apart from the principles of andragogy, Knowles (1975) clearly states that the learning environment is paramount in unlocking the capacity of adult learners to learn successfully. The creation of a learning milieu that is conducive to adult learning should include the following seven conditions (Alghamdi, 2016; Gravani, 2015; Knowles, 1975):

- (a) Preparing the learners so that they fully understand on a personal level why specific learning is necessary
- (b) Creating a somatic ('physical') and emotional learning milieu that encourages full immersion in the learning experience
- (c) Promoting learner involvement in the planning of personal learning
- (d) Encouraging learners to identify their own learning requirements ('needs')
- (e) Encouraging learners to set up a personal learning strategy to satisfy their learning requirements (the learning journey they should follow)
- (f) Assisting learners to execute their learning strategies
- (g) Assessing competency development at the end of the learning journey.

Once again, there seems to be little difference between the climate-setting conditions of Knowles (1975) and modern descriptions of the student as an active agent in a learner-centred and/or social constructivist learning milieu that facilitate academic success specifically for mature learners (Alghamdi, 2016; Baran, et al., 2011; Kahu, et al., 2013; Sze-yeng & Hussain, 2010; Zepke, Leach, & Butler, 2010). The social-constructivist learning milieu includes three main elements of learning, namely learning activities that relate directly to life experiences of the learners (related to culture), discourse between the teacher and students and collaborative support from the student peers (Sze-yeng & Hussain, 2010; Vallance & Towndrow, 2016). The conventions of the social-constructivist learning milieu appear to straddle the principles of andragogy as well as the climate-setting conditions of Knowles (1975), again with the obvious exception of self-reflection and/or metacognition as well as the exclusion of autonomous learner behaviour. In addition, there appears to be such a variety of research findings on those student beliefs, behaviours and learning context configurations that facilitate student academic success, that no single solution can be proposed to nurture academic success across cultures, study disciplines and diverse age and gender groups (Baron & Corbin, 2012; Olivier, 2016; Sze-yeng & Hussain, 2010; Vallance & Towndrow, 2016; Zepke, et al., 2010).

In terms of Knowles's (1975) climate-setting conditions, a feedback network may be added to the creation of a learning environment conducive to successful learning, thereby facilitating the possibility

of cultivating reflective and/or metacognitive capacity. Metacognitive capacity focuses on individual reflection on learning and the construction of unique, individual knowledge scaffolds that may be similar to 'threshold concepts' (Barradell & Kennedy-Jones, 2015; Baran, et al., 2011; Mezirow, 1997, 2000; Vallance & Towndrow, 2016). The mastery of threshold concepts allows students to become immersed in the quintessence of the discipline, thereby transforming students into pure disciplinary specialists (Barradell & Peseta, 2014). The addition of a feedback network by the academic involved in the learning process could provide the opportunity for adult learners to reflect on the quality of their learning by, for example, investigating the learning requirements identified, the learning strategy employed and the resulting knowledge and/or competency acquisition. In this way, the learners can be empowered to think about whether the learning requirements were identified correctly and whether the learning strategy was appropriate for the specific learning requirements and individual learning needs so that learners can start teaching themselves (Blashke, 2012; Olivier, 2016). As the internal cultivation of autonomous thinking and self-direction evolves, a 'transformative learning process' may be created, possibly up to the point where the learner is prepared to and capable of accepting full responsibility for the learning (Blashke, 2012; Olivier, 2016). With the inclusion of a feedback network, the process of 'climate setting' could possibly be called the learning context and could then be depicted as follows (see Figure 3.2):

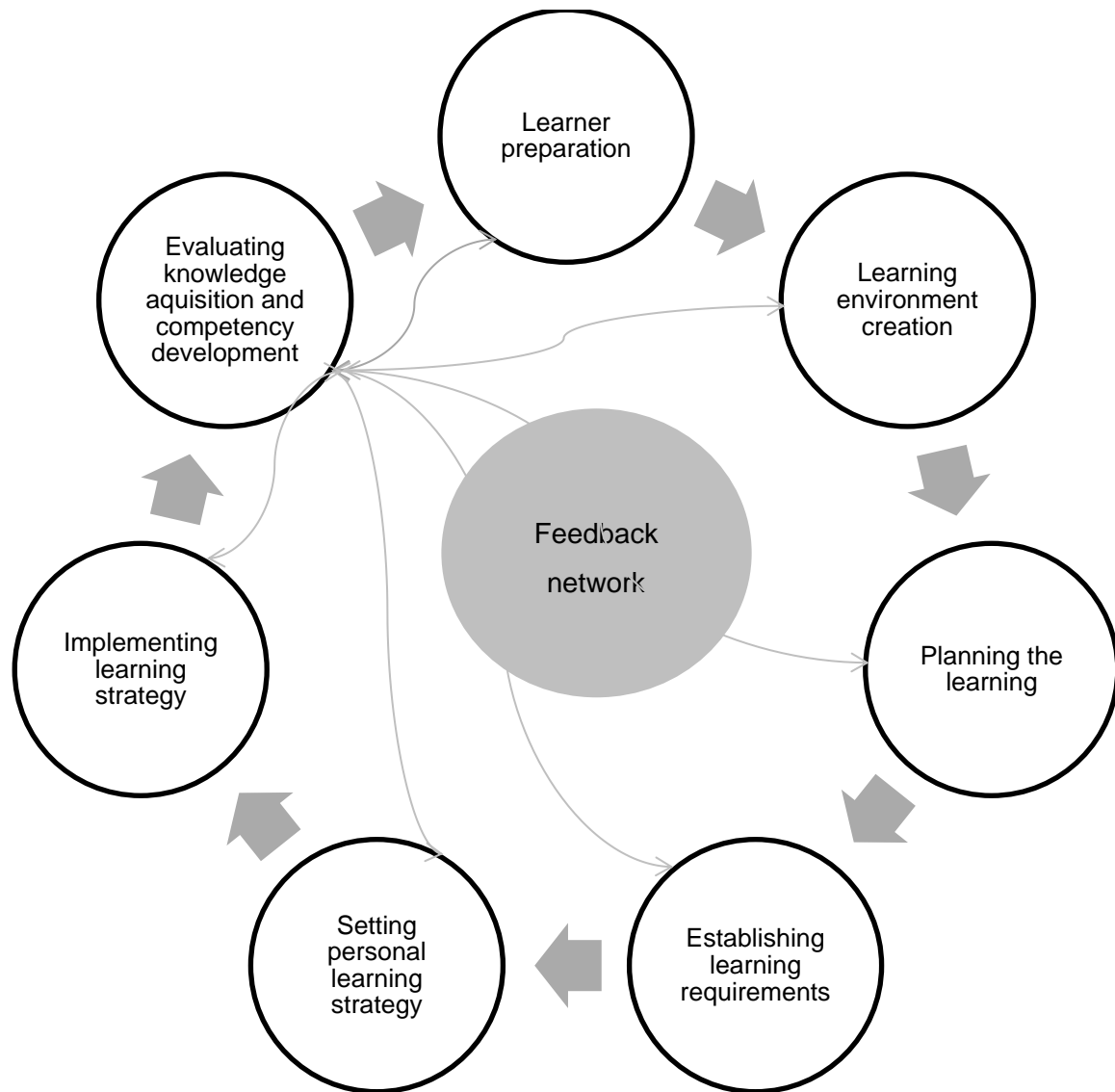


Figure 3.2: Establishing the learning context (adapted from Knowles, 1975). Source: Botha (2014).

The role of the ‘teacher’ in the andragogical approach is one of facilitation – a person who does not tell or convey information while the learner listens, but supports the learner along the learning journey, providing some guidance, assistance, advice and information as and when required. The facilitator plays a less active role while the student is actively driving the learning and so fully engaged in the learning journey (Alghamdi, 2016; Botha, 2014; Knowles, 1975). The facilitative approach appears to be in direct contrast to the teacher as transformative leader approach. The one requires active participation, encouragement and stimulation of discourse by the teacher, while the other encourages a more reserved approach, allowing learners to follow their own path and find their own way. When one follows the heutagogical approach, there is neither a teacher nor a facilitator present in the learning situation, and the student is completely responsible for the learning environment (Blashke, 2012; Olivier, 2016). Heutagogy is depicted as an extension of andragogy, with the learner

progressing from dependence to interdependence and independence, consequently maturing into being comfortable with, even preferring, a heutagogical learning milieu. The more mature a learner is in terms of learning, the less input (control) is needed by the teacher or facilitator (Blashke, 2012; Olivier, 2016).

Heutagogy requires the following design features (Blashke, 2012; Botha, 2014; Olivier, 2016):

- (1) **Design feature 1:** When learners define and create learning contracts, which allows the learners to determine and control their own learning journeys.
- (2) **Design feature 2:** A flexible curriculum allows learners to choose what they learn. Facilitators guide the learners.
- (3) **Design feature 3:** Interaction between the learners create the learning opportunities.
- (4) **Design feature 4:** Learners and educators agree about the assessments.
- (5) **Design feature 5:** The cultivation of reflective practice is a significant element of the learning design.
- (6) **Design feature 6:** The learners and facilitator create a cooperative learning milieu that stimulates the construction of shared meaning.

In the tertiary education environment, universities traditionally offer set curricula in which students participate (Blashke, 2012; Olivier, 2016). In the university and college featured in this research study, students can choose from a number of business-related degrees, with only a few elective modules available. It may appear impossible for adult learners studying at the institution to establish their own learning requirements and to plan and implement their personal learning strategy. Nonetheless, in view of the entire qualification as well as at the level of individual modules, the choices offered to students create the perception of control over planning their learning and setting and executing a personal learning strategy. The phenomenon of learner control in a tertiary qualification with prescribed components has been investigated by a number of researchers globally (see Gorissen, et al., 2013; Torenbeeck, et al., 2013; Wang, et al., 2008; Yamagata-Lynch, et al., 2015). Students can decide for how many and for which modules to register in any tuition period, with the proviso that that they adhere to specific module requirements and prerequisites. In ODeLHE, students largely plan their own study schedules and decide which study behaviours and methods to employ. Within the academic rules governing a curriculum at tertiary level, there is consequently a fair amount of freedom for students to plan, decide upon and execute their learning strategies (Gorissen, et al., 2013; Wang, et al., 2008; Yamagata-Lynch et al., 2015). In addition, given the nature of ODeLHE, students have

a reasonable amount of autonomy or self-direction in their learning (Gorissen, et al., 2013; Olivier, 2016; Wang, et al., 2008). However, students may not perceive or experience the ODeLHE environment as autonomous, as they may be used to study environments where most choices and actions are compulsory (Olivier, 2016). The compulsory nature of tertiary education environments may therefore erode perceptions of learner control and autonomy (Gorissen, et al., 2013; Olivier, 2016). In addition, not all learners are willing or able to engage in self-directed or independent learning to the extent described by Blashke (2012) (see Olivier, 2016; Sze-yeng & Hussain, 2010). Some students prefer a more structured learning environment and more active teachers, at least until they feel more comfortable in a less structured learning milieu (Curtis, et al., 2014; Frambach, et al., 2012; Olivier, 2016).

The principles of andragogy and heutagogy should not be confused with the existing models of academic self-directedness. Although both andragogy and heutagogy assume and depend on the existence of student academic self-directedness, neither of the approaches to learning facilitation give a thorough description of academic self-directedness. The following models of adult learner self-directedness provide a systematic review of the concept of adult learner self-directedness as it is conceptualised in reported research.

3.2.2 The models of adult learner self-directedness

The models of adult learner self-directedness that are discussed in this section are those of Brockett and Hiemstra (1991), Candy (1991), Grow (1991), Garrison (1997), Song and Hill (2007) and Botha (2014). The models of Brockett and Hiemstra (1991), Candy (1991), Grow (1991), Garrison (1997), Song and Hill (2007) are specifically discussed, because these models were significant in the development of the ALSDS (Botha, 2014) in ODeLHE model originated by Botha (2014).

3.2.2.1 Brockett and Hiemstra

Brockett and Hiemstra (1991; also see Du Toit-Brits & Van Zyl, 2017a; Gu, 2016) view the capacity for self-directed learning from two primary perspectives: a process perspective and a goal perspective. The process view of learner self-direction represents the learner as being an active agent in the learning process by harnessing personal responsibility to plan, execute and evaluate a learning strategy (Du Toit-Brits & Van Zyl, 2017a; Gu, 2016). The goal perspective puts a learner's personal need or preference for autonomous learning in the spotlight. Consequently, the learner can possess a conviction for self-directed learning, or can participate in the process of self-directed learning, or can utilise both the process and goal perspective in the autonomous management of the learning

journey (Du Toit-Brits & Van Zyl, 2017a; Gu, 2016). Context is included in the self-directedness of students in terms of place of learning and policies used in those places to manage learning (Brockett & Hiemstra, 1991; Du Toit-Brits & Van Zyl, 2017a; Song & Hill, 2007). Brockett and Hiemstra's (1991) model consequently consists of context, student behaviour and student need or desire. In 2012, the model was updated and refined (Gu, 2016). The refined model consists of three elements, namely person (individual characteristics), process (the teaching–learning interaction) and context (the socio-biographical milieu). All three elements are equally influential in student self-directedness (Du Toit-Brits & Van Zyl, 2017a; Gu, 2016).

3.2.2.2 Candy and Grow

According to Candy (1991, also see Gu, 2016; Khiat, 2015), self-directed learning consists of four dimensions. The dimensions are: personal attribute (learner agency or autonomy), motivational orientation (personal management of learning behaviour), learner behaviour (displaying certain learner behaviours related to controlling the learning in a given learning environment) and autodidaxy or true self-directed learning (searching for learning in all situations, not only the formal tertiary context). Candy (1991) had the insight to consider the impact of context and content on the self-directedness of learners, indicating that self-directedness may vary according to a learner's familiarity with the content to be mastered and the context within which it should be mastered (also see Gu, 2016, Khiat, 2015). In this regard, Candy (1991) built on the assumption of Knowles (1975) that self-directedness may be measured on a continuum, and preceded Blashke's (2012) avowal of contextual adult learner autonomy. On the other hand, Grow (1991) proposes a staged self-directed learning model, which emphasises alignment between students' levels of self-directedness and tuition methods. Highly self-directed students would consequently require less guidance from the university teacher, while the least self-directed students would require full guidance (Du Toit-Brits & Van Zyl, 2017b).

3.2.2.3 Garrison

Garrison (1997; also see Du Toit-Brits & Van Zyl, 2017b) portrays self-directed learning in educational settings as interconnected aspects, namely self-supervision (managing the broader external learning context), self-observation (closely monitoring personal thought processes and learning behaviours) and individual motivation (consisting of inflowing motivation – to enrol for higher education, and engaged motivation – the persistence to immerse the self in the learning environment). The bigger the integration between self-supervision, self-observation and individual motivation, the more agentic

the student is in the learning experience (Botha, 2014; Du-Toit-Brits, 2017; Garrison, 1997; Gu, 2016; Lai, 2011). Garrison (1997) incorporates the learning context into the concept of adult learner self-directedness and significantly emphasises individual self-monitoring of thought processes and learning behaviours in learner self-directedness. Grow's (1991) staged self-directed learning model incorporates Knowles's (1975) assumption that adult learner self-directedness exists on a continuum and develops through experience. Conversely, both internal and external factors (such as comprehension of the learning material and preparedness for higher education or ODeLHE) may affect students' successful application of self-directed learning (Gu, 2016).

3.2.2.4 Song and Hill

Song and Hill (2007; also see Du Toit-Brits & Van Zyl, 2017b) propose a conceptual model for self-directed learning in online contexts, based on Brockett and Hiemstra's (1991) model. The point of departure is the assumption that self-directed learning consists of both individual traits and a learning process, but the model includes a well-developed focus on the learning milieu and its impact on learner self-directedness (Du Toit-Brits & Van Zyl, 2017b; Gu, 2016). Individual traits relate to capacities adult learners possess to facilitate learning in online contexts, such as the desire to and aptitude for managing their own learning. Song and Hill (2007) include the utilisation of resources and well-developed cognitive stratagems, as well as the incorporation of existing knowledge of the specific subject and previous experience as a learner into the individual traits of learners. The learning process relates to how the learners independently manage the learning, such as planning, checking and assessing their own learning. The learning milieu consists of factors external to the learner that influence the displayed self-directedness, such as the human and information resources supplied by the tertiary institution and the learning tasks expected of learners ('design elements') (Du Toit-Brits & Van Zyl, 2017b; Gu, 2016; Song & Hill, 2007). Song and Hill's (2007) approach seems to incorporate all the aspects of the various models of student self-directedness, including student autonomy, interaction with the learning environment, individual historical knowledge and student learning behaviours.

3.2.2.5 Botha

Botha (2014) puts forward a four-dimension model of self-directed learning in ODeLHE. Botha's (2014) model comprises the following four dimensions:

- (a) Strategic utilisation of officially provided resources measures how and at what time adult learners as active students use the academic resources provided by the tertiary institution (Botha, 2014; Botha, et al., 2015; Coetzee, 2014).
- (b) Engaged academic activity assesses adult learners' calculated, decisive study activities to advance their academic studies or cultivate subject-specific competence (Botha, 2014; Botha, et al., 2015; Coetzee, 2014).
- (c) Success orientation for open distance learning measures adult learners' self-reported self-confidence, self-efficacy beliefs and resilience in their ability to be successful ODeLHE students (Botha, 2014; Botha, et al., 2015; Coetzee, 2014).
- (d) Academically motivated behaviour assesses the self-reported behaviour of adult learners that relate to intrinsic or extrinsic motivation in an ODeLHE milieu (Botha, 2014; Botha, et al., 2015; Coetzee, 2014).

The four-dimension Model of Adult Learner Self-directedness in ODeLHE is depicted in Figure 3.3 and additionally clarified after the figure.

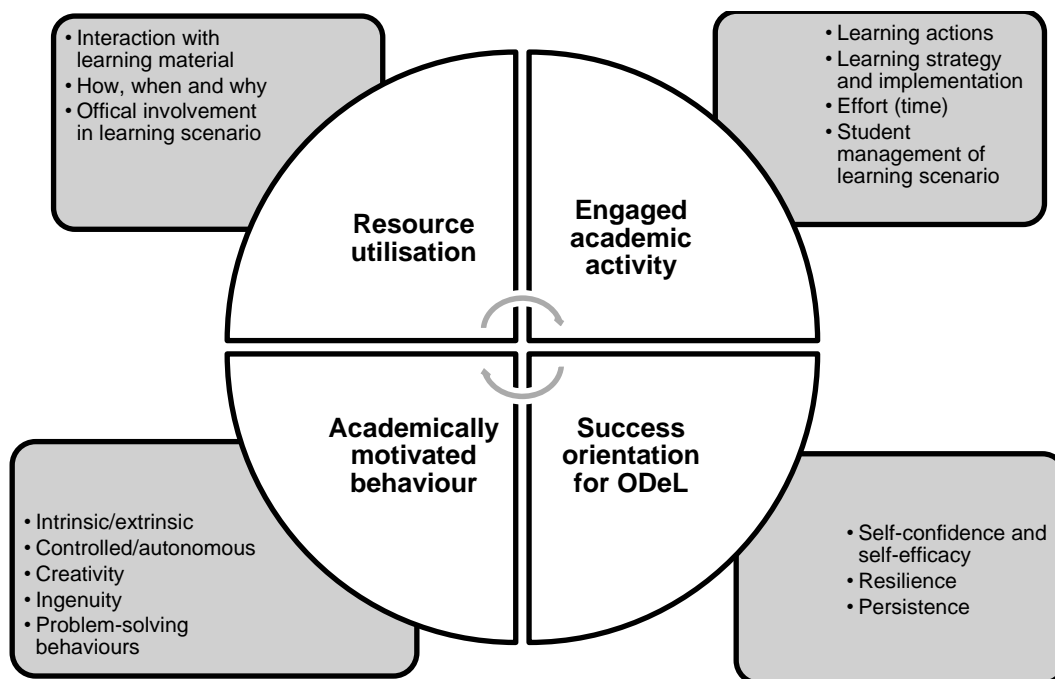


Figure 3.3 The four-dimension Model of Adult Learner Self-directedness in ODeLHE (Source: Botha, 2014)

The four-dimension Model of Adult Learner Self-directedness for ODeLHE encompasses both behavioural elements and psychological elements. The strategic utilisation of officially provided resources and engaged academic activity focus on the behaviour displayed by students in their academic activities, while success orientation for ODL focuses on the thought processes and beliefs underlying students' academic behaviours and academically motivated behaviours focus on adult learners' motivational orientation beliefs (Botha, 2014; Botha, et al., 2015).

(i) The strategic utilisation of officially provided resources

The first dimension of Botha's (2014) model of adult learner self-directedness in ODeLHE the strategic utilisation of officially provided resources, which indicates when, how and why adult learners utilise the resources provided by the ODeL University in question. Officially provided resources are currently the main method of communication with students of the university where the original research study was completed. The official resources are supported by various online and mobile technological applications based on a learning management system called myUnisa. The mobile and online applications include short message service messages, blogs, discussion forums, announcements and the placing of both tuition material and additional material that may be of help on a module (subject) website (Archer, Chetty, & Prinsloo, 2014; Botha, et al., 2015; Clayton & Smith, 2016; Olivier, 2016; Subotzky & Prinsloo, 2011). Official resources include printed study guides, tutorial letters and module (subject) websites, and provide the boundaries of the learning milieu created by the university (Balfour, et al., 2015; Olivier, 2016). Strategic utilisation of officially provided resources indicates how adult learners choose to interact with the learning milieu and in addition provides an indication of their engagement with the learning material (Bolkan, et al., 2016; Hew, Law, Wan, Lee, & Kwok, 2016; Vayre & Vonthron, 2017). Kahu and Nelson (2017) call student interactions with learning spaces (which include learning material) a 'psycho-social' area, where official elements and learner characteristics merge in order to facilitate efficient learning.

The way students choose to interact with the learning environment through their strategic use of officially provided resources demonstrates the measure of learner control, autonomy and/or adult learner dependence/independence in the learning scenario (Alt, 2015; Artino & Jones, 2012; Botha, 2014; Bolkan, et al., 2016; Du Toit-Brits, 2015b; Lu, et al., 2016; Ng & Tan, 2017; Xiao, 2017). The adult learners' self-reports on the strategic utilisation of officially provided resources indicates the voluntary interactions of the students with the learning milieu, and describes whether the learners use the learning resources for the planned purpose (Alt, 2015; Artino & Jones, 2012; Botha, 2014; Botha, et al., 2015; Ng & Tan, 2017). In addition, adult learners' diverse interactions with the officially provided resources could provide an early indication of specific self-regulatory behaviours such as goal setting, self-assessments and self-analysis of completed work (Alt, 2015; Aziz, Sulaiman, &

Zahari, 2016; Bolkan, et al., 2016; Botha, 2014; Botha, et al., 2015; Du Toit-Brits, 2015b; Ng & Tan, 2017). Furthermore, the learners' interactions with the official learning material indicates what they require from the academic institution in terms of structure, clarity, feedback and general guidance in their learning (Yamagata-Lynch, et al., 2015).

On the other hand, the official resources provided by the university serve as an indication of how the university defines and manages the learning scenario (Bolkan, et al., 2016; Prinsloo, 2015; Subotzky & Prinsloo, 2011; Vu & Shah, 2016). The official university resources are authorised by the institution and should adhere to specific policies on tuition and assessment and communicate to students the tuition philosophy underlying the creation and distribution of the learning resources (Balfour, et al., 2015; Du Toit-Brits, 2015b; Vu & Shah, 2016). In fact, Prinsloo (2015) describes the learning context as one where both the academic institution and the adult learner possess agency – the capacity to act independently. Furthermore, in order to be successful, ODeLHE learners need some form of structure to provide direction to their learning, but also need support in order to cultivate self-directed learning capacities (Vu & Shah, 2016; Yamagata-Lynch, et al., 2015). Consequently, the interactions between the learning context and the adult learner are a critical dimension in the adult learner self-directedness for the ODeLHE model. The interactions between the learning context and the adult learner indicate whether the institution has succeeded in providing an empowering learning climate for each adult learner and whether the learners are capable of functioning successfully as self-directed learners in that climate (Prinsloo & Coetzee, 2013; Vu & Shah, 2016).

(ii) Engaged academic activity

Engaged academic activity describes the deliberate and persistent learning actions in which adult learners engage in order to build their competence and progress with their studies (Alt, 2015; Aziz, et al., 2016; Botha, 2014; Botha, et al., 2015). Strategic utilisation of officially provided resources emphasises the official learning environment created by the academic institution and the adult learners' interactions with the official learning context. On the other hand, engaged academic activity focuses on how adult learners immerse themselves in the learning material, for example by initiating and executing a learning strategy, reflecting on what and how they learn and linking new knowledge to existing knowledge scaffolds (Alt, 2015; Bolkan, 2015; Bolkan, et al., 2016; Botha, 2014; Botha, et al., 2015). Engaged academic activity includes an indication of the amount of time adult learners are actively involved with the learning material, which is influenced by the adult learners' interest in the learning content and their awareness of their own cognitive capacities (Alt, 2015; Bolkan, 2015; Danilowicz-Gösele, et al., 2017). Adult learners who are effectively engaged in the learning activities, and who believe in their capacity to be successful, are more academically motivated, and

consequently more successful academically (Alt, 2015; Bolkan, 2015; Coetzee & Oosthuizen, 2013; Danilowicz-Gösele, et al., 2017; Xiao, 2017).

Academic engagement incorporates three components, namely a behavioural element, an emotional component and a cognitive element (Danilowicz-Gösele, et al., 2017). The behavioural component focuses on the learners' academic actions, while the emotional element is about learners' feelings regarding the academic milieu, their academic endeavours and the various role players in their academic work. The cognitive component refers to the thought processes involved in engaged study, including the amount of effort put into understanding difficult sections of the work, the overall inclination to become immersed in the learning material and an informed realisation of the effort and learning strategy needed to be academically successful (Danilowicz-Gösele, et al., 2017). Engaged academic activity indicates the academic maturity of adult learners, because it clarifies the awareness of the learners that a certain amount of time and effort should be invested in their studies, along with a sense of proactivity related to scholastic activities (Alt, 2015; Brown & Murdolo 2016). Engaged academic activity provides evidence of how the adult learners delimit, elaborate on and manage the learning content (Bolkan, 2015; Bolkan, et al., 2016; Botha, 2014; Botha, et al., 2015). Elaboration involves integrating new information into existing knowledge scaffolds in order to facilitate comprehension and future recall (Bolkan, et al., 2016).

Academically engaged learners tend to be more intrinsically motivated in addition to being more autonomous in their academic work and more capable of elaborating on new knowledge (Alt, 2015; Bolkan, 2015; Bolkan, et al., 2016; Danilowicz-Gösele, et al., 2017). In addition, it is not only the amount of time spent studying, but also the amount of active learning in order to analyse, reflect on and assimilate information into existing knowledge frameworks that creates the necessary memory pathways for deep learning and later recall (Bolkan, et al., 2016). However, adult learners' perceptions of the effort required to complete academic tasks successfully influence the amount of effort students are prepared to devote to achieving success (Mahlangu & Fraser, 2017). Furthermore, cognitive load plays a role in the relationship between the effort students put into their studies and the resultant academic outcomes (Bolkan, et al., 2016). Cognitive load is the amount of intellectual effort required from the student to master the learning material. Cognitive load is affected by the perceived difficulty of the learning material and the cognitive capacity of the learner (Bolkan, et al., 2016).

Du Toit-Brits (2015b) indicates that adult learners should be mainly responsible for immersing themselves in the learning process. However, the academic institution has a concomitant responsibility to provide a framework within which the adult learners can acquire the capacities that allow for immersion in the learning material (Alt, 2015; Du Toit-Brits, 2015b; Mahlangu & Fraser, 2017). Opportunities for self-reflection and dialogue, in one form or another, seem to be the methods

by which student engagement can be cultivated in an ODeLHE setting (Alt, 2015; Du Toit-Brits, 2015b; Van Wyk, 2017; Vayre & Vonthron, 2017). Here it is important to bear in mind that the concept of 'dialogue' implies conversation between the academic educator and the students, as well as students themselves, which requires an exchange of ideas, information and content (Alt, 2015; Du Toit-Brits, 2015b; Van Wyk, 2017; Vu & Shah, 2016).

The provision of timely and effective emotional support from the academic facilitator and the institution at large is particularly important, as the association between emotion, engaged academic activity and success orientation in the form of positive academic self-efficacy beliefs is strongly positive (Mahlangu & Fraser, 2017; Van Niekerk & Schmidt, 2016; Van Wyk, 2017; Vayre & Vonthron, 2017). Furthermore, Vallance and Towndrow (2016) propound that learning through problem solving and, more importantly, learning as problem solving by executing progressively complex tasks, enhance student engagement. The approach of Vallance and Towndrow (2016) overlaps with that of Deci and Ryan (2000) (also see Deci, et al., 2017; Evans, 2015), who indicate that engaging with increasingly complex tasks enhances learner self-efficacy. In addition, students assimilate new information more successfully when they are highly motivated and when the learning materials are clear and unambiguous (Bolkan, et al., 2016). Consequently, the resources provided by the academic institution, encouragement to reflect on and assimilate the learning material and the student's motivation to succeed would affect the relevant academic outcomes (Bolkan, et al., 2016).

(iii) Success orientation for open distance and e-learning

The third dimension of the ALSDS for ODeLHE model is success orientation for ODeL, which denotes thought patterns of adult learners that indicate their academic self-confidence in the context of ODeLHE (Botha, 2014; Botha & Coetzee, 2016; Coetzee & Oosthuizen, 2013; Vayre & Vonthron, 2017). Success orientation for ODL is the mental toolbox of adult learners in ODeLHE and includes academic self-efficacy, resilience, persistence and innovative problem-solving attitudes in their academic activities. Success orientation for ODeLHE relates to the aspects of learner autonomy, individual motivation, adult learner independence and personal self-sufficiency that are designated in the different models of student self-directedness (Botha, 2014; Botha & Coetzee, 2016). Consequently, success orientation encompasses, but is not limited to, self-efficacy beliefs, the implementation of effective learning strategies and commitment to academic goals (Northcote, Gosselin, Reynaud, Kilgour, & Anderson, 2015; Wilson & Narajan, 2016).

Moreover, success orientation for ODeLHE is not a behaviour, but rather an attitude or psychological construct that informs and influences behaviour (Botha, 2014; Botha & Coetzee, 2016; Coetzee & Botha, 2013). Adult learners' belief in their capacity to be successful and their concomitant learning

behaviours are not similar in all contexts, because their reasons for engaging in learning differ (Northcote, et al., 2015; Plakhotnik & Rocco, 2015; Vansteenkiste & Mouratidis, 2016). However, success orientation for ODL influences student engagement with the learning material, the capacity to apply what is learnt and subsequently academic performance (Vu & Shah, 2016; Wilson & Narajan, 2016). Learners with a strong success orientation are usually persistent and motivated and function effectively as students (Spedding, Hawkes, & Burgess, 2017). Furthermore, motivational orientation also seems to affect success orientation, specifically academic self-efficacy and the employment of effective learning strategies, as well as engaged academic behaviour (Rashid & Ashgar, 2016; Rothes, et al., 2017).

Proactivity seems to play a significant role in success orientation for ODL, particularly when students utilise their strong points and attempt to mitigate their perceived shortcomings in an academic milieu. Proactive implementation of strong points and mitigation of shortcomings also affect motivation and academic engagement positively (Mostert, et al., 2017). Furthermore, learners' belief in their capacity is influenced by their perceptions of their ability as well as their expectations or hopefulness. Consequently, when learners believe that they do not possess the necessary academic abilities to succeed, they may be impairing their own success and progress (Mahlangu & Fraser, 2017; Mpofu, 2016). Therefore, a lack of belief in one's own capacity to succeed can lead one to fail (Mahlangu & Fraser, 2017; Mpofu, 2016).

Individual beliefs in what leads to success or failure in the academic (or any) environment can partially be clarified through attribution theory (Bolkan, et al., 2016; Mahlangu & Fraser, 2017; Mpofu, 2016). Attribution theory proposes that individual learners' perceptions of favourable or unfavourable academic outcomes may be ascribed to three general characteristics, namely locus (external or internal causality), stability (stable or unstable) and control (controllable or uncontrollable) (Mahlangu & Fraser, 2017). In terms of academic success, beliefs and efforts, a difficult activity may be perceived by an individual learner as external (required from outside the student), stable and uncontrollable, while the individual effort required to complete the task may be described as internal (situated in the learner), instable and within the learner's control (Mahlangu & Fraser, 2017). Consequently, adult learners' academic self-confidence and self-beliefs inform their academic activities and ultimately their success (Mahlangu & Fraser, 2017).

(iv) Academically motivated behaviour

Academically motivated behaviour is the fourth and last dimension of the model for ALSDS for ODeLHE and describes the behaviour of adult learners that indicate their motivational orientation

towards academic undertakings, as well as their individual resilience and problem-solving behaviours (Botha, 2014; Botha, et al., 2015). Academically motivated behaviours indicate whether adult learners are sufficiently self-motivated for distance learning, how resilient the adult learners are in the face of adverse situations, and whether they possess the capacity to autonomously solve academic-related problems or approach someone who can assist them with solutions (Bolkan, 2015; Botha, 2014; Botha & Coetzee, 2016; Du Toit-Brits & Van Zyl, 2017b). Academically motivated behaviours are those that one might expect in an ODeLHE context from adult learners who are self-sufficient, motivated, persistent and autonomous learners (Bolkan, 2015; Botha, 2014; Botha & Coetzee, 2016; Du Toit-Brits & Van Zyl, 2017b). Motivation is a multi-dimensional concept, which includes extrinsic motivation (external motivational cues that drive adult learners to achieve their learning goals), intrinsic motivation (motivational drivers internal to the adult learner) and amotivation (the absence of academic motivation) (Du Toit-Brits & Van Zyl, 2017b; Kim, Christy, Schlegel, Donnellan, & Hicks, 2017).

Motivational orientations affect the resilience and problem-solving attitudes of adult learners (Bolkan, 2015; Mahlangu & Fraser, 2017). An intrinsic motivational orientation indicates a curiosity about, fascination with and absorption in a course of study. An extrinsic orientation to academic motivation indicates that external considerations, such as completing a qualification, obtaining good marks, being praised by the academic educator or pleasing a parent, are the primary influences on learner motivation (Bolkan, 2015). Intrinsic motivation is positively associated with self-directed learning, resilience, persistence in learning and academic performance. Tuition approaches, methods and activities affect cognitive stimulation and intrinsic motivation (Bolkan, 2015). Consequently, it becomes clear that the learning milieu created by the university, adult learners' immersion in the learning material and their academic motivation are intrinsically interrelated and all form part of the cultivation and nurturing of adult learner self-directedness (Bolkan, 2015; Mahlangu & Fraser, 2017). Academically motivated behaviour includes the capacity to accurately follow learning progress and adjust learning behaviours accordingly (Yang, 2016).

Adult learners tend to display more motivated behaviours than younger (also called traditional) higher education students, but it is possible that level of education could play a mediating role (Rothes, et al., 2017). In addition, research points out that it is those students who autonomously utilise the emotional and academic resources and relevant support systems available to them who cope best with the rigours of higher education study (Mahlangu & Fraser, 2017). However, adult learners need to be integrated into the higher education context in order to function effectively as students. As many of the adult learners in ODeLHE are removed in time and place from the source of educational context, resources and support, ODeLHE students may feel isolated and uncertain about what is

expected and how to comply with expectations (Mpofu, 2016). It is therefore imperative for the institution to provide a learning environment that is inclusive, supportive and sufficiently structured and that communicates expectations clearly to learners (Mahlangu & Fraser, 2017). In addition, it is vital for adult learners to realise that they personally contribute to their own academic success through their use of the official resources, engagement with the academic material, success orientation for ODeL and their academically motivated behaviours (Mpofu, 2016). Successful adult learners in ODeLHE are continuously solving problems in order to facilitate their academic success, indicating that they are autonomous, resourceful and empowered individuals (Mpofu, 2016). Table 3.1 provides a summarised comparison of the six models of adult learner self-directedness.

Table 3.1

A Comparison of the Six Models of Adult Learner Self-Directedness

Elements of learner self-direction	Brockett & Hiemstra (1991, 2012)	Candy (1991)	Grow (1991)	Garrison (1997)	Song & Hill (2007)	Botha (2014)
Basic foundation of learner self-directedness	1991: Process (learner actively manages the learning and goal (learner wishes to be self-directed) 2012: Person process context	Four dimensions: Personal agency, individual management of learning behaviour, relevant learner behaviour and autodidaxy	Tuition should match learner self-directedness across stages	Three elements: Self-supervision, self-observation and individual motivation	Three elements: Individual traits, learning process and learning milieu	Four facets: Strategic resource utilisation, engaged academic activity, success orientation for ODL and academically motivated behaviour
Basic beliefs	1991: Individuals can act in a self-directed manner, wish to be self-directed or both. 2012: Context has an equal influence on self-directedness as person and process	Individual self-directedness may vary according to context and content	Learner self-directedness occurs or develops in a staged manner	Integration between self-supervision, self-observation and individual motivation is essential for self-directedness	All three aspects of learning affect individual self-directedness in an ODeL context	Individual capacity, learning milieu, learner beliefs and learner behaviours affect adult learner self-directedness; socio-biographical variables affect individual capacity for self-directedness
Advantages	Considers both context and individual desires	Capacity for self-directedness may vary according to individual experience and knowledge; incorporates metacognitive principles in learner self-directedness	Personal, learner-focused tuition	Incorporates metacognition and context into self-direction; emphasises integration between three elements of self-directedness	Developed specifically for an ODeL context	Developed specifically for the South-African ODeL milieu
Disadvantages	Metacognition is not considered	Relevance for ODeLHE not established; socio-cultural differences in capacity for self-directedness are not considered	Difficult to implement with large groups of students; difficult to gauge the students' stage of self-directedness	Relevance for ODeLHE not established; socio-cultural differences in capacity for self-directedness are not considered	No evidence could be found on whether socio-cultural differences in capacity to utilise and benefit from ODeL technologies were considered	Not tested in practice yet; not tested for structural equivalence (factorial invariance) and metric, configural and scalar invariance for age, race and gender groups

3.2.2.6 A comparison of the six models of adult learner self-directedness

From Table 3.1 it is clear that adult learner self-directedness is envisioned and described as follows by the various models:

(i) The basic foundation of adult learner self-directedness

Brockett and Hiemstra (1991, 2012) combine personal responsibility (individual characteristics), attributes of the teaching–learning environment (process) and the social milieu (context) in their model of self-directedness. In the model, Brockett and Hiemstra (1991) as well as Hiemstra and Brockett (2012) clearly distinguish between the individual attribute of learner self-directedness and the context within which the learner can become a self-directed individual. Personal responsibility facilitates the development of self-direction in learning by harnessing the individual learner's personal characteristics, the attributes of the learning context and the social environment of the learner (Du Toit-Brits & Van Zyl, 2017a; Gu, 2016; Hiemstra & Brockett, 2012). Candy (1991) focuses only on the individual, highlighting personal agency, the agentic management of learner behaviour, learner behaviour that is relevant to the learning material and autodidaxy (also refer to Gu, 2016; Khiat, 2015, 2017). In addition, Candy (1991) believes that elements of the learning context could influence the extent of individual self-directedness.

Grow (1991) indicates that learner self-directedness manifests across various stages from dependence to independence and propounds that tuition approaches should match individual learner self-directedness development (also refer to Gu, 2016; Khiat, 2015). Garrison (1997) focuses on three elements, namely self-supervision, self-management and individual motivation, which Garrison (1997) divides into the motivation to enrol for tertiary study and the motivation to engage in and complete the study activities (also see Du Toit-Brits & Van Zyl, 2017a; Gu, 2016). Garrison (1997) specifically states that the focus in the study of self-directed learning should shift from the external management of the learning context to understanding and utilising the internal individual processes that cultivate and drive self-directed learning (also see Du Toit-Brits & Van Zyl, 2017a; Gu, 2016). Brockett and Hiemstra (1991), Candy (1991), Grow (1991) and Garrison (1997) were all concerned about learner self-directedness at residential tertiary learning institutions, not distance learning or ODeL milieus.

Conversely, Song and Hill (2007) emphasise that the cultivation of self-directed learning in online learning milieus may differ from that in residential or face-to-face settings (Du Toit-Brits & Van Zyl, 2017a). Song and Hill (2007) single out individual traits, learning process and learning milieu as vital components of adult learner self-directedness in ODeL contexts (also refer to Du Toit-Brits & Van Zyl, 2017b). Individual traits are the distinctive attributes of particular learners, such as their willingness and ability to manage their own learning, that affect their self-directedness. Learning process is about learner behaviour when participating in a learning event, such as agentially preparing, implementing, managing and assessing an individual learning strategy. Learning context includes design of the learning milieu and learning material, and the kind of learner support that is provided to learners (Du

Toit-Brits & Van Zyl, 2017b). Botha (2014) describes a four-dimensional model of adult learner self-directedness in ODeLHE (with a specific focus on the South-African milieu). The model encompasses how learners use the official resources and engage with the learning material, how confident learners are in their capacity to be successful in an ODeLHE context and the academically motivated behaviours learners display during their learning journey in order to ensure success (Botha, et al., 2015). Botha's (2014) model consequently includes intra-personal, contextual and behavioural components in order to explain adult learner self-directedness in South Africa's ODeLHE environment.

(ii) The basic beliefs underpinning the diverse models of adult learner self-directedness

Brockett and Hiemstra (1991) believe that personal responsibility is the vital factor in adult learner self-directedness. Adult learners can possess the capacity and/or willingness to be self-directed, act self-directed in a self-directed manner, or both. In a later revision of their model, context is stated as having an equal influence on both a self-directed orientation and self-directed actions within a specific milieu (Brockett & Hiemstra, 1991; Du Toit-Brits & Van Zyl, 2017b, Hiemstra & Brockett, 2012). Candy (1991) partially supports Brockett and Hiemstra's (1991) model by indicating that adult learner self-directedness may vary according to learning context and the difficulty of the learning content (also refer to Du Toit-Brits & Van Zyl, 2017b). Grow (1991), on the other hand, believes that adult learner self-directedness develops in stages over time and that tuition methods should match learners' stage of self-directedness (also refer to Gu, 2016). Garrison (1997) indicates that the zone of integration between self-supervision, self-observation and individual motivation is the area where adult learners can be truly self-directed; consequently, integration between the three dimensions is vital for effective self-directed learning (also see Gu, 2016). Song and Hill (2007) believe that all three elements of learning in an ODeL context, namely individual learners' traits, their learning behaviour and the learning milieu, cultivate adult learner self-directedness (also refer to Du Toit-Brits & Van Zyl, 2017b). Botha (2014) believes that individual capacities, beliefs and motivations, learner behaviour and the way the learner interacts with the learning context all influence adult learner self-directedness in a South African ODeL environment (also refer to Botha, et al., 2015).

(iii) The advantages and disadvantages of the various models of adult learner self-directedness

Brockett and Hiemstra's (1991) model and their revised model (2012) consider both individual drive, behaviour and learning context as important factors in adult learner self-directedness, but the vital factor of metacognition is not described in the model (Botha, 2014). Candy (1991) propounds that individual capacity for academic self-directedness may vary according to individual experience and knowledge scaffolds and integrated metacognitive principles into his model of adult learner self-directedness (see Botha, 2014). However, Candy's (1991) model does not elaborate on the socio-cultural influences on adult learner self-directedness. In addition, the model has not been assessed for application in ODeLHE contexts (Botha, 2014). Grow (1991), on the other hand, indicates that individually focused tuition principles develop self-directedness. This is however not an economic approach to ODeLHE, where large student numbers pose a challenge to institutions (Botha, 2014).

Garrison (1997) builds on Candy's (1991) model by also incorporating metacognition into his model of adult learner self-directedness, but also emphasises that learner self-directedness is most effective in the area where self-supervision, self-observation and motivation are integrated. However, Garrison (1991) developed the model for use in residential universities and the application in ODeLHE has not been established. In addition, the influence of socio-cultural elements on academic self-directedness are not addressed (Botha, 2014). Song and Hill (2012) developed their model specifically for online or ODeL contexts; however, given the challenges that adult learners in developing economies face, and the diverse nature of student cohorts in ODeL milieus, the socio-cultural influences that may affect adult learner academic self-directedness should be thoroughly investigated in order to develop a sound model that is not culturally biased. Such evidence could not be found (Botha, 2014). Botha (2014) addresses academic self-directedness of adult learners specifically in the ODeLHE milieu in South Africa, but the model has not yet been assessed for practical application and still has to be tested for structural equivalence (factorial invariance) and metric, configural and scalar invariance for age, race and gender groups.

3.2.3 The main elements of adult learner self-directedness

The four most significant elements evident in all the theories on adult learner self-directedness discussed in this chapter are the following: the formal learning milieu, learner emotions (affect or motivation), learner study behaviour, (engagement) and learner autonomy (agency or cognition). The following discussion deconstructs each of these four elements in order to report briefly on the reported research on each element.

3.2.3.1 The formal learning milieu

The formal learning milieu created by the educational institution is the point of departure of the learning context in ODeL (Bidarra & Rusman, 2016; Cassidy, 2011; Olivier, 2016; Xiao, 2017). The presentation of course content is central to the learning environment and sets the tone for what will be expected of students and how they are encouraged to engage with the learning material (Daddow, 2016; Gorissen, et al., 2013; Moore, 1990; Song & Hill, 2007; Torenbeek, Jansen, & Suhre, 2013). The learning environment can be either conventional (centrally controlled by the academic institution) or collaborative (jointly controlled by the student participants and the academic institution) (Candy, 1991; Moore, 1990; Tan, 2017; Torenbeek, et al., 2013). In an ODeLHE context, adult learners are expected to display more self-directed behaviours by managing their own learning and closely scrutinising their own cognitive processes and behaviours (Song & Bonk, 2016; Tan, 2017; Wang, et al., 2008).

One of the most important responsibilities or goals of tertiary education are to inculcate in students the capacity to be autonomous learners – a process which students may very well find both difficult and painful (Alghamdi, 2016; Bedggood & Donovan, 2012; Bernhardsson, et al., 2017). Candy (1991) indicates that the capacity for self-direction may vary according to context, which includes the learner's experience world (also refer to Botha & Coetzee, 2016). Now the question arises: If students in an ODeLHE environment are expected to be more self-directed, do they really possess the required capacity for self-direction? Candy's (1991) approach mirrors that of Knowles (1975) in the belief that the capacity for self-directed behaviour can be cultivated (also refer to Botha & Coetzee, 2016). In support of this belief, Wang, et al. (2008) found that a personal learning strategy and personal motivation to learn play a significant role in the capacity for self-directed learning and are significantly related to learning outcomes in tertiary education (also refer to Alghamdi, 2016). In addition, Mostert, Theron and De Beer (2017) report that adult learners frequently prefer to utilise their academic strong points and correct their weaknesses in order to ensure academic success. Furthermore, the agentic correction of weak points and utilisation of academic strengths relate positively to active engagement in the learning process (Mostert et al., 2017).

3.2.3.2 Learner emotions

The emotions (such as motivation) surrounding study in ODeLHE may significantly influence students' academic self-directedness (Alghamdi, 2016; Cassidy, 2011; Gravani, 2015; Greene, 2015; Hurd, 2007). Emotions are inner signals that direct individual actions and thought processes; consequently, emotions are the axis upon which learning behaviours turn and a key factor in student

success (Alghamdi, 2016; Cassidy, 2011; Xiao, 2017). Learner emotions may vary according to the learning task with which they are engaging (Rothes, et al., 2017). A more challenging task may elicit more negative emotions and insecurity, while a more enjoyable task may elicit a positive set of emotions. Coping strategies are associated with challenging tasks (Bhayat & Madiba, 2016; Hurd, 2007; Rothes, et al., 2017). Learners may use cognitive or metacognitive strategies, such as positive personal reinforcement or thinking about possible solutions, to cope with the emotions concomitant to ODeLHE study (Cassidy, 2011; Hurd, 2007; Mostert, et al., 2017; Mundia, Shahrill, Jaidin, Jawawi, & Mahadi, 2016). While more students tend to utilise cognitive or metacognitive strategies as coping mechanisms, affective strategies are also available, but not necessarily used. Relaxation and mindfulness are examples of affective strategies that can be used to cope with the negative emotion of anxiety over a learning task (Bhayat & Madiba, 2017; Hurd, 2007; Pidgeon & Pickett, 2017). The use of coping strategies to manage negative emotions in a learning environment is an indication of the resilience of ODeLHE learners and their capacity to practise self-regulation in their learning (Bhayat & Madiba, 2017; Pidgeon & Pickett, 2017). However, learners may also use detrimental coping strategies, such as task avoidance or disengagement. Reported research indicates that learners who utilise positive coping strategies are psychologically better adjusted to the stressors related to ODeLHE (Pidgeon & Pickett, 2017).

Attendant to the affective dimension of adult learning in ODeLHE is the experience world of the learner. According to Knowles (1975), adult learners have a rich experience world that can be used fruitfully in educational contexts (also see Alghamdi, 2016). The experience world of adult learners consists not only of their work experience, but also their experience of previous learning participation and their broader social experiences, to name but a few (Alghamdi, 2016; Botha, 2014; Song & Hill, 2007). The learners' rich experience world influences their interactions with the learning context, ongoing learning experiences and outcomes (Alghamdi, 2016; Botha, 2014; Gravani, 2015).

The study of self-determination theory as it relates to student motivation is vital, as student motivation, specifically intrinsic motivation, is directly linked to academic success (Martens, De Brabander, Rozendaal, Boekaerts, & Van Der Leede, 2010; Olafsen, et al., 2017; Torenbeek, et al., 2013). Student motivation is also related to adult learner self-directedness (Du Toit-Brits & Van Zyl, 2017b). Self-determination theory focuses on intrinsic motivation in learning contexts and on how extrinsically motivated behaviours may become assimilated and internalised to be viewed by the learner as self-regulatory behaviours (Deci, et al., 2017; Olafsen, et al., 2017). Higher education learners' motivation significantly predicts academic success (Goldman, Goodboy, & Weber, 2017; Torenbeek, et al., 2013). Adult learners' motivational orientation is explained mostly from one of two perspectives, namely intrinsic or extrinsic motivation. Intrinsic motivation revolves around the inherent drivers that

inspire learner motivation, while extrinsic motivation relies on external stimulation of learner motivation (Bolkan, 2015; Deci, et al., 2017; Johnson, Stewart, & Bachman, 2013; Kynd, Dochy, Struyven, & Cascallar, 2011; Moneta, Spada, & Frost, 2007; Olafsen, et al., 2017; Torenbeek, et al., 2013).

The assumption is that intrinsically motivated students will also have a natural desire to be self-directed, autonomous learners (Goldman, et al., 2017; Johnson, et al., 2013; Liu, Wang, Kee, Boon, Lim, & Chua, 2014). The supposition of intrinsic motivation supports the assumptions Knowles (1975) made about adult learners, namely that adults grow into the desire to be self-directed and that adults have a personal motivation to acquire new competencies (also refer to Botha, 2014; Botha & Coetzee, 2016). Deci and Ryan (2000) indicate that intrinsically motivated actions are entirely autonomous and flow from an independent desire to engage in that action (Goldman, et al., 2017). Student motivation is closely linked to self-efficacy, which relates to students' beliefs in their ability to behave actively in specific ways to achieve personal goals, and that their efforts will lead to successful outcomes (Bolkan, 2015; Du Toit-Brits & Van Zyl, 2017b; Goldman, et al., 2017; Matoti, 2011). The learning environment created by the institution (Bolkan, 2015; Goldman, et al., 2017; Matoti, 2011) influences learner motivation and the attendant academic achievement. Specifically, cerebral stimulation, perplexing tasks and quality communication with students are linked to intrinsic motivation, learner autonomy and learner engagement (Bolkan, 2015; Goldman, et al., 2017).

3.2.3.3 Learner engagement

Learner engagement, not only with the learning environment but also with peer groups, has been identified as one of the many factors that influence academic success (Bore & Munro, 2016; Greene, 2015; Kahu, et al., 2013; Wimpenny & Savin-Baden, 2013; Zepke, et al., 2010). Learner engagement is described as the time and energy students focus on significant learning activities and the effort they devote to effective educational practices (Bore & Munro, 2016; Kahu, et al., 2013; Salanova, et al., 2010). Academics tend to agree that the more time learners spend engaged with their studies, the bigger their chances of success (Torenbeek, et al., 2013). Conversely, the deeper learners are engaged in the learning material, the higher the probability that they will effectively plan for their learning and execute their plan (Bore & Munro, 2016). Coetzee and Oosthuizen (2013) found that study engagement positively affects adult learner self-efficacy in an ODeLHE milieu. In addition, the institution plays a role in learner engagement in terms of learning context, course and learning material design (Bore & Munro, 2016; Kahu, et al., 2013). Learner engagement involves more than motivation and self-efficacy; it also encompasses learner study behaviour.

Learner preparation for examinations or other formal assessments is usually described as one perspective or a mixture of three perspectives, namely the 'deep' (immersion) approach, the 'surface' (superficial) approach and the 'strategic' (considered) approach (Brown & Murdolo, 2016; Price, Richardson, Robinson, Ding, Sun, & Han, 2011). Learners who utilise the immersion approach ('deep approach') aim to fully comprehend the significance of the material to be mastered, while learners who use the considered approach ('strategic approach') wish to achieve high marks while at the same time aiming to comprehend the significance of the material. Learners who adopt a superficial approach ('surface approach') learn by rote in order to remember sufficient information to complete an assessment successfully (Brown & Murdolo, 2016; Price, et al., 2011). In some instances, learners can use both the superficial and the immersion approach – that is, they attempt to fully comprehend the significance of the learning material for their lives and study field. However, since these learners also aspire to achieve good marks, they may revert to using a shallow approach in certain assessments, for instance to use rote learning to remember and recall definitions or lists of dates (Brown & Murdolo 2016; Price, et al, 2011). The course content, learning environment and learners' perception of the intellectual challenge presented by learning activities seem to influence the learning approaches students adopt (Brown & Murdolo, 2016; Price, et al., 2011). However, the personal characteristics of individual students, such as resilience, diligence, efficiency and intellect, seem to enable learners to utilise an immersion approach to their academic learning, irrespective of the learning environment (Bore & Munro, 2016). It is clear that a myriad factors influence student learning behaviour. The question arises: Are universities, specifically ODeL universities, inculcating the desired behaviours in their students, with specific reference to the ability to be autonomous, self-directed learners?

3.2.3.4 *Learner autonomy*

Learner autonomy can be broadly described as adult learners' capacity (ability and willingness) to manage their learning process independently (Alghamdi, 2016; Bernhardsson, et al., 2017; Bowen, 2011; Feryok, 2013; Knowles, 1975). Autonomous learners are predisposed to and proficient in making decisions and plans about and for their own learning, implementing those decisions and plans and accepting responsibility for the outcomes (Alghamdi, 2016; Bowen, 2011; Du Toit-Brits, 2016). However, autonomous learners are also free to take the actions needed to be autonomous (Turula, 2017). Benson (2013) separates learner autonomy into three varieties, namely technical (the individual's conviction to take action), psychological (the individual's belief in his or her own ability to be agentic) and political (the context that allows the individual to act agentially without fearing adverse consequences) (also see Alghamdi, 2016). Furthermore, autonomous learners think about what they learn and how they learn, in order to develop and implement effective learning strategies, and adapt strategies that are ineffective in particular circumstances (Du Toit-Brits, 2016; Firat, et al., 2016). Autonomous learners have mastered the competence of overcoming challenges created by past learning experiences, socio-cultural contexts and poor basic education (Alghamdi, 2016).

Learner autonomy does not imply only the transfer of power for the management of the learning experience to the agentic learner, but also the possession of a particular collection of inherent characteristics and competencies (Alghamdi, 2016). Self-determination, self-efficacy, intrinsic motivation and learner empowerment are just some of the variables that affect learner autonomy (Turula, 2017). According to Murphy (1998, as cited in Turula, 2017), learners cultivate autonomy in five stages, namely interaction (socialisation), emerging metacognition (dawning metacognition), instigating decision or resolve (initiating choice), growing self-determination (expanding autonomy) and analytical participative self-determination (critical collaborative autonomy). The first stage, interaction, creates a safe atmosphere for learning, while emerging metacognition as the second stage indicates that learners are developing a consciousness of their individual learning practices. The third stage, instigating decisions on the part of the learners, is built into the learning context, where learners are given a choice between sets of learning activities. During the fourth stage of growing self-determination (expanding autonomy), learners develop their agency (autonomy) by introducing their own learning activities independent of those prescribed by a course. The last stage, analytical participative self-determination, indicates that the learners have developed into lifelong learners, who realise that while they participate in collaborative efforts, they should also maintain their independence as learners with independent opinions. Learners who have developed participating self-determination acknowledge that they should use their knowledge and feelings of empowerment

in the interest of society at large (Turula, 2017). Clearly, autonomous learners can then, according to Murphey (1998, as cited in Turula, 2017), become transformative learners, as envisioned by Mezirow (2000), when the adult learners evolve from disenfranchised to empowered individuals (Also see Dix, 2016; Lau, 2017).

Cultivating learner autonomy is not only the student's responsibility (Turula, 2017). It has become clear through research that the learning milieu created by the tertiary institution plays a significant role in learners' capacity to act autonomously in their learning (Bowen, 2011; Du Toit-Brits, 2016; Feryok, 2013; Lai, Yeung, & Hu, 2015; Turula, 2017). Consequently, the cultivation of learner autonomy requires a shift in behaviour of the academic towards a facilitative approach instead of an authoritative approach in the learning milieu, in order to create learning experiences that focus on nurturing learners' ability to take charge of their own learning (Du Toit-Brits, 2016; Furtak & Kunter, 2012; Lai, et al., 2015; Turula, 2017). Conversely, reported research indicates that socio-demographic, cultural and psychological considerations have a direct effect on the capacity of learners to be autonomous in their learning (Du Toit-Brits, 2016). In order to establish whether this is the case in South Africa, it should be possible to assess adult learner self-directedness and the socio-biographical variables that may influence adult learner self-directedness in ODeLHE milieus (Botha, 2014).

3.2.3.5 Interpretation of reported research into adult learner self-directedness

Adult learner self-directedness is a vital component of successful lifelong learning and of particular significance to ODeLHE learners and adult workplace learners (Alghamdi, 2016; Du Toit-Brits & Van Zyl, 2017a; Rana, et al., 2016). The literature indicates that adult learner self-directedness is a multi-faceted phenomenon, difficult to describe and assess accurately in the broader global context and in particular in South African ODeLHE (Alghamdi, 2016; Botha & Coetzee, 2016; Du Toit-Brits & Van Zyl, 2017a). Researchers agree that adult learner self-directedness can be characterised from a contextual (learning environment), learner behavioural and learner trait perspective and a variety of models to explain adult learner self-directedness have been developed (Alghamdi, 2016; Botha & Coetzee, 2016; Du Toit-Brits, 2015a). It is further agreed that socio-economic variables, individual experiences, individual orientations and socio-cultural variables influence adult learner self-directedness (Alghamdi, 2016; Botha & Coetzee, 2016; Bourdeaux & Schoenack, 2016; Papageorgiou, 2017). In addition, Botha (2014) found a definite, positive relationship between adult learner self-directedness and employability attributes, indicating that adult learner self-directedness influences several employability attributes (Botha, et al., 2015). Given that most students in South Africa rely on ODeLHE to further their education, and in the light of the socio-demographic variables

that influence adult learner self-directedness, it has become imperative to produce a scale that can accurately assess adult learner self-directedness in the multi-cultural South African ODeLHE milieu (Botha & Coetzee, 2016). Various scales have been developed over the years to assess adult learner self-directedness, but none of them focuses specifically on the South African higher education ODeL context (Botha & Coetzee, 2016).

3.2.4 Scales measuring adult learner self-directedness

Since the 1970s, scales have been developed in order to assess or measure adult learner self-directedness (Zhoc & Chen, 2016). The scales mostly focus on assessing the psychological elements of self-directedness. Furthermore, most of the scales have been developed in North America and Europe, while some have been validated for use in other cultures (Zhoc & Chen, 2016). However, no existing scale that assesses levels of adult learner self-directedness has yet been validated for use in African ODeLHE contexts (Botha, 2014; Botha & Coetzee, 2016).

3.2.4.1 The Self-directed Learning Readiness Scale

The most acknowledged instrument used to measure attitudes and competencies related to adult learner self-directedness is Guglielmino's (1977) SDLRS, which has been utilised in studies by inter alia Alghamdi (2016); Boyer and others (2014) and Zhoc and Chen (2016) to name but a few. The SDLRS is a Likert-type scale comprising 41 items that assess students' readiness for self-directed learning, not their existing levels of self-directedness (Alghamdi, 2016; Botha, 2014; Boyer, et al., 2014; Zhoc & Chen, 2016). The Delphi technique, utilising 14 experts in the field of adult education and self-directed learning, was used to develop the items for the SDLRS. The factor analysis yielded eight factors, namely openness to learning opportunities, self-concept as an effective learner, initiative and independence in learning, informed acceptance of responsibility for personal learning, a love for learning, creativity, a future orientation and ability to utilise basic study and problem-solving skills. Strong reliability coefficients as high as .94 were reported (Guglielmino, 1997; Zhoc & Chen, 2016). The scale is well researched and utilised, although certain questions have been raised about its validity and cultural transferability (Alghamdi, 2016; Botha, 2014). In addition, the scale assesses readiness for self-directed learning, not specific indicators of existing self-directedness. The scale has reportedly been used mostly in residential universities, and not in ODeLHE milieus (Alghamdi, 2016; Botha, 2014; Botha, et al., 2015). For these reasons, the scale was not considered for use in the current research study.

3.2.4.2 The Oddi Continuing Learning Inventory

Apart from the SDLRS, the Oddi Continuing Learning Inventory (OCLI), developed by Oddi (1986), is another well-known scale for assessing learner self-directedness (also refer to Zhoc & Chen, 2016). The OCLI focuses on the personality characteristics of self-directed continuing learners involved in professional development (Zhoc & Chen, 2016). The OCLI consists of a 24-item Likert-type scale and yielded an estimated internal consistency value of $\alpha = .87$ and test-retest reliability of $r = 0.89$. The factor analysis yielded three factors that accounted for 45.7% of the total variance. The first factor was a general factor (consisting of 15 items that focus on a learner's capacity to institute and continue with learning activities) that explains 30.9% of the total variance. The second factor was self-regulating capacity (consisting of three items) that explains 8.0% of the total variance, and the third factor was an eagerness to read (consisting of four items) that explains 7.0% of the total variance (Oddi, 1986; Zhoc & Chen, 2016). In addition, Oddi (1986) found noteworthy correlations between the total OCLI score and the biographical variables of gender ($r = .228$; $p < 0.001$) and age ($r = .251$, $p < 0.001$). However, the OCLI focuses only on the personality traits of self-directed learners and does not consider the learning milieu; in addition, cultural transferability could not be confirmed. The OCLI was consequently not considered suitable for use in the research study.

3.2.4.3 The Self-Directed Learning Scale

The Self-directed Learning Scale (SDLS) was developed by Lounsbury and Gibson (2006, as cited in Lounsbury, Levy, Park, Gibson, & Smith, 2009) and utilised on primary school, high school and university (college) students in North America (also refer to Zhoc & Chen, 2016). The scale was developed primarily to assess personality characteristics of adolescents and adults and consequently focuses on only the personality context of learner self-directedness (Zhoc & Chen, 2016). The SDLS comprises 10 items that are answered using a five-option Likert-type scale, namely 1 = strongly disagree, 2 = disagree, 3 = neutral/undecided, 4 = agree and 5 = strongly agree (Lounsbury, et al., 2009; Zhoc & Chen, 2016). The scale was used on two different samples of university (college) students and yielded a one-factor structure, with acceptable internal consistency reliability (Cronbach's alpha coefficient = .84 and .87 for the two samples respectively). Zhoc and Chen (2016) assessed the reliability and validity of the SDLS for Chinese students and found that the measure's internal consistency reliability could be confirmed for Chinese students (Cronbach's alpha coefficient = .79) (Zhoc & Chen, 2016). However, the SDLS assesses only the personality component of the complex phenomenon of adult learner self-directedness and does not consider learner behaviour or learning context. In addition, transferability to the African culture could not be confirmed; consequently, the instrument was not considered acceptable for use in this research study.

3.2.4.4. The Student Self-directed Learning Questionnaire

The SSDL (De Bruin, 2008) is a unidimensional scale designed to measure levels of self-directed learning among students in the residential higher education context in South Africa (also see Botha, 2014; Du Toit-Brits, 2015a). The questionnaire consists of 22 items that are answered using a five-point Likert-type scale, with the highest possible score being 110. High scores on the SSDL indicate high levels of self-directed learning. Acceptable internal consistency reliabilities were obtained for samples of black ($\alpha = .91$) and white ($\alpha = .90$) students at a residential university in South Africa (De Bruin, 2008). A Cronbach's alpha coefficient of .88 was reported for the whole group (.87 for the black group and 0.88 for the white group). The coefficients were deemed satisfactory for research purposes (De Bruin, 2008). However, the scale items load onto only one factor, raising concerns about whether the scale could effectively assess adult learner self-directedness in the ODeLHE milieu, with its complex interactions between the cognitive, metacognitive, contextual and social components of the learning experience. In addition, the sample consisted of mainly younger students at a residential university, who were between 18 and 22 years of age, while the average student in ODeLHE is 31 years of age. Consequently, the scale was not deemed acceptable for use in the research study.

3.2.4.5 The Self-directed Learning with Technology Scale

The Self-directed Learning with Technology Scale (SDLTS) (Teo, et al., 2010) assesses primary school children's self-directedness when learning in a technologically enhanced environment. The SDLTS was developed specifically for use with younger children and with a particular focus on the use of technology in learning. The scale was found to be reliable for the sample involved in the research study, but as it was aimed at a well-defined learning environment, and also developed for use among primary school children, the scale was not considered for use in the current research study.

3.2.4.6 The Personal Responsibility Orientation to Self-direction in Learning Scale

Stockdale and Brockett (2011) developed a scale to assess self-directedness in higher education students (also refer to Douarte, et al., 2016). The Personal Responsibility Orientation to Self-direction in Learning Scale (PRO-SDLS) (Stockdale & Brockett 2011) was developed based on the Personal Responsibility Orientation Model of Self-direction in Learning and found to be reliable for the sample used in the study (a Cronbach's alpha coefficient of $\alpha = .95$ was calculated) (Douarte, Leite, & Mouraz, 2016). The PRO-SDLS consists of 25 items and factor analysis revealed four latent variables that correspond to the four subscales of the instrument (Douarte, et al., 2016). The four sub-scales of the

PRO-SDLS are initiative, self-efficacy, control and motivation (Douarte, et al., 2016). As the sample used in the development of the PRO-SDLS was homogenous, and comprised, mostly women of approximately 23 years old, cultural transferability cannot be ensured; consequently, the scale was not considered for use in the current research study. In addition, the study focused on students at a residential university and once again did not consider the effect of learning milieu on adult learner self-directedness, also leading to the instrument not deemed suitable for the study.

3.2.4.7 The Bartlett-Kotrlík Inventory of Self-learning and the Learner Self-directedness in the Workplace Scale

Two further measures of self-directedness in learning were reported in the research: the Bartlett-Kotrlík Inventory of Self-learning (BKISL) (Bartlett & Kotrlík, 1999) and the Learner Self-directedness in the Workplace Scale (LSWS) (De Bruin & De Bruin, 2011), both of which are aimed at assessing learner self-directedness in workplace settings and consequently could not be considered for use in the present research study. The LSWS is a unidimensional scale that may prove valuable for identifying low levels of learner self-directedness and to assess growth in learner self-directedness, rather than to assess well-developed self-directedness in participants (Botha, 2014; De Bruin & De Bruin, 2011). The BKISL includes both social and environmental variables and supports the use of individual variables in measuring self-directed learning in environments outside formal learning contexts. The authors report an estimated reliability of $\alpha = .91$ of their 11-factor instrument. The 11 factors include the following: performance and self-efficacy of work, peer learning, supportive workplace, attitude towards technology, time management, others' performance rating, extrinsic motivation, goal setting, external support, help seeking and intrinsic motivation. As the BKISL was developed for use in workplaces, and as the sample consisted mainly of Caucasian women, the instrument was not deemed appropriate for use in the proposed study.

3.2.4.8. The Adult Learner Self-directedness Scale

In an effort to find a way to determine, the capacity for self-directedness displayed by adult students enrolled for a business-related degree in a South African ODeL university with a diverse student cohort, the ALSDS was developed (Botha, 2014). The ALSDS is a descriptively anchored rating scale utilising short written descriptions of learner emotions and/or behaviours associated with the self-directedness of adult students in an ODeLHE context (the construct being measured). A descriptively anchored scale was used instead of numerical anchors in an effort to limit the number of questions and provide a measure of structure to the solicited answers. A similar scale design was used by Shapiro, et al. (2008). Furthermore, descriptively anchored scales were deemed more appropriate,

as the research study was aimed at a heterogeneous group of students, who may be studying and completing the questionnaire in their second or third language, and to attempt to avoid the general concerns expressed in the research related to Likert-type scales (Botha, 2014; Minkov, 2013). The use of descriptively anchored scales attempts to eliminate the possibility of acquiescence bias and central tendency bias, as well as taking into consideration the possibly of poor reading capacity of respondents (Barnett, 2012; Botha, 2014). The ALSDS describes specific critical incidents associated with the ODeLHE study process at a South African ODeL university, along with a range of descriptions of learning behaviours, thought processes and attitudes. For every critical incident, participants are required to choose the description that most faithfully corresponds with their own study behaviours, individual emotions or motivational thought processes (Botha, 2014).

The ALSDS was deemed suitable for use in the study, because it was developed specifically for use in the South African ODeLHE milieu, utilising the expertise of individuals involved in tuition and research in a South African ODeLHE context. In addition, the ALSDS utilises a descriptively anchored scale instead of a Likert-type scale, which is usually used to assess attitudes (Barnett, 2012). The scale considers all four aspects of adult learner self-directedness discussed in the research literature, namely learning context, learner behaviour, learner characteristics and learner motivation, in the assessment of adult learner self-directedness.

The ALSDS (Botha, 2014) measures four elements of adult learner self-directedness in ODL, namely strategic utilisation of officially provided resources, engaged academic activity, success orientation for open distance learning and academically motivated behaviour:

- (a) Strategic utilisation of officially provided resources (five items) measures when and how adult learners utilise the official resources provided by the university in their role as active learners (Botha, 2014; Botha & Coetzee, 2016). An example of one of the items assessing strategic utilisation of officially provided resources follows.

Example of item: Strategic utilisation of officially provided resources				
According to the credits they carry, how many hours are you required to devote to each module per week?				
1	2	3	4	5
I don't know	One to two	Two to three	Three to four	More than four

- (b) Engaged academic activity (five items) measures the deliberate, planned learning actions of adult learners (Botha, 2014; Botha & Coetzee, 2016). An example of one of the items assessing engaged academic activity follows:

Example of item: Engaged academic activity

How many hours per week do you devote to your studies at Unisa?

1	2	3	4	5
Less than one	One to two	Two to three	Three to four	More than four

- (c) Success orientation for open distance learning (11 items) measures the behaviours of adult learners related to their study self-confidence and learning self-efficacy (Botha, 2014; Botha & Coetzee, 2016). An example of one of the items assessing success orientation for ODL follows:

Example of item: Success orientation for open distance learning

Which of the following describes the learning situation where you are most comfortable?

1	2	3	4	5
When I am provided with specific content and questions that should be mastered, and work is scheduled daily	When I get clear guidance on what I should do to succeed and clear time frames to stick to	When I get sufficient guidelines to ensure success but can also work at my own pace	When I get sufficient guidelines of the learning content and success factors but can study at my own pace, using my own methods and techniques	When I am given the minimum standards required for success and left to my own devices

- (d) Academically motivated behaviour (13 items) relates to the behaviours associated with intrinsic or extrinsic academic motivation (Botha, 2014; Botha, & Coetzee, 2016). An example of one of the items assessing academically motivated behaviour follows:

Example of item: Academically motivated behaviour

What do you do when you struggle to understand the work?

1	2	3	4	5
I get discouraged and stop working	I contact a friend for assistance	I contact the lecturer for assistance	I read through the material again and if I still don't understand I contact the lecturer	I never struggle to understand the work

The four elements of the ALSDS (Botha, 2014) identify the measure of external versus personal control of the learning context adult students in ODeLHE are able and prepared to accept (strategic utilisation of officially provided resources and engaged academic activity). In addition, the ALSDS assesses the personal characteristics, attitudes and motivational orientation associated with learner

self-directedness (success orientation for ODL and academically motivated behaviour) (Botha, 2014, Coetzee & Botha, 2016).

An exploratory factor analysis (principal axis factor analysis) conducted in two phases established the construct validity of the ALSDS for a stratified random sample of adult learners in an ODL university (Botha, 2014). Prior to executing the two phases of the principle axis factor analysis, the suitability of the data for factor analysis was established. Phase 1 of the data delivered a Kaiser-Meyer-Olkin value of .83, which exceeded the recommended minimum value of .60, (Child, 1990; Hair, Black, Babin, & Anderson, 2010) while the Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance ($p < 0.001$). Phase 2 of the exploratory factor analysis yielded a Kaiser-Meyer-Olkin value of .79, also exceeding the recommended minimum value of 0.60 (Child, 1990; Hair, et al., 2010). The Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance ($p < 0.001$), indicating the reliability of the correlation matrix. The results show the adequacy of the sample used in the study as well as the existence of significant correlations between the variables of the correlation matrix (Botha, 2014; Botha & Coetzee, 2016; Coetzee & Botha, 2013). The ALSDS yielded satisfactory internal consistency reliabilities, with the reliabilities for the four sub-scales ranging between 0.60 and 0.77. The total ALSDS scale obtained a Cronbach's alpha coefficient of .91 (Botha, 2014; Botha & Coetzee, 2016). The question now arises: Will the ALSDS also be a valid and reliable measuring scale of adult learner self-directedness for diverse groups of adult learners in the broader South African and African ODeLHE environment?

The study by Botha (2014) yielded results indicating the existence of significant differences between adult learners' self-directedness in terms of gender, age and race, which was further reported in published research after completion of the Masters' study (Botha, et al., 2015; Botha & Coetzee, 2016). However, the structural equivalence (factorial invariance) of the ALSDS for different gender, age and race groups for the population relevant to the master's study by Botha (2014) has not yet been established. The significant differences found in Botha's (2014) study indicate, inter alia, that academic self-directedness is more highly developed in older people, while Indian men also have a more well-developed level of self-directedness generally (Botha, 2014; Botha, et al., 2015; Botha & Coetzee, 2016). The student profile of the biggest ODeL University in South Africa, Unisa, specifically in the College of Economic and Management Sciences, includes a larger percentage of black women, for whom generally the levels of self-directedness recorded were the lowest (Botha, 2014; Botha, et al., 2015; Botha & Coetzee, 2016). A further research question therefore revolves around the socio-biographical factors other than gender, age and race that may or may not influence adult learner self-directedness. The additional socio-biographical factors that were investigated included employment status, occupation, socio-economic situation, being depended upon financially, access to a library,

access to a computer, proficiency in English, number of modules for which the learner was enrolled and who was funding the learner's studies. These factors were not addressed regarding the population investigated by the master's study (Botha, 2014).

Various combinations of the factors that influence student success in ODeLHE environments have been researched over the years (Adcroft, 2011; Bhayat & Madiba, 2016; Danilowicz-Gösele, et al., 2017; Shillington, et al., 2012; Wang, et al., 2008). Although most of the research on adult learner self-directedness were conducted in mainly Western and Asian societies, some research also reflects the African context (Archer, et al., 2014; Du Toit-Brits, 2015a; Du Toit-Brits & Van Zyl, 2017a; Prinsloo, 2009; Prinsloo; 2010; Subotzky & Prinsloo, 2011). The miscellaneous risk or success factors identified include the following: student personality types, student demographics, student motivation, student experiences, students' preferred learning styles, student estimation of the time and skills involved in ODeLHE success, environmental factors, educational background, time available for study, learning landscapes, choice of courses, support from family, chosen occupation and occupational status (Ainscough, Stewart, Colthorpe & Zimbardi, 2017; Botha, 2014; Bhayat & Madiba, 2016; Du Toit-Brits, 2015a; Du Toit-Brits & Van Zyl, 2017a; Shillington, et al., 2012; Wang, et al., 2008).

Adcroft (2011) reports that adult learners specifically may have different motivations to study, experience diverse feelings about studying and working, and differ in how they pay for their studies, their academic self-confidence and what they expect to achieve through their studies. Chen (2017) supports Adcroft's (2011) findings and indicates that tertiary education seems to be focused almost exclusively on the needs and aspirations of younger students at residential universities, while the majority of learners in tertiary education are actually older adult learners who are in diverse life phases. In addition, adult learners frequently experience what Chen (2017) calls 'role strain', which comprises role conflict, role overload and role contagion. Role conflict occurs when an individual has to attempt to fulfil diverse demands that are important to the individual. Role overload stems from a lack of support for the demands of a specific role and role contagion arises when the individual is focused on the demands of one role while actually being involved in the demands of another role (Chen, 2017). Moreover, students enrolled for business-related studies may have significantly diverse motivations for study and for motivated engagement in the specific courses related to a qualification, because of the nature of business-related qualifications on the one hand and the usually large student cohorts on the other hand (Adcroft, 2011). Furthermore, students' age, race, gender, socio-cultural background, usual study approach, previous educational experiences and the context within which self-directed learning is applied may influence the development of learner self-directedness (Botha, 2014; Botha & Coetzee, 2016; Frambach, et al., 2012).

Most of the research on adult learner self-directedness in South Africa has been conducted at residential universities using Guglielmino's SDLRS (1977) (De Bruin, 2007), or scales developed in South Africa but for residential universities (De Bruin, 2008; De Bruin & Hughes, 2012). Du Toit-Brits and Van Zyl (2017) identified various characteristics of self-directedness using a qualitative research design. As research has shown conclusively that socio-cultural influences affect the tendency to be self-directed (Faircloth, 2012; Frambach, et al., 2012; Rienties & Tempelaar, 2013), a scale specifically for the South African and African ODeLHE contexts is essential. The need for a scale that incorporates the African and South African milieus is significant in the light of the number of African students who will have to utilise ODeLHE offerings in order to improve their qualifications and chances for successfully entering the employment market of the new millennium (Botha, 2014; Cloete, 2014; Letseka & Pitsoe, 2014). Further investigation of the psychometric properties of the ALSDS is consequently critically important for South African ODeLHE (Botha, 2014).

Although the ALSDS (Botha 214; Coetzee & Botha, 2013) is a relatively new scale for assessing adult learner self-directedness, it has been used in some research studies in the South African ODeLHE context. Coetzee and Botha (2013) found that the examination preparation styles of a sample of adult South African students in the economic and management sciences field were significant predictors of the participants' academic self-directedness as assessed by the ALSDS. In a further study, Coetzee (2014) found that graduate attributes such as scholarship, global/moral citizenship and lifelong learning capacities positively influence the academic self-directedness of adult students in ODeLHE. In addition, Botha, Coetzee and Coetzee (2015) reported that a positive relationship was found between ODeLHE adult learners' self-directedness and their self-perceived confidence in their employability attributes.

However, the reported South African research where the ALSDS (Botha, 2014) was utilised neither includes the confirmatory factor analysis of the scale, nor does it further explore the psychometric properties of the ALSDS. Moreover, a wide range of socio-biographical factors other than gender, race and age, which could influence the academic self-directedness of adult learners in South African ODeLHE, is not explored in the research.

3.2.4.9 Summary: Critical reflection on the various scales for assessing self-directedness

Nine scales for the assessment of learner self-directedness were investigated for the purpose of this research study. The scales, and the reasons for inclusion or exclusion, are now briefly summarised.

The SDLRS (Guglielmino, 1977) is one of the most well known and used of all the scales related to the assessment of academic self-directedness (also see Zhoc & Chen, 2016). The scale is frequently

used in research, despite questions on its validity. Since concerns have been reported about the validity of the instrument, and the cultural transferability of the scale could not be confirmed for the South African context, the decision was made to not use the scale in this research project. Furthermore, the SDLRS (Guglielmino, 1977) assesses learner readiness for self-directed learning and not existing self-directed learning capacity. In addition, the diverse requirements and environments of ODeLHE study required the use of a scale designed specifically for South African ODeLHE learners.

The OCLI (Oddi 1986) is another scale frequently used for the assessment of learner self-directedness (also see Zhoc & Chen 2016). Since the OCLI focuses only on the personality dimension of adult learner self-directedness, and the transferability of the OCLI to the South African ODeLHE milieu could not be confirmed, the scale was not used for this research project. The SDLS (Lounsbury & Gibson, 2006, cited in Lounsbury, et al., 2009) was developed for use on both adolescents and adult learners. This scale also focuses only on the personality dimension of learner self-directedness. In addition, the scale was used only on learners at residential tertiary institutions, and the cultural transferability to the South African milieu

The SSDL (De Bruin, 2008) was the only South African scale for the assessment of adult learner self-directedness that could be found. The scale focuses only on the personality component of student self-directedness. In addition, the SSDL was developed and utilised in a residential higher education setting and used on younger adults, raising concerns about its suitability for older adults in the ODeLHE context.

The SDLTS (Teo, et al., 2010) was developed for use in technology-rich learning environments and specifically aimed at schoolchildren. Because of its narrow focus and target group, the scale was not suitable for the current research study. The PRO-SDLS (Stockdale & Brockett 2011) was developed for use in tertiary education (also see Douarte, et al., 2016). The scale assesses four dimensions of adult learner self-directedness, namely individual initiative, self-efficacy, control and motivation (Douarte, et al., 2016). Since the PRO-SDLS does not consider the learning milieu in the assessment of student self-directedness and was applied to a homogenous group of students at a residential university, the transferability to the South African ODeLHE milieu could not be established and it was rejected for this study. Both the BKISL (Bartlett-Kotrlik 1999) and the LSWS (De Bruin 2008) were investigated for the purposes of this study. However, both scales focus on the assessment of the self-directedness of employees in workplace settings and could consequently not be used for this study.

The ALSDS (Botha, 2014) was developed specifically for application in the South African ODeLHE context. It assesses adult learner academic self-directedness in four dimensions, namely the use of

official resources, engaged academic activity, success orientation for ODL and academically motivated behaviour. The ALSDS (Botha, 2014) consequently focuses not only on the personality dimension, but also on the learning context, as well as learner behaviour within the learning context, to assess adult learner academic self-directedness. An acceptable internal consistency reliability of a Cronbach's alpha coefficient of 0.91 was reported (Botha, 2014; Botha & Coetzee, 2016; Coetzee & Botha, 2013). As the scale was developed specifically with the cultural complexities of South Africa and the challenges faced by ODeLHE learners in South Africa in mind, it was deemed the only acceptable scale for this research study.

The 2014 study by Botha focused on assessing the initial factor structure (four-factor solution) of the ALSDS (Botha, 2014). The following internal consistency reliabilities were reported for the four subscales: "strategic utilisation of officially provided resources" ($r = .60$); "engaged academic activity" ($r = .60$); "success orientation for open distance learning" ($r = .77$) and "academically motivated behaviour" ($r = .71$). However, it is not clear whether the factor structure is equivalent for race, age, and gender groups of the sample population identified by Botha (2014). In addition, Botha (2014) did not consider the socio-biographical variables that affect adult learner self-directedness in ODeLHE contexts in the initial study. The socio-biographical factors that affect adult learner self-directedness are discussed in Chapter 2, section 2.4.6. It is not clear whether the identified socio-biographical variables significantly predict the self-directedness of adult learners in ODeLHE contexts, as measured by the ALSDS.

Construct validity indicates whether a scale assesses what it purports to assess. An assessment of construct validity is essential in order to ensure that a measurement scale developed to assess a latent variable or set of variables provides useful information on that variable(s). Furthermore, the structural equivalence of scales that are used to distinguish between diverse groups should be assessed in order to make it possible to identify and clarify differences between the diverse groups. If a scale is unreliable and/or invalid, it cannot be used to make conclusions on research conducted using the scale (Salkind, 2010).

In conclusion the section addressed the third research aim, namely to conceptualise adult learner self-directedness in an ODeLHE context. In the next section, the fourth research aim will be addressed namely to conceptualise the implications of the measurement of adult learner self-directedness workplace learning and ODeLHE tuition practices.

3.3 IMPLICATIONS FOR HUMAN RESOURCE DEVELOPMENT AND OPEN DISTANCE E-LEARNING TEACHING PRACTICE

Modern workplaces require different ways of thinking (Bowerman & Reich, 2016). Higher education institutions should be the harbingers of new thinking and practice by continuously renewing curricula and by practising and encouraging new thinking and innovative trends. However, universities themselves are frequently the reverse of dynamic learning organisations that easily adapt to unexpected changes; consequently, the capacity of higher education to facilitate transferable learning is frequently questioned. On the other hand, the actual reason for the presence of institutions of higher learning is to inculcate the capacity of learning how to learn, and not ensuring that students possess the required subject-related information (Bowerman & Reich, 2016).

Bunney, Sharplin and Howitt (2015) believe that the role of universities goes beyond that of only providing economic assets to business organisations, but should also embrace a socio-cultural imperative by producing graduates who are flexible, self-directed and autonomous managers of their own lives and careers. In order to achieve this goal, academic institutions should follow a programmatic approach in the development of curricula, employ innovative tuition methods and nurture cooperation between departments (Bunney, et al., 2015). Furthermore, tertiary institutions have an obligation to prepare graduates for an uncharted future, which includes shifts in how tuition and assessment are practised (Wilson & Zamberlan, 2017). The measurement of adult learner self-directedness who pursue tertiary education on ODeL contexts can contribute to learner support strategies, the development and implementation of learning material that inculcate learner self-directedness and consequently to the development of adult learners who are active agents in ODeLHE and workplace learning milieus.

3.3.1 The role of higher education institutions in adult learner self-directedness

Bowerman and Reich (2016) question whether higher education institutions possess the capacity and/or willingness to engage in the tuition development, delivery and assessment techniques necessary to deliver self-directed graduates at the end of their learning journey. Francis and Flanigan (2012) believe that there is a lack of alignment between self-directed learning practices, what is expected of adult learners and higher education teaching practice, which could explain inconsistent findings on adult student self-directedness in various cultural and educational settings. The view is supported by Altoabi (2016). Conversely, Su (2014) as well as Hill, Walkington, and France (2016), argue that the general approaches followed by universities to develop the necessary graduate

attributes preclude the belief that students are active agents in their own learning, that they can exercise personal judgement and make their own decisions

The inculcation of graduate attributes that enhance employability should be a process that guides students on a personal learning journey so that they willingly, and seemingly fortuitously, cultivate graduate attributes that are germane to the students' identities and not because the inculcation of the graduate attributes are add-ons to the academic curriculum (Hill, et al., 2016; Su, 2014). Such a student-centred approach to the cultivation of graduate attributes requires active participation from the student, which necessitates an individual, agentic and self-directed orientation. In effect, adult learners should possess a propensity for cultivating those graduate attributes that are personally relevant and authentic (Hill, et al., 2016; Su, 2014). The ALSDS can provide information on the academically motivated behaviour of adult ODeLHE learners. Academically motivated behaviour and success orientation for ODL provide information on adult learners' self-belief and motivational orientations to succeed in ODeLHE contexts (Botha, 2014; Botha, et al., 2015).

Brookfield (1993) refers to self-directed learning as a 'growth industry' (so to speak), well entrenched in education circles, embedded in both the theoretical and applied mainstream discussions on adult education (also refer to Tan, 2017). Learner control is the crux of self-directed learning, which implies a certain level of confidence in the individual's astuteness and capacity to be self-directed (Brookfield, 1993; Tan, 2017). In addition, an acknowledgment of the cultural context of the learner is essential to ensure a thorough comprehension of the applied practice of self-directed learning throughout diverse learning cultures (Tan, 2017). Candy (1991) describes learning as a social activity, indicating that self-directed learning and personal autonomy are practised within the boundaries of social interaction (see Gu, 2016; Khiat, 2015). Self-direction in learning consequently depends on the making of informed decisions by the learner and engaging in deliberate reflective practice in order to make sense of new information and one's personal interactions with that information (Candy, 1991; Gu, 2016; Khiat, 2015). In addition, Tan (2017) propounds a commitment from the adult learner to become and remain involved in the learning journey, until true self-direction (or heutagogy) is reached. The ALSDS can provide robust information on adult learners in South African ODeLHE in this regard by assessing their success orientation for ODL, their engaged academic activity and their strategic utilisation of officially provided resources.

The ALSDS (Botha, 2014) can be used fruitfully in assessing an adult learner's growth path to self-directedness, as it was developed to assess levels of self-directedness in individuals. Such a study would require a longitudinal approach and would be a recommendation for further research. Coetzee (2014) found that the graduate attributes of global/moral citizenship and lifelong learning orientation mediated academic self-directedness in adult ODeLHE learners in South Africa. In order to reinforce

the graduate attributes, attention should be paid to cultivating academic attributes such as interpretation, problem solving, decision making and resourcefulness by building learning activities and assessments that focus on these into the learning material (Coetzee, 2014; Ismail, Ferreira, & Coetzee, 2016). In addition, an assessment of the socio-cultural variables that may affect adult learner self-directedness would contribute to unravelling the complex relationship between individual learners, learning environment and learner habitus. Such information could be used constructively in the development of learning material and learning environments in both ODeLHE and workplace learning opportunities (Asino, et al., 2017).

Although the research on adult learner self-directedness is somewhat fragmented, reported research describes positive effects between student self-directedness and student academic performance (Alghamdi, 2016). Adult learners' study beliefs and study behaviours influence their self-directedness. Individual motivational beliefs, self-management, metacognition, time management, resource utilisation and self-observation are all elements of effective self-directed learning (Alghamdi, 2016; Botha, 2014). Motivational beliefs are tied to metacognition, cognitive strategies and resource utilisation and consequently to success in mathematics (Alghamdi, 2016; Moseki & Shultze, 2010). Khiat (2017) found that five indicators of adult student self-directed learning had practical significance on the academic performance of students at a university in Singapore. The five indicators are examination preparation, time management, goal setting, assignment preparation and procrastination management (Khiat, 2017).

Furthermore, Khaled, Gulikers, Biemans and Mulder (2015) found that learning activities that stimulate student self-directedness indirectly predict the development of competence by influencing student perceptions. Boyer, et al. (2014) and Brock (2017) report a significant, positive association between students' self-directed learning and their self-efficacy, and a moderate positive association between self-directed learning and internal locus of control, as well as between self-directed learning and student motivation, support from peers and facilitators, and improved academic performance. The results suggest that the cultivation of these capacities is important for the utilisation of self-directed learning by students (Brock, 2017). The ALSDS can provide valuable data on ODeLHE learners' motivational orientation by assessing their academically motivated behaviours and success orientation for ODeLHE.

Most of the adult students enrolled in higher education in South Africa would have been exposed to pedagogical approaches to teaching in primary and secondary school, and may be exposed to similar practices in their tertiary education (Daddow, 2016; Mpofo, 2016). In such scenarios, existing experiences of learning will resurface, and adult learners may revert to the learning behaviours that were successful in primary and secondary school (Blackley & Sheffield, 2015). Tertiary educators are

concerned with learners' engagement with course content and their academic success as defined by course completion, and may consequently utilise pedagogic approaches in their tuition in order to ensure success (Blackley & Sheffield, 2015). Conversely, Francis and Flanigan (2012) found that students who displayed higher levels of self-directed learning were discouraged and tended to be disengaged from learning activities that were strongly focused on traditional university instructions methods. Alotaibi (2016) supports this view. By using the ALSDS to assess adult ODeLHE learners' engaged academic activity, university educators could finesse their learning material and the learning environment in order to promote engagement of disengaged learners, while ensuring that engaged learners remain engaged.

Blackley and Sheffield (2015) propose a 'digital andragogy' to drive the cultivation of adult learner academic self-directedness. In digital andragogy, the focus is on the learner as driver of the learning experience, and the expectations and required actions of both the adult learner and the tertiary educator are clarified thoroughly before the start of and during the learning journey. For example, where the educator is responsible for portioning learning content and learning tasks into comprehensible and easily mastered units, the students are responsible for autonomously working through the course content. The educators articulate the instant application of the learning content, while the students cultivate internal motivation and monitor their own progress. The educators design learning activities that require collaboration and team effort, and the students work together in teams with matched competencies. The educators model original and inventive solutions and practices, while the students utilise their existing experiences and knowledge bases in order to assimilate and productively use these modelled behaviours. The educators provide the circumstances for creative growth and thinking, and the students develop contextual creativity. Both educators and learners utilise diverse communication styles and methods. Blackley and Sheffield (2015) tested the digital andragogy mode of online instruction on 88 students over two semesters and report enthusiasm from students with this approach. As the digital andragogy approach has not been utilised in South Africa, no supportive research could be found.

In the South African context, Coetzee (2014) found a positive association between a group of South African ODeLHE students' graduate attributes (namely scholarship, global/moral citizenship and lifelong learning) and their academic self-directedness (Botha, et al., 2015). In addition, participation in problem-based learning improved the self-directedness of a small group of students at a residential South African university (Havenga, 2015). Self-directedness is a vital competence for 21st-century students and employees and one could argue that academic self-directedness is even more essential in the South African context, given the skills shortage and the large number of students who participate in ODeLHE in South Africa (Botha, 2014; Botha, et al., 2015; Coetzee, 2014).

The paucity of research in general on the effect of traditional pedagogical teaching methods on student self-directedness precludes the making of an irrefutable pronouncement in this regard, but provides a fruitful source of future research. The inculcation of a sense of responsibility, the development of self-improvement goals and the nurturing of a capacity for lifelong learning in higher education students could contribute to their employability characteristics (Botha, et al., 2015; Coetzee, 2014). Students with well-developed employability profiles are adaptable in the 21st-century workplace characterised by rapid and unexpected changes. A focus on problem-solving competence, critical creative thinking capacity and decision-making ability in tuition and assessment could support the development of scholarship, lifelong learning and self-directedness in ODeLHE adult learners (Botha, et al., 2015; Coetzee, 2014). In Table 3.2, the implications of the ALSDS for ODeLHE practice in South Africa is briefly summarised.

Table 3.2

The Implications of the Application of the ALSDS for Open Distance e-Learning Higher Education Practice

Adult ODeLHE learner attributes to be cultivated	How the ALSDS can assess adult ODeLHE learners	Tuition practices that may be implemented
Graduate attributes	The ALSDS provides a measure of an adult ODeLHE learner's degree of adult learner academic self-directedness.	Incorporate evaluative thinking, problem-solving capacity and decision-making ability into ODeLHE learning material and assessments.
Individual agency and learner motivation	Success orientation for ODL and academically motivated behaviour provide information on students' self-belief and motivational orientations to succeed in ODL.	Build activities and assessments into the learning material that are increasingly difficult to achieve, but still achievable, in order to nurture academic self-efficacy. In addition, reflective activities develop metacognition, which is an essential capacity to inculcate for student agency to flourish.
Active engagement with the learning material	Engaged academic activity and strategic utilisation of official resources provide information on adult learners' immersion in and employment of the official learning resources.	Use the principles of digital andragogy to design and implement ODeL materials. Learning materials should include activities and assessments that allow students to set their own learning goals (what they want to achieve), manage their own learning time, and reflect on the effectiveness of their learning strategy and whether they have achieved their learning goals, and so take control of their learning journey.

Following a digital andragogy approach to the design and implementation of ODeLHE learning material, contexts and experiences could contribute positively to the development of adult ODeLHE learner graduate attributes, agency, motivation and engagement with and utilisation of learning material (Blackley & Sheffield, 2015).

3.3.2 The role of workplace learning in adult learner self-directedness

Students become employees who need to adapt to new ways of doing and learning in organisational settings (Milligan, Fontana, Littlejohn, & Margaryan, 2015). Effective functioning in new contexts is advanced through social interaction, participation in work projects and self-directed learning (Milligan, et al., 2015). Employees not only have to take responsibility for their work and continued employment, but are also expected to adopt an active role in their job-related learning (Milligan, et al., 2015).

Organisations, on the other hand, are expected to provide a milieu in which adult learners can engage in the learning required to ensure that their knowledge and competencies remain current.

In the not too distant future, workplace learning will have to be able to sustain a demand for continued learning and rise above challenges to learning (for example lack of time and information overload) (Karakas & Manisaligil, 2012; Rana, et al., 2016). In addition, workplace-learning contexts will have to make available just-in-time learning in easily consumable portions to address work challenges. Learning experiences will have to be customised and personalised, while HRD departments simultaneously will have to achieve more with less. Informal and formal learning will be combined, technology will be utilised to empower learners and self-directedness and agentic behaviour as regard learning will have to be inculcated in workplace learners (Rana, et al., 2016). Human resource developers will play a critical role in the inculcation of self-directed learning behaviours (Karakas & Manisaligil, 2012; Rana, et al., 2016). In the 21st-century work milieu, where e-learning will be a significant contributor to employee workplace learning, the capacity for self-regulation will be vital. Self-directed individuals practise self-regulation as part of their self-directed behaviour. Conversely, self-directed employees are more likely to utilise ICTs for continued learning (Hester, Hutchins, & Burke-Smalley, 2016; London & Hall, 2011).

Workplace learning is a vital contributor to organisational success and continued existence. However, the possibility exists that business organisations still do not possess the capacity to manage learning at both individual and organisational level appropriately, even when the principles of andragogy are applied in workplace learning programmes (Chandler & Hwang, 2015; Landol & Zollo, 2008). The difficulties experienced with managing the learning in and of organisations could be caused by the complexity of the process of learning and organisational evolution – the fact that organisations in the 21st century are in a continual process of conversion (Chandler & Hwang, 2015). In consequence, the question can also be asked whether business organisations possess the wherewithal to inculcate self-directed learning in their employees and to harness the self-directed learning, their employees have already developed productively (Chandler & Hwang, 2015). In an age where HRD is moving towards greater investment in digital, online and e-learning, such a concern is alarming; however, a paucity of research on the effect of work milieu on employee self-directedness and autonomy precludes the reaching of a supportable conclusion.

According to Gijbels, Raemdonck, Vervecken and Van Herck (2012), individual characteristics influence employees' willingness to participate in the learning opportunities offered by the employer; consequently, active learning by employees not only depends on a work milieu that is favourable to learning, but also on individual inclinations and characteristics (Lazarus & Ferris, 2016). In addition, Kim and McLean (2014) propound that workplace learning cannot be investigated when it is divorced

from cultural outlooks, as the cultural context of both the developer and the receiver of learning experiences influences the development, implementation, evaluation and utilisation of the learning experience (Wahab, Saad, & Samsudin, 2016). Cultural contextual influences are especially apparent in informal learning in workplaces (Wahab, et al., 2016). However, the capacity to be a self-directed learner is an essential competence in order to remain competitively employed and employable in the 21st-century workplace (Kim & Mc Lean, 2014; Wahab, et al., 2016).

Self-regulation and self-directedness are significant contributors to workplace learning effectiveness. Employee self-directedness positively predicts employee workplace learning behaviour (Gijbels, et al., 2010; Lejeune, et al., 2016). A relationship exists between employees' self-regulating learning behaviours such as task interest or values, task strategies and self-evaluation, and the utilisation of workplace learning opportunities (Milligan, et al., 2015). Furthermore, the context of workplace learning affects the learning activities in which employees engage. In addition, individual self-regulation characteristics influence the relationship between workplace learning context and workplace learning activities, while workplace-learning context also significantly influences self-regulated learning (Milligan, et al., 2015). Kim and McLean (2014) found that workplaces are effective learning environments for managerial staff and that self-directed learning practices effectively contribute to employee learning (also see Wahab, et al., 2016). Informal self-regulated workplace learning is inextricably linked with work tasks and individual learning goals that can relate to organisational imperatives (Gu, 2016; Littlejohn, Milligan, Fontana, & Margaryan, 2016; Margaryan, Littlejohn, & Milligan, 2013).

In South Africa, Maree, Joubert, Van der Linde and Van Staden (2010) conducted a study on self-directed work teams working as air traffic controllers. The authors found that the superiority of the teams' performance was affected by the excellence of the team learning activities. Supportive learning approaches ensured the durability of the teams' self-directed learning (Maree, et al., 2010). Self-directed learning is also positively linked with increased work performance, cost-effective workplace learning programmes, increased capacity for critical thinking, problem-solving and networking capacity, a strong emotional commitment to work and a sense of meaning at work (Karakas & Manisaligil, 2012; Rana, et al., 2016). Botha, Coetzee and Coetzee (2015) report that employed adult learners who have a high degree of self-directedness were also confident about their capacity to manage their careers pro-actively. Unfortunately, studies reporting on the efficacy of self-directed learning in the workplace are hard to find, and studies in South Africa are even more limited.

Workplace learning in today's business organisation consists of technical learning (acquiring new competencies for new tools), strategic learning (focusing on changes in organisational strategies and policies) and personal learning (learning for advancement in the organisation or personal growth)

(Caudill, 2015). In the modern workplace, the creation of formal learning opportunities should be re-assessed. Noe, Clark and Klein (2014) suggest the following: Learning design should create learning milieus where the learner is an active participant and socially rooted with peers and the HRD professional; broad ranges of learning content should be described, allowing the learner to choose what to learn; and HRD professionals should create learning strategies that facilitate and utilise collaborative learning. Self-directed learning and learner self-regulation are vital elements for successful implementation of new learning designs (Coetzer, Kock, & Wallo, 2017; Noe, et al., 2014). As studies in South African workplaces on the self-directedness of employees are scarce, the question arises whether South African employees would be able to benefit from a more modern approach to learning design and/or digitally enhanced learning opportunities.

According to Allais (2017), race, gender and socio-economic class are key determinants in work placement in South Africa. Furthermore, employers expect employees to either possess or agentically foster individual attributes such as lifelong learning, autonomy and self-efficacy when they enter the workplace (Ismail, et al., 2016). Such individual attributes are related to individual habitus (Mpofu, 2016). Consequently, a rigorous investigation of the socio-cultural variables that influence adult learner self-directedness in ODeLHE should contribute significantly to the body of knowledge of learning material and learning context design in ODeLHE. Learning contexts that nurture the development of adult learner self-directedness could contribute to adult learner success in ODeLHE, and consequently successful entry into the workplace. Coetzee (2014) reports a positive relationship between adult ODeLHE learners' self-directedness and graduate attributes such as a lifelong learning orientation. Most of the learners in ODeLHE in South Africa are black women (DHET, 2013). Consequently, the capacity by ODeLHE institutions to assess and nurture adult learners' self-directedness capacities could contribute positively to graduates' employability and their subsequent utilisation of workplace learning opportunities in order to maintain their employability throughout their self-managed careers.

The ALSDS (Botha 2014) would provide an assessment scale to ascertain the self-directedness of adult students enrolled in ODeLHE in South Africa. As more than half of the students in ODeLHE courses are also employed, the measure could give an indication of the students' self-directedness as employees in workplace learning programmes as well (Botha, et al., 2015; Coetzee & Botha, 2013). The ALSDS focuses on adult learners' learning behaviours, interactions with the learning milieu and beliefs about and attitudes towards learning to assess their self-directedness as adult learners, thereby encompassing the three major components of adult learner self-directedness discussed earlier. The availability of an instrument that was designed specifically for the South African ODeLHE context, and that may also be verified and validated for applications across cultural, gender

and age variables, would make a vital contribution to the South African ODeLHE teaching and workplace learning landscape. In Table 3.3, the implications of the ALSDS for workplace learning practice are briefly summarised.

Table 3.3.

The Implications of the ALSDS for Workplace Learning Practice

Adult learner attributes that should be cultivated for the workplace	How the ALSDS can contribute to ODeLHE tuition practice	How ODeLHE tuition practice may influence workplace learning
Agentic, self-directed learning orientation	The ALSDS assesses adult learners' degree of self-directedness in ODeLHE.	Informed academic educators can design and implement learning materials that inculcate and nurture adult learner agency in order to cultivate adult learner academic self-directedness.
Employability attributes	The degree of adult learner self-directedness significantly predicts employability attributes.	The nurturing of adult learner self-directedness contributes to the inculcation of employability attributes such as lifelong learning, which enable employees to self-manage their learning and careers for continued employability.
Proactive career management	The ALSDS assesses success orientation to ODL, which is positively associated with proactivity, career self-management and individual resilience.	Agentic employees can self-manage their learning and careers.

Cultivating and nurturing adult learner self-directedness in ODeLHE milieus in South Africa could favourably influence their employability attributes and contribute to effective and efficient agentic workplace learning and career management of South African employees in workplace learning contexts (Coetzee, 2014; Maree, 2010; Ismail, et al., 2016).

3.4 INTEGRATION AND CORE CONCLUSIONS

Lifelong learning, and self-directed learning as a key element of lifelong learning, are crucial capacities in modern-day adult learners, irrespective of where the learning opportunities are utilised (Alghamdi, 2016; Du Toit-Brits & Van Zyl, 2017a; Rana, et al., 2016). Conversely, researchers agree that the notion of adult learner self-directedness is nebulous, multi-faceted and challenging to assess (Botha & Coetzee, 2016; Du Toit-Brits & Van Zyl, 2017a). The literature encapsulates adult learner self-directedness from a contextual (learning environment), learner behavioural and/or learner trait perspective. A number of models have been proposed to explain adult learner self-directedness, focusing on one or more of the perspectives mentioned (Alghamdi, 2016; Zhoc & Chen, 2016).

Miscellaneous scales for the assessment of adult learner self-directedness exist, but most of the existing scales were developed and validated in European, American and Eastern learning contexts and/or for residential university students (Alghamdi, 2016; Zhock & Chen, 2016).

Diverse socio-cultural and individual variables may have an impact on adult learner self-directedness (Alghamdi, 2016; Botha & Coetzee, 2016; Bourdeaux & Schoenack, 2016; Papageorgiou, 2017). As most of the adult learners in South Africa depend on ODeLHE for educational advancement, it is crucial to develop a reliable and valid scale for assessing adult learner self-directedness in the South African ODeLHE milieu (Botha & Coetzee, 2016). Only two scales for the assessment of self-directedness have been developed in and for South Africa, namely the SSDL (De Bruin, 2008) and the LSDWS (2011). The SSDL was developed and used in a residential university. Unfortunately, the scale proved to be unidimensional, focusing only on the individual personality element of self-directedness. In addition, the scale was validated using a sample of mostly younger adults at a residential university, raising concerns about the effectiveness of its application in the complex ODeLHE context for older adults (Botha, 2014). The LSWS could not be used in this research study because it is once again a unidimensional scale and is concerned with assessing the self-directedness of employees, who are not necessarily ODeLHE learners.

The ALSDS can be utilised explicitly to quantify the academic self-directedness of adult learners the South African ODeLHE milieu (Botha, 2014; Botha, et al., 2015). The ALSDS assesses the following four dimensions of adult learner academic self-directedness: the use of official resources, engaged academic activity, success orientation for ODL and academically motivated behaviour. The ALSDS attempts to integrate the four prevalent constituents of learner self-directedness that are emphasised in the reported research, namely individual disposition (including motivation), learning milieu and learner behaviour within the learning milieu (Botha, 2014). This comprehensive approach aims to provide a holistic measure of adult learner self-directedness in South African ODeLHE in order to inform the development of adult learning opportunities in both the ODeLHE and workplace contexts (Botha, 2014; Botha, et al., 2015; Coetzee & Botha, 2013).

According to Nkabinde (2016) and Rogan and Reynolds (2016), the diverse influences of habitus and habitat on student academic success should be vigorously examined in order to equalise the inherited inequalities in the South African education system and the concomitant difficulties experienced by previously disadvantaged individuals to break free of the boundaries of poverty. Research has shown that socio-economic background, the complexities of ODeLHE study, cognitive style and habitus are all variables that affect learner success in South African ODeLHE (Botha, et al., 2015; Cox & John, 2016; Desai, 2016; Geduld, 2016; Mpofo, 2016; Nkabinde, 2016; Norodien-Fataar, 2016; Rogan & Reynolds, 2016). However, a paucity of research on the various socio-cultural influences on adult

learner self-directedness necessitates a thorough investigation in the South African ODeLHE milieu in order to add to the existing body of knowledge on learner success in ODeLHE. In addition, the assessment of the structural/factorial equivalence of the ALSDS (Botha, 2014) scale for age, race and gender will enable researchers to assess any differences that may exist between these groups in more valid and reliable manner (Botha, et al., 2015; Kahu & Nelson, 2017).

3.5 EVALUATION AND SYNTHESIS

From the discussion, it is clear that most of the adult learners in South Africa study via ODeLHE (DHET, 2013). The majority of these learners are black women. However, in 2011, only 7% of students successfully completed their qualifications at Unisa. In addition, the success rate for ODeLHE adult learners at institutions that offer contact sessions was lower than students at residential universities (DHET, 2013). South African ODeLHE and teaching are rapidly changing in order to survive in an environment defined by change – changes in technology, tuition and learning, higher education policy, higher education access and equalisation and student diversity (Matsolo, et al., 2016; Mpofu, 2016; Prinsloo, 2013; Rogan & Reynolds, 2016). Individual differences between students have an impact on their academic success, and in consequence on the higher education success rate and economy of the country (Matsolo, et al., 2016; Mpofu, 2016; Rogan & Reynolds, 2016).

The majority of students in South Africa choose (or are forced through socio-economic circumstances to use) ODeLHE for post-secondary education, which puts them at risk of failing their academic endeavours. Students in ODeLHE should have well-developed capacities in order to facilitate their success (Havenga, 2015). Conversely, Botha (2014) found that the self-directedness of black female students at Unisa was the most poorly developed of the student profile (also see Botha & Coetzee, 2016). Clearly, there is a need for an instrument to quantify ODeLHE adult learners' levels of self-directedness in order to contribute to the body of knowledge on ODeLHE learning design and implementation. In addition, a need exists to determine whether socio-biographic variables affect the academic self-directedness of ODeLHE adult learners in South Africa in order to facilitate support for students from poor socio-demographic backgrounds. The paucity of research on adult self-directedness in both the ODeLHE and workplace contexts indicates a clear and urgent need to explore this field in the context of South Africa.

A measurement scale is used to quantify in some way the diverse observations made about individuals, groups or processes (constructs) in social sciences in order to add to the existing body of knowledge of a discipline (DeVellis, 2016). However, the measurement of human behaviour,

attributes or values may contain a certain amount of error. Consequently, measurement instruments should be both reliable and valid in order to produce credible assessments of the relevant constructs (DeVellis, 2016). Assessing the psychometric properties (reliability and validity) of a measurement scale is a critical step in scale construction in order to ensure that the observations made through the scale are interpretable and generalisable (DeVellis, 2016). Social scientists generally rely on observing a number of nebulous phenomena, described through diverse theoretical lenses, in order to make sense of a certain aspect of human behaviour. The cloudy nature of the phenomena being measured and the number of continuously developing theories that give forth the phenomena in social sciences require a rigorous approach to the development of measurement scales in the social sciences (DeVellis, 2016).

Self-directed learning is possibly one of the most nebulous concepts that currently contribute to the body of knowledge of learning and student success (Alghamdi, 2016; Botha, 2014; Gu, 2016; Zhoc & Chen, 2016). The number of theories explaining self-directedness in various contexts and the number of measurement scales available are an indication of the great need that exists to conceptualise and clarify the notion of self-directedness in theory in order to apply it in practice. The paucity of research in South Africa and Africa possibly indicates that self-directed learning in the context of South African higher education is under-researched, and that Africa as a continent has not contributed sufficiently to the existing body of knowledge on student self-directedness (Botha, 2014; Du Toit-Brits, 2015b). Consequently, a scale that can be productively utilised in African ODeLHE milieus would make a significant contribution to the evolving body of knowledge on adult learner self-directedness in particular, and to student success in ODeLHE in general.

The ALSDS (Botha, 2014) was developed specifically for use in the South African ODeLHE. The scale attempts to unify the psychological, behavioural and contextual aspects of learner self-directedness in order to derive a measure to assess existing levels of adult learner self-directedness (Botha, 2014; Botha, et al., 2015). Unlike other scales, which tend to focus exclusively on the psychology of self-directedness, or on learners in residential universities who do not have to deal with the complexities of studying through ODeLHE, the ALSDS (Botha, 2014) attempts to consider all aspects involved in student self-directedness in ODeLHE. In addition, the scale was used in a study by Coetzee and Botha (2013) and by Botha (2014) and was investigated more rigorously in the South African context, making a unique contribution to the existing body of knowledge on adult learner self-directedness in South Africa. Should the reliability and validity of the ALSDS (Botha, 2014) be proven for age, race and gender groups and in addition, the role of socio-biographical variables in explaining adult learners' levels of self-directedness be proven, future studies may further refine the psychometric properties of the scale. Then the ALSDS (Botha, 2014) may be a valid and/or reliable

tool for intervention design in ODeLHE and workplace learning programme design contexts, since the degree of self-directedness of the proposed participants in the learning programme could be taken into account in both the design and implementation phases of learning programmes.

3.6 CHAPTER SUMMARY

Chapter 3 focused on conceptualising adult learner self-directedness in the ODeL tertiary education context, discussing the psychometric properties of the ALSDS and conceptualising the implications of the measurement of adult learner self-directedness for HRD in the workplace and tertiary ODeLHE teaching practices.

Self-directedness is becoming increasingly important in ODeLHE, since self-directed learning is associated with learner success. Self-directed learning is the capacity to manage individual learning from conception to conclusion. Various scales for the assessment of adult self-directed learning exist, but no scale focuses specifically on the South African ODeLHE context. Botha (2014) developed the ALSDS specifically for use in the South African ODeLHE milieu. The psychometric properties of the ALSDS include the strategic utilisation of officially provided resources, engaged academic activity, success orientation for ODeLHE and academically motivated behaviour. Furthermore, certain socio-biographic variables that may affect adult learner self-directedness were deliberated on. The examination of adult learner self-directedness in general and in South Africa in particular highlighted the scantiness of research on adult learner self-directedness in the tertiary education and workplace milieus in South Africa and asked questions about the teaching practices in tertiary education and workplace learning contexts. In Chapter 4, the research methodology followed in this research study is illuminated. The sample of the study is explained, the statistical analyses conducted on the sample are explained and the reasons why these analysis methods were chosen are elucidated.

CHAPTER 4 RESEARCH METHOD

In this chapter, the research methodology utilised in the study is explained. Empirical research is a step in the quantitative social science research process that focuses on quantifying theoretical principles of observable human behaviour in order to explain the underlying (unobservable) influences on observable behaviours (Bastow, Dunleavy & Tinkler, 2014; Reale, et al., 2017). Research in social sciences studies the causes and effects of human behaviour in order to broaden the existing knowledge bases about human beings and their societies. In a society that is more and more knowledge-based, the social sciences are increasingly contributing to knowledge systems (Bastow, et al. 2014; Reale, et al. 2017). This chapter starts with an overview of the current research study's population and sample, followed by an examination and justification of the measuring instrument. Next, the data gathering and processing procedures are explained, and finally, the research hypotheses are formulated.

The current study formed part of a large research project on adult learner self-directedness in the South African open and distance learning higher education (ODELHE) context. As shown in Figure 4.1, the research project was conducted in two phases. Phase 1 formed part of the student's master's study (Botha, 2014) and entailed the development of the theoretical underpinnings of adult learner self-directedness in ODeLHE. The development of the Adult Learner Self-directedness Scale (ALSDS), including the development of the measurement items and the data collection on a stratified random sample of adult learners (N = 1102 registered students of the College of Economic and Management Sciences) in a large ODeLHE institution was the core focus of the master's study. The outcome of phase 1 was a preliminary exploratory factor analysis of the ALSDS in order to ascertain the initial factor structure of the ALSDS for a master's dissertation. However, a limitation of the master's study was that the study was elementary and did not consider the rigorous assessment of the factor structure, rating scale functionality, construct validity, internal consistency reliability and the equivalence of the ALSDS for age, gender and race groups for the particular research population. The master's study also did not consider how person-centered characteristics unique to the ODeLHE context influence the manifestation of adult learner self-directedness. To address the gap in the master's study research, the current doctoral study served to extend at an advanced level the assessment of the psychometric properties of the ALSDS as manifested for the research sample utilised in the master's study. The doctoral study therefore represents phase 2 of the research project on adult learner self-directedness in the ODeLHE context.

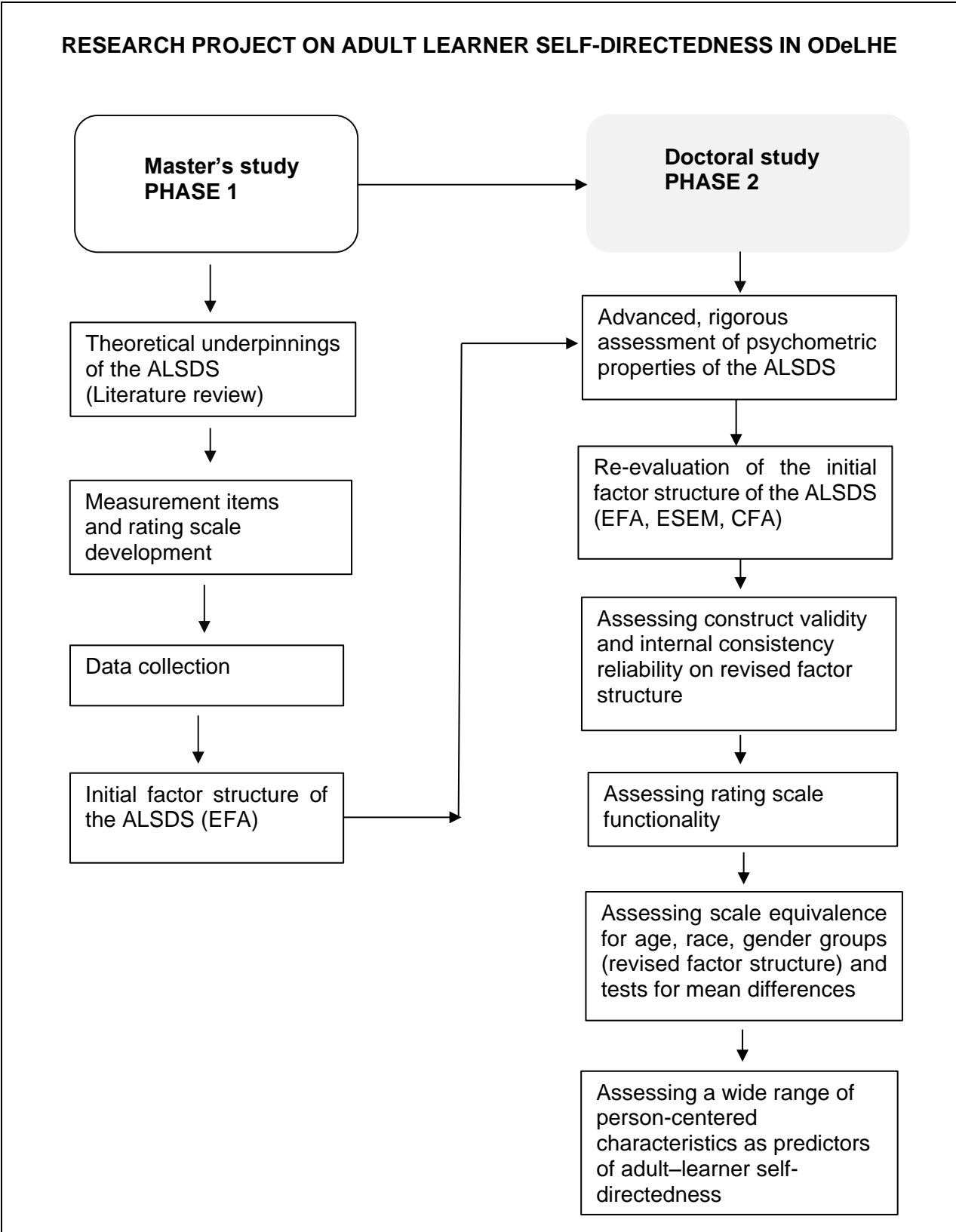


Figure 4.1 Overview of research project on adult learner self-directedness in the ODeLHE context

The sample utilised in Botha's (2014) study served as the baseline sample of the present study (phase 2 of the research project). Since the purpose of the present study was to do a rigorous investigation of the psychometric properties of the ALSDS (Botha, 2014) as manifested for the research population identified by Botha (2014), the present research followed a two-pronged approach. First, the sample of $N = 1\ 102$ was analysed using the exploratory structural equation modelling (ESEM) analysis method. After data cleaning, the ESEM yielded 1 059 usable questionnaires. After the ESEM analysis, a random subsample of $n = 747$ was drawn from the initial ($N = 1\ 102$) sample in order to thoroughly investigate the psychometric properties of the ALSDS which was not done in the initial study by Botha (2014). The present study did not focus on confirming the construct validity on a new sample, but rather to assess on an advanced level the structural (construct) validity of the ALSDS (Botha, 2014) on a selected random subsample of the initial sample identified by Botha (2014). In addition, the present study evaluated the influence of a range of socio-biographical factors on explaining the variance in individuals' self-directedness as measured by the ALSDS.

In summary, the doctoral study sought to conduct a rigorous advanced examination of the psychometric properties of the ALSDS, namely the construct validity (convergent and discriminant validity) as well as the structural invariance of the scale as regards age, race and gender, in order to further refine the scale before actual implementation in the ODeLHE context. In addition, the doctoral study investigated whether a range of socio-cultural variables of specific relevance to the ODeLHE environment in South Africa significantly predicts the self-directedness of adult learners (Botha, 2014). The following socio-biographical variables were investigated: employment status, occupation, socio-economic situation, being depended upon financially, access to a library, access to a computer, proficiency in English, number of modules for which the learner was enrolled and who was funding the learner's studies.

The advantage of the present approach is that the data were readily available but underutilised in the initial master's study. The present study adds value because a more rigorous assessment of the psychometric properties of the ALSDS was done (Botha, 2014). Obtaining a large sample of student data in the ODeLHE context is often problematic and time consuming (with low response rate) and therefore the optimal usage of data obtained (available) is recommended and beneficial when investigating the psychometric properties of an instrument for a specific population group. The random selection of a subsample of the initial sample of participants is also beneficial because the approach lends itself to creating a new subsample that could lead to a more unbiased evaluation of the factor structure of the ALSDS (Botha, 2014). Furthermore, the statistical procedures utilised in the doctoral study are more rigorous and advanced than those employed in the master's level study.

In addition, the findings could be generalised to the sample population group identified by Botha (2014).

The next section opens with a summary of the sample size and population of the research study, followed by a discussion of and motivation for the measuring instrument used. The data gathering and statistical processing methods are then described. Finally, the formulation of the research hypotheses is explained.

The empirical phase consisted of nine steps, as indicated below in Figure 4.2:

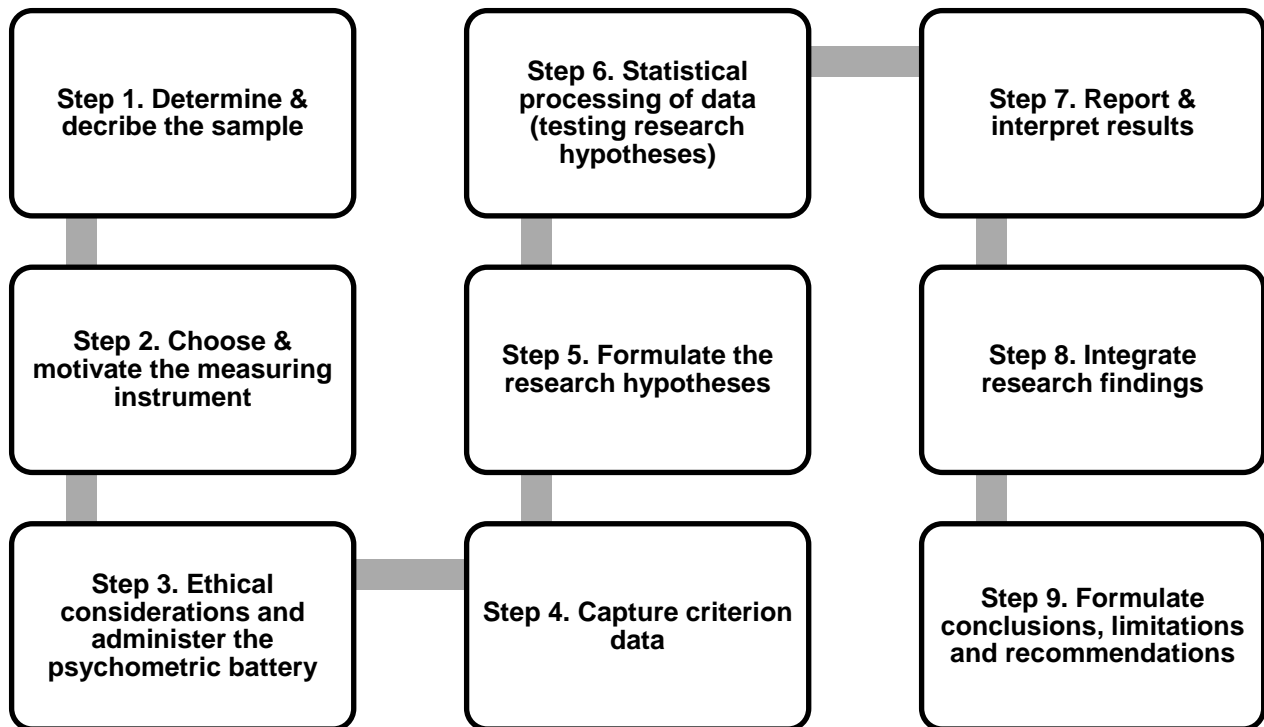


Figure 4.2 The empirical research process

Steps one to six are addressed in this chapter and steps seven to nine are addressed in Chapters 5 and 6.

4. 1 DETERMINATION AND DESCRIPTION OF THE SAMPLE

As explained earlier, the current study formed part of a larger research project comprising (1) the development of the ALSDS scale items through a comprehensive literature review and an initial exploration of the factor structure of the newly developed ALSDS in the student's master's research and (2), a more rigorous, advanced assessment of the factor structure and psychometric properties of the ALSDS by using the dataset involved in the master's study in the current research (doctoral study).

The data mining of existing research data had the advantage of providing secondary data that were readily available, saving time and costs for the purpose of a doctoral study. In addition, the data were already anonymised and informed consent for utilising the data for research had been obtained, eliminating any ethical issues that may arise (Clow & James, 2014; Slater, Jocsimović, Kovanovic, Baker & Basovic, 2017). Data mining can be used for descriptive modelling, such as principal component analysis (as was used in the exploratory factor analysis in the current study) and for predictive modelling, for example regression analysis, which was also used in the current study (SAS, Inc., 2017). With the easy access to huge amounts of data made possible by ICTs in the 21st century, data gathering, processing, investigation and model validation have become an integrated whole. In this regard, data mining saves time and resources, thereby providing a cost-effective solution precursor to predictive analytics for business solutions (SAS, Inc. 2017). Since the purpose of this study was to investigate the capacity of the ALSDS to accurately and equitably assess adult learner self-directedness in an ODeLHE context, the use of data mining in the form of secondary data gathered from an earlier related study made good business sense. The decision is supported by the imperative on higher education institutions to provide cost-effective education (Aili & Nilsson, 2015).

However, some of the limitations of secondary data should also be acknowledged. Inaccuracies may arise in the use of secondary data. In order to prevent inaccuracies caused by the data when using secondary data analysis, it is vital to consider the data source and purpose of the primary research study (Clow & James, 2014; Neagoie, et al., 2017). Furthermore, the sample selection method used in the primary research study, the size of the sample, and the representivity of the original sample are significant considerations in the use of secondary data. In addition, it was acknowledged that the data collection method, the analyses and interpretations of the original data assembled could affect the usability of the secondary dataset (Clow & James, 2014; Neagoie, et al., 2017).

In the case of the current research study, which extended a post-graduate study by Botha (2014), the source of the secondary data was internal. In addition, the purpose, sample selection, sample size

and representivity, the data collection method, analyses and interpretations of the original data set were all available (Botha, 2014). The purpose of the current study was to investigate the psychometric properties of the ALSDS as a vital first stage in the validation of the scale (i.e. future studies on other samples) by examining the construct validity of the scale for the particular population group identified by Botha (2014). In addition, the structural invariance of the ALSDS for differences in gender, race and age, were investigated in order to determine whether measurement invariance exists in terms of the sample population group. Furthermore, the current study investigated a broad range of added socio-demographic variables, which were not used in the initial study. The demographic variables were as follows:

- employment status
- occupation
- socio-economic situation
- being depended upon financially
- access to a library
- access to a computer
- proficiency in English
- number of modules for which the learner was enrolled
- who was funding the learner's studies

In a research study such as this, the sample is the solid foundation on which the statistical evaluation and interpretation of the data gathered for the research study is to be based. The objectives of a research study direct the sample design (Ornston, 2012; Salkind 2016). The sample is drawn from the target population – the whole population that could be utilised in the research. For the purposes of the original (masters) research study, the population was determined as all the undergraduate adult learners enrolled in the economic and management sciences field at a comprehensive, ODeL university in South Africa. At the time of the primary study the total population constituted around N = 438 055 adult learners – the approximate number of adult learners registered in 2010 at the College of Economic and Management Sciences. The total population from which the original sample was drawn is illustrated in Table 4.1.

Table 4.1

The Composition of the Total Population From Which the Original Sample Was Drawn

School	Department	N	%
School of Accounting Studies	Auditing	22 93	5.2
	Financial Accounting	73 71	16.8
	Management Accounting	35 64	8.1
	Taxation	19 05	4.4
School of Economic Sciences	Decision Sciences	17 84	4.1

	Economics	59 84	13.7
	Transport Economics, Logistics and Tourism	7 89	1.8
School of Management Sciences	Business Management and Entrepreneurship	101 73	23.2
	Finance and Risk Management and Banking	19 40	4.4
	Human Resource Management	22 10	5.0
	Industrial and Organisational Psychology	18 01	4.1
	Marketing and Retail	22 56	5.2
	Public Administration	17 19	3.9
Total		438 05	100

In Table 4.1, the number of students registered in each department and school of the college is illustrated, as well as the percentage of students per department and school that were included in the final sample of the 2014 study. The total population of the original study was $N = 438\ 05$.

As the sample of the research study should represent the population, all members of the population should have an equal chance to be selected to participate in the study (Salkind 2016). Accordingly, it was decided to use a probability sampling approach. As the population of the university in question is diverse, it was further decided to use a stratified sampling technique. In a stratified sampling technique, the population is separated into a number of mutually exclusive categories (strata), and a random sample is then drawn from each category. However, owing to the size differences between the various categories in the population of this university, the additional decision was made to proportionalise a random sample of each category in order to build the total sample (Salkind, 2016).

The nett effect was that the probability sample was also stratified and proportional in order to account for the possibility of sampling error as far as possible. The stratified, proportional, random sample of the original study was $N = 10\ 500$. The original sample was stratified according to module (subject), qualification, department and school, and comprised various gender, race and age groups. A total of 1 102 responses to the survey were received, thus the total sample size on which the research findings of the original study were based was $N = 1\ 102$. In Table 4.2 the composition of the original sample as well as the response rate, per department and school, is illustrated.

Table 4.2

The Composition of the Original Sample per Department and School, Including the Response Rate

School	Department	Mailing list	Response rate %				
			.01	.03	.06	.09	.12
School of Accounting Sciences	Auditing	547	5	16	33	49	66
	Financial Accounting	1 766	18	53	106	159	212
	Management Accounting	851	9	26	51	77	102
	Taxation	462	5	14	28	42	55
School of Economic Sciences	Decision Sciences	431	4	13	26	39	52
	Economics	1 440	14	43	86	130	173
	Transport Economics, Logistics and Tourism	189	2	6	11	17	23
School of Management Sciences	Business Management and Entrepreneurship	2 438	24	73	146	219	293
	Finance and Risk Management and Banking	462	5	14	28	42	55
	Human Resource Management	526	5	16	32	47	63
	Industrial and Organisational Psychology	431	4	13	26	39	52
	Marketing and Retail	547	5	16	33	49	66
	Public Administration	410	4	12	25	37	49
Total		10 500	104	315	631	946	1260

Table 4.2 shows that a total of 1 260 surveys, out of 10 500 that were sent out, were returned, producing a response rate of 12% in the 2014 study. After data cleaning, a total of 1 102 returned surveys could be used, resulting in a final response rate of 8.3%. The response rate percentages indicated in Table 4.2 are estimates of the different sample sizes based on a 1% to a 12% response rate.

The composition of the gender groups of the original sample is summarised in Table 4.3.

Table 4.3

The Composition of the Gender Groups of the Original Sample

		Frequency	%	Valid %	Cumulative %
Valid	Male	409	37.1	37.2	37.2
	Female	690	62.6	62.8	100.00
	Total	1 099	99.7	100.00	
Missing	System	3	.3		
Total		1 102	100.00		

Table 4.3 indicates that 37.1% of surveys returned were from male adult learners, while 62.6% were from female learners.

The composition of the race groups of the original sample is summarised in Table 4.4.

Table 4.4

The Composition of the Race Groups of the Original Sample

		Frequency	%	Valid %	Cumulative %
Valid	Black (African)	948	86.0	86.3	86.3
	Coloured	39	3.5	3.5	89.8
	Indian	30	2.7	2.7	92.5
	White	82	7.4	7.5	100.0
	Total	1 099	99.7	100.0	
Missing	System	3	.3		
	Total	1 102	100.0		

Table 4.4 shows that the four race groups represented in this sample consisted of 86.3% black (African) learners, 3.5% coloured learners, 2.7% Indian learners and 7.5% white learners.

In Table 4.5, the composition of the age groups of the original sample is summarised.

Table 4.5

The Composition of the Age Groups of the Original Sample

		Frequency	%	Valid %	Cumulative %
Valid	18–25	413	37.5	39.9	39.9
	26–30	251	22.8	24.3	64.2
	31–40	252	22.9	24.3	88.5
	41–50	101	9.2	9.8	98.3
	Over 50	18	1.6	1.7	
	Total	1 035	93.9	100.0	100.0
Missing	System	67	6.1		
	Total	1 102	100.0		

In Table 4.5, the age groups are divided as follows: 18–25: 39.9%; 26–30: 24.3%; 31–40: 24.3%; 41–50: 9.3%, and older than 50: 1.6%.

For the purpose of the current research study, a further random subsample of 67% was drawn from the sample (N = 1 102) of the original study. Consequently, the sample of the current study consisted of n = 747. The composition of the new sample for the current research study is illustrated in Table 4.6.

Table 4.6

The Composition of the Subsample for the Current Research Study, According to Gender, Race and Age

Biographical data			Frequency	%	Valid %	Cumulative %
Valid	Gender	Male	286	38.3	38.3	38.3
		Female	460	61.6	61.7	100
		Total	746	99.9	100.0	
Missing		System	1	.1		
	Total		747	100.0		
Valid	Race	Black (African)	650	87.0	87.4	87.4
		Coloured	25	3.3	3.4	90.7
		Indian	18	2.4	2.4	93.1
		White	51	6.8	6.9	100.0
		Total	744	99.6	100.0	
Missing		System	3	.4		
	Total		747	100.0		
Valid	Age	18-25	275	36.8	39.0	39.0
		26-30	176	23.6	24.9	63.9
		31-40	170	22.8	24.1	88.0
		41-50	72	9.6	10.2	96.2
		Over 50	13	1.7	1.8	100.0
		Total	706	94.5	100.0	
Missing		System	41	5.5		
	Total		747	100.0		

In summary, the doctoral study (2017) drew a random subsample (Table 4.6) from the stratified random sample (described in Table 4.2). The subsample consisted of $n = 747$. The subsample included 38.3% males and 61.7% females. As regards race, 87.4 % of the subsample were black Africans, 3.4% were coloured, 2.4% were Indian and 6.9% were white. The ages were distributed as follows: 18 – 25 (39%); 26 – 30 (24.9%); 31 – 40 (10.2%) and over 50 (1.8%).

The information indicates that the majority of the adult learners in the doctoral sample were female, black (African) students of between 18 and 25 years of age, although cumulatively the age can be taken as between 18 and 39.

The data of the sample as regards age, race and gender are summarised in Figure 4.3.

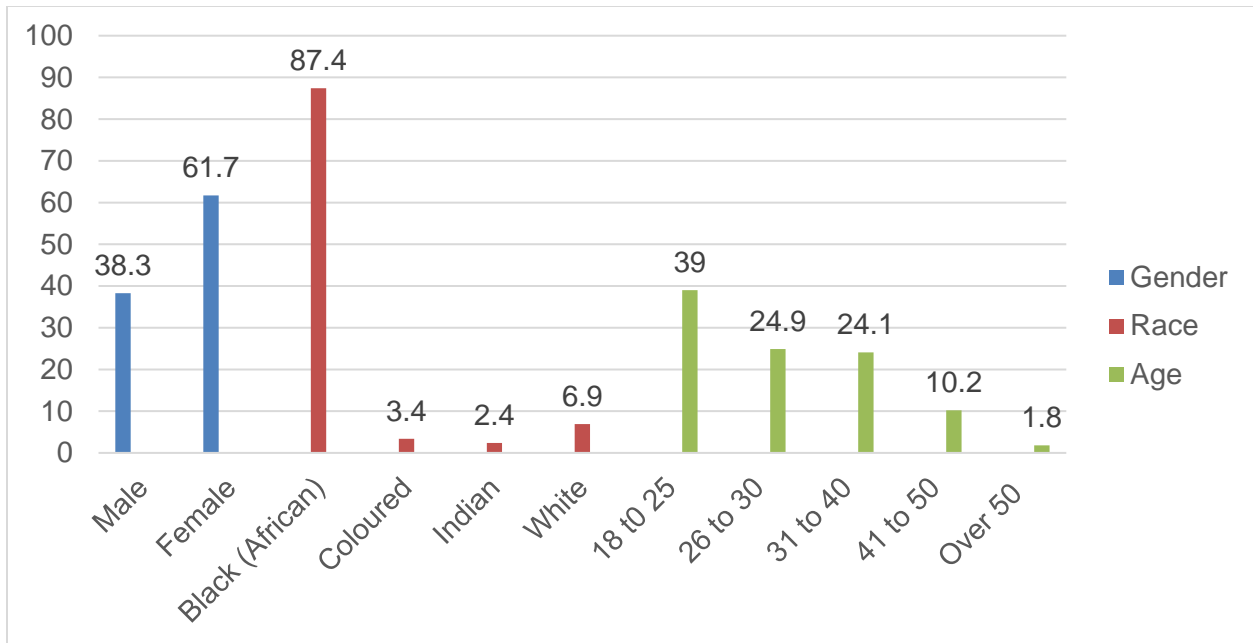


Figure 4.3 Composition of the subsample (n = 747) as regards gender, race and age

The composition of the sample for employment status is summarised in Table 4.7.

Table 4.7

The Composition of the Sample for Employment Status

Employment status	Frequency	%	Valid %	Cumulative %
Valid				
Unemployed	318	42.6	43	43
Employed part-time	67	9.0	9.0	52.0
Employed full-time	356	47.7	48	100.0
Total	741	99.3	100.0	
Missing				
System	6	.7		
Total	747	100.0		

From Table 4.7, it is evident that the majority of the adult learners in this sample were employed full-time (356; 47%), while 318 (42.6%) were unemployed and 67 (9.0%) were employed part-time. In Table 4.8, the composition of the sample for current occupation is reported.

Table 4.8

The Composition of the Sample for Current Occupation

Current occupation		Frequency	%	Valid %	Cumulative %
Valid	Unskilled	22	2.9	3	3
	Menial occupation (limited skills)	52	7.0	7.1	10.1
	Skilled	106	14.2	14.5	24.6
	Administrative position	150	20.1	20.5	45.1
	Professional occupation	92	12.3	12.6	57.7
	Unemployed	309	41.4	42.3	100.0
	Total	731	97.9	100	
Missing	System	16	2.1		
Total		747	100.0		

Table 4.8 indicates that 309 respondents reported that they were unemployed, while 150 were employed in administrative positions, 106 (14.2%) were employed in skilled positions, 92 (12.3%) were in professional occupations, 52 (7.0%) were in menial positions requiring limited skills and 22 (2.9%) were employed in unskilled positions. The high number of respondents who reported that they were unemployed can probably be ascribed to some difficulties the respondents may have experienced to decide which option to choose, due to lack of knowledge. Although examples were provided with each option, it is possible that the respondents still found it difficult to place their occupation into one of the categories other than unemployed. The data for this question could obviously not be used reliably in the analysis of the data.

Table 4.9

The Composition of the Sample for Socio-Economic Situation

Monthly income		Frequency	%	Valid %	Cumulative %
Valid	No steady income monthly	308	41.2	41.6	41.6
	Monthly income < R 2 000	53	7.1	7.2	48.7
	Monthly income R 2 001 – R 5 000	130	17.4	17.5	66.3
	Monthly income R 5 001 – R 9 000	132	17.7	17.8	84.1
	Monthly income > R 9 000	118	15.8	15.9	100
	Total	741	99.2	100.0	
Missing	System	6	.8		
Total		747	100.0		

According to Table 4.9, the majority of the adult learners in this sample (308) (41.2%) had no steady monthly income, while 132 (17.1%) had a monthly income between R 5 001 and R 9 000. There were 130 (17.4%) respondents with a monthly income of R 2 001 – R 5 000 and 118 (15.8%) with a monthly income of > R 9 000. The data on the sample for financial dependents are explained in Table 4.10.

Table 4.10

The Composition of the Sample for Being Dependent on Financially

Who do you support financially		Frequency	%	Valid %	Cumulative %
Valid	No one – someone else supports me	269	36.9	36.0	36.0
	Only myself	82	11.0	11.0	47.0
	Myself and 1 dependent	92	12.3	12.3	59.3
	Myself and 2 dependents	83	11.1	11.1	70.4
	Myself and > 2 dependents	221	29.6	29.6	100.0
	Total	747	100		

Table 4.10 indicates that the majority of the respondents in this sample (269; 36.9%) were financially dependent on someone else, while a substantial number of respondents (221; 29.6%) supported themselves and more than 2 dependents. The number of adult learners in this sample who support themselves and 1 dependent was 92 (12.3%), while 83 (11.1%) support themselves and two dependents. The number of respondents who supported only themselves were 82 (11.0%).

Table 4.11

The Composition of the Sample for Access to a Library

Access to a library		Frequency	%	Valid %	Cumulative %
Valid	No access	98	13.1	13.4	13.4
	Limited access	85	11.4	11.6	25.0
	Unisa's library	242	32.4	33.0	58.0
	Municipal library	281	37.6	38.3	96.3
	Own extensive academic library	27	3.6	3.7	100
	Total	733	98.1	100.0	
Missing	System	14	1.9		
Total		747	100.0		

From Table 4.11, it is clear that the majority of adult learners in this sample (281; 37.6%) had access to a municipal library, and a substantial number of adult learners (242; 32.4%) had access to the

university's library. Only 27 (3.6%) of the respondents owned an extensive academic library of their own, while 98 (13.1%) of the respondents had no access to a library and 85 (11.4%) had limited access to a library.

Table 4.12

The Composition of the Sample for Access to a Computer

Access to a computer		Frequency	%	Valid %	Cumulative %
Valid	No access	152	20.3	20.6	20.6
	Can ask someone to use a computer	117	15.7	15.9	36.4
	Access to a family computer	107	14.3	14.5	50.9
	Access to a computer at work	175	23.4	23.7	74.7
	Own a computer	187	25.0	25.3	100.0
	Total	738	98.8	100.0	
Missing	System	9	1.2		
Total		747	100		

Table 4.12 indicates that 187 (25.0%) respondents in this sample owned their own computer, while 152(20.3%) respondents had no access to a computer. The number of adult learners who could ask someone to use a computer was 117 (15.7%) and 175 (23.4%) respondents had access to a computer at work.

Table 4.13

The Composition of the Sample for Mark Received for English in the Final School Examination

English mark for the final school exam		Frequency	%	Valid %	Cumulative %
Valid	< 30%	2	.3	.3	.3
	31 – 40%	82	11.0	11.4	11.7
	41 – 50%	229	30.7	31.8	43.4
	51 – 60%	259	34.7	35.9	79.3
	60% or more	149	19.9	20.7	100.0
	Total	721	96.5	100.0	
Missing	System	26	3.5		
Total		747	100		

From Table 4.13 it is clear that the majority of the students (34.7%) received a mark of 51 – 60% for English in their final school exam. A substantial number (229; 30.7%) received a mark between 41 and 50%, while a small number (2; .03%) received a mark of < 30%. A mark of 61% or more was reported by 149 (19.9%) respondents, which is considerably less than for the combined groups 41 – 60%.

Table 4.14

The Composition of the Sample for Number of Modules Enrolled For

Number of modules		Frequency	%	Valid %	Cumulative %
Valid	One	98	13.1	13.5	13.5
	Two	45	6.0	6.2	19.7
	Three	90	12.0	12.4	32.1
	Four	128	17.1	17.7	49.8
	More than four	364	48.7	50.2	100.0
	Total	725	97.1	100.0	
Missing	System	22	2.9		
Total		747	100		

Table 4.15

The Composition of the Sample for Who is Paying for the Learner's Studies

Who is paying for the learner's studies		Frequency	%	Valid %	Cumulative %
Valid	Paying self	327	43.8	44.4	44.4
	Family is paying	202	27.0	27.4	71.9
	Employer is paying	72	9.6	9.8	81.7
	Family through a loan	55	7.4	7.5	89.1
	Bursary	80	10.7	10.9	100
	Total	736	98.5	100.0	
Missing	System	11	1.5		
Total		747	100		

Table 4.15 indicates that the majority of the respondents for this sample (327; 43.8%) were paying for their own studies, while a substantial number of adult learners (202; 27.0%) had to rely on their families to pay for their tertiary education. The number of respondents who received a bursary was 80 (10.7%), while 72 (9.6%) adult learners' employers were sponsoring their studies. Finally, 55 (7.4%) respondents' families were sponsoring their studies through a loan.

In conclusion, the characteristics of the subsample can be described as consisting mostly of black (African) (87%) females (61%) of between 18 and 25 years old (39%). The subsample was therefore

close to the sample of the first phase of the study (2011), which was as follows: black (African) (86%), women (62%) of between 18 and 25 years old (37%).

In addition, the subsample respondents indicated first that they were mostly employed full time (47%), while 42 % indicated that they were unemployed. Where occupation was concerned, the subsample respondents were mostly unemployed (39%), while 21% were employed in administrative positions, and 14% were employed in skilled positions. The high reporting of unemployment where employment position was concerned may be ascribed to some difficulty that respondents may have experienced in placing their positions within the categories provided in the questionnaire.

Furthermore, the subsample respondents reported that 41% had no steady monthly income, while only 15.8% had a monthly income of higher than R 9 000. The indication places the majority of the respondents within an income bracket that is associated with poor socio-economic circumstances. The majority of adult learners in the subsample were supported by others (39%), while a substantial number (29%) supported themselves and more than two dependants, indicating the amount of financial and role responsibilities the adult learners in the subsample experienced in addition to their academic responsibilities.

As regards access to a library, 37% of the respondents in the subsample reported access to a municipal library, while 32% reported access to the library of the academic institution. Since access to a library is vital for post-secondary study, the poor access to reliable libraries is a concern. Where access to a computer is concerned, 25% of respondents reported that they had access to their own computer, while 23% had access to a computer at work and 20% had no access to a computer. This is once again of concern, since access to a computer is a necessity in ODeLHE.

The mark the respondents obtained for English at school was reported as follows: only 19% obtained a mark higher than 60%, while 34% received a mark of between 51 and 60% and 30% obtained a mark of between 41 and 50%. Another indicator of concern as regards ODeLHE is the poor mark for English, since English is the language of instruction at the academic institution where the sample was drawn. As regards the number of modules for which the respondents were enrolled, 48% indicated that they were registered for more than four modules. Registering for more than four modules can lead to an extremely high academic workload on top of full time work and family responsibilities, since the majority of the subsample respondents were black (African) females who worked fulltime and were responsible for supporting themselves and more than two dependants. In addition, 43% of the subsample reported that they were paying for their tertiary education themselves, while 27% reported that their families were paying for their studies. The financial and time investment that the respondents

of the subsample were prepared to make in order to improve their socio-economic circumstances was substantial.

4.2 CHOOSING AND MOTIVATING THE MEASURING INSTRUMENT

In the current study, the ALSDS developed by Botha (2014) was used, as well as data obtained from the biographical questionnaire included in the master's study sample.

The biographical questionnaire was used to gather data on the socio-biographical characteristics of the sample of the 2014 study, as regards gender, race and age. The following socio-demographic variables were also included in the biographical questionnaire: employment status, occupation, socio-economic situation, being depended upon financially, access to a library, access to a computer, proficiency in English, number of modules for which the learner was enrolled and who was funding the learner's studies. These socio-biographical variables were not utilised in the 2014 master's study, but were investigated in the current study.

In addition, the newly developed ALSDS (Botha, 2014) was used. As a first stage in the original research study an exploratory factor analysis (EFA) was conducted. The results of the master's study (Botha, 2014) indicated a four-factor solution that had acceptable internal consistency reliability and content validity. However, the construct (convergent and discriminant validity) and structural equivalence of the ALSDS for gender, race and age groups of the best fit factor solution was not established in the master's study. Being part of a larger research project (see Figure 4.1), the focus of the doctoral study was to rigorously extend the master's study by assessing the intra-dimensional construct validity, homogeneity (unidimensionality), and structural equivalence of the ALSDS for diverse groups. In addition, a wide range of biographical variables relevant to the ODeLHE context was investigated in terms of explaining the variance in participants' levels of self-directedness in the doctoral study.

The master's study (Botha, 2014) indicated an overall internal consistency reliability coefficient for the ALSDS of .91. The reliability coefficients for each subscale ranged from .60 to .77 and inter-construct correlations (r) ranged from .02 to .60, indicating a small to large practical effect size (Botha, 2014). Nunally and Bernstein (1994) used .70 as a rule, while Bartholomew, Antonia, and Marcia (2000) indicated that a range of between .60 and .80 could be considered adequate in the social sciences. The internal consistency reliabilities of the ALSDS subscales evidently fell within the array of directives. The lower internal consistency coefficients for some of the ALSDS variables could be

attributed to influences such as the life stage and inexperience of participants on the subject of the attributes measured. Although the internal consistency reliabilities of the ALSDS were considered adequate for the purposes of the initial master's research study (phase 1 of the research project), further rigorous investigation of the scale is vital. The reliabilities of the four factors derived from the master's study EFA are explained in Table 4.16 below.

Table 4.16

Internal Consistency Reliability Coefficients of the ALSDS

Factor	Name	Cronbach's alpha	Number of items
Factor 1	Strategic utilisation of officially provided resources	.60	5
Factor 2	Engaged academic activity	.60	5
Factor 3	Success orientation for open and distance e-learning	.77	11
Factor 4	Academically motivated behaviour	.71	14
Overall scale		.91	35

Source: Botha (2014)

The ALSDS (Botha, 2014) is a self-reporting behaviourally anchored questionnaire consisting of 35 questions and a corresponding list of five behavioural or attitudinal responses for each question. Respondents are required to read both the question and the list of behavioural or attitudinal responses and then choose one response (in the case of 21 of the questions) or more than one (in the case of the remaining questions) response that most accurately describes the respondent's attitude or behaviour associated with the question. Respondents are requested to answer each question as quickly and honestly as possible. Detailed instructions are provided for the administration of the instrument; consequently, the survey is self-explanatory and no supervision is required. The instrument is suitable for administration to groups and individuals alike. Responses received are individually scored and captured electronically. A total score for each respondent is calculated by adding all the items for each subscale. Total scores can range between 35 and 70 (or more, where respondents choose to pick more than one option in the part of the survey where this is allowed). The higher the individual score obtained, the higher the person's self-reported self-directedness in an ODeLHE context.

4.2.1 Development of the Adult Learner Self-Directedness Scale

The questionnaire items of the ALSDS (Botha, 2014) were constructed after studying various theoretical models developed by researchers in the field of adult learner self-directedness (Brockett & Hiemstra 1991; Candy, 1991, Garrison 1997, Knowles 1975; Song & Hill 2007). In terms of the doctoral study, the questionnaire item development was augmented by published research on adult learners, adult learners' learning behaviours, the challenges faced by adult learners in the ODeLHE milieu and the complexities of learning and teaching in an ODeLHE context (Alghamdi 2016; Ainscough, et al., 2017; Alt 2015; Bhayat & Madiba, 2016; Bolkan, et al., 2016; Cannard, et al., 2016; Chen, 2017; Coetzee & Botha, 2013; Douarte, et al., 2016; Firat, et al., 2017; Geduld, 2016; Havenga, 2015; Kauffman, 2015; Khiat, 2017; Lin, et al., 2016; Morong & DeBiens, 2016; Mpofo, 2016; Olafsen, et al., 2017; Pidgeon & Pickett, 2017; Rana, et al., 2016; Zhoc & Chen 2016). In addition, the developer's (student's) experience of teaching adult learners in a comprehensive ODeL university in South Africa contributed to the knowledge used in the development of the scale items (Botha, 2014).

4.2.1.1 *The foundation of the scale items*

The principles of adult learning proposed by Knowles (1975) formed the foundation of the item development for the measure. Although adult learning principles are not widely used in the formal tertiary learning environment, they have been adopted extensively in workplace learning contexts (Alghamdi, 2016). Published research on adult learner self-directedness in the ODeLHE milieu was investigated in order to learn which concepts were relevant to teaching and learning in an ODeLHE milieu. The notions of adult learners' motivational inclinations, self-efficacy; self-regulation, learner engagement, learner agency, learner persistence, learner self-directedness in the workplace, variables that may affect learner self-directedness, and learning contexts within which learners may display self-directedness were investigated (Billett, 2010, Candy, 1991; Coetzee, et al., 2011; De Bruin & De Bruin, 2011; Karakas & Manisaligil, 2012; Knowles, 1975; Ross-Gordon, 2011, Taylor, 2008). In the doctoral study, the theoretical foundation of adult learner self-directedness, outlined by Botha (2014) was critically reviewed and further corroborated by scholars in the field of adult learner self-directedness (Alghamdi 2016; Atkinson 2017; Berhardsson, et al., 2016; Bolkan, et al., 2016; Bore & Munro, 2016; Botha & Coetzee, 2016; Cavenett, 2017; Coetzee & Botha, 2013; Du Toit-Brits & Van Zyl, 2017a; Fontana, et al., 2015; Geduld, 2016; Hagen & Park, 2016; Johnson & O'Keeffe, 2016; Kauffman, 2015; Khiat, 2017; Lejeune, et al., 2016; Lin, et al., 2016; Mello, 2016; Morong &

DeBiens, 2016; Mpofu, 2016; Olafsen, et al., 2017; Pidgeon & Pickett, 2017; Rana, et al., 2016; Zhoc & Chen, 2016).

The integrated principles of adult learning and adult learner self-directedness, together with the information on the complexities of teaching and learning in the ODeLHE context, were used to distil the kinds of learning behaviours and individual beliefs both dependent and self-directed adult learners in an ODeLHE context would display in order to complete their academic studies successfully (Botha, 2014). As a similar questionnaire could not be found, as explained in Chapter 3, comparisons were made with models of self-directedness and not with existing scales. The items of the ALSDS were based on the principles of andragogy proposed by Knowles (1975), supported by information from the models proposed by Brockett and Hiemstra (1991), Candy (1991), Garrison (1997) and Song and Hill (2007) [Botha, 2014]. Three subject matter experts in the fields of scale development and survey design, and experienced in ODeLHE tuition, verified the face and content validity of the scale through a process of triangulation (Botha, 2014).

4.2.1.2 The format of the scale

When a scale is developed, it is vital to remember that the survey requires a response from the individual participant. Thus, it is preferable to design survey questions and answer options from the point of view of the participant, keeping in mind the data the researcher wishes to collect (Smyth, 2016). A verbal label is usually attached to each response option on the scale in order to clarify the meaning of the rating for the respondents. Research has shown that respondents prefer clear descriptions for each response option and that the position and values of numerical rating choices may influence the respondent's answer. In addition, the matter of the psycho-cultural influences that may affect responses to survey questions also had to be considered in the development of the ALSDS items (Botha, 2014). The main concern about the psycho-cultural influences on respondents stems from researchers' disquiet about the comparability of questions and responses (Miller & Willis, 2016). The chief concern is whether all the socio-cultural groups in a specific study interpret the survey questions in the same way. Another concern is whether the data that derive from the survey convey the same occurrences for a diverse sample of respondents. Furthermore, the life experiences and socio-cultural context of respondents affect the interpretation of survey questions (Miller & Willis, 2016). Consequently, socio-cultural influences need to be taken into account in the development of survey instruments in diverse populations. The language of the scale should also be considered (Miller & Willis, 2016). When respondents have to answer survey questions set in what is for them a second or third language and not their mother tongue, socio-linguistic influences may arise in the responses, which may invalidate the data gathered (Miller & Willis, 2016).

Likert scales are frequently used in social sciences and educational research (Leutner, Yearsley, Codreanu, Borenstein, & Ahmetoglu 2016). Likert scales comprise a succession of items that are broken down into two sections, namely a stem (usually a declaration of fact or point of view) and a response scale. A Likert-type scale usually provides response labels such as agree, strongly agree, disagree and strongly disagree, which may be vague and inadvertently have negative socio-linguistic influences on the responses provided. An example of a Likert Scale is provided in Table 4.17.

Table 4.17

An Example of a Likert Scale

I am confident in my ability to be successful in an ODeLHE environment				
1 Strongly disagree	2. Agree	3 Neither agree nor disagree	4 Disagree	5 Strongly disagree

Table 4.17 indicates the stem of the scale and the response options provided to participants.

In addition, Likert scales focus on assessing individual opinions, attitudes or perceptions, not behaviours, and frequently do not engage the respondents in the question items (Leutner, et al., 2016). Furthermore, acquiescent responses may affect the quality of the data gathered when using a Likert scale (Rammstedt, Danner & Bosnjak 2017). Acquiescence is the individual predisposition to reply to explanations of theoretically diverse characteristics or convictions by either agreeing (acquiescence) or disagreeing (counter-acquiescence), irrespective of the explanation’s content or meaning. Acquiescence may influence the levels of means in item responses, producing misleading mean differences (Rammstedt, et al., 2017). Specific influences on acquiescence seem to be a collectivist cultural orientation and individual conservatism (Rammstedt, et al., 2017). As the study by Rammstedt, et al. (2017) was conducted in Europe, the transferability of the data cannot be confirmed, but the possibility of acquiescence had to be considered in the development of the ALSDS. Because of the criticisms aimed at Likert Scales, and in the wake of integrated communication technology progression, interest in innovative approaches to the development of assessment scales has been rising (Leutner, et al., 2016).

Keeping in mind the criticism on Likert-type scales and the composition of the sample of the study, the developer of the ALSDS decided to create items related to the various incidents of adult self-directed learning in an ODeLHE context (the stem), accompanied by specific behavioural or affective descriptions (the response). In essence a descriptively anchored scale and not a Likert scale was developed (see Appendix B) (Botha, 2014; Coetzee & Botha, 2013; Hartley, 2013; Rosenman,

Branzetti & Fernandez 2016). Self-directed learning encompasses individual behaviours, attitudes and a learning context; consequently, focusing only on opinions or reactions would have resulted in a lengthy questionnaire that would not necessarily identify the subtle behavioural and attitudinal differences among respondents. The purpose of the ALSDS is to enable adult learners to report on their learning behaviours in, attitudes about and interaction with an ODeLHE learning milieu. In Table 4.18, an example of a descriptively anchored scale is provided. More examples of the descriptively anchored scales of the ALSDS are provided in Chapter 3, section 3.3.4.8.

Table 4.18

An Example of a Descriptively Anchored Scale from the ALSDS

How confident are you that you will master all the learning outcomes of your field of study?

1	2	3	4	5
I don't know if I will be able to master all the learning outcomes.	I hope I will be able to master most of the learning outcomes sufficiently to pass all the modules.	I think I will be able to master all the learning outcomes well enough to pass all the modules.	I am moderately confident that I will master all the learning outcomes sufficiently to pass all the modules.	I am very confident that I will master all the learning outcomes sufficiently to pass all the modules.

Table 4.18 illustrates the stem and response options provided to respondents in the ALSDS descriptively anchored scale.

However, descriptively anchored scales also have their limitations. Researchers acknowledge that survey questions on personal issues such as individual behaviours and motivational orientations could be vague and susceptible to bias (Lakens, 2013). Furthermore, complex concepts and long descriptions can make it challenging to answer questions, particularly when language barriers may also exist (Miller & Willis, 2016). The limitations of descriptively anchored scales may increase measurement error, which is why rigorous investigation of the psychometric properties of the ALSDS (Botha, 2014) is an essential first step in the validation process for the scale (Lakens, 2013; Miller & Willis, 2016).

A descriptively anchored scale provides verbal descriptions of behaviours for each point of the rating scale (Ohland, Layton, Loughry, & Yuhasz, 2005). Where other survey instruments may use numerical anchors as responses, descriptively anchored scales use descriptions of the relevant learner behaviours and attitudes associated with specific critical incidents during the ODeLHE study process, such as completing assignments or preparing for examinations (Christ & Boice, 2009; Jafari, Bourouni, & Amiri, 2009). The use of a descriptively anchored scale to assess a construct such as adult learner self-directedness is aligned with the competency-based approach used in the

Occupational Learning System (OLS). The structure for the OLS was provided for in the Amendment to the Skills Development Act (Act 37 of 2008) and the National Qualifications Framework Act (Act 67 of 2008) and stems from the National Skills Development Strategy (NSDS III). The OLS propounds the use of the competencies required in a specific occupation as the foundation for the design of skills development initiatives (Coetzee, et al., 2013).

The advantages of using a descriptively anchored scale include an emphasis on well-defined behaviours and attitudes through the provision of clear descriptions of actual learner behaviours and attitudes. In addition, the distinct descriptions engage the attention of the respondent, which lead to more precise reporting of learner behaviours and attitudes (Rosenman, et al., 2016; Shapiro, et al.). Conversely, the respondents may focus too much on isolated instances of the described behaviour or attitude, which may affect the accuracy of the responses. In the case of the ALSDS (Botha, 2014), a range of descriptions of adult learner behaviours and attitudes in the ODeLHE learning scenario were used as the foundation for the answering of each scale item. The respondents were required to choose the description that most closely matched their own behaviours and attitudes. Five options were provided for answering each question and respondents had to choose one (or in some cases two) of the options as an answer. In most cases, the respondents provided only one response to each item; consequently, the second responses that were provided were discarded. However, as the use of a descriptively anchored scale for the assessment of adult learner academic self-directedness is an innovative approach not followed by other researchers, the initial rigorous advanced assessment and future validation of the scale are of considerable scholarly and practical significance. The doctoral study therefore focused on first establishing through cost effective data mining and rigorous advanced statistical methods the construct validity, rating scale functionality and reliability of the ALSDS as relevant to the original sample population group before applying it in future studies on other samples for cross-validation purposes.

4.3 ETHICAL CONSIDERATIONS AND ADMINISTRATION OF THE PSYCHOMETRIC BATTERY

This step describes ethics clearance that was obtained prior to the commencement of the study and the process followed to collect the data from the sample.

Ethics clearance and permission to conduct the research (using secondary data) for the Doctoral study as part of the larger research project that entailed the development of the ALSDS and preliminary factor structure (master's study - Botha, 2014 - see figure 4.1) and the advanced assessment of the psychometric properties of the ALSDS (doctoral study) was provided by the

College of Economic and Management Sciences Research Ethics Committee of Unisa as well as the Senate Research Ethics Sub-Committee of Unisa (see Appendix A).

The ethical guidelines and standards of the university as outlined in the Research Ethics Policy formed the basis on which this research study was conducted. As the research was conducted within the ambit of the ethical requirements and procedures of Unisa, the research ethics procedures of the institution were followed at all times. These considerations formed part of every step of the research process to ensure that they guided the researcher and the study. Informed and voluntary consent was obtained from the participants in the original study and appropriate permission was requested from the relevant Senate sub-committee to utilise the secondary data gathered in the initial study by Botha (2014).

Before the Botha (2014) study commenced, all the participants were ensured that all information, data and results would remain confidential and that their personal information would be safeguarded in line with the principles of the POPI Act. The research was designed in such a way that individuals, organisations and the community would benefit from it and no harm would be done to any individual involved in the research process (Lefkowitz, 2008). The researcher, under the guidance of the research supervisor, strove to remain objective and to conduct the research with integrity. The principles of ethics in research, as indicated in the institutional Research Ethics Policy (Unisa, 2014), are as follows:

- The fundamental right to academic freedom and freedom of scientific research
- Integrity in research that encompasses the competence and accountability of the researcher
- Acting responsibly and striving for excellence in research
- Not contravening the institutional Policy on Research Ethics
- Obtaining approval for research involving human participants
- Undertaking research that will benefit society
- Making the research findings available in the public domain
- Guiding against harmful or undesirable consequences of the research
- Honesty with regard to individual actions and responses to the actions of others
- Not committing plagiarism, piracy, falsification or fabrication of results
- Accurately and truthfully reporting the results of the research
- Protecting the personal information of respondents in line with the principles of the POPI Act
- Reporting to the relevant Ethics Review Committee when requested to do so.

4.4 CAPTURING OF CRITERION DATA

The current research study utilised secondary data captured in the original study by Botha (2014). In the original study, the responses of participants to each item on the three questionnaires were captured on a Microsoft Excel spreadsheet. The resulting data were analysed using the following statistical analysis programmes: SPSS (Statistical Package for Social Sciences) Version 24 for the Microsoft Windows platform (IBM, 2016), SAS, Version 9.4 Windows (SAS, Inc., 2013), RASCH analysis Version 1.0.0 (Bond & Fox, 2015) and M Plus Version 7.4 (2016).

The secondary data were analysed in terms of the research protocols for exploratory scale validation. In order to minimise the risk of capitalisation on chance that can result from the use of secondary data, a non-exhaustive cross-validation approach was used. The goal of cross-validation is to define a dataset to 'test' the model derived from the initial exploratory phase of scale development (i.e., creating a new validation set), in order to limit problems like overfitting and to give an insight on how the model will generalise to an independent dataset (i.e., an unknown dataset). Cross-validation combines (averages) measures of fit (prediction error) to derive a more accurate estimate of model of potential prediction performance (Salkind 2016). In a cross-validation study, the sample is usually divided into 1/3 and 2/3 and the statistical analysis is run separately on the two datasets. The first dataset is called the 'test set' and the second dataset is called the 'training set'.

Conventional validation was not used due to the limitations of the sample data which could result in the loss of significant modelling or testing capability. The focus was not on assessing the predictive (criterion) validity of the ALSDS (i.e. confirming the construct validity on a new sample in relation to other similar construct measures). Rather, the purpose was to assess the construct and structural equivalence of the scale in a more rigorous manner through non-exhaustive cross-validation (testing the psychometric properties on a randomly selected sub-sample of the original dataset). The statistical analysis was based on two samples: firstly, the ESEM was based on the original sample of $N = 1\ 102$, which resulted in a sample of $n = 1\ 095$. Secondly, the further investigation on the ALSDS (Botha, 2014) was based on the stratified random sample of $N = 1\ 102$ students of the College of Economic and Management Sciences. The sample utilised in Botha's (2014) study served as the baseline sample of the present study. The present research drew a random subsample of $n = 747$ of the initial $N = 1\ 102$ sample in order to critically investigate the psychometric properties of the ALSDS which was not done in the initial study by Botha (2014). The present study did not focus on confirming the construct validity on a new sample, but rather to assess the structural (construct) validity of the ALSDS on a selected sample of the initial sample population group. In addition, the present study

also evaluated the influence of a range of socio-biographical factors on explaining the variance in individuals' self-directedness as measured by the ALSDS.

4.5 FORMULATION OF THE RESEARCH HYPOTHESES

Research hypotheses are suppositions about a possible relationship between two or more variables (Salkind, 2016). The research hypotheses were formulated in order to determine the appropriate statistical analysis procedures to be used. The research hypotheses are summarised in Table 4.19 below.

Table 4.19

Summary of Research Aims, Research Hypotheses and Statistical Procedures to be Applied

Research aim	Research hypothesis	Statistical procedure
Research aim 1 To assess the psychometric properties (factorial structure/construct validity and internal consistency reliability) of the ALSDS as a valid and reliable instrument for measuring adult learners' self-directedness in ODeLHE for diverse groups.	H1: The ALSDS is a valid and reliable instrument for measuring adult learners' self-directedness in ODeLHE for diverse groups of adult learners	<ul style="list-style-type: none"> • Exploratory Structural Equation Modelling (ESEM) • Exploratory factor analysis (EFA) • Common method bias • Construct validity: Convergent & discriminant validity (CFA) • Average variance extracted (AVE) • RASCH unidimensionality analysis • Reliability analysis
Research aim 2 To assess whether the factorial structure of the ALSDS is equivalent for diverse student socio-demographic groups (age, race and gender)	H2: The factorial structure of the ALSDS is equivalent for diverse student socio-demographic groups (age, race and gender).	Group confirmatory factor analysis
Research aim 3 To assess whether the various demographic groups differ significantly regarding the sub-scale dimensions of the scale	H3: The various demographic groups differ significantly regarding the sub-scale dimensions of the scale.	Tests for significant mean differences Post hoc tests
Research aim 4 To explore whether the various socio-demographic variables listed below significantly predict adult learner self-directedness: <ul style="list-style-type: none"> • gender • race • age • employment status • occupation • socio-economic situation • being depended upon financially • access to a library • access to a computer • proficiency in English • number of modules for which the participant is enrolled • who is paying for the learner's studies 	H4: The socio-demographic variables significantly predict adult learner self-directedness.	Stepwise hierarchical regression

4.6 STATISTICAL PROCESSING OF THE DATA (TESTING THE RESEARCH HYPOTHESES)

The statistical programmes SPSS, Version 24 for Windows, (2016) SAS Version 9.4 for Windows, (2013), RASCH Analysis, Version 1.0.0 (Bond & Fox, 2015) and M Plus Version 7.4 (Muthén & Muthén, 2016) were used to analyse the data. The statistical procedures used are illustrated in Figure 4.4.

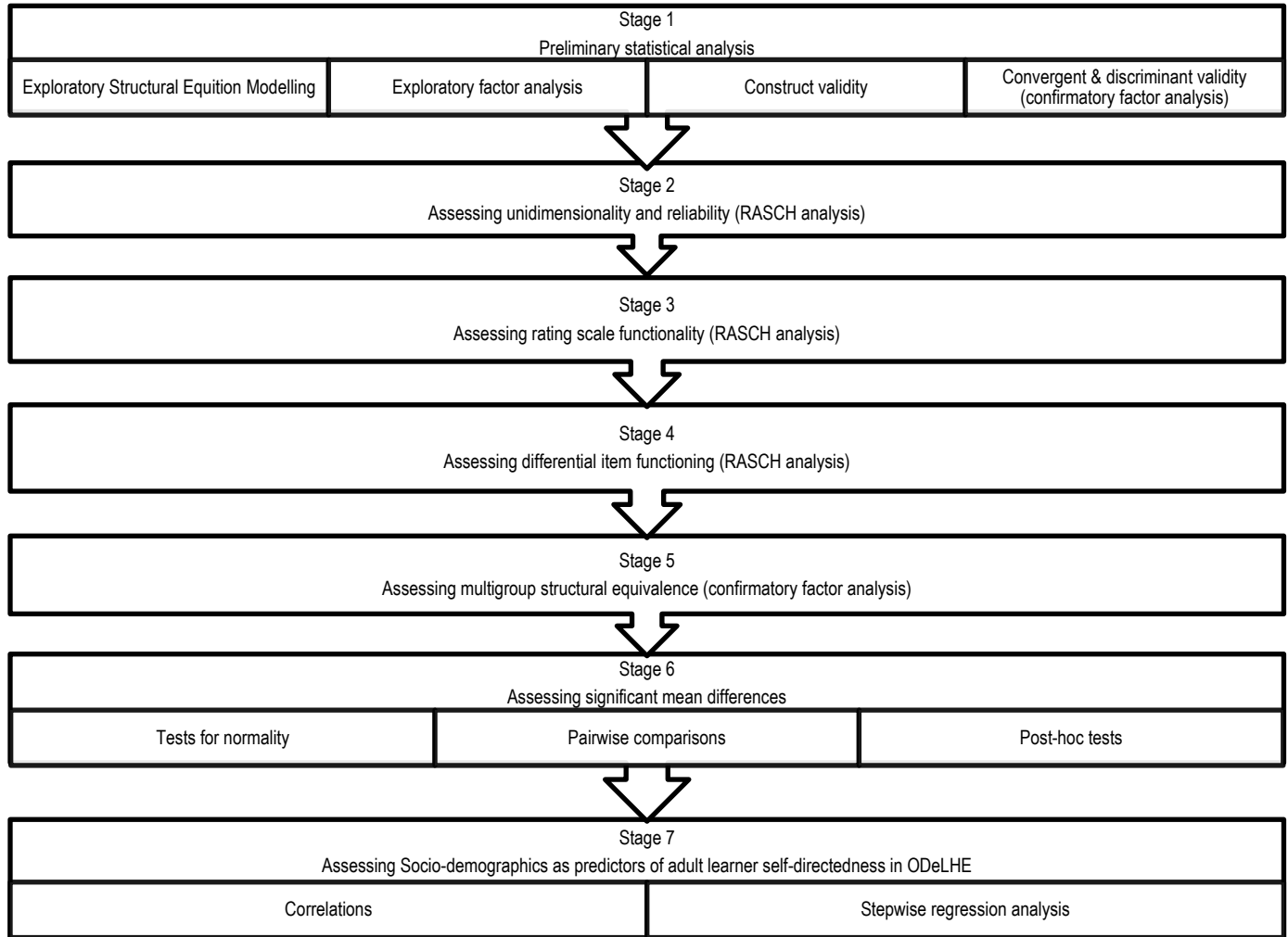


Figure 4.4 The seven stages of the statistical processing of the data.

The statistical processing of the data was performed in the following seven stages:

Stage 1: Preliminary statistical analysis:

The preliminary statistical analysis involved testing the factor structure through ESEM and EFA procedures, testing for convergent and discriminant validity (construct validity) on the confirmed factor solution derived from the ESEM and EFA, and testing for common method bias because of the cross-sectional and self-report nature of the ALSDS.

- *Step 1: Exploratory Structural Equation Modelling*
- *Step 2: Exploratory Factor Analysis*
- *Step 3: Testing common method bias and construct validity*
- *Step 4: Testing construct (convergent and discriminant) validity (confirmatory factor analysis)*

Stage 2: Assessing the unidimensionality and reliability of the ALSDS

Stage 3: Assessing the rating scale functionality of the ALSDS

Stage 4: Assessing the differential item functioning of the ALSDS

Stage 5: Assessing the ALSDS for structural equivalence (multigroup confirmatory factor analysis)

Stage 6: Tests for significant mean differences

- *Step 1: Tests for normality*
- *Step 2: Pairwise comparisons*
- *Step 3: Post-hoc tests*

Stage 7: Socio-demographics as predictors of self-directedness

- *Step 1: Correlations*
- *Step 2: Stepwise regression analyses*

4.6.1 Stage 1: Preliminary statistical analysis

Stage 1 consisted of four steps of statistical analysis in order to confirm the factor structure of the ALSDS (Botha, 2014). The four steps will be discussed in the sections that follow.

4.6.1.1 Stage 1 (Step 1): Exploratory Structural Equation Modelling

The step that frequently follows on an EFA analysis is a confirmatory factor analysis. In confirmatory factor analysis, the researcher usually assumes that the items load on the respective factors without any cross-loadings on the latent factors. However, an assessment instrument may have many weak cross-loadings that support the underlying theory. When these cross-loadings are set to zero, the model that results from the confirmatory factor analysis (CFA) may not fit the data sufficiently well. Exploratory SEM (ESEM) is a statistical technique that integrates the best qualities of EFA, CFA and SEM (Marsh, Morin, Parker, & Kaur, 2014). ESEM includes all possible combinations of CFA factors, ESEM factors, covariates and complex structures that usually require the use of CFA or SEM (Marsh, et al., 2014). ESEM is considered to be a preliminary confirmatory statistical method, but is also suitable for use as an exploratory analysis method. The maximum likelihood estimator (ML) or weighted least squares estimators, or any rigorous and appropriate alternative can be used to identify the constraints in ESEM (Marsh, et al., 2014). In order to confirm the initial factor structure of the four-factor ALSDS (Botha, 2014), an ESEM analysis was run on the original sample of $N = 1\ 102$. After data cleaning, the ESEM provided data of $N = 1\ 095$. Initially, the ESEM indicated a four-factor model, but because multicollinearity was found between Factors 4 and 1, Factor 4 was discarded, resulting in a three-factor model, consequently corroborating the need for further rigorous analysis of the psychometric properties of the four-factor model of the ALSDS (Botha, 2014).

4.6.1.2 Stage 1 (Step 2): Exploratory Factor Analysis

Exploratory factor analysis (EFA) is a widely used and broadly applied statistical technique in the social sciences (Salkind, 2016). The underlying factors or latent variables for a set of variables are identified by EFA, thereby reducing the number of factors to a manageable number. EFA is utilised as an exploratory first step, and the CFA can be applied as a second step to either confirm or reject the model identified by the EFA (Salkind, 2016).

Step two of stage one involved performing an EFA on the new subsample of $n = 747$ of the data gathered in the original research. The EFA examined the existence of any association between diverse variables by combining the data into a reduced number of factors in order to facilitate interpretation. An EFA supposes that there are unobservable collective factors in the data that could be assessed indirectly using the observed variables. The collective factors, although hidden, do have a perceptible effect on the observed variable(s). It is possible to use EFA without presuming the possibility of a predictive influence on the variables prior to the exploration (Salkind, 2016). The

number of factors brought to light by the EFA is established by using a variety of methods. In this study, a scree plot, communalities and the Kaiser-Guttman Criterion (KGC) were used to determine the factors.

A scree plot provides a visual explanation of the eigenvalues ranging from large to small, thus providing a clear, visual indication of the point at which the eigenvalues start tapering off to the horizontal (Salkind, 2016). The KGC applies the principle of using the number of factors that are equal to the number of eigenvalues in a sample correlation matrix that are greater than 1. In this way the researcher may use those factors whose variance is, as a minimum, bigger than the variance of every observed variable (Salkind, 2016, Watts, & Stenner, 2012). Communalities are used to facilitate the decision about the number of factors to be included in the research study. The proviso is that the communalities should be satisfactorily large. Communalities in variables describe the amount of variance in each variable that may be explained by underlying common factors. When the communality value is high, the observed variable is significantly influenced by at least one common factor (Salkind, 2016, Watts & Stenner, 2012).

The KGC (or commonly called eigenvalues) indicates the statistical power and descriptive value of a factor. Eigenvalues of < 1 are usually discarded when decisions are made on the retention of extracted factors. The cut-off value of 1 is used because those factors with eigenvalues < 1 account for less of the total variance than one of the factors with eigenvalue > 1 . Since the purpose of the scree plot, communalities and KGC is to reduce the number of factors, it does not make sense to include factors that contribute so little value to the variation in the extracted data model. One of the advantages of the KGC is its wide acceptance as part of factor analysis in the social sciences community (Watts & Stenner, 2012).

4.6.1.3. Stage 1 (Step 3): Testing for common method variance

The assessment of common method bias was not addressed in the master's study. Common method bias is a universal concern when cross-sectional studies and self-report measures are used for data collection. Common method bias is the scale of false covariance between the variables of a rating scale because of the self-report data-collection method used (Salkind 2010). When common method bias exists, the construct being investigated may become concealed behind the measurement items. If a substantial amount of common method variance is present, either (a) a single factor will emerge from the factor analysis, or (b) one general factor will account for the majority of the covariance among the variables. Common method variance can either inflate or deflate observed relationships between constructs, thus leading to both Type I and Type II errors (Salkind, 2010). The statistical procedures

that were applied in this stage of the research were Harman's one-factor solution and confirmatory factor analyses (CFA).

The Harman's one-factor solution simply means that when one factor accounts for most of the variance in a model, evidence of common method variance is produced. When CFA is used, all the variables in a scale are loaded on one factor to examine the fit of the confirmatory factor analysis model. If common method variance is largely responsible for the relationship among the variables, the one-factor CFA model should fit the data well.

A CFA is an extension of an EFA and is used to examine any variance that may exist between variables that are associated with a construct (Salkind, 2016). A variety of tests is applied in a CFA in order to establish how well the model fits to the data. When a good model fit is established, the researcher assumes that the model is acceptable. The model fit statistics that will be reported in this study are the following: the Chi-squared test, the Root mean square error of approximation (RMSEA), the standardised root mean square residual (SRMR), the Comparative fit index (CFI), the Goodness of fit index, (GFI), the Akaike Information Criterion (AIC), the Bentler Comparative Fit index (BCFI), the Bentler-Bonnett NFI and the Bentler-Bonnett Non-normed Index (NNI). The statistical analysis used to assess goodness of fit is the Chi-square value, where a non-significant chi-square value indicates the goodness of fit model. Irrespective of whether the Chi-square value is significant, an absolute fit index and an incremental fit index should also be assessed. The absolute fit index that is commonly used is the RMSEA. An RSMEA and SRMR using a 90% confidence interval should be < .08 in order to show goodness of fit for the model. The incremental fit index can be calculated using a variety of indices, such as CFI, GFI, NFI and AIC, which were used in the current study. All of these fit indices should be > .90 in order to produce a good fitting model (Hooper, et al., 2008).

The Chi-squared test shows the variance between perceived and estimated covariance matrices (Salkind 2010). A better fit is indicated when the values are close to 0. Consequently, the chi-squared statistic indicates a reduced variance between estimated and perceived covariance matrices. Sample size, model size, distribution of variables and omitted variables all affect the results of the Chi-squared test, therefore, other model fit tests should also be run on the data. The cut-off value for acceptable model fit is a Chi-squared value (χ^2/df) <3 (Salkind, 2010).

The root mean square error of approximation (RMSEA) is used as a supplementary statistical analysis to determine fit to a RASCH model where the Chi-squared statistical analysis is used on large samples. The RMSEA measures the inconsistencies between the hypothesised model and the population covariance matrix; consequently, sample size does not play a role in the RMSEA

estimation. The RMSEA produces values between 0 and 1 and values closer to 0 indicate a better model fit. The cut-off for an acceptable model is 0.06 or 0.08 (Kline, 2010; Salkind, 2010).

The standardised root mean square residual (SRMR) is defined as the difference between the observed correlation and the predicted correlation. The SRMR allows for the assessment of the average amount of the differences between observed and estimated correlations as an unqualified measure of (model) fit criterion. Values range between 0 and 1, and the closer the value is to 0 the better the fit of the model. The value of a well-fitting model is described as ≤ 0.05 , but values as high as 0.09 are acceptable (Salkind, 2010).

The goodness of fit index (GFI) indicates the relationship between a hypothesised model and an observed covariance matrix. The number of indicators of each latent variable influences the GFI, consequently in some cases the Adjusted Goodness of Fit Index (AGFI) is used. Both the GFI and AGFI range from 0 to 1, and a value $> .95$ for GFI and $> .80$ for AGFI indicate an acceptable model fit (Hooper, Coughlin & Mullin, 2008)

The non-normed fit index (NNFI) assesses the fit of EFA models that used the maximum likelihood estimation. The values range between 0 and 1, with a cut-off of $.90$ (acceptable fit) or $\geq .95$ (good fit). The NNFI may produce a poor fit when small samples are used, but since this study uses a large sample the index should not prove problematic (Hooper, et al., 2008).

The comparative fit index (CFI) inspects the difference between the data and the hypothesised model, but adjusts for sample size. CFI values range between 0 and 1, and larger values indicate better fit. In the past, a CFI value of $\geq .90$ was considered to indicate acceptable model fit, but recently there have been indications that a value of $> .90$ is needed to ensure that miss-specified models are not assumed to be satisfactory. Currently, a CFI value of $\geq .95$ is accepted as an indicator of good fit (Hooper, et al., 2008). In the current study, a CFI value of $> .90$ was accepted as an indicator of good fit.

Akaike's Information Criterion (AIC), is used for comparison of non-hierarchical models estimated with the same data set. AIC is a parsimony index, and smaller values are indicative of good model fit. The AIC is not normed to a 0-1 scale; consequently, it is challenging to suggest a cut-off value. Usually the model that yields the lowest AIC value is considered to be the best fitting model. The AIC is affected by sample size and samples > 200 are needed when this index is assessed in order to ensure the reliability of the results (Hooper, et al., 2008).

Maximum likelihood estimation in the SAS system (CALIS procedure, SAS, 2013) with Levenberg-Marquardt Optimisation, Scaling Update of More (1978) was used in all CFA analyses to establish

the covariance structures of the various models. CFA has some limitations, such as inadequate fit to item-level factor structures, reduced discriminant validity related to overestimated correlations between CFA factors, and biased structural constraint estimations in SEM caused by inadequately stipulated measurement models. Reported research highlights that CFA models are frequently too restrictive to allow for an acceptable fit for a variety of psychological instruments (Marsh, Morin, Parker & Kau, 2014). Consequently, additional statistical procedures have to be applied in order to ensure statistical rigour. RASCH analyses were run on the data. RASCH analyses are discussed in section 4.6.2.

4.6.1.4 Stage 1 (Step 4): Testing construct validity: convergent and discriminant validity

Tests should be conducted on assessment instruments that measure latent psychological variables in order to investigate convergent and discriminant validity (Salkind, 2010). Convergent validity is allied with construct validity. Construct validity indicates that an assessment measure developed to assess a particular construct does in reality assess that construct. On the other hand, discriminant validity is an assessment that indicates that two assessments that are theoretically not related, are in fact unrelated. Both convergent and discriminant validity are requirements for excellent construct validity (Salkind, 2010).

The Fornell-Larcker (1981) criterion was used to further assess the convergent validity of the ALSDS model. This criterion focuses on determining the amount of shared variance between the latent variables in a model, using the Average Variance Extracted (AVE) and Composite Reliability (CR) (Hair, Sarstedt, Hopkins, & Kuppelwieser, 2014). AVE indicates the amount of variance that relates to a specific construct as opposed to the amount of variance that can be ascribed to measurement error (Hair, et al., 2014).

Measurement error is the difference between the value assessed through data collection and the accurate value of a particular variable (DeVellis, 2016). However, measurement error can also be caused by poor scale construction or administration, or by the personal circumstances of a respondent (DeVellis, 2016). An AVE value $>.70$ is accepted as a good statistic, while an AVE value of $\geq .50$ is considered to be acceptable. Such values indicate the construct reliability and convergent validity of a scale (Hair, et al., 2014).

Discriminant validity indicates how uncorrelated factors in a scale are, thus confirming that each factor is distinct (DeVellis, 2016). Discriminant validity is established when maximum shared variance (MSV) $<$ AVE and average shared variance (ASV) $<$ AVE (DeVellis, 2016).

In addition to the preliminary statistical analyses, correlations and descriptive analyses were run on the data. The correlations and descriptive statistics are discussed in section 4.6.1.5.

4.6.1.5 Correlations and descriptive statistics

Bivariate correlations are correlations between two factors on a rating scale and are called Pearson's r (Salkind, 2016). The correlation variable ranges between -1 and +1, with a positive correlation being indicated by an $r > 0$ but < 1 . A positive correlation means that when one variable grows bigger or smaller, then the correlated variable grows bigger or smaller simultaneously. A negative correlation means that when one variable grows bigger, the other will grow smaller. When the correlation coefficient = 0, no relationship exists between the two variables. Bivariate correlations can only be calculated on data that have a linear relationship (Salkind, 2016).

The means, standard deviations, skewness and kurtosis for the best fitting model were explained. Means, standard deviation, skewness and kurtosis are descriptive statistics, indicating the relative shape of the statistics that should be analysed (Salkind, 2016). The mean is the most commonly reported descriptive statistic and is merely the sum of all the data divided by the total sample. The means provide an indication of central tendency. The standard deviation of the dataset is a measure of dispersion – it indicates how the data are distributed around the mean. The skewness of the dataset indicates whether the data are symmetric or asymmetric (Salkind, 2016). Symmetric data produces a perfect normal curve, while the curve of asymmetric data lies either to the left (positive skewness) or to the right (negative skewness) of the mean. The kurtosis of symmetric data = 0. In social sciences statistics, researchers usually have to analyse asymmetric data, which is also called non-parametric data. The kurtosis indicates the number of items that are considered outliers – items that group in the tails of the curve instead of around the mean. The kurtosis for a normally distributed dataset = 3. If the kurtosis is low, it means that there are a large number of outliers in the dataset – values that are not close to the mean, which could influence the data interpretation. Consequently, the kurtosis should not be too low (Salkind, 2016).

4.6.2 Stages 2, 3 & 4 Assessing unidimensionality, reliability, rating scale functionality and differential item functioning of the ALSDS

The assessment of the unidimensionality of a scale and its subscales shows whether the overall scale assesses only one dimension or construct (in this study, the dimension is adult learner self-directedness). Furthermore, the assessment measures the internal consistency reliability of the

overall scale and subscales (De Mars, 2017). RASCH analysis is used to simplify measurement scales in order to reduce redundancy in the items without the loss of measurement information (Bansilal, 2015).

RASCH analysis focuses on a latent characteristic and produces assessments of persons and items on the same scale, measured in logits. RASCH analysis is based on the assumption that the interaction between person and item is determined only by the difficulty of the scale item and the ability of the respondent. RASCH analysis produces fit statistics, which highlights scale items that could be deleted or altered in some way (for example, by rewording or rescored) (Bansilal, 2015). The most commonly used RASCH analysis statistical values used are the infit and outfit statistics. Infit and outfit measures are produced for both persons and items and interpreted as follows: when item values are close to person values, infit information produces more useful diagnostic evidence. When item values are far from person values, outfit information produces more useful diagnostic evidence.

Infit and outfit values can also indicate misfit. Misfit is present when values lie beyond the recommended limits of between -2.5 and 2.5 logits (Bansilal, 2015). The ideal value for infit and outfit statistics = 1.0 as an indication of homogeneity, but infit and outfit mean square values of between .5 and 1.5, and t values of 0 ± 2 indicate acceptable model fit (Bansilal, 2015; De Mars, 2017). The infit and outfit statistics indicate the unidimensionality of the various scale dimensions – that the items related to the various scale dimensions actually measure the relevant latent variables adequately (De Mars, 2017). The Infit statistic of persons is easily affected by the pattern of responses to items closely related to the individual (i.e., items that are perceived as personal or sensitive by the respondent). Outfit indicates outlier-sensitive fit. Outfit is affected by the responses provided by respondents that are perceived by them as difficult but not personal. Item outfit statistics can indicate speculations and careless mistakes. Item infit statistics indicate how well the respondents have spread out their responses to the individual scale items across the response measure of the scale. The ideal value for infit and outfit statistics = 1.0 as an indication of homogeneity (De Mars, 2017).

Infit and outfit values are supplemented by assessing the person separation index (which provides an indication of the internal consistency of a scale). The separation indices indicate the comparison on the actual spread of the responses and the related measurement error. Person separation classifies people (the respondents in the research study) (De Mars, 2017). The ideal value for the separation indices = 2.00. The ideal value for reliability in a RASCH person and item analysis equals or is higher than .70. Reliability smaller than .50 indicates that differences between items can mainly be ascribed to measurement error. However, reliability is influenced by the number of items in each scale dimension and the overall scale, the number of response items provided in the response matrix

(the rating scale of the ALSDS provides five possible responses) and the standard deviation of the sample for persons (De Mars, 2017). Evaluating the rating scale categories assists in deciding whether the response categories are sufficient and whether some categories should be collapsed. Examining category frequencies indicates how many respondents chose a particular rating category. The average measure is the average ability estimate for all respondents in the sample who chose that particular response category). Outfit statistics higher than 2.0 indicate more misinformation than information provided by a rating scale category (inadequate functioning of the rating scale categories). These categories might need to be collapsed within broader categories.

4.6.3 Stage 5: Assessing multi-group equivalence

Multi-group equivalence refers to assessing whether measures and/or constructs can be compared across various groups, such as cultures (Huang, Beshai, Korol & Carleton, 2017). In scale development for multi-group application, equivalence is of specific importance. The assessment of multi-group equivalence determines whether mean differences between various groups are so insignificant that the groups can be viewed as comparable in terms of statistical analyses (Rusticus & Lovato, 2011). Multi-group equivalence can be investigated by testing for configural invariance, metric invariance and scalar invariance (Huang, et al., 2017). Configural invariance (construct equivalence) relates to the stability of a measurement scale's factor structure across diverse groups. Metric invariance (measurement unit equivalence) is the extent of the association between scale items among diverse groups and the full scale score equivalence (scalar invariance) is a measure of the stability of the subscales and full scale scores among diverse groups (Huang, et al., 2017).

In the current study, the confirmatory sample was used to evaluate the invariance of the parameter estimates (i.e. factor loadings, factor covariances and item error variances) across different age, race and gender groups. Factorial invariance (structural equivalence) were tested for age groups (18-30 vs 31-50 years), race groups (black vs white groups) and gender groups (female vs male) using group confirmatory factor analyses.

4. 6.4 Stage 6: Tests for significant mean differences

Tests for mean differences are used to establish whether significant differences exist between variables (Salkind 2017). Assessment of significant mean differences are vital when a measurement instrument will be applied in a multi-cultural context. However, before mean differences are assessed, tests for normality have to be conducted on the data in order to establish whether the data are

normally distributed. The tests for normality inform the tests for significant mean differences that will be used (Salkind, 2016). In the current study, the one-sample Kolmogoroff-Smirnov test was used to determine normality. Afterwards, tests for significant mean differences were conducted between the gender (male vs female), race (black vs white) and age groups < 35 years and > 35 years, on the factors of the ALSDS as well as on the overall scale.

Since the tests for normality indicated that the data were non-parametric, the Mann-Whitney U-test was run on the socio-biographical sub-group gender. The Mann-Whitney-U test is used to compare the medians of two independent samples and is used for analysis of nonparametric data. The Independent-Samples Kruskal-Wallis Test was run on both the socio-biographical sub-groups race and age. The Kruskal-Wallis Test is used to compare differences between more than two samples in non-parametric data. The t-test is performed using the standard error (SE) and degrees of freedom (*df*). The t statistic (*t*), the *p*-value and significance level are used as parameters in these tests. The *p*-value has to be greater than the significance level for the difference to be significant.

In the current study, tests for significant mean differences and post hoc tests were applied to the second confirmatory sample so as to establish whether the various socio-demographic groups differed significantly regarding the sub-scale dimensions of the scale, thereby achieving the fourth research aim of this study. Post-hoc tests are done when a significant difference between the means of two (or more) groups on a factor or item of a scale has been confirmed. Post-hoc tests confirm where (the source of) the differences observed in the means exist.

4. 6.5 Stage 7: Socio-demographics as predictors of self-directedness

The fourth research aim was achieved by applying stepwise regression analyses. Stepwise regression conducts two tasks in succession to fit a regression model and determine whether a regressor should be included in the analysis, thus retaining only the best predictors of a range of predictor variables (Salkind, 2016). Stepwise regression concentrates on finding the best grouping of independent (predictor) variables to predict the dependent (predicted) variable. (Salkind 2016). In the current study, stepwise regression analysis was performed to assess the best predictors of the overall construct and, if possible, each factor of the ALSDS. The stepwise regression analysis was performed using the following socio-biographical variables as predictor variables:

- gender
- race
- age
- employment status

- occupation
- socio-economic situation
- being depended upon financially
- access to a library
- access to a computer
- proficiency in English
- number of modules for which the learner is enrolled
- who is paying for the learner's studies

4.7 STATISTICAL SIGNIFICANCE LEVEL

Statistical significance is an indication of the truthfulness of the research findings; it provides information on how likely it is that a research finding is due to coincidence (Salkind, 2016). Significance is represented by the p -value. The most commonly used descriptor of statistical significance is $p \leq .05$, indicating that the research finding have a probability of 95% to not be caused by coincidence. A significance level of $p = .01$ indicates that the research findings have a 99% probability of not being caused by chance. A significance level of $p = .1$, indicates that the research findings have a 90% probability of not being ascribed to coincidence. Apart from significance level (which does not indicate the importance of the results but rather the probability that the reported results are not due to chance), researchers often report the practical effect of a reported result. The practical effect indicates the practical usefulness of a reported research result (Salkind, 2016).

Type I and type II errors can occur in cross-sectional research (Salkind, 2016). A type I error occurs when a researcher wrongly rejects a null hypothesis that is in fact true for a specific population. A type II error occurs in research when a null hypothesis is wrongly accepted when it should in fact have been rejected for a specific population. The possibility of type I and type II errors can be reduced by ensuring that the sample size is sufficiently large to run the required statistical analyses, and by setting the statistical significance at a scientifically acceptable level (Salkind, 2016)

Running a large number of tests on one sample could lead to a falsely positive result. This problem can partially be addressed by running only a limited number of tests or reducing the sample size. Conversely, a repetition of the study could be done in order to establish whether the results are the same. The subsample technique utilised in the current study is one way of repeating an analysis without conducting a completely new study. Another common error related to significance level is the assumption that a sample is truly a random sample. The importance of decisions on the sample construction is consequently a vital step in the research process (Salkind, 2016).

The various statistical tests used in the research study and their related measures of significance are summarised in Table 4.20.

Table 4.20

Summary of Statistical Analyses and Levels of Significance Used in Data Analyses

Model fit statistic	Represented by	Acceptable values	Source
Unidimensionality	Eigenvalues	First contrast eigenvalue unit ≤ 2.0 Eigenvalue units ≥ 2.0 indicate multidimensionality	Salkind, 2016
Chi-squared/df	χ^2	< 3	Salkind, 2016
SRMR	Standardised root mean square residual	$< .08$ (good fit) $< .10$ (acceptable fit)	Salkind, 2010
RMSEA	Root mean square error of approximation	$< .08$ (good fit) $< .10$ (acceptable fit)	Salkind, 2010
CFI	Comparative fit index	$> .95$	Hooper, et al., 2008
GFI	Goodness of fit index	$> .95$	Hooper, et al., 2008
AIC	Akaike Information Criterion	The AIC is not normed to a 0-1 scale. The model that yields the lowest AIC value is considered to be the best fitting model.	Hooper, et al., 2008
BCFI	Bentler Comparative Fit index	$> .90$	Hooper, et al., 2008
NFI	Bentler-Bonnett NFI	$> .90$	Hooper, et al., 2008
NNI	Bentler-Bonnett Non-normed Index	$> .90$	Hooper, et al., 2008
AVE	Average variance extracted	$> .70$ – preferable $\geq .50$ - acceptable	Hair, et al., 2014
CR	Composite reliability	$\geq .70$	Hair, et al., 2014
ASV	Average shared variance	$ASV < AVE$	Hair, et al., 2014
MSV	Maximum shared variance	$MSV < AVE$	Hair, et al., 2014
Pearson's correlations	r	Ranges between -1 and 1 Read on a scale of -1 - +1 Perfect negative = -1 Perfect positive = 1 No correlation = 0 $r \geq .10 \leq .29$ = small practical effect $r \geq .30 \leq .49$: medium practical effect $r \geq .50$: large practical effect	Salkind, 2016
Descriptive statistics	Means, standard deviation, skewness & kurtosis		Salkind, 2016
Person/item separation		Separation ≥ 1.0 greater spread of items and persons along a continuum	De Mars, 2017
Reliability	Cut-off point $\geq .70$		Salkind, 2010
Differential Item Functioning	DIF	Insignificant DIF, $\leq .50$ logits;	De Mars, 2017

		Mild (but probably inconsequential), $\geq .50 \leq 1.00$ logits; and Notable, ≥ 1.00 logits	
t-test	t	Statistical significance is determined by the size of the difference between the group averages, the sample size, and the standard deviations of the groups.	Salkind, 2010
Cohen's d -coefficient		Cohen d $> .20 < .49$: small practical effect Cohen d $> .50 < .79$: medium practical effect Cohen d $> .80$: large practical effect	Cohen, 1988, Hair, et al., 2008
Multiple-regression	R ²	R ² $\geq .01 \leq .09$: small practical effect R ² $\geq .09 \leq .25$: moderate practical effect R ² $\geq .25$: large practical effect $p \leq .05$	Salkind, 2010
Test for distribution normality Independent-samples Kruskall-Wallis test Independent-samples Mann-Whitney U test	Asymp. Sig.	Asymp. Sig $> .05$: normally distributed data Asymp. Sig $< .05$: not normally distributed data (non-parametric)	Salkind, 2010

4.8 CHAPTER SUMMARY

In this chapter, the research methods used to assess the data were explained. To summarise, the current research study aimed to extend the master's research study (Botha, 2014) in which the development and initial factor structure of the ALSDS were reported. The sample utilised in Botha's (2014) study served as the baseline sample of the present study in order to rigorously assess the psychometric properties of the ALSDS. In the doctoral study, ESEM, EFA, CFA and RASCH analyses were used to establish and confirm the factor structure of the ALSDS, to assess the common method variance, composite and discriminant validity of the ALSDS for the initial sample population group identified by Botha (2014). In addition, RASCH analysis was used to assess the unidimensionality, reliability, rating scale functionality, differential item functioning and multigroup equivalence for the groups gender, race and age of the ALSDS. Furthermore, significant mean differences were assessed using post-hoc tests and Cohen's d coefficient. Lastly, tests for normality were conducted and stepwise regression analyses were performed to establish whether various socio-demographic variables predicted adult learner self-directedness. In Chapter 5, the results of the various statistical analyses are reported and discussed.

CHAPTER 5 RESULTS AND DISCUSSION

In this chapter, the statistical results pertaining to the following research aims are reported:

Research aim 1: To assess the psychometric properties (factorial structure/construct validity and internal consistency reliability) of the ALSDS as a valid and reliable instrument for measuring adult learners' self-directedness in ODeLHE for diverse groups of adult learners.

Research aim 2: To assess whether the factorial structure of the ALSDS is equivalent for diverse groups of adult learners as regards their gender, race and age.

Research aim 3: To assess whether the various socio-demographic groups differ significantly regarding the sub-scale dimensions of the ALSDS.

Research aim 4: To explore whether the various socio-demographic variables such as employment status, occupation, socio-economic situation, being depended upon financially, access to a library, access to a computer, proficiency in English, number of modules for which the learner was enrolled and who was paying for the learner's studies predict adult learner self-directedness in ODeLHE.

5.1 ASSESSING THE PSYCHOMETRIC PROPERTIES OF THE ALSDS

In this section, the research results are reported, interpreted and discussed. The research results will be presented in the form of tables, diagrams and/or graphs while the discussion of the findings will be presented in a systematic framework, thus ensuring that the interpretation of the findings is conveyed in a clear and articulate manner. In addition, because this study formed part of a major research study conducted in two phases, some of the results of the first phase (the masters' study that focused on the development of the ALSDS scale items and initial exploration of the factor structure by the student: Botha, 2014) will be reported in the current study. The reporting of the results of the first phase is necessary in order to critically compare the initial adult learner self-directedness scale (ALSDS) factor structure (Botha, 2014) with the factor structure assessed in the doctoral study as pertaining to the sample population group identified by Botha (2014). The doctoral study involved the rigorous advanced assessment of the psychometric properties of the ALSDS, which was not carried out in the master's study, in order to develop a valid and reliable instrument to assess adult learner self-directedness in the South African ODeLHE milieu.

The section commences with the reporting on the sampling adequacy for the initial ALSDS EFA (N = 1 102), and for the ALSDS EFA (n = 747) obtained in the current (doctoral) study. The section also

reports on the preliminary statistical procedures to establish the factor structure of the ALSDS developed by Botha (2014), tests for construct validity (i.e. convergent and discriminant validity) and bi-variate correlations of the scale. In addition, the means, standard deviations, skewness and kurtosis of the overall scale will be reported. It should be noted that the doctoral study did not focus on testing external and criterion validity, but only focused on assessing in a more rigorous and advanced manner the construct validity and internal consistency reliability of the ALSDS as relevant to the sample population group identified by Botha (2014).

5.1.1 Preliminary statistical analyses: The factor structure of the ALSDS

In order to establish an initial factor structure of the ALSDS in the 2014 study, an exploratory factor analysis (EFA) method was applied. The method yielded four factors, as already described in Chapters 3 and 4. The results of the statistical analysis to assess the data for suitability for factor analysis and the exploratory factor analysis (EFA) are reported below in order to make comparisons between the two phases of the overall research study. Academic and statistical rigour requires a thorough investigation of the psychometric properties of the ALSDS in order to establish its usability in general. The preliminary statistical analyses for the current (Doctoral) study therefore included the following:

- (1) Re-exploring the factor structure of the ALSDS on the original master's study sample by means of exploratory structural equation modelling (ESEM). The sample size for the ESEM after data cleaning was $N = 1095$. ESEM analysis differs from CFA analysis is that all the parameters of the statistical model are freely estimated, and not specified *a priori* by the researcher. Thus, no assumptions are made of any relationships between the observed and the latent constructs being investigated. All factors are free to load on all indicators. Consequently, the ESEM approach may present a more versatile structure for analysing the psychometric properties of measures used for assessing complex constructs, such as self-directedness (Booth & Hughes, 2014).
- (2) Applying EFA on a random subsample ($n = 747$) of the original sample to critically compare the factor structure with the factor structure that emerged from the ESEM analysis. In this section, the tests for sampling adequacy, results of the EFA (scree plot, factor matrix, factor correlation matrix and final factor structure) of the ALSDS will be reported. In addition, a comparison of the factor structures yielded by the three different analyses will be explained.
- (3) Using the factor solution obtained for the random subsample ($n = 747$) as baseline factor structure of the ALSDS for the purposes of the doctoral study, conducting preliminary

statistical analyses including testing for common method bias and testing for construct (convergent and discriminant) validity of the ALSDS measurement model. In addition, descriptive statistics (means, standard deviations, skewness and kurtosis) of the three-factor solution of the ALSDS will be reported.

The results derived from the preliminary statistical analyses will be reported and explained in the following sections.

5.1.1.1 EFA analysis (master's study)

In the master's study by Botha (2014), a two-phase EFA was conducted, with items 1-21 included in the first phase of the EFA and items 22 – 35 included in the second phase of the EFA. As explained before, a two-phase EFA was used in the original study because respondents were given the opportunity to provide more than one answer to items 22-35. In the eventual investigation of the responses, it was found that most respondents chose to provide only one answer to items 22 – 35 as well; consequently, the second responses were discarded. The response options of the ALSDS (Botha, 2014) were explained in Chapter 3. The EFA yielded a four-factor solution, with 35 items loading onto the scale. The four factors were named as follows: strategic utilisation of officially provided resources (5 items), engaged academic activity (5 items), success orientation for ODeL (11 items) and active academic motivation (14 items).

Statistical rigour requires that data should be tested for suitability for factor analysis before commencing with the EFA. Consequently, before the EFA (two-phase) (principal-axis analysis) in the original study was conducted the suitability of the data for factor analysis was assessed using the Kaiser-Meyer-Olkin value for both phases of the EFA. Table 5.1 indicates that the Kaiser-Meyer-Olkin value for phase 1 of the EFA was .83, while the Kaiser-Meyer-Olkin value for phase 2 of the EFA was .79. Both values exceeded the minimum value of .60 recommended by Child (1990) and Hair, et al. (2010). In addition, the Bartlett's Test of Sphericity (Bartlett, 1954) on the sample $N = 1\ 102$ produced a statistical significance of $p < .001$, which supported the factorability of the correlation matrix. The Kaiser-Meyer-Olkin values and Bartlett's Test of Sphericity result confirmed that the sample used in the initial study was satisfactory and that substantial relationships existed between the variables of the correlation matrix (Botha, 2014). Table 5.1 summarises the results of the Bartlett's test for the ALSDS (Botha, 2014).

Table 5.1.

KMO and Bartlett's Test: Adult Learner Self-Directedness Scale (Four-Factor Model)

EFA: PHASE 1: ITEMS 1 to 21		
Kaiser-Meyer-Olkin measure of sampling adequacy		.83
Bartlett's test of sphericity	Approximate chi-square	3703.852
	Df	210
	Sig.	.000
EFA: PHASE 2 : ITEMS 22 to 35		
Kaiser-Meyer-Olkin measure of sampling adequacy		.79
Bartlett's test of sphericity	Approximate chi-square	1414.471
	Df	91
	Sig.	.000

Note: N = 1 102

Source: Botha (2014)

The principal-axis factor analysis of phase 1 of the initial EFA clearly indicated the existence of three factors with eigenvalues greater than 1.50 (see Table C1 in Appendix C). In addition, the three factors (items 1-21) identified in this phase of the EFA cumulatively explained 36.94% of the variance in the data. The scree plot (see Figure C1 in Appendix C) shows a clear inflection point at the fourth component. Nevertheless, because the criterion of eigenvalues > than 1.50 was used, and with Cattell's (1966) scree test in mind, only three components were retained for additional examination in the first phase of the EFA of the initial study (Botha, 2014).

The scree plot unmistakably indicates strong support for one factor, gradually diminishing support for the next three factors and a clear decrease to the horizontal after the fourth factor. The following criteria were used to determine the number of factors to be extracted from the EFA (principal factor analysis) (Hair, et al., 2010; Owen, 1995):

- Statistical criteria that are usually used in Social Sciences statistical analyses, such as Kaiser's eigenvalue-larger-than-one-criterion. In order to increase the value of the data, the criterion for the eigenvalues was set at < 1.50;
- The theoretical anticipation of the number of factors that would be identified and the ability to interpret the factors extracted;
- The number of factors with a significance ($p < .01$), and the proportion of the total variance explained by each factor, and
- The consideration that any given item belonged to a particular factor when the relevant factor loading was $\geq .35$.

- Where the decisions to include or omit an item were not clear-cut, theoretical potential and the substance of the relevant items and factors were taken into account (Botha, 2014).

A varimax rotation was performed on the first phase of the initial EFA. Rotation of a factor analysis assists with the extraction and interpretation of the relevant factors and supports the scientific utility of the three factors that were extracted. The rotation resulted in a simple structure where all three factors displayed strong loadings ($\geq .35$) (Thurstone, 1947) (see Table 5.2). The subscales for the three factors extracted from the rotation were determined by calculating the mean of the items loading on each of the subscales or factors. Consequently, three factors were determined, and labelled as follows:

Factor 1: Strategic utilisation of officially provided resources

Factor 2: Engaged academic activity

Factor 3: Success orientation for open distance learning

The first phase of the principal-axis factor analysis results for the Four-Factor model for the ALSDS (Botha, 2014) is illustrated in Table C 1 in Appendix C. The scree plot is illustrated in Figure C 1 in Appendix C.

In the second phase of the EFA on the Four-Factor model (items 22-35) of the ALSDS (Botha, 2014), the principal-axis factor analysis resulted in only one factor with eigenvalue < 1.5 ., which cumulatively explained 20.80% of the total variance in the data (see Table 5.2). The scree plot indicates an inflection point at the third component. Nevertheless, since the criterion for the eigenvalue was > 1.50 (applying Cattell's (1966) requirement for scree plots), only one component was retained for further study. The scree plot clearly illustrates strong support for one factor, gradually weakening support for the next two factors and a decrease to the horizontal after the third extracted factor. The scree plot for the second phase of the initial EFA is illustrated in Figure C 2 in Appendix C.

A varimax rotation was performed to assist with the extraction and interpretation of the relevant factor and to support the scientific utility of the extracted factor. The rotated solution indicated a simple structure with the strongest component showing a number of robust loadings ($\geq .35$) (Thurstone, 1947). The subscale for the one extracted factor was determined by calculating the mean of the items loading on the factor. Only one significant factor was calculated and it was named as follows:

Factor 4: Academically motivated behaviour (Botha, 2014).

The results of the second phase of the principal axis factor analysis of the Four-Factor model of the ALSDS (Botha, 2014) are shown in Table C2 in Appendix C.

Table 5.2 provides a summary of the final four-factor solution for the ALSDS (Botha, 2014).

Table 5.2

ALSDDS: Final Four-Factor Solution

Statistical Identity	Dimension name	Dimension description	Items per dimension
Factor 1	Strategic utilisation of officially provided resources	Relates to when and how adult learners utilise the official resources provided by the university in their role as active students	3, 7, 8, 9, 19 (5 items)
Factor 2	Engaged academic activity	Relates to the intentional, purposeful actions in which students engage and that are directly related to furthering their studies or improving their competence	1, 2, 4, 5, 6 (5 items)
Factor 3		The self-reported behaviours of adult learners that display their level of self-confidence and related behaviours in their ability to be successful in the pursuit of their studies in an open distance learning environment	10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 21 (11 items)
Factor 4	Academically motivated behaviour	The self-reported behaviour of adult learners that may be interpreted as displaying either intrinsic or extrinsic motivation in relation to their academic activities	22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35 (14 items)
Total number of items:			35 items

Note: N = 1 102

Source: Botha (2014)

5.1.1.2 Exploratory structural equation modelling: ALSDDS

As an extension of the original master's study, the doctoral study focused on an advanced and more rigorous assessment of the psychometric properties of the ALSDDS. No *a priori* factor structure of the ALSDDS was assumed in this phase of the statistical analysis. Exploratory structural equation modelling (ESEM) using the Mplus version 7.4 statistical analysis programme (Muthén & Muthén 2015) was applied to the original sample data set (N = 1 102). Oblique and geomin rotations were used in order to extract the data. Data cleaning resulted in a sample size of N = 1 095. The factor loadings for the ESEM model are reported in Table 5.3. Only factor loadings > .30 were used in the analysis.

Table 5.3 indicates that the ESEM analysis yielded a four-factor solution of the ALSDDS, which was similar to the four-factor solution reported on in the Master's study.

Table 5.3

Factor Loadings for ESEM on the Four Factor Model of the ALSDS

Factor	Item	Estimate	SE	Two-tailed Est/SE	p-value	
1	1	0.76	0.03	24.37	0.000	
	2	0.82	0.02	29.09	0.000	
	3	0.32	0.03	8.77	0.000	
2	7	0.64	0.04	13.50	0.000	
	8	0.54	0.04	12.14	0.000	
	9	0.54	0.03	14.26	0.000	
	11	0.45	0.04	9.94	0.000	
3	14	0.60	0.03	19.41	0.000	
	15	0.64	0.02	24.47	0.000	
	16	0.80	0.02	3.49	0.000	
	17	0.79	0.02	34.61	0.000	
	18	0.79	0.02	40.25	0.000	
	19	0.43	0.03	12.40	0.000	
	20	0.45	0.03	12.40	0.000	
	21	0.35	0.03	8.80	0.000	
	4	24	0.43	0.03	11.30	0.000
		25	0.34	0.03	9.35	0.000
26		0.47	0.04	11.09	0.000	
27		0.58	0.03	17.54	0.000	
28		0.67	0.02	24.54	0.000	
29		0.59	0.02	20.88	0.000	
30		0.37	0.03	10.51	0.000	
31		0.360	0.03	11.07	0.000	
Model fit information		Chi square/df	RMSEA	CFI	TL1	WRMR
		968.264/461 $p = 0.0000$.03 $p < .05$.95	.93	.97

Note: N = 1095, 90% confidence interval

Only factors with loadings > .30 were included and significance was established at $p < .05$. Using the ESEM model, only 23 items of the original 35 were retained, but a four-factor solution is present in the model. Since only three items loaded on factor 1 it would be possible to discard factor 1 entirely,

however, the factor loadings were high and the significance was of an acceptable level. Four items loaded on factor 2, and the loadings and significance were acceptable. Eight items loaded on factor 3, with high values and acceptable significance, while 8 items loaded on factor 4, with acceptable values and significance. According to the model fit statistics, the calculated Chi-square was p -value < 0.00001 . The RMSEA (.03) fits the requirement of < 0.06 ($p \leq 0.05$), while the CFI (0.95) fits the requirement of ≥ 0.90 . Both the TLI (0.93) and WRMR (.97) meet the respective requirements (TLI $\geq .90$; WRMR < 1.0). The factor correlation matrix is reported in Table 5.4.

Table 5.4

Factor Correlation Matrix of ESEM

Factors used	Estimate	SE	Two-tailed Est/SE	p -value
F2 with F1	0.28	0.03	7.36	0.000
F3 with F1	0.20	0.03	5.81	0.000
with F2	0.38	0.03	11.45	0.000
F4 with F1	-0.00	0.03	-0.04	0.964
with F2	0.11	0.03	2.92	0.003
with F3	0.15	0.03	4.06	0.000

Note: N = 1095

The correlation matrix in Table 5.4 indicates the existence of multicollinearity between factors 4 and 1, with an unacceptable significance of $p = 0.96$, which violates the requirement of $p < .05$. Factors 1, 2 and 3 were retained. Consequently, after the ESEM analysis, the ALSDS retained three factors, which required further exploration. The EFA on the new random subsample, ($n = 747$) is reported in the section that follows.

5.1.1.3 Exploratory factor analysis: ALSDS

This phase of the doctoral (current) study involved conducting an EFA on a randomly selected subsample ($n = 747$) of the original data set ($N = 1\ 102$) in order to create a new data set. The factor solution obtained from the EFA ($n = 747$) was then compared with the master's study EFA factor solution and the ESEM factor solution. The factor solution obtained for the subsample ($n = 747$) was used as the baseline factor solution for further statistical analyses (i.e. testing the research hypotheses).

The following steps were followed in the EFA of the ALSDS ($n = 747$):

- (1) Kaiser-Meyer-Olkin test for sampling adequacy and Bartlett's test for sphericity in order to confirm that the data were suitable for factor analysis.

- (2) Principal axis factoring, using oblimin rotation with Kaiser normalisation as extraction methods to determine the underlying factors.
- (3) Assessment of possible multi-collinearity between the three retained factors of the ALSDS.
- (4) Assessment of the convergent and discriminant validity of the three-factor solution of the ALSDS.
- (5) Assessment for common method bias and construct validity of the retained three-factor solution of the ALSDS.

Before the EFA could be performed, the data had to be analysed to assess its suitability for factor analysis. The tests that were performed were the Kaiser-Meyer-Olkin test for sampling adequacy (KMO) and the Bartlett's test for sphericity. The results of the tests are reported in Table 5.5.

Table 5.5

Kaiser-Meyer-Olkin Test for Sampling Adequacy and Bartlett's Test for Sphericity

Kaiser-Meyer-Olkin test for sampling adequacy	.829	
Bartlett's test for sphericity	Approx. Chi-square	2284.702
	df	105
	Sig.	.000

Note: n = 747

According to the results of the KMO, the sample was suitable for factor analysis. The KMO ranges from 0 to 1 and a result between .8 and 1 is considered good for factor analysis. In addition, the Bartlett's test for sphericity significance was used to assess the data for factor analysis. Since the significance (p) = .000, the data were suitable for factor analysis.

Principal axis factoring was applied using oblimin rotation with Kaiser normalisation as extraction methods. The extraction resulted in ten factors with eigenvalues > 1. The ten factors cumulatively explained 52.01% of the total variance, but from Factor 11 onwards the eigenvalues declined to below one (see Table C 3 in Appendix C). The scree plot clearly showed strong loadings for Factor 1, with sharply declining loadings for Factors 2, 3 and 4; and then gradually decreasing loadings for Factors 5 – 10, where after the factor loadings did not take on a horizontal nature but showed an increasingly limited decline for items 11 – 35 (see Figure C 3 in Appendix C).

Table C 3 made it clear that some items did not display robust loadings ($\geq .35$) (Thurstone, 1947) on any of the ten factors when using the smaller sample of n = 747. In addition, only Factors 1, 2, 3, 4, 5, 6, and 9 indicated sufficiently robust loadings with values $\geq .35$. Factor 1 had the largest number

of robust item loadings, namely 6. Factor 3 showed robust loadings for three items. Factors 2, 4, 6 and 9 displayed robust loadings for two items each, while Factor 5 displayed only one robust item loading (see Table C 3 in Appendix C). Both the scree plot and the principal axis factoring indicated the necessity for another EFA in order to simplify the model and obtain robust factor loadings. The second test was called Test 2.

In Test 2, principal axis factoring was once again used as extraction method. The extraction of Test 2 yielded three factors with eigenvalues > 1 . The three factors cumulatively explained 52.01% of the total variance, but from Factor 4, onwards the Eigenvalues declined to below one (see Table 5.6.). The scree plot indicates the factor loadings for Test 2 (see Figure 5.1).

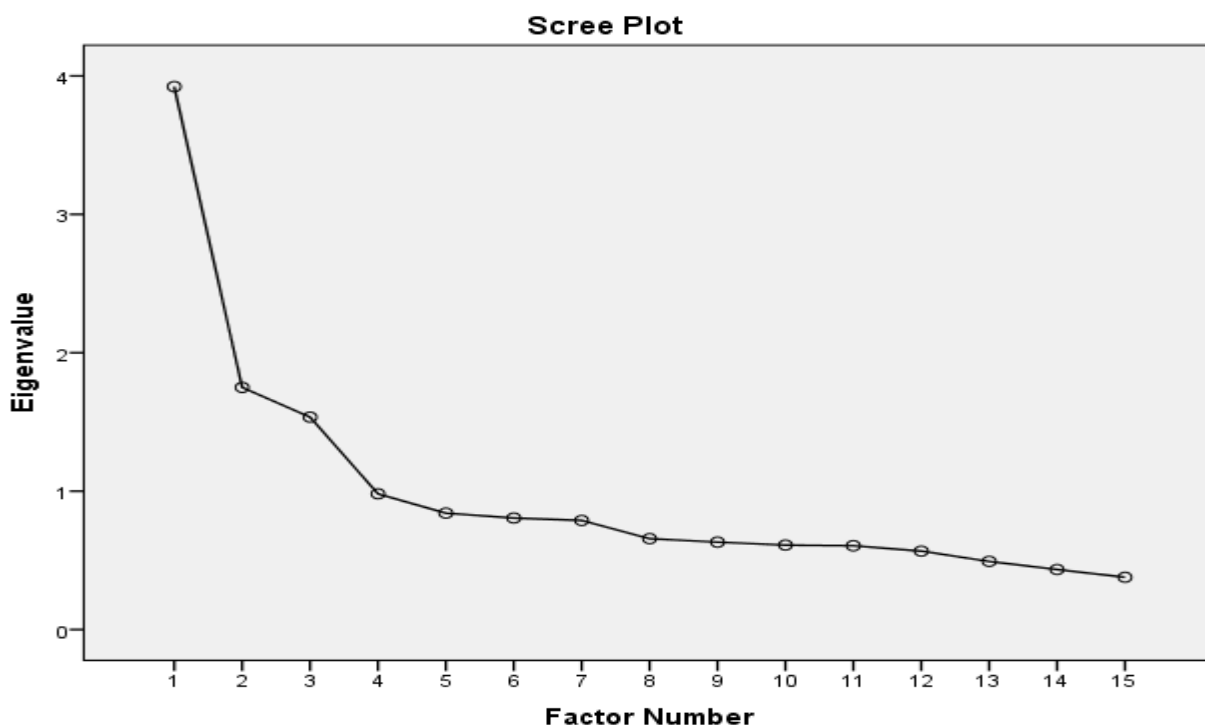


Figure 5.1 Scree plot for EFA on $n = 747$, Test 2

The scree plot for the second test on the subsample $n = 747$ once again indicated strong support for Factor 1, a fairly sharp decline to Factor 2, a shallower decline to Factor 3 and then a further fairly sharp decline to Factor 4. From factor 4, the scree plot became fairly horizontal; indicating that Factors 5 – 35 could be discarded. In addition, the factor matrix for EFA $n = 747$, Test 2 indicated eigenvalues > 1 for only Factors 1-3, consequently, all the factors after Factor 3 were discarded for the sake of academic and statistical rigour. The results of the EFA (Test 2) are reported in Tale 5.6.

Table 5.6

Factor Matrix: EFA Test 2

Item	Factor 1	Factor 2	Factor 3
18: How confident are you that you possess the skills necessary to cope in an open distance learning environment?	.79		
17: How confident are you that you will be able to solve problems you encounter in your learning?	.75		
16: How confident are you that you will complete your qualification?	.72		
15: How confident are you that you will master all the learning outcomes of your field of study?	.63		
14: How confident are you that you will understand the learning material?	.51		
19: How much information have you collected about open distance learning?	.48		
20: How do you find the rigours of studying in an open distance learning environment?	.46		
28: Why do you use your study guide?		.61	
29: How do you use your study guide?		.60	
33: How do you prepare for the examinations?		.47	
22: What do you do when you struggle to understand the work?		.41	
25: What do you do when you don't understand what is required in an assignment question?		.33	
07: When do you read your tutorial letters?			.66
08: When do you use your study guide?			.58
09: How do you use feedback tutorial letters in your studies?			.54

Note: n = 747

The extraction method used for Test 2 was principal axis factoring with oblimin rotation and Kaiser normalisation. Table 5.6 indicates that Factor 1 has seven items loading on it with values > .3. Factor 2 has five items loading with values > .3 and Factor 3 has three items loading with values > .3. Since the item loadings are more closely clustered in this EFA, and the item loadings are more robust, the decision was made to use the factor solution derived from this test for further statistical analyses. Out of an original 35 items (Botha, 2014); only 15 were retained for the new, three-factor solution of the ALSDS.

The factor 'success orientation for open distance learning' was retained and renamed to 'success orientation for ODeLHE' (Factor number 1, with 7 items loading onto it). Since Factor 1 was clearly the strongest, with the most number of items (7) loading on it, it will from now on be listed as the first factor. The items that loaded on the new factor 'success orientation for ODeLHE' are 14, 15, 16, 17, 18, 19 and 20. Items 10, 11, 12 and 13, which loaded onto the old Factor 'success orientation for open distance learning', were discarded.

The Factor 'strategic utilisation of officially provided resources' was discarded, with the exception of item 19, which loaded onto Factor 1 ('success orientation for ODeLHE') in the new three-factor model. Items three, seven, eight and nine, which used to load onto the initial Factor 'strategic utilisation of officially provided resources', were discarded.

The previous Factor 'engaged academic activity' was discarded in its entirety, which means that the items that initially loaded onto this factor (1, 2, 4, 5 and 6) were also discarded.

The previous Factor 'academically motivated behaviour' was renamed 'active academic behaviour' (Factor 2, with five items loading onto the factor). The following items loaded onto 'active academic behaviour', namely items 28, 29, 33, 22 and 25. Items 23, 24, 26, 27, 30, 31, 32, 34 and 35 used to load on the initial Factor 'academically motivated behaviour' and were discarded.

Lastly, items seven, eight and nine load onto a new factor (Factor 3) which is labelled 'strategic resource utilisation'.

In summary, three factors, namely 'success orientation for ODeLHE', 'active academic behaviour' and 'strategic resource utilisation' were retained, with respectively seven, five and three scale items loading onto each factor. The factor correlations of the three factors were assessed for multicollinearity. The factor correlation matrix is illustrated in Table 5.7

Table 5.7

Correlation Matrix for the Three-Factor ALSDS Model

Factor Correlation Matrix			
Factor	1	2	3
1 Success orientation for ODeLHE	1.000		
2 Active academic behaviour	.279	1.000	
3 Strategic resource utilisation	.371	.187	1.000

Note: n = 747

It is clear from Table 5.7 that multi-collinearity was not present in the new three-factor ALSDS model. The correlation coefficient (r) for each factor with itself = 1.00, indicating that each factor correlates perfectly with itself, but for the three factors separately, r is sufficiently small (<.80) to indicate the absence of multi-collinearity. The new three-factor structure of the ALSDS is summarised in the next section.

In Table 5.8, the items that loaded onto the retained three factors of the three-factor model of the ALSDS are summarised.

Table 5.8

Summary of the New Three-Factor Model for the ALSDS

Factor	Factor label	Items
1	Success orientation for ODeLHE	14, 15, 16, 17, 18, 19, 20
2	Active academic behaviour	28, 29, 33, 22 & 25
3	Strategic resource utilisation	7, 8 & 9

Note: n = 747

5.1.1.4 A comparison of the factor structures of the various exploratory factor analyses

In this section, the factor structures yielded by the various exploratory statistical analyses comparison are compared. The analyses included the following: the factor structure that resulted from the original master's study (N = 1 102), the factor solution yielded by the ESEM analysis (N = 1 095) and the factor solution obtained for the random subsample of n = 747.

The factor structure of the three-factor solution produced when using (1) the smaller random sample n = 747, (2) the ESEM analysis, using the cleaned, stratified random sample N = 1 095, and (3) the original two-phase EFA on the original, stratified random sample of 1 102 of the original four-factor solution, were compared. Table 5.9 indicates that the EFA (n = 747) extracted three factors with acceptable correlation coefficients, while the ESEM (N = 1 095) initially extracted four factors. One factor (Factor 4) was discarded because of an unacceptably high correlation coefficient with Factor 1. Factor 1 was retained because of the high factor loadings. The EFA (N = 1 102) extracted four factors, all with acceptable correlation coefficients. However, since the ESEM indicated unacceptable collinearity between Factors 1 and 4, which was not indicated in the original four-factor solution, it was decided to use the three-factor solution (n = 747) as baseline for the statistical analyses for the current study. The results of the EFA (n = 747), ESEM (N = 1 095) and EFA (N = 1 102) are summarised in Table 5.9

Table 5.9

A Summary of the EFA Analyses Conducted on the Various Samples

Model		EFA (model 2) (n = 747)	ESEM (N = 1 095)	EFA (N = 1 102)
Number of factors		3	4 reduced to 3	4
Items loading on each factor	Factor 1	14, 15, 16, 17, 18, 19, 20	1, 2, 3,	3, 7, 8, 9, 19
	Factor 2	22, 25, 28, 29, 33,	7, 8, 9, 11	1, 2, 4, 5, 6
	Factor 3	7, 8, 9	14, 15, 16, 17, 18, 19, 20, 21	10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 21
	Factor 4		24, 25, 26, 27, 28, 29, 30, 31	22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35
Correlation matrices	F1 with F2	$p = 0.279$	F2 with F1 $p = 0.000$	F1 with F 2 $p = 0.41$
	F1 with F3	$p = 0.371$	F3 with F1 $p = 0.000$	F 1 with F 3 $p = 0.28$
	F2 with F 1	$p = 0.279$	F3 with F2 $p = 0.000$	F1 with F 4 $p = 0.17$
	F2 with F3	$p = 0.187$	F4 with F1 $p = 0.964$	F2 with F3 $p = 0.26$
	F3 with F1	$p = 0.371$	F4 with F2 $p = 0.003$	F 2 with F 4 $p = 0.29$
	F3 with F2	$p = 0.187$	F4 with F3 $p = 0.000$	F 3 with F 4 $p = 0.25$

5.1.1.5 Common method bias and construct validity

Common method bias is a general concern with cross-sectional studies using self-report techniques to collect the data. Common method bias is the extent of unauthentic covariance between the variables of a rating scale because of the data collection method used (Salkind, 2010). Common method bias in the ALSDS was not assessed in the original master's study (Botha, 2014). According to Harman's one-factor test, common method bias (variance) exists when one factor accounts for the majority of the covariance in the variables, or when only one factor emerges from the factor analysis (Podsakoff, MacKenzie & Podsakoff, 2016). The Harman's one-factor solution conducted on the data is summarised in Table 5.10.

Table 5.10

Total Variance Explained Using Harman's One-Factor Solution

Components	Initial Eigenvalues			Extraction sums of squared loadings	
	Total	% of Variance	Cumulative %	Total	% of Variance
1	3.93	26.26	26.26	3.93	26.26
2	1.61	10.76	37.02		
3	1.53	10.26	47.38		
4	1.02	6.83	54.12		
5	.87	5.80	59.93		
6	.81	5.43	65.36		
7	.77	5.15	70.52		
8	.67	4.46	74.98		
9	.64	4.28	79.26		
10	.62	4.19	83.46		
11	.60	4.06	87.52		
12	.57	3.79	91.32		
13	.48	3.26	94.58		
14	.43	2.90	97.49		
15	.37	2.50	100.00		

Note: n = 747

Table 5.10 illustrates that there is more than one factor present, with no single factor accounting for most of the variance between the factors. The eigenvalues indicate the presence of four factors with eigenvalues > 1. In addition, according to the extraction sum of squared loadings, the factor that accounts for most of the variance is Factor 1 ('success orientation for ODeLHE') and the variance attributed to this factor accounts for only 26% of the total variance of the model. The three factors retained cumulatively account for 47.28% of the total variance of the model. To further test for common method variance, confirmatory factor analyses (CFA) were conducted.

The sample (n = 747) was used for CFA model fitting (factorial validity) purposes of the new three-factor solution. Three CFA models were compared with a one-factor CFA, the new three-factor ALSDS solution derived from the EFA, an optimised three-factor CFA model and a three-factor CFA model with the three sub-factors loading onto the overall construct of adult learner self-directedness.

Maximum likelihood estimation in the SAS system (CALIS procedure, SAS Inc., 2013) with Levenberg-Marquardt Optimisation, Scaling Update of More (1978) was used in all CFA analyses to establish the covariance structure.

Model fit relates to how well the model of the factor structure explains the associations between the variables of the data. When all the significant correlations between the variables in the model are explained, the model fits the data well. The results of the four CFAs are reported in Table 5.11.

Table 5.11

Results of the CFA Analyses: Three Models and Overall ALSDS Scale

Models	%	Chi-squared	df	p	RMSEA	SRMR	CFI	NNI	AIC
Harman's one-factor model	26.26%	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
One-factor CFA	-	271.49	90	< .0001	.11	.09	.71	.66	781.49
Three-factor CFA model 1	-	309.40	87	< .0001	.06	.05	.89	.87	375.40
Three-factor CFA optimised model 2	-	175.48	81	< .0001	.04	.04	.95	.94	253.48
Final structural model: CFA model 3. Three factors loading onto self-directedness	-	175.48	81	< .0001	.04	.04	.95	.94	253.48
Summary statistics of the two competing models – Model 1 and Model 2									
Statistical measure	Model 1 (three-factor)		Model 2 (three-factor)		diff	p-value			
Chi-square	309.4019		175.4546		133.9473	0.0000			
df	87		81		6				
AIC	375.4019		253.4846						
CAIC	559.0557		470.53						
BIC	526.0557		431.53						

Note: n = 747; p < .0001

Table 5.11 shows that the Harman's one-factor solution for the new three-factor ALSDS loaded onto one construct explained only 26.26% of the covariance between the scale variables. When the three factors of the ALSDS were loaded onto a single construct in the CFA one-factor model, the fit indices indicated a poor model fit. A value of < 3 for the chi-squared (chi-square/df ratio) is considered a good fit. The chi-square/df ratio in the model = 3.01, which was too high. The RMSEA should preferably be between 0 and 1. A value closer to 0 represents a better model fit; a value < .05 is considered a good fit, between .05 and .10 is considered to be a moderate fit and > .10 represents a poor fit (Salkind, 2010).

In the one-factor CFA model, the RMSEA = .11, which clearly represented a poor fit. An SRMR < .05 is considered a good fit. The SRMR of the one factor model CFA = .09, indicating moderately good fit. However, the CFI for the one-factor CFA model = .71, which did not indicate good fit, since a CFI value > .90 is considered to be an acceptable fit, while a CFA > .95 represents a good fit. Values of > .80 are sometimes acceptable. The NNI should range between 0 and 1, with a cut-off set at .95 (as close to 1 as possible). Consequently, the NNI value of .66 did not contribute to good model fit. Lastly, the AIC index for the one-factor CFA model was the highest of all four CFA models, indicating poor model fit.

The model-fit indices for the new three-factor Model 1 generally indicated poor fit. The chi-squared/*df* ratio = 3.56, which is unacceptably high, while the model's $p = .001$, when an acceptable statistical significance (p) is specified at .0001. The RMSEA = .07, indicating poor fit, and SRMR = .06, representing a poor fit. The CFI = .89, representing a traditionally accepted fit and NNI = .87, representing an acceptable fit. The AIC (375.40) was higher than that of Model 2. The fit indices of Model 1 (three-factor) consequently did not indicate good model fit in general.

The model-fit indices for the three-factor Model 2 (optimised model) were as follows: Chi-squared (175.48)/*df* (81) ratio = 2.16, which meets the criteria for good fit. The level of statistical significance $p < .0001$ meets the stated criterium. The RMSEA = .04 was smaller than .05, representing a good model fit. In addition, the SRMR = .04, indicating good model fit. The CFI = .95, which indicated acceptable fit. The NNI = .94, which is sufficiently close to the cut-off value of $>.95$ to be acceptable. Lastly, the AIC = 253.48, which was significantly lower than the AIC for Model 1. The model-fit indices of Model 2 clearly indicated that Model 2 was the best-suited model for further statistical analysis.

The final structural model (Model 3), with the three factors of the ALSDS loading onto the latent factor (self-directedness) yielded the following fit indices: Chi-squared (175.48)/*df* (81) ratio = 2.16, indicating good fit. The statistical significance level ($p < .0001$) meets the stated criterium. The RMSEA = .04, representing good model fit. The SRMR = .04, indicating good model fit. The CFI = .95, representing acceptable fit. The NNI = .94, which is sufficiently close to $>.95$ to be acceptable. The AIC = 253.48, which is lower than model 1 and thus acceptable.

In Table 5.12, the standardised path coefficients (factor loadings) of the best-fit measurement model (three-factor) for the ALSDS are summarised.

Table 5.12

The Standardised Path Coefficients of the Best Fit Measurement Model for the Three-Factor ALSDS: Construct Validity of Indicators: CFA Model 2

Factor identity	Related items	Factor loadings	SE	t	Number of items
Success orientation for ODeLHE	1. How confident are you that you possess the skills necessary for an ODeL environment?	.79	.02	36.73	7
	2. How confident are you that you will be able to solve problems you encounter in your learning?	.78	.03	26.51	
	3. How confident are you that you will complete your qualification?	.72	.03	24.90	
	4. How confident are you that you will master all the learning outcomes of your field of study?	.63	.03	23.08	
	5. How confident are you that you will understand the learning material?	.51	.03	16.74	
	6. How much information have you collected about ODeL?	.48	.03	16.51	
	7. How do you find studying in an ODeL environment?	.46	.03	17.45	
Active academic behaviour	8. Why do you use your study guide?	.61	.04		5
	9. How do you use your study guide?	.60	.04	7.70	
	10. How do you prepare for the examinations?	.47	.04	9.62	
	11. What do you do when you struggle to understand the work?	.41	.04	15.98	
	12. What do you do when you don't understand what is required in an assignment question?	.33	.04	13.45	
Strategic resource utilisation	13. When do you read your tutorial letters?	.66	.04	14.54	3
	14. When do you use your study guide?	.58	.04	16.11	
	15. How do you use feedback tutorial letters in your studies?	.54	.04	14.68	

Note: n = 747. t-values > 2.56 ($p \leq .01$). t-values > 1.96 ($p \leq .05$)

The general rule of thumb for a PATH analysis is that the maximum likelihood estimation (estimate) should range between > .30 (average convergence), > .50 (good convergence) and > .70 (excellent convergence) for an indication of goodness of fit (Kelly, 2014). Table 5.12 clearly indicates that the estimates for all the items loading on the factors indicated a convergence estimate of > .30 (average) to > .70 (excellent), which implies acceptable goodness of fit. The t-values should be > 2.56 ($p \leq .01$) or $t > 1.96$ ($p \leq .05$). Since the significance level was set at $p \leq .01$, the t-values indicated significant loadings. The low loadings > .30 < .50 suggest that more of the variance in these sub-factor indicators was due to error variance than explained variance. However, it was decided not to delete the items with low loadings (< .50) because the three-factor solution contained only 15 items and fewer items could negatively influence the reliability of the ALSDS. Loadings of > .30 were regarded as acceptable for the present study. All loadings were significant at $p \leq .01$ (t-values > 2.56).

The next section reports on the construct validity (convergent and discriminant validity) of the final structural model of the three-factor ALSDS.

5.1.1.6 Convergent and discriminant validity: ALSDS Structural Model

Construct validity encompasses convergent and discriminant validity and represent an assessment of consistency (De Vellis, 2016). Convergent validity indicates that an assessment instrument actually measures what it purports to measure. In the present study, a significant standardised regression estimate (path coefficient from an indicator to its construct) of .30 or above indicates that a variable adequately contributes to the construct it was intended to measure. As shown in figure 5.2, the ALSDS items were treated as indicators of each of the relevant factors and each factor as an indicator of the overall construct of self-directedness.

Discriminant validity is the opposite of convergent validity, as the name indicates. In the present study discriminant validity related to assessing whether the ALSDS indicators (items) were better associated with their respective latent variables (i.e. the respective factor) than with other latent variables (intra-test validity).

Excellent construct validity requires proof of both discriminant and convergent validity (Salkind 2010). In this section, the convergent and discriminant validity of the ALSDS final structural (three-factor solution) model are reported. SAS, Version 9.4 for Windows (SAS, Inc., 2013) with maximum likelihood estimation and Lavenberg-Marquardt (Scaling update of Moré, 1978) optimisation technique were used in the analyses of the data.

As explained earlier, the general rule of thumb for a PATH analysis is that the maximum likelihood estimation (estimate) should range between $>.30$ (average convergence), $>.50$ (good convergence) and $>.70$ (excellent convergence) for an indication of goodness of fit (Kelly, 2014). Table 5.13 shows that the estimates for all three factor loadings indicated a convergence estimate of $>.50$ to $>.70$, which implies good convergence of the three factors onto the overall construct of self-directedness. The indicators (items) of each sub-factor had average ($>.30$) to excellent ($>.70$) convergence onto the respective sub-factors. All loadings were significant at $p \leq .01$ (t-values >2.56). The results of the PATH analysis for the final structural model of the ALSDS are reported in Table 5.13. The structural equation model (PATH diagram) of the three-factor ALSDS is illustrated in Figure 5.2.

Table 5.13

Final Structural Model for the Three-Factor ALSDS: Convergent Validity

Observed variable	Latent variable	Estimate	Standard Error	t Value
1. Understanding material	Success orientation for ODeLHE	.54	.03	16.74
2. Learning outcomes	Success orientation for ODeLHE	.67	.03	23.08
3. Complete qualification	Success orientation for ODeLHE	.67	.03	24.90
4. Able to solve problems	Success orientation for ODeLHE	.68	.03	26.51
5. Possess skills	Success orientation for ODeLHE	.79	.02	36.73
6. Information collected	Success orientation for ODeLHE	.51	.03	16.51
7. Studying in ODeL	Success orientation for ODeLHE	.54	.03	17.45
8. Struggle to understand	Active academic behaviour	.65	.04	15.98
9. Required assignment	Active academic behaviour	.55	.04	13.45
10. Why use study guide	Active academic behaviour	.32	.04	7.30
11. How use study guide	Active academic behaviour	.34	.04	7.70
12. How prepare for exams	Active academic behaviour	.41	.04	9.62
13. When read tutorial letters	Strategic resource utilisation	.57	.04	14.54
14. When use study guide	Strategic resource utilisation	.64	.04	16.11
15. Read feedback	Strategic resource utilisation	.58	.04	14.68
Self-directedness	Success orientation for ODeLHE	.71	.07	9.59
Self-directedness	Active academic behaviour	.63	.07	8.72
Self-directedness	Strategic resource utilisation	.51	.06	7.80
Model fit statistics				
Absolute index	Chi-square = 175.49; <i>df</i> = 81		Pr > Chi-square	< .0001
	SRMR		.04	
Parsimony Index	RMSEA upper 90% confidence limit		.05	
	AIC		253.48	
Incremental Index	Bentler CFI		.96	
	Bentler-Bonnett NFI		.92	
	Bentler Bonnett NNI		.94	

Note: *n* = 747. *t*-values > 2.56 ($p \leq .01$). *t*-values > 1.96 ($p \leq .05$)

In addition, the Fornell-Larcker (1981) criterion was used to assess the convergent validity of the ALSDS model further. The Fornell-Larcker (1981) criterion focuses on determining the amount of shared variance between the latent variables in a model, using the average variance extracted (AVE) and Composite Reliability (CR) (Hair, et al., 2014). AVE indicates the amount of variance that relates to a specific construct as opposed to the amount of variance that can be ascribed to measurement error (Hair, et al., 2014). Measurement error is the difference between the value assessed through data collection and the accurate value of a particular variable (DeVellis, 2016). However, measurement error can also be caused by poor scale construction or administration, or by the personal circumstances of a respondent (DeVellis, 2016). An AVE value >.70 is accepted as a good statistic, while an AVE value of $\geq .50$ is considered to be acceptable. Such values indicate the construct reliability and convergent validity of a scale (Hair, et al., 2014).

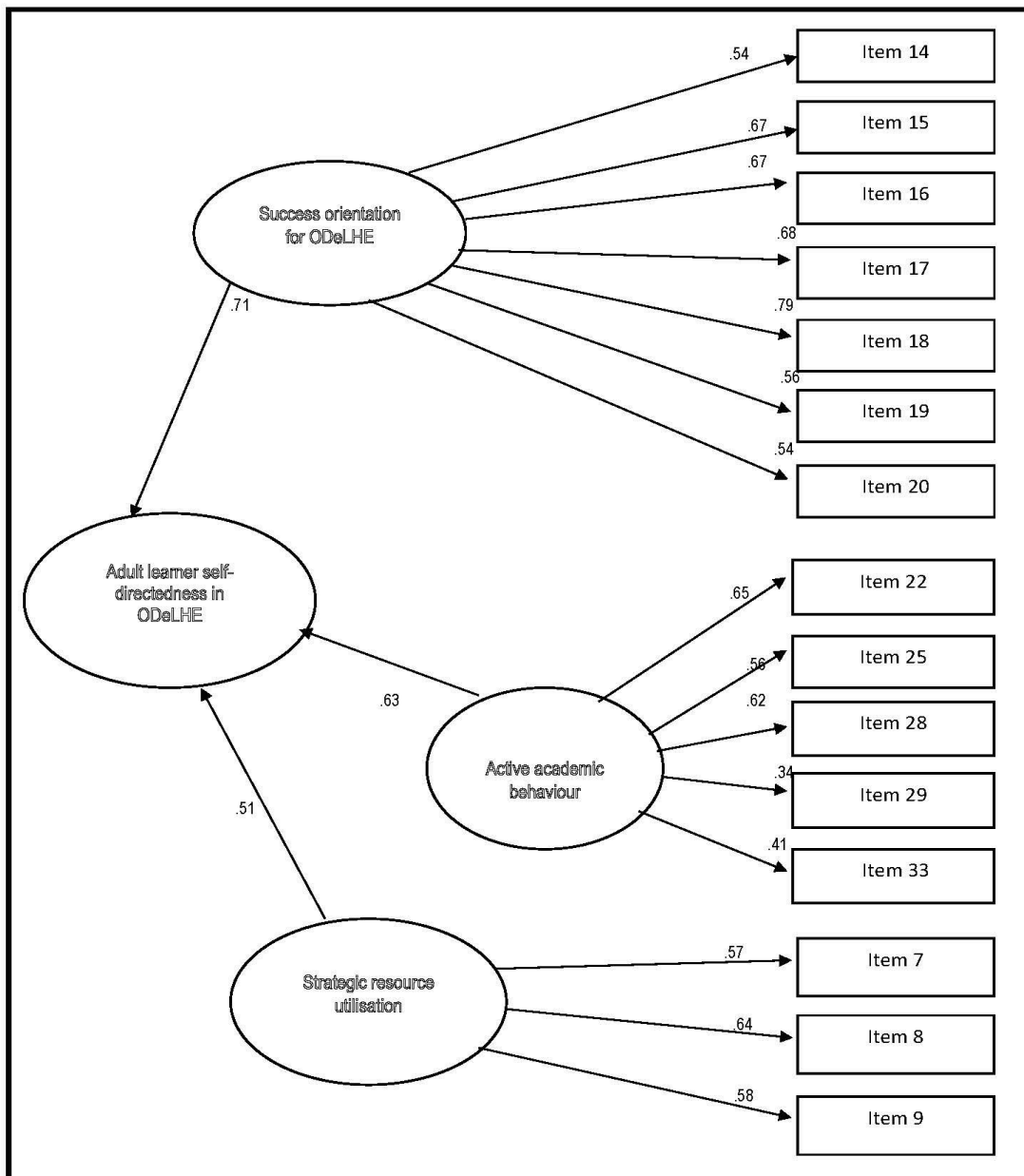


Figure 5.2 The final structural model (path analysis) of the three-factor ALSDS

Discriminant validity indicates how uncorrelated factors in a scale are, thus confirming that each factor is distinct (DeVellis, 2016). Discriminant validity is established when maximum shared variance (MSV) < AVE and average shared variance (ASV) < AVE (DeVellis, 2016). The convergent and discriminant validity of the ALSDS are indicated in Table 5.14.

Table 5.14

Convergent and Discriminant Validity of the ALSDS Structural Model

Scale dimension	CR	AVE	MSV	ASV	Construct validity CR > AVE AVE > .50	Discriminant validity MSV < AVE ASV < AVE
Success orientation for ODeLHE	.82	.40	.20	.16	CR > AVE AVE < .50	MSV < AVE ASV < AVE
Active academic behaviour	.57	.22	.20	.15	CR > AVE AVE < .50	MSV < AVE ASV < AVE
Strategic resource utilisation	.63	.36	.13	.11	CR > AVE AVE < .50	MSV < AVE ASV < AVE

Note: n = 747; CR: composite reliability; AVE: average variance extracted; MSV: maximum shared variance; ASV: average shared variance.

A CR of $>.70$ is accepted as an indicator of good model fit. In the three-factor solution accepted in this study, only one of the scale dimensions (success orientation for ODeLHE) had a CR of $>.70$ (.82). The CR for active academic behaviour was .57 and for strategic resource utilisation, the CR was .63. Clearly, the convergent and discriminant validity of the last two scale dimensions should be investigated further. This conclusion is further supported by the AVE, which should be $>.50$ in order to illustrate acceptable convergent and discriminant validity. None of the scale dimensions yielded an AVE of $>.50$. The first scale dimension, success orientation for ODeLHE yielded the highest AVE (.40), while active academic behaviour indicated an AVE of .22 and strategic resource utilisation had an AVE of .36.

The overall assessment of convergent validity requires that $CR > AVE$ and that $AVE >.50$. In all three subscales, $CR > AVE$ but $AVE <.50$, which indicated some concerns about the convergent validity for the final three-factor model that should be investigated in future research. However, overall, the CFA path (factor) loadings and CRs provided evidence of convergent validity. The low AVEs indicated that further refinement is needed in future research in order to improve the convergent validity of the ALSDS further.

As shown in Table 5.14, all three of the scale dimensions of the three-factor model demonstrated discriminant validity. To further establish the intra-dimensional discriminant validity of the ALSDS (three-factor model); the AVE was matched with the squared inter-construct correlations (SIC) related to each of the three factors of the ALSDS. For evidence of discriminant validity, the levels of AVE for each construct should be greater than the SIC of the constructs. The intra-dimensional discriminant validity using AVE and SIC are reported in Table 5.15.

Table 5.15

Intra-Dimensional Discriminant Validity Using Average Variance Extracted and the Squared Inter-Construct Correlations of the ALSDS

Scale dimensions	AVE	Scale dimensions SIC		
		Success orientation for ODeLHE	Active academic behaviour	Strategic resource utilisation
Success orientation for ODeLHE	.40	-----	.20	.13
Active academic behaviour	.22	.20	-----	.10
Strategic resource utilisation	.36	.13	.10	-----

Note: n = 747; AVE: average variance extracted; SIC: squared inter-construct correlations.

In Table 5.15 It is clear that the AVE for each scale dimension was greater than the SIC for each scale dimension. Success orientation for ODeLHE had an AVE of .40, while the SIC of active academic behaviour = .20 and the SIC for strategic resource utilisation = .13. For active academic behaviour, the AVE is .22, while the AVE of success orientation for ODeLHE = .40 and the SIC for strategic resource utilisation = .10. The AVE for the scale dimension strategic resource utilisation = .36, while the SIC for success orientation for ODeLHE = .13 and the SIC for active academic behaviour = .20. Since the AVE > SIC for each of the inter-construct correlations of the ALSDS (three-factor model), discriminant validity was acceptable and thus supported.

Correlational statistics were performed in order to determine the magnitude and direction of any relationship between the respective variables. Correlational statistics further assisted in establishing whether multi-collinearity ($r > .85$) was present (Cohen, et al., 2003). Lack of multi-collinearity provides additional evidence of acceptable intra-dimensional convergent and discriminant validity.

Multi-collinearity concerns were not present as the r -values in Table 5.16 were below the threshold value ($r > .85$). Next, the Pearson's correlations of the new three-factor model of the ALSDS will be discussed. The results of the Pearson's correlations for the three-factor model are provided in Table 5.16.

Table 5.16

Pearson Correlations for the Revised Three-Factor ALSDS

Correlations		1	2	3	Overall
Scale dimensions					
Success orientation for ODeLHE	Pearson Correlation	1			
	Sig. (2-tailed)				
Active academic behaviour	Pearson Correlation	.276**	1		
	Sig. (2-tailed)	.000			
Strategic resource utilisation	Pearson Correlation	.260**	.161**	1	
	Sig. (2-tailed)	.000	.000		
Overall	Pearson Correlation	.714**	.670**	.710**	1
	Sig (2-tailed)	.000	.000	.000	

Note: n = 747. ***Correlation is significant at the $p = 0.000$ level (2-tailed).

In Table 5.16, all the r -values were positive, indicating positive overall correlations among the subscale ($r \geq .16$ and $r \leq .71$; $p = .00$; small, moderate to large practical effect) and the subscales with the overall scale ($r \geq .67$ and $r \leq .71$; $p = .00$; large practical effect) dimensions of the new three-factor solution for the ALSDS. The results confirmed the convergent and discriminant validity for the ALSDS (three-factor model) and the absence of multi-collinearity in the scale ($r \leq .80$).

In the next section, the means, standard deviation, skewness and kurtosis of the overall ALSDS (three-factor model) are reported.

5.1.1.7 Means, standard deviation, skewness and kurtosis of the ALSDS

The means, standard deviation, skewness and kurtosis of the three-factor ALSDS are reported in this section. The means provide an indication of the normality of the data, while the skewness indicates whether the data are non-parametric. The standard deviation indicates how the data points are clustered around the mean, and the kurtosis indicates whether the dataset contains too many outliers. The One-Sample Kolmogorov-Smirnoff Normal Test was conducted to assess the distribution of the data. The test indicated that the data were not normally distributed, consequently the dataset for the $n = 747$ sample was non-parametric.

The analyses are summarised in Table 5.17.

Table 5.17

One-Sample Kolmogorov-Smirnoff Normal Test

Total N		747
Most extreme differences	Absolute	.047
	Positive	.035
	Negative	-.047
Test statistic		.047
Asymptotic Sig. (2-sided)		.001

The information in Table 5.17 indicates that the data were non-parametric. The rule of thumb in the Kolmogorov-Smirnoff test is that when the Asymptotic Sig. (2-sided test) > .05, the data is normally distributed, while the data is non-parametric when the Asymptotic Sig. (2-sided test) < .05. An asymptotic test of significance is an assessment that assumes adequate sample size. Exact statistical analyses can only be used when sample size is very small. Since the sample for this study was $n = 747$, the asymptotic test of significance was used. A two-tailed test indicates that certain assumptions were made about the hypothesis. The Kolmogorov-Smirnoff Normal Test uses a hypothesis approach to testing. The hypothesis is that the data will have a normal distribution. When the hypothesis is rejected, the test indicates that the data are not normally distributed and thus non-parametric. Non-parametric data requires the application of different statistical analyses than parametric data. In the following table (Table 5.18) the means, standard deviations, skewness and kurtosis of the three factors of the ALSDS are reported.

Table 5.18

Means, Standard Deviations, Skewness and Kurtosis of the Three Factors of the ALSDS

	Means	SD	Skewness	Kurtosis
Success orientation for ODeLHE	3.69	.75	-.40	-.53
Active academic behaviour	3.56	.77	-.41	-.41
Strategic resource utilisation	4.12	.86	-.90	-.17
Overall ALSDS	3.78	.55	-.43	-.44

Note: $n = 747$

Table 5.18 indicates that the data were negatively skewed for all the sub-scales of the ALSDS, with the skewness = $-.43$ for the overall scale. Most of the data points were on the higher side of the scale. The mean = 3.78 and the standard deviation = $.55$ for the overall scale. The mean (4.12) and standard deviation ($.86$) of the sub factor 'strategic resource utilisation' was the highest, while the mean (3.56) and standard deviation ($.77$) of the factor 'active academic behaviour' was the lowest. The kurtosis of the overall scale was $-.44$, indicating that there were few outliers. The kurtosis for a larger sample, such as the one used in this study, would be fairly high because of the sample size.

In Table 5.19, the means, standard deviations, skewness and kurtosis for the three factors of the ALSDS and the biographical groups gender, race and age are reported.

Table 5.19

Means, Standard Deviation, Skewness and Kurtosis for Gender, Race and Age Groups for the Three Factors of the ALSDS

Factor	Socio-biographical group	Means	SD	Skewness	Kurtosis
Success orientation for ODeLHE	Gender	3.68	.75	-.38	-.55
	Race	3.68	.75	-.39	-.54
	Age	3.68	.74	-.39	-.52
Active academic behaviour	Gender	3.55	.77	-.40	-.41
	Race	3.68	.67	-.40	-.42
	Age	3.56	.77	-.41	-.41
Strategic resource utilisation	Gender	4.12	.86	-.91	-.15
	Race	4.11	.86	-.91	-.15
	Age	4.10	.86	-.89	-.17

Note: n = 747

The data for the means, standard deviations, skewness and kurtosis for the ALSDS factors and the socio-biographical subgroups gender, race and age indicate that the means are fairly closely distributed (between 3.55 and 4.12). The data are grouped fairly close around the mean (between .67 and .86), that the data are negatively skewed for all three factors and socio-biographical groups and that the kurtosis for all three factors and socio-biographical subgroups are negative. Negative kurtosis indicates that the data produced few outliers, with less extreme values (Salkind, 2010).

5.1.1.8 Conclusions on preliminary statistical analysis

After the preliminary statistical analysis, it could be concluded that the initial factor structure of the ALSDS (Botha, 2014) had changed from a four-factor model to a three-factor model. The overall scale had been refined, by retaining only 15 of the initial 35 items on the scale. Both the ESEM (N = 1059) and the EFA (n = 747) indicated that the ALSDS should retain only three factors and that the questionnaire should be refined to only 15 items. The EFA (n = 747, three-factor model) was used as the baseline for the statistical analyses that followed on the ESEM and EFA.

The Harman's one-factor solution and the CFAs conducted on the three competing models indicated that common method bias posed no threat to the continuing statistical analyses on the ALSDS (three-factor solution). The results supported the construct validity of the three-factor model for the ALSDS. The CFA analysis (path coefficients/item and factor loadings), CR, AVE, MSV and ASV analyses,

including the AVE-SIC and correlation analyses, provided evidence of the construct (convergent and discriminant) validity of the ALSDS. However, based on the low AVEs, further scale item refinement appears to be needed in future scale validation research. The Pearson's correlation coefficients of all three-scale dimensions supported the previous conclusion that convergent validity may be confirmed, and again confirms the absence of multicollinearity between the scale items. The means, standard deviations, skewness and kurtosis of the data for the three-factor ALSDS (overall) indicate that the data are non-parametric, negatively skewed, and that the kurtosis is sufficiently rounded.

In the next section, the unidimensionality and reliability of the revised, three-factor ALSDS are reported. The RASCH rating scale functionality and the RASCH differential item functioning for gender, race and age groups for the three-factor ALSDS, multigroup structural equivalence, tests for significant mean differences on socio-demographic variables and correlations are reported.

5.2 UNIDIMENSIONALITY AND RELIABILITY OF THE ALSDS

RASCH analysis (Version 1.0.0, 2013) was performed on the sample $n = 747$ in order to establish the unidimensionality and internal consistency reliability of the three-factor ALSDS. RASCH analysis produces infit and outfit statistics, as well as separation indices. The ideal value for infit and outfit statistics = 1.0 as an indication of homogeneity (De Mars, 2017). The ideal value for the separation indices = 2.00. The ideal value for reliability in a RASCH person and item analysis equals or is higher than .70. Reliability smaller than .50 is an indication that differences between items can mainly be ascribed to measurement error. However, reliability is influenced by the number of items in each scale dimension and in the overall scale, the number of response items provided in the response matrix (the rating scale of the ALSDS provides five possible responses) and the standard deviation of the sample for persons (De Mars, 2017). In Table 5.20, the RASCH summary statistics and internal consistency reliability coefficients for the three-factor ALSDS are summarised.

Table 5.20

RASCH Summary Statistics and Internal Consistency Reliability Coefficients for the ALSDS

Scale dimension	Average measure (SD)	Infit (SD)	Outfit (SD)	Separation	Reliability	Cronbach's Alpha
Success orientation for ODeLHE						
Person	1.16 (1.17)	.97 (.64)	.96 (.66)	2.01	.80	.83
Item	.00 (.49)	1.00 (.17)	.97 (.13)	10.39	.99	
Active academic behaviour						
Person	.68 (.84)	.95 (.62)	.96 (.65)	1.31	.63	.63
Item	.00 (.49)	1.00 (.31)	.96 (.20)	12.77	.99	
Strategic resource utilisation						
Person	1.36 (.98)	.90 (.72)	.92 (.78)	.80	.39	.64
Item	.00 (.29)	1.05 (.14)	.92 (.02)	5.74	.97	
Overall scale						
Person	.58 (.81)	1.03 (.38)	1.01 (.43)	1.84	.77	.78
Item	.39 (.00)	1.00 (.42)	1.01 (.38)	10.44	.99	

Notes: n = 747

Table 5.20 shows that the person and item infit/outfit statistics were close to 1.00, indicating the homogeneity (construct validity) of the three subscales. In addition, the infit and outfit statistics for the overall scale were sufficiently close to 1.00 to draw the same conclusion for the overall ALSDS. The infit mean values showed that the responses neither underfitted (≥ 1.30) nor overfitted ($\leq .70$), indicating that the respondents replied to the items in a consistent manner. The outfit statistics were below 2.00 indicating that the scale provided useful information. The person reliability coefficients (Cronbach's alpha coefficient) for Factor 1 ('success orientation for ODeLHE') and Factor 3 ('strategic resource utilisation') were below the threshold value of $\geq .70$ (although above .60 and therefore acceptable). The reliability of the overall scale and Factor 1 ('success orientation for ODeLHE') was above .70 indicating good internal consistency reliability. The person separation index provided an additional indication of internal consistency reliability for 'success orientation for ODeLHE' (2.00) and for the overall scale (1.84), which is close to 2.00. However, the factors 'active academic behaviour' and 'strategic resource utilisation' did not show acceptable internal consistency reliability. This finding was taken into consideration in the interpretation of the findings.

No problems were identified regarding the item reliability (well above .90) and separation indices (well above 2.00). This indicates that items were able to discriminate well across the investigated variables (the difficulty levels of items were well distributed along the measured latent variable) and that the

items would most probably be stable if the ALSDS were applied to a different sample in another setting.

In conclusion, the RASCH statistics provided evidence in support of the homogeneity, acceptable internal consistency reliability and usefulness of the scale for the purposes of the present research. However, further refinement of the scale in terms of factor 2 and 3 is required. Only three items load onto the factor “strategic resource utilisation”, which could explain the low reliability.

5.3 RASCH RATING SCALE FUNCTIONALITY

RASCH analysis (Version 1.0.0, 2013) was used to determine the functionality and item fit statistics of the three subscale dimensions and items of the ALSDS. The item fit statistics further assisted in assessing the unidimensionality of each of the three subscale dimensions.

Evaluating the rating scale categories assists in deciding whether the response categories are sufficient and whether some categories should be collapsed (Jafari, Bagheri, Ayatollahi, & Soltani, 2012). Examining category frequencies indicates how many respondents chose a particular rating category. The average measure represents the average of the ability estimates of all respondents who chose a specific response category. Outfit statistics higher than 2.00 indicate that the rating scale category provides misinformation instead of useful information (inadequate functioning of the rating scale categories). Categories that indicate outfit statistics higher than 2.00 might need to be collapsed within broader categories (Jafari, et al., 2012).

The results are reported in Table 5.21.

Table 5.21

RASCH Rating Scale Categories and Item Fit Statistics for the Three Dimensions of the ALSDS

Item	Category statistics			Item fit statistics			
	Rating category	Category frequency (%)	Average measure	Outfit	Measurement intensity Measure (θ)	Infit mean square	Outfit mean square
Scale item 12: How do you prepare for exams?							
	1	.63	.44	1.4	-.02	2.15	2.03
	2	49	.48	1.1			
	3	16	.40*	.50			
	4	80	.77	1.1			
	5	436	1.10	.03			
Scale item 13: When do you read your tutorial letters?							
	1	8	.34	1.2	-.62	1.80	1.66
	2	138	.46	1.3			
	3	16	.29*	.7			

4	32	.64	.6			
5	552	.93	1.1			
Scale item 14: When do you use your study guide?						
1	8	.44	1.4	-.36	1.24	1.24
2	139	.42*	1.2			
3	14	.18	.4			
4	189	.68	.8			
5	396	1.05	1.0			
Scale item 9: What do you do when you do not understand what is required in an assignment question?						
1	16	.22	.90	.44	1.12	1.10
2	289	.57	1.2			
3	150	.67	.9			
4	64	1.06	.6			
5	224	1.19	1.1			
Scale item 11: How do you use your study guide?						
1	3	-.54	.4	-.06	.99	1.07
2	73	.48	1.3			
3	247	.67	1.3			
4	151	.87	1.1			
5	267	1.02	1.2			
Scale item 10: Why do you use your study guide?						
1	1	-.54	.4	1.39	.95	1.04
2	48	.31	1.0			
3	133	.68	1.4			
4	229	.76	1.0			
5	332	.98	1.1			
Scale item 3: How confident are you that you will complete your qualification?						
1	9	.3	1.2	-.27	.04	.89
2	117	.26*	.8			
3	116	.52	.7			
4	114	.78	.9			
5	390	1.08	.9			
Scale item 15: How do you use your feedback tutorial letters in your studies?						
1	9	.35	.10	-.18	.88	.91
2	74	.33*	.8			
3	146	.60	1.3			
4	243	.81	.8			
5	272	1.08	1.1			
Scale item 6: How much information have you collected about ODeL?						
1	19	.17	.9	-.07	.89	.88
2	89	.31	.8			
3	183	.60	.03			
4	166	.81	.8			
5	288	1.14	1.0			
Scale item 8: What do you do when you struggle to understand the work?						
1	71	.19	.8	.86	.87	.89
2	328	.63	1.0			
3	53	.94	.8			
4	261	1.14	.9			
5	26	1.2	1.3			
Scale item 5: How confident are you that you possess the skills necessary for an ODeL environment?						
1	.30	.09	.8	.04	.82	.78
2	126	.36	.8			
3	132	.52	.5			

4	201	.85	.7			
5	256	1.24	.8			
Scale item 2: How confident are you that you will be able to master all the learning outcomes of your field of study?						
1	30	.2	1.0	.23	.81	.80
2	160	.37	.8			
3	159	.64	.7			
4	194	.95	.7			
5	200	1.26	.9			
Scale item 4: How confident are you that you will be able to solve problems you encounter in your learning						
1	7	.37	1.1	.07	.80	.76
2	158	.35	.8			
3	142	.56	.6			
4	202	.86	.8			
5	237	1.24	.9			
Scale item 1: How confident are you that you will understand the learning material?						
1	11	.84	.01	-.28	.58	.48
2	4	-.11	.6			
3	15	-.01	.4			
4	183	.45	.7			
5	250	1.12	1.0			
Scale item 7: How do you find the rigours of studying in an ODeL environment?						
1	34	.20	.9	.62	.45	.48
2	86	.34	.6			
3	455	.77	.9			
4	140	1.25	.7			
5	28	1.53	.7			

Table 5.21 indicates that fourteen of the ALSDS items yielded outfit statistics ≤ 2 . The outfit statistic for the item ‘how do you prepare for exams?’ yielded an outfit = 2.03, which falls within the accepted range as being close to 2.00. Overall, the item categories outfit statistics were well below 2.00 (except for item 1: 2.03, i.e. close to 2.00), indicating that the categories provided good information and functioned adequately.

Nine of the scale items exhibited a negative measurement intensity (θ), which indicated that these items are problematic. The item ‘how do you prepare for exams?’ yielded the lowest measurement intensity (-.02), while the item ‘Why do you use your study guide?’ yielded the highest measurement intensity (1.39). The items with negative measurement intensity should be investigated further.

Infit statistics of ≥ 1.30 indicates model underfit, which affect the performance and reliability of the scale. In addition, items with infit statistics ≥ 1.30 are not sufficiently predictable to indicate the usefulness of the item category. The items ‘how do you prepare for exams’ (2.15) (which loads on ‘success orientation for ODeLHE’) and ‘when do you read your tutorial letters (1.8)’ (which loads on ‘strategic academic activity’) both produced infit statistics > 1.30 , indicating underfit. It is possible that

these infit statistics could explain the low person reliability and AVE of the factors 'success orientation for ODeLHE' and 'strategic resource utilisation'.

Infit statistics ≤ 70 indicate model overfit. Model overfit shows that item categories are not independent from each other. Items with overfit statistics provide the same information and contribute no new information to measured variable. These items could be integrated into other item categories. The items, 'how confident are you that you will complete your qualification? (.04); 'how confident are you that you will understand the learning material? (.58)' and 'how do you find the rigours of studying in an ODeL environment? (.45)' all produced infit statistics smaller than .70. All three of these items load onto the factor 'success orientation for ODeLHE. It is possible that the overfit of these three items contributed to the low person reliability and AVE of the factor 'success orientation for ODeLHE'. These items could be removed from the scale since they probably assess the latent variable related to the items 'how confident are you that you possess the skills necessary for an ODeL environment' and 'how confident are you that you will master all the learning outcomes of your field of study?'. The removal of these three items would reduce the number of items that load onto the factor 'success orientation for ODeLHE' to four instead of seven, and reduce the number of items for the overall scale to 12. However, since internal consistency reliability is affected by the strength of the correlation between scale items as well as the number of items in the scale, the removal of items could affect the internal consistency reliability of the ALSDS (DeVellis, 2016).

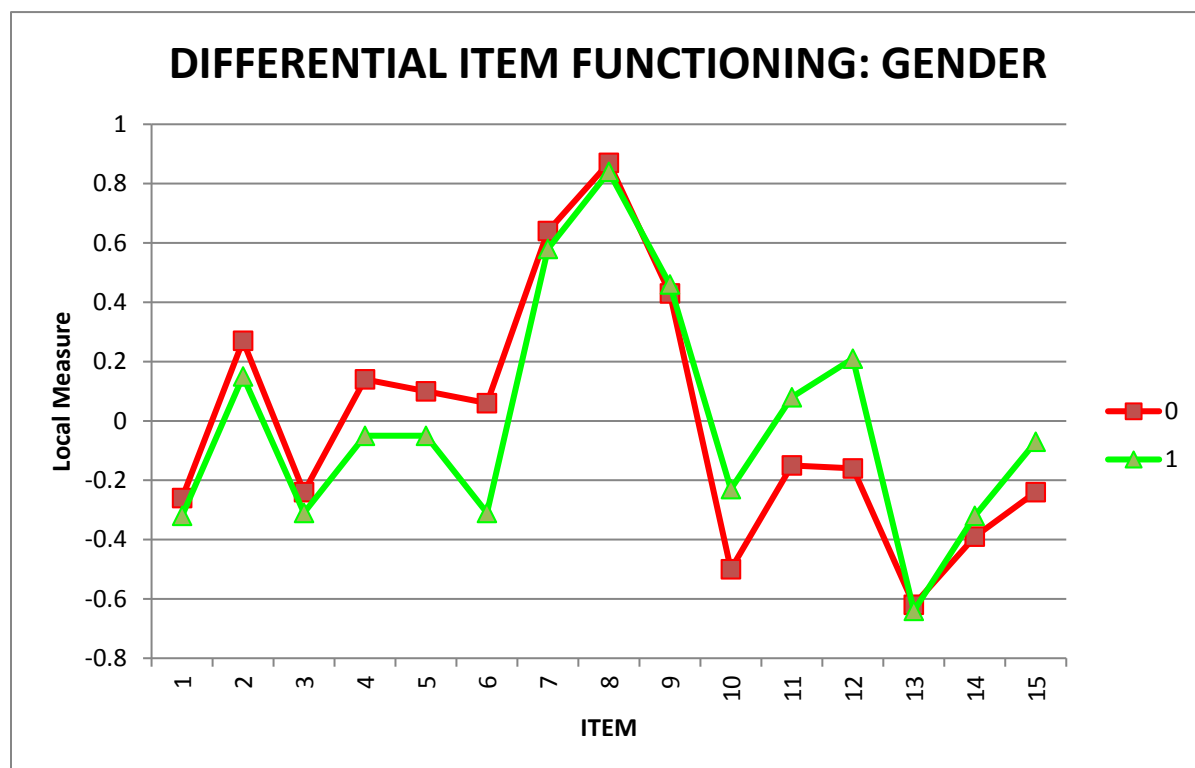
5.4 RASCH DIFFERENTIAL ITEM FUNCTIONING

In addition to assessing the unidimensionality and reliability of the ALSDS, RASCH analysis (Version 1.0.0, 2013) was used to assess the differential item functioning of the scale (DIF).

A RASCH model assesses whether the data fit the theoretical model by measuring whether the response pattern displayed by the data corresponds to the theoretical pattern expected for the model (De Mars, 2017). DIF indicates observable bias between the respondents on the three subscales and the overall ALSDS. Item functioning should be invariant as regards biographical and socio-biographical factors. In this study, the DIF assessed whether individuals from different gender, race and age groups produced similar results to the scale items. In addition, the DIF assessed whether respondents belonging to a particular age, gender or race group and who are assumed to have equal levels of ability would have the same probability of selecting a particular response to an item. DIF assessments were run on the following groups: gender (male [coded 1] vs female [coded 0]), race (black [coded 1] vs white [coded 0]) and age (< 35 years; > 35 years).

DIF is assessed by interpreting logits (DeVellis, 2016). A logit indicates the expected log-odds that a respondent will provide a specific answer to a scale item as opposed to another answer. The acceptable item measure on a scale is set at zero. An item with a negative logit value is interpreted as easier than the average, while items with a higher logit value are interpreted as more difficult. The DIF produces a visual linear interval scale that is relatively easy to interpret (DeVellis, 2016).

The following scale parameters were applied in the assessment of the data DIF: $<.50$ logits = insignificant, $.50 \leq 1.00$ = probably insignificant, and >1.00 = significant. A negative DIF index indicates that a particular group of respondents easily agree upon a particular scale item, while a positive DIF index indicates that a particular group would probably not agree on an item and produce varying responses. That is, negative logit values indicate respondents experienced less difficulty in answering the question while positive logit values indicate higher levels of difficulty in answering the item. The following norms were used to interpret the results: DIF contrast $\geq .5 < 1$ ($p \leq .05$) and DIF contrast ≥ 1 ($p \leq .01$). The DIF for the two gender groups is displayed in Figure 5.3.



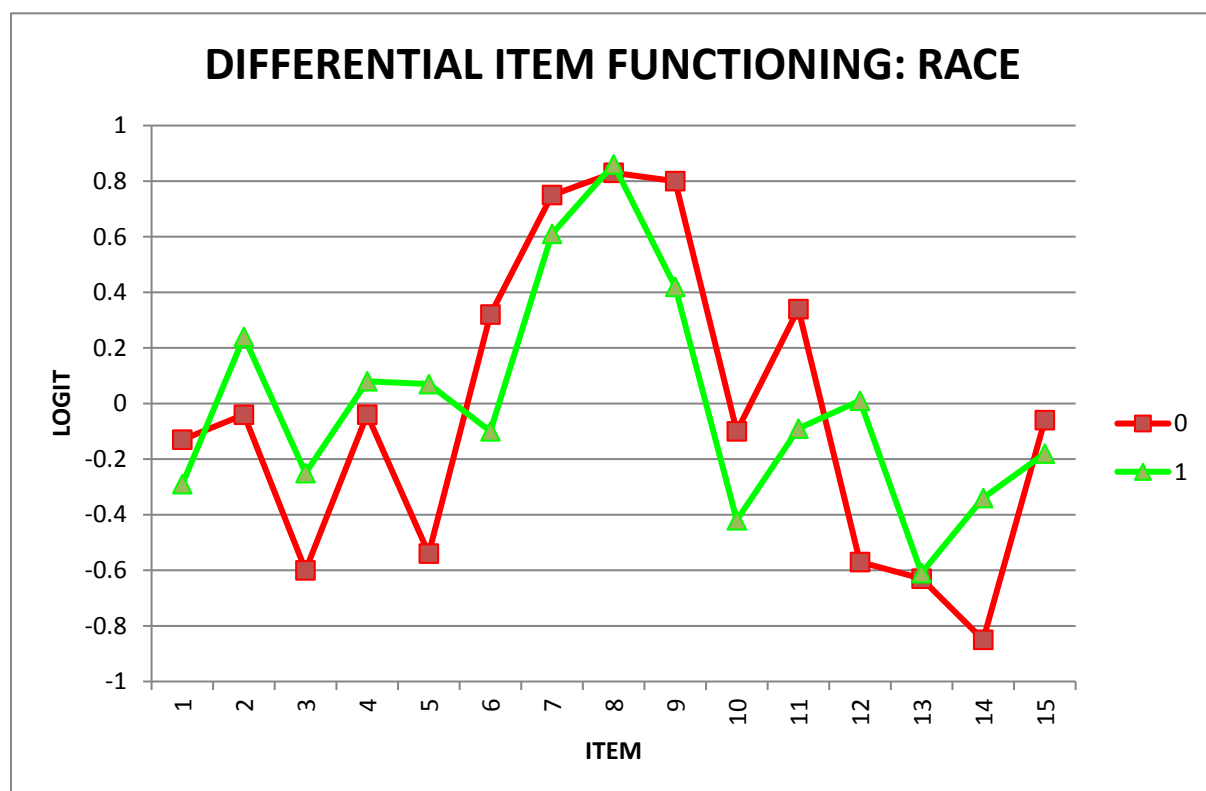
Notes: Coding: 0 = Female, 1 = Male. DIF constraints: $<.50$ Logits = inconsequential; $.50-1.00$ logits = mild/probably insignificant; >1.00 logits = notable and significant.

Figure 5.3 Differential item functioning: Gender.

Figure 5.3 shows that scale items 1, 3, 6, 10, 11, 12, 13, 14 and 15 had negative values, indicating that they were probably easier for the respondents to interpret and provide answers. Items 4, 5 and 6 only indicated negative values for male respondents. For the female respondents, the values of items 4, 5 and 6 were a little higher, but still <1 and thus insignificant. Items 11 and 12 appeared to be easier for the male respondents to answer, while items 4, 5 and 6 appeared to be more difficult for the female respondents to answer.

Items 7 ('how do you find the rigours of studying in and ODeL environment?'), loading onto the factor 'success orientation for ODeLHE'), 8 ('what do you do when you struggle to understand the work?') and 9 ('what do you do when you struggle to understand what is required in an assignment question?') [both loading onto the factor 'active academic behaviour'] had logits considerably higher than the other scale items (>.40). Although the logit value indicated an insignificant difference, the steep incline of the slope from item 7 to 8 and the steep decline of the slope from item 8 to 9 were clearly visible. These may provide areas for possible future research in order to refine the scale further.

In Figure 5.4 the differential item functioning of the two race groups is displayed.

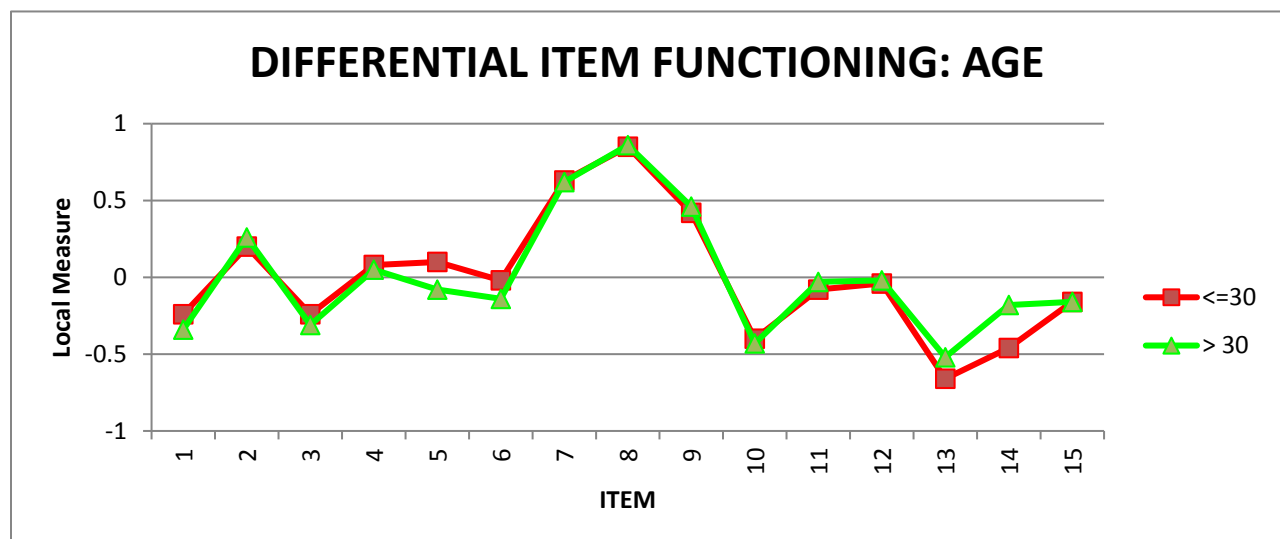


Notes: Coding: 0 = white; 1 = black. DIF constraints: <.50 Logits = inconsequential; .50-1.00 logits = mild/probably insignificant; >1.00 logits = notable and significant.

Figure 5.4 *Differential item functioning: Race*

From Figure 5.4, it is clear that items 1, 2, 3, 5, 10, 12, 13 and 14 had negative logit values, indicating that the different race groups probably found these items easy to interpret and provide answers. For the black group of respondents, items 2, 4 and 5 had positive values, but since the logit <5, this could be interpreted as inconsequential. It appeared that the white group of respondents found items 3, 5, 12 and 14 relatively easier to answer than the black group. For the white group, there was a steep incline from item 6 to 7 and then a gentle incline from 7 to 8. There was a gentle decline from 7 to 9 and a sharp decline from 9 to 10. For the black group, there was a steep incline from item 6 to 7, a slighter incline from 7 to 8, a fairly steep decline from item 8 to 9 and a very steep decline from item 9 to 10. The apparent difficulty with Items 7 ('how do you find the rigours of studying in and ODeL environment?'), [loading onto the factor 'success orientation for ODeLHE'], 8 ('what do you do when you struggle to understand the work?') and 9 ('what do you do when you struggle to understand what is required in an assignment question?') [both loading onto the factor 'active academic behaviour'] was also displayed in the DIF of the two gender groups. However, in this DIF, items 6 ('how much information have you collected on ODeL?', loading onto the factor 'success orientation for ODeLHE') and 10 ('why do you use your study guide?', loading onto the factor 'active academic behaviour'), also yielded odd results that may indicate a need for further research to refine the scale items.

In Figure 5.5, the DIF for the two age groups is displayed.



Notes: DIF constraints: <.50 Logits = inconsequential; .50-1.00 logits = mild/probably insignificant; >1.00 logits = notable and significant.

Figure 5.5 *Differential item functioning: Age*

The results for this test seemed to yield almost similar results for the two age groups, and again indicated that items 7 ('how do you find the rigours of studying in and ODeL environment?'), [loading

onto the factor ‘success orientation for ODeLHE’], 8 (‘what do you do when you struggle to understand the work?’) and 9 (‘what do you do when you struggle to understand what is required in an assignment question?’) [both loading onto the factor ‘active academic behaviour’] appeared to present difficulties for both groups. Ten of the scale items displayed negative values for the age group >30, while eight of the items displayed negative values for the age group <30, indicating that the relevant items were probably easier for the two age groups to interpret and provide answers to.

In conclusion, it is noteworthy that for the gender, race and age groups Items 7 (‘how do you find the rigours of studying in and ODeL environment?’), loading onto the factor ‘success orientation for ODeLHE’), 8 (‘what do you do when you struggle to understand the work?’) and 9 (‘what do you do when you struggle to understand what is required in an assignment question?’) [both loading onto the factor ‘active academic behaviour’], emerged as the most problematic items for all the groups, indicating a higher level of difficulty to provide a response. The items with their response scales are displayed in order to ascertain whether the difficulty in providing answers may be ascribed to the response scales provided.

Item 7. How do you find the rigours of studying in an open distance-learning environment?

1	2	3	4	5
I find it extremely difficult to cope	I find it somewhat difficult to cope	Some days I cope better than others	I find it easy to cope	If find it extremely easy to cope

Item 8. What do you do when you struggle to understand the work?

1	2	3	4	5
I become discouraged and stop working	I contact a friend for assistance	I contact the lecturer for assistance	I read through the material again and, if I still do not understand, I contact the lecturer	I never struggle to understand the work

Item 9. What do you do when you do not understand what is required in an assignment question?

1	2	3	4	5
I leave out the question	I complete the question the way I understand it	I consult a friend to find out what I should do	I consult the lecturer to find a solution	I try to find the solution myself and, if I am unsuccessful, I consult the lecturer

On assessment of the questionnaire items and the response scales provided, it could be possible that the apparent difficulty experienced by the various respondents related to their individual

academic coping behaviours and circumstances. For example, some students who are single and unemployed may find it easier to cope with the rigours of ODeL, while those with multiple responsibilities (thus the majority of the respondents) may find it more difficult to cope. In addition, answers to items 8 and 9 could depend on the individual's support network, availability of lecturers and the socio-economic circumstances (i.e., whether it is possible for the individual to contact either the lecturer or a friend, depending on where the person lives, as well as financial circumstances). It is also possible that the respondents found the response scales confusing and difficult to respond to. Further investigation into items 7, 8 and 9 is therefore required.

Overall, the statistical analyses provided evidence in support of research hypothesis H1:

H1: The ALSDS is a valid and reliable instrument for measuring adult learners' self-directedness in ODeLHE for diverse groups of adult learners

5.5 MULTIGROUP STRUCTURAL EQUIVALENCE

In this section, the metric invariance (measurement unit equivalence), configural invariance (construct equivalence) and scalar invariance (full score equivalence) for each of the biographical groups gender (male and female), race (black and white) and age (18 to \leq 30 years; \geq 31 to 50 years) are reported and discussed.

Metric invariance involves assessing whether the psychometric properties of a scale can be generalised across diverse groups – that is, whether the scale assesses the same construct in the same way across diverse groups. Metric invariance is established when the factor loadings of each item on each factor are the same across all groups involved in the study (Cieciuch, Davidov, Vecchione, Beierlein & Schwartz, 2014).

Configural invariance (construct equivalence) assesses whether the factor structure of a scale is the same for the various biographical subgroups, by determining whether respondents from diverse groups ascribe the same meaning to a construct being assessed as a whole. That is, the same number of factors as well as the same configuration of fixed and free constraints occur within each group in the research study. Significantly different factor loadings present evidence of the absence of configural invariance (Cieciuch, et al., 2014).

Scalar invariance assesses the invariance of the scale item intercepts and factor loadings in the regression equations that connect the indicators to the relevant latent variables. Item intercepts can denote systematic biases in the responses of a specific group to a particular scale item.

Consequently, the apparent mean may be systematically higher or lower than expected because of the latent mean and factor loading associated with a specific group. When the amount of bias (either upward or downward) of the visible variable is equal across groups, scalar invariance is present. When there is a significant difference in one or more of the item intercepts for one of the groups, scalar invariance cannot be confirmed (Cieciuch, et al., 2014).

The statistical programme, SAS, Version 9.4 (2013) was used to run the multigroup structural equivalence tests. The multigroup structural equivalence testing involved two steps:

Step 1: Testing the measurement model fit of the ALSDS for each biographical subgroup separately by means of CFA.

Step 2: Testing the measurement model fit of the ALSDS for the combined gender, race and age groups by means of multigroup CFA. In testing metric invariance, the factor loadings on each item on each factor were treated as being equal across the respective subgroups, but the intercepts were allowed to differ. In testing configural invariance, the factor structure of the ALSDS was treated as being equal for each respective subgroup. In testing scalar invariance, both the factor loadings and measure/item intercepts were constrained to be equal in the analysis.

The following fit statistics threshold values were applied to establish model fit: the RMSEA and SRMR are $\leq .10$ (model acceptance) and $\leq .08$ (good fit), and the GFI, CFI and NFI are $\geq .90$ or higher. In addition, the fit comparison statistics among the respective subgroups were also evaluated in terms of percentage (%) contribution to the chi-square, SRMR, GFI, and NFI. Higher GFI and NFI values and lower SRMR values implied a better fit of the data for a subgroup, values close to each other implied that the model fitted almost equally to the respective subgroups.

5.5.1 Gender

In this section, the measurement model fit test results (CFA) of the ALSDS for the gender (male vs female) biographical subgroups are reported. In addition, the measurement model fit results of the ALSDS for the combined gender groups established by using multigroup CFA are reported.

In Table 5.22, the results of the measurement model testing for the gender subgroups are discussed.

Table 5.22

Step 1: Measurement Model Testing: Gender

Gender	n	Chi-sq	df	p	SRMR	RMSEA	GFI	CFI	NFI	AIC
Male	276	132.18	81	.000	.06	.03	.94	.94	.85	210.18
Female	433	115.47	81	.007	.04	.01	.97	.97	.92	193.47

Note: N = 747

In Table 5.22, the results indicate that the SRMR and RMSEA for both the male (.06 & .03) and female (.04 & .01) subgroups were $\leq .08$, which indicated good fit. In addition, for both the male and female subgroups, the GFI (male .94; female .97) and CFI (male .94; female, .97) were $\geq .90$, indicating good fit. The NFI for the male group (.85) was smaller than the requirement for good fit, but the NFI for the female group (.92) was sufficiently large to fall within the required parameter of $\geq .90$. Overall, the measurement model was regarded as acceptable for both males and females.

In Table 5.23, the results of the multigroup CFA testing the construct equivalence, scalar invariance and metric invariance for the gender group are displayed.

Table 5.23

Step 2: Multigroup CFA- Testing Construct Equivalence, Scalar Invariance and Metric invariance: Gender

Model data fit statistics	Construct equivalence			Scalar invariance			Metric invariance		
Chi-Sq	247.65			420.49			362.25		
df	162			179			167		
p	.0001			.0001			.0001		
SRMR	.04			.26			.17		
RMSEA	.06			.05			.06		
GFI	.95			.98			.94		
CFI	.96			.89			.90		
NFI	.89			.82			.84		
AIC	403.65			602.48			508.25		
Fit comparison	Overall	Male	Female	Overall	Male	Female	Overall	Male	Female
Fit function	.35	.48	.27	.59	.94	.37	.51	.84	.30
% Contribution to Chi-sq	100	53	47	100	61	39	100	64	36
SRMR	.05	.06	.04	.26	.41	.07	.17	.27	.05
GFI	.95	.94	.96	.98	.97	.99	.94	.91	.96
NFI	.89	.85	.92	.82	.71	.89	.84	.74	.91

Note: n = 709

Table 5.23 shows that the construct equivalence for the gender groups was acceptable, with the SRMR (.04) and RSMEA (.06) meeting the requirement of $\leq .08$ for the acceptance of good fit. In

addition, the GFI (.95) and CFI (.96) were both larger than .90, indicating good fit. The NFI (.89) was close to the cut-off point of .90 and consequently regarded as acceptable for the purpose of this study. The NFI value for the overall scale for the gender group was influenced by the lower value for the male subgroup (.85). The percentage contribution to the Chi-square value of the male subgroup (53) was higher than the female subgroup (47) even though the number of female participants was bigger than the number of male participants. This may have influenced the NFI for the male subgroup and consequently also the NFI for the overall scale. Table 5.23 shows that the ALSDS had better construct equivalence for the female than for the male group.

The assessment of scalar invariance for the overall scale indicates that the SRMR (.26) did not meet the requirement of $\leq .10$ for model acceptance, whereas the RMSEA (.05) met the requirement of $\leq .08$, indicating good fit. Furthermore, the GFI (.98) met the requirement of $\geq .90$, with the CFI (.89) being close to the cut-off value. The NFI (.82) was too low to be acceptable. Once again, the percentage contribution of the two subgroups to the Chi-square value indicated that the male group (61%) contributed more than the female group (39%), even though there were more female than male participants. Possibly this influenced the SRMR and NFI for the male subgroup and consequently also the SRMR and NFI for the overall scale. Table 5.23 shows that the ALSDS had better full-score equivalence for the female than for the male group.

The values of the metric invariance of the scale indicated that the SRMR (.17) did not meet the requirement of $\leq .10$ for model acceptance; however, RMSEA (.06) met the requirement of $\leq .08$, indicating good fit. Both the GFI (.94) and CFI (.90) met the requirement of $\geq .90$, indicating good fit. Once again, the NFI (.84) value for the overall scale for the gender groups was low, possibly influenced by the low value for the male subgroup (.71) because of the percentage contribution to the Chi-square value of the male subgroup (64%) as opposed to the female subgroup (36%). This could also explain the high SRMR for the overall scale, since the SRMR for the male subgroup was high (.27). Table 5.23 shows that the ALSDS had better measurement unit equivalence for the female than for the male group.

The results showed acceptable construct equivalence for the gender groups (and especially the female group). However, metric invariance and scalar invariance seemed problematic for the gender groups. In terms of the seeming lack of scalar invariance (full score equivalence), tests for significant mean differences between the male and female groups should be interpreted with caution as meaningful comparisons may be problematic.

In section 5.2.2, the measurement model fit results for the two race subgroups, as well as the measurement model fit results of the ALSDS for the combined race groups are reported.

5.5.2 Race

In this section, the measurement model fit test results (CFA) of the ALSDS for the race (black vs white) biographical subgroups are reported. In addition, the measurement model fit results of the ALSDS for the combined race groups established by using multigroup CFA, are reported.

The results of the measurement model testing for the race subgroups are presented in Table 5.24.

Table 5.24

Step 1: Measurement Model Testing: Race

Race	n	Chi-sq.	Df	p	SRMR	RMSEA	GFI	CFI	NFI	AIC
Black	657	163.00	81	.0001	.04	.03	.97	.96	.92	241.00
White	51	97.09	81	.107	.10	.10	.81	.93	.73	175.09

Note: N = 747

Table 5.24 indicates that both the SRMR (black .04; white .10) and the RMSEA (black .03; white .10) met the requirements of acceptable model fit ($\leq .10$); however, the fit statistics for the black subgroup indicated good fit ($\leq .08$). The GFI (.97), CFI (.96) and NFI (.92) for the black subgroup were all $>.90$, indicating good fit. Yet, for the white subgroup, the GFI (.81) and NFI (.73) did not meet the requirement for good fit ($\geq .90$), while the CFI (.93) did meet the requirement for good fit. In addition, the statistical significance level of the white subgroup ($p = .107$) indicated the presence of significant differences between the two groups. It is possible that the difference in the sample sizes between the two groups contributed to the differences observed.

The results of the multigroup CFA testing the construct equivalence, scalar invariance and metric invariance for the combined race groups are displayed in Table 5.25.

Table 5.25

Step 2: Multigroup CFA - Testing Construct Equivalence, Scalar Invariance and Metric Invariance:
Race

Model data fit statistics	Construct equivalence			Scalar invariance			Metric invariance		
Chi-Sq.	260.09			375.99			303.58		
Df	162			179			167		
p	.0001			.0001			.0001		
SRMR	.05			.27			.12		
RMSEA	.03			.06			.05		
GFI	.96			.98			.95		
CFI	.95			.91			.94		
NFI	.90			.85			.87		
AIC	416.09			557.99			449.58		
Fit comparison	Overall	Black	White	Overall	Black	White	Overall	Black	White
Fit function	.37	1.94	.24	.53	3.54	.30	.43	2.28	.29
%	100	37	63	100	47	53	100	38	62
Contribution to Chi-sq.									
SRMR	.05	.11	.04	.27	1.00	.06	.12	.41	.05
GFI	.95	.81	.97	.98	.91	.99	.95	.79	.96
NFI	.90	.73	.92	.85	.51	.90	.87	.68	.91

Note: n = 246

Table 5.25 shows that the SRMR (.05) and RMSEA (.03) of the ALSDS measurement model for the two race groups both indicated good model fit ($\leq .08$) for construct equivalence. In addition, the GFI (.96), CFI (.95) and NFI (.90) of the two race groups indicated good model fit ($>.90$) for construct equivalence. The SRMR for the overall scale for construct equivalence (.05) produced an acceptable value for good model fit, despite the high value of the SRMR for the black subgroup (.11). This may be attributable to the overall percentage contribution to the Chi-square value of the white subgroup (63%) as opposed to the black subgroup (37%). Table 5.25 shows that the ALSDS had better construct equivalence for the white than for the black group.

In terms of scalar invariance, the SRMR (.27) indicated poor model fit, while the RSMEA (.06) indicated good model fit ($\leq .08$). Both the GFI (.98) and the CFI (.91) indices indicated good model fit ($\geq .90$), but the NFI value was unacceptably low (.85). Although scalar invariance (full-score equivalence) was not evident for the combined group, the model had a better fit for the white group than the black group. The lack of scalar equivalence for the race groups implies that meaningful comparisons between the black and white groups could be problematic and should be considered in tests for mean differences.

The assessment for metric invariance for the two race groups indicated that the SRMR (.12) was not acceptable for model acceptance, while the RMSEA (.05) indicated good model fit. Both the GFI (.95)

and CFI (.94) indices yielded acceptable values for model fit, but once again, the NFI (.87) was too low for the cut-off value of $\geq .90$. Although metric invariance was not evident for the combined group, the model had a better fit for the white group than the black group.

Overall, the results showed acceptable construct equivalence for the race groups (and especially the white group). However, metric invariance and scalar invariance seemed problematic for the race groups.

In section 5.5.3, the measurement model fit test results of the ALSDS for the age (<35 vs >35) biographical subgroups, as well as the measurement model fit results of the ALSDS for the combined age groups are reported.

5.5.3 Age

In this section, the measurement model fit test results (CFA) of the ALSDS for the age (18 to <30 vs >31 to 50 years) biographical subgroups are reported. In addition, the measurement model fit results of the ALSDS for the combined age groups established by using multigroup CFA are reported.

The measurement model fit results for the two socio-biographical subgroups (age) are reported in Table 5.26.

Table 5.26

Step 1: Measurement Model Testing: Age

Age group	n	Chi-sq.	Df	p	SRMR	RMSEA	GFI	CFI	NFI	AIC
18–30 years	426	129.68	81	.001	.05	.06	.96	.96	.90	207.67
31–50 years	246	104.53	81	.04	.05	.05	.95	.97	.88	182.53

Note: N= 747

From Table 5.26, the fit statistics SRMR (18-30: .05; 31-50: .05) and RMSEA (18-30: .06; 31-50: .05) for both age groups were smaller than .08 and consequently met the requirement for good model fit. The GFI (18-30 = .96; 31-50 = .95) and CFI (18-30 = .96; 31-50 = .95) for both age groups was acceptable, while the NFI for the 18-30 years group (.90) was acceptable, but the NFI for the 31-50 years group (.88) was close to .90.

The results of the assessments of construct equivalence, scalar invariance and metric invariance for the two age groups are reported in Table 5.27.

Table 5.27

Step 2: Multigroup CFA Testing Construct Equivalence, Scalar Invariance and Metric Equivalence:
Age

Model data fit statistics	Construct equivalence			Scalar invariance			Metric invariance		
Chi-sq	234.21			444.63			395.53		
df	162			179			167		
p	.0001			.0001			.0001		
SRMR	.05			.25			.20		
RMSEA	.05			.07			.07		
GFI	.96			.98			.94		
CFI	.96			.87			.88		
NFI	.90			.80			.83		
AIC	390.21			626.63			541.53		
Fit comparison	Overall	18-30	31-15	Overall	18-30	31-50	Overall	18-30	31-50
Fit function	.66	.67	.65	.66	.67	.65	.59	.64	.50
% Contribution to Chi-sq	100	55	45	100	64	36	100	69	31
SRMR	.25	.30	.09	.25	.30	.09	.20	.25	.06
GFI	.98	.98	.98	.98	.98	.98	.94	.93	.94
NFI	.80	.79	.81	.80	.79	.82	.80	.80	.86

Table 5.27 clearly shows that the SRMR (.05) and RSMEA (.06) of the ALSDS for construct equivalence was acceptable and indicated good model fit, since they were $\leq .08$. The GFI (.96), CFI (.96) and NFI (.90) indices were acceptable, since they were $\geq .90$. Table 5.27 shows that the ALSDS had better construct equivalence for the 31-50 years age group than for the 18-30 years group.

The results for the scalar invariance test show that the SRMR for the two age groups was unacceptable (.25) since it did not meet the cut-off value of $\leq .10$ for model acceptance. However, the RSMEA (.07) met the requirement for good model fit since it was smaller than .08. The GFI (.98) met the requirement of $\geq .90$, but the CFI (.87) and NFI (.80) were too low to be acceptable.

Although scalar invariance (full-score equivalence) was not evident for the combined group, the model had a better fit for the 31to 50 years group than the 18 to 30 years group. The lack of scalar equivalence for the age groups implied that meaningful comparisons between the 18 to 30 years and 31 to 50 years groups could be problematic and should be considered in tests for mean differences.

When assessing metric invariance, Table 5.27 indicates that the SRMR (.20) was too high for model acceptance ($\leq .10$), but the RMSEA (.07) did meet the requirement for good model fit ($\leq .08$). The GFI (.94) was acceptable, but the CFI (.88) and NFI (.83) were unacceptably low. Although metric invariance was not evident for the combined group, the model had a better fit for the 31-50 years group than the 18 to 30 years group.

Overall, the results showed acceptable construct equivalence for the age groups (and especially the 31 to 50 years group). However, metric invariance and scalar invariance seemed problematic for the age groups.

In summary: the multi-group CFAs confirmed the construct equivalence of the three factor ALSDS for the gender, race and age groups.

Overall, the statistical analyses provided partial evidence in support of research hypothesis H2:

H2: The factorial structure of the ALSDS is equivalent for diverse student socio-demographic groups (age, race and gender).

Evidence in terms of construct equivalence was supported but not for metric invariance and scalar invariance.

5.6 TESTS FOR MEAN DIFFERENCES BETWEEN GENDER, RACE AND AGE GROUPS

In order to assess for mean differences between the various gender, race and age groups in the sample $n = 747$, pair-wise, post-hoc comparisons were made, using Cohen's d to assess for the practical effect of significant mean differences. The tests for normality reported on in section 5.1.1.7 and Tables 5.17 and 5.18 indicated that the data were non-parametric, which required the use of the independent-samples Mann-Whitney-U and Kruskal-Wallis tests in the assessment for mean differences between the groups.

Next, the tests for mean differences between the gender (male vs female), race (black vs white) and age groups (<35 years; >35 years), on each of the three factors and the overall scale are reported and discussed. The lack of evidence of scalar equivalence (full-score equivalence) was considered in the interpretation of the findings.

The results of the tests for significant mean differences are summarised in Table 5.28.

Table 5.28

Independent-Samples Mann-Whitney U-Test and Kruskal-Wallis tests for Significant Mean Differences

Factors	Socio-biographical subgroup	n	Mann-Whitney U	Test Statistic	Standardised test statistic	df	Asymp.Sig (2-sided)
	Gender	746					
Success orientation for ODeLHE			52065.50	52065.50	-.480		.000
Active academic behaviour			67860.00	67860.00	.73		.466
Strategic resource utilisation			64661.50	64661.50	-.39		.692
	Race	744	Kruskal-Wallis test statistic				
Success orientation for ODeLHE				15.877		3	.001
Active academic behaviour				3.926		3	.270
Strategic resource utilisation				14.567		3	.002
	Age	706	Kruskal-Wallis test statistic				
Success orientation for ODeLHE				13.267		4	.010
Active academic behaviour				4.802		4	.308
Strategic resource utilisation				1.851		4	.763

Note: p < .05

As can be seen in Table 5.28, significant differences were displayed for the factor 'success orientation for ODeLHE' in the gender, race and age socio-biographical groups, and for the factor 'strategic resource utilisation' in the race socio-biographical group. Consequently, additional pairwise comparison post-hoc tests were run to determine the source of the differences. The results are displayed in Table 5.29.

Table 5.29

Source of Significant Mean Differences: Gender, Race and Age

Factor	Socio-biographical subgroup	N	Mean	SD	Source of significant difference between means	Test Statistic	<i>p</i>	Cohen's <i>d</i>
Success orientation for ODeLHE	Male	286	3.86	.69			.00	.38
	Female	460	3.58	.77				
	Black (African)	650	3.66	.76	Black (African)-white-	-95.99	.00	.43
	Indian	18	4.12	.45	Black (African)-Indian-	-132.39	.01	.74
	White	51	3.97	.68				
	18-25 years	275	3.63	.73	18-25- > 50	-172.42	.00	.95
	26-30 years	176	3.63	.78	26-30- > 50	-169.38	.00	.91
	> 50 years	15	4.24	.54				
Strategic resource utilisation	Coloured	25	3.68	1.09	Coloured-white	-2.00	.00	.74
	Indian	18	4.55	.59	Coloured-Indian	-3.194	.00	.99
	White	51	4.36	.72				

Note: $p < .05$

For the factor 'success orientation for ODeLHE', the source of the difference between the means of the gender groups could be ascribed to the male group (Mean = 3.86; SD = .69). Table 5.29 shows that the male participants (Cohen's $d = .38$; small practical effect) scored significantly higher on the factor 'success orientation for ODeLHE' than the female group.

Table 5.29 further indicates that the sources of the differences between the means of the race groups for the factor 'success orientation for ODeLHE' could be ascribed to differences between the black (African) (Mean = 3.66; SD = .76) vs Indian (Mean = 4.12; SD = .45) groups. Table 5.29 shows that the Indian (Cohen's $d = .74$; moderate practical effect; $p = .05$) followed by the white (Cohen's $d = .43$; small practical effect; $p = .01$) participants scored significantly higher on success orientation for ODeLHE than the African participants. Overall, the African participants scored significantly lower than the Indian and white groups on success orientation for ODeLHE.

The source of the differences between the means of the age groups for the factor 'success orientation for ODeLHE' can be attributed to the difference between the 18-25 age group (Mean = 3.63; SD = .73) vs the older than 50 group (Mean = 4.24; SD = .54). Table 5.29 indicates that the over 50 age group (Cohen's $d = .95$; large practical effect) scored significantly higher on success orientation for ODeLHE than the age groups 18 – 25 and the age groups 26 – 30.

Table 5.29 indicates that the source of the difference between the means of the race groups on the factor 'strategic resource utilisation' can be ascribed to the difference between the coloured vs the Indian groups (Mean = 4.55; SD = .59). Table 5.29 indicates that the Indian participants (Cohen's d

= .99; large practical effect) scored significantly higher than the white and African groups on the factor 'strategic resource utilisation'.

The general rule of thumb when using the Cohen's d value, is that $r < .29$ (small practical effect); $r < .30 < .49$ (moderate practical effect) and $r > .50$ (large practical effect). However, these are guidelines only and should not be interpreted too rigidly (Lakens, 2013).

Overall, the statistical analyses provided partial evidence in support of research hypothesis H3:

H3: The various demographic groups differ significantly regarding the sub-scale dimensions of the scale.

5.7 SOCIO-DEMOGRAPHIC VARIABLES AS PREDICTORS OF ADULT LEARNER SELF-DIRECTEDNESS IN ODELHE

In this section, the assessment of whether the various socio-biographic variables predict adult learner self-directedness in ODeLHE is discussed. The variables that are reported on are as follows:

- gender
- race
- age
- employment status
- occupation
- socio-economic situation
- being depended upon financially
- access to a library
- access to a computer
- proficiency in English
- number of modules for which the participant is enrolled
- who is paying for the learner's studies

First, the correlations between the variables and the three factors of the ALSDS will be reported. In the second step, only those socio-biographic variables that functioned as significant predictor variables are reported.

Table 5.30

Correlations Between Socio-Biographical Variables and the ALSDS Factors

Socio-demographic variable	Measures	ALSDS factors		
		Success orientation for ODeLHE	Active academic behaviour	Strategic resource utilisation
Employment status	Correlation coefficient	.033	-.025	-.103**
	Sig. (2-tailed)	.366	.495	.005
	N	741	741	741
Occupation	Correlation coefficient	-.013	.034	.092*
	Sig. (2-tailed)	.731	.355	.013
	N	731	731	731
Socio-economic situation	Correlation coefficient	.062	-.034	-.103**
	Sig. (2-tailed)	.094	.357	.005
	N	741	741	741
Being dependant on financially	Correlation coefficient	.096**	-.006	-.006
	Sig. (2-tailed)	.009	.872	.070
	N	747	747	747
Access to a library	Correlation coefficient	.078*	.046	.054
	Sig. (2-tailed)	.035	.219	.143
	N	733	733	733
Access to a computer	Correlation coefficient	.139**	.047	-.001
	Sig. (2-tailed)	.000	.205	.970
	N	738	738	738
High school mark for English (Proficiency in English)	Correlation coefficient	.216**	-.021	.116**
	Sig. (2-tailed)	.000	.205	.002
	N	721	721	721
Number of modules	Correlation coefficient	.064	-.043	.088**
	Sig. (2-tailed)	.086	.245	.018
	N	725	725	725
Who is paying for the learner's studies	Correlation coefficient	-.044	.048	.061
	Sig. (2-tailed)	.238	.195	.100
	N	736	736	736
Gender	Correlation coefficient	-.176**	.027	-.015
	Sig. (2-tailed)	.000	.311	.095
	N	746	746	746
Race	Correlation coefficient	.117**	.037	.061
	Sig. (2-tailed)	.000	.466	.692
	N	744	744	744
Age	Correlation coefficient	.103**	.009	-.018
	Sig. (2-tailed)	.006	.820	.640
	N	706	706	706

Notes: * correlations are significant at the .01 level; ** correlations are significant at the .05 level.

Table 5.30 indicates that significant positive correlations were found between the factor 'success orientation for ODeLHE' and the socio-biographical variables 'access to a computer' ($r = .139$, $p = .000$), 'mark for English' ($r = .216$, $p = .000$), 'being dependent on financially' ($r = .096$, $p = .009$), 'access to a library' ($r = .078$, $p = .035$), 'race' ($r = .117$; $p = .000$) and 'age' ($r = .103$, $p = .006$).

Furthermore, a negative but significant correlation was found between 'success orientation for ODeLHE' and 'gender' ($r = -.176, p = .000$).

In addition, significant positive correlations were found between the factor 'strategic resource utilisation' and the socio-biographical variables 'current occupation' ($r = .092, p = .013$), 'high school mark for English' ($r = .116, p = .002$) and 'number of modules for which the learner was registered' ($r = .088, p = .018$). Furthermore, a significant negative correlation was found between the factor 'strategic resource utilisation' and the socio-biographical variable 'occupation' ($r = 1.103, p = .005$).

In Table 5.31, the results of the stepwise multiple regression analyses are reported.

Table 5.31

Multiple Regression Analysis Results

Predictor variable	Success orientation for ODeLHE			Active academic behaviour			Overall ALSDS		
	β	t	p	β	t	p	β	t	p
Mark for English	.224	4.36	.000						
Gender	.208	4.04	.000				.108	2.022	.044
Access to a library				.135	2.556	.000	.112	2.130	.034
Number of modules				-.111	-2.089	.011			
Who student supports financially				.106	2.009	.045			
Model statistics	2nd step			3rd step			2nd step		
	Fp	17.39 (.000)		Fp	4.97 (.002)		Fp	4.33 (.014)	
	Adjusted R²	.09		Adjusted R²	.03		Adjusted R²	.019	

Note: *** correlations are significant at $p = .001$ level; ** correlations are significant at $p = .01$ level; * correlations are significant at $p = .05$ level.

In Table 5.31, the stepwise multiple regressions on the predictor variables 'mark for English', 'gender', 'access to a library', 'number of modules' and 'who the student supports financially' are displayed as significant predictors of self-directedness. Table 5.31 shows that the regression analysis produced a statistically significant model for the factor 'success orientation for ODeLHE' with the predictor variables 'gender' and 'mark for English' ($F = 17.39, p = .000$; adjusted $R^2 = .09$; small practical effect). A statistically significant model was produced for the factor 'active academic behaviour' with the predictor variables 'access to a library', 'number of modules' and 'who the student supports financially', with $F = 4.97$ and $p < .05$ (adjusted $R^2 = .03$; small practical effect). Lastly, the overall

scale produced a statistically significant model for the predictor variables 'gender' and 'access to a library', with $F = 4.33$ and $p < .05$ (adjusted $R^2 = .02$; small practical effect).

Mark for English ($\beta = .22$; $p = .000$) and gender ($\beta = .21$; $p = .000$) positively accounted for the variance in success orientation for ODeLHE. Access to a library positively accounted for the variance in active academic behaviour ($\beta = .14$; $p = .000$) and overall self-directedness ($\beta = .11$; $p = .03$). In addition, number of modules for which the student was registered ($\beta = -.11$; $p = .01$) and being dependent on financially ($\beta = .11$; $p = .05$) accounted for the variance in active academic behaviour.

Overall, the statistical analyses provided partial evidence in support of research hypothesis H4:

H4: The socio-demographic variables significantly predict adult learner self-directedness.
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5.8 DISCUSSION OF RESULTS

The present research formed part of a larger research project on the self-directedness of adult learners in the ODeLHE context. The doctoral study addressed research gaps in the master's study conducted by Botha (2014) on the psychometric properties of the newly developed ALSDS. The general research aim of the doctoral study was to assess the structure and psychometric properties of the ALSDS rigorously, in order to establish whether it is a valid measure of academic self-directedness in ODeLHE for diverse gender, race and age groups of adult learners, and to determine whether a range of socio-biographical variables significantly predicts adult learner self-directedness.

Adult learner self-directedness is influenced by socio-biographical factors such as culture, gender, and socio-economic environment. ODeLHE requires high levels of adult learner self-directedness, and research has suggested that ODeLHE is the way for Africans to access tertiary education in order to improve their socio-economic circumstances and the economy of the continent as a whole (Mpofu, 2015). However, since socio-biographical factors influence adult learner self-directedness, it is possible that those learners who supposedly should benefit from improved access to tertiary education through ODeLHE, are in fact further disadvantaged (Mpofu, 2015). Currently, no scale exists that is focused specifically on the African ODeLHE milieu; consequently, research into the assessment of the degree of self-directedness present in adult learners participating in ODeLHE will contribute to understanding the milieu and internal convictions that most usefully facilitate the successful learning journey of adult students (Botha, 2014; Gravani, 2015). The focus of the doctoral study, namely the rigorous assessment of the factorial structure and construct validity of the newly developed ALSDS (Botha, 2014) was therefore deemed important in order to assess the validity of utilising the ALSDS in the African and South African ODeLHE context. African adult learners in

general and African females specifically require support in the development of self-belief, self-confidence and individual agency in order to take control of their lifelong learning and development. Furthermore, competence in the language of instruction (English) is vital to ensure the development of adult learner self-directedness.

It is evident that knowledge of the degree of self-directedness of the participants in adult education will assist in the formulation of best practice guidelines and principles in adult education tuition and assessment, both in the workplace and in tertiary education contexts. The paucity of research on adult learner self-directedness in the adult education context in South Africa specifically and in Africa generally, and the dire need for the improvement of education levels in South Africa requires thorough research into self-directedness in South African adult learners. In addition, although the factors affecting student success in distance education has been widely researched; almost no research is conducted on adult learner self-directedness, although there is a link between self-directedness in learning and academic success (Netanda, Mamabolo, & Themane, 2017).

The study indicated that various biographical and socio-biographical variables affect adult learner self-directedness. Specifically, adult learners' gender and race should receive attention in the development of learning material and assessments, as well as the provision of learner support in ODeLHE and workplace learning contexts. Furthermore, the personal circumstances of adult learners should be investigated before the development and implementation of learning materials and assessments for adult learning interventions in both ODeLHE and workplace learning milieus, so that learner support can be adapted or personified for the individual circumstances of adult learners.

The ALSDS (Botha, 2014) is the first scale developed specifically for the South African ODeLHE milieu. However, any scale that assesses latent variables should be investigated rigorously as regards its validity and reliability in order to be practically useful (DeVellis, 2016). For this reason, the current study focused on investigating the psychometric properties of the ALSDS as a second step in the bigger research project of developing a valid and reliable scale for assessing the degree or level of self-directedness of adult learners in the South African ODeLHE milieu.

Overall, the empirical study provided evidence of the structural validity (construct validity) and internal consistency reliability of the revised three-factor structure of the ALSDS. Construct equivalence was also established for the gender, race and age groups. The research highlighted some differences between the gender, race and age groups in terms of the ALSDS factors. A number of socio-demographic variables were indicated as significant predictors of the ALSDS factors. The next section discusses the psychometric properties of the ALSDS as manifested in the present (doctoral) study.

5.8.1 Biographical profile of the sample

The sample of the current study (n = 747, subsample of N = 1 102) consisted of black (African) women of between 18 and 25 years old, who were employed full time mostly in administrative and skilled occupations. In addition, a substantial percentage of the subsample had no steady monthly income, and supported themselves as well as more than two dependents. The results indicated that the respondents did not only have a large amount of family and financial responsibilities, but could also be considered to live in constrained socio-economic circumstances. Since socio-economic and cultural variables affect adult learner success (Akala & Divala, 2016; Cincinnato, et al., 2016; Välimaa & Nokkala 2014), the influences on adult learner self-directedness should be investigated in South Africa.

Only 32% of respondents had access to the library of the academic institution, and only 25% had access to their own computer. While 23% of respondents had access to a computer at work, the restricted access to a computer is an alarming indicator of the possible disadvantage that the students in the sample may suffer in an ODeLHE milieu that relies on ICT to supplement the tuition and assessment of adult learners (Halabi, et al., 2014; Nguyen, Barton & Nguyen, 2015). In addition, access to an academic library is a necessity for adult learners who should consult various academic sources in the course of their studies in order to nurture their capacity for academic inquiry and analysis (Soria, Fransen & Nackerud, 2013).

In general, the respondents reported a fair to poor mark for English at school, which is an indicator of concern for adult learner success in ODeLHE, since the language of instruction at the academic institution is English. A poorly developed capacity in the language of instruction may exacerbate the challenges faced by adult learners who are already disadvantaged in ODeLHE (Desai, 2016). In addition, the majority of the learners reported that they were registered for more than four modules, which adds a substantial academic workload to the existing work and family responsibilities faced by the participants in the sub-sample. The majority of the participants indicated that they were paying for their tertiary education themselves, which indicates that the respondents in the sub-sample were under considerable financial strain as regards their monthly income, their dependents and paying for their own tertiary education. Clearly, the participants in the study were making a substantial financial and time investment in their futures.

However, it is possible that the participants in the study were over-extending themselves as regards the time they have available for successful ODeLHE study, when comparing the time required for successful study with all the other responsibilities of the participants. Time management does seem to be of concern for adult learners and educators alike. It appears that adult learners who are new to

tertiary education have difficulty in gauging how much time they would have to invest in their studies (Anderson, et al., 2014; Thibodeaux, et al., 2017).

In the next section, the psychometric properties of the ALSDS will be discussed.

5.8.2 Psychometric properties of the ALDS: Evidence of construct validity and reliability

This section discusses the findings in terms of empirical research aim 1, namely to assess the psychometric properties (factorial structure/construct validity and internal consistency reliability) of the ALSDS as a valid and reliable instrument for measuring adult learner self-directedness in ODeLHE for diverse groups of adult learners.

The preliminary statistical analyses revealed a three-factor structure for the ALSDS. The three factors, a short description and the items loading on each factor are summarised in Table 5.32.

Table 5.32

The Factors and Items of the Three-Factor ALSDS

Factor	Description	Items
Success orientation for ODeLHE	Relates to adult learners' self-beliefs in their capacity to be successful in an ODeLHE milieu.	1. How confident are you that you will understand the learning material? 2. How confident are you that you will be able to master all the learning outcomes in your field of study? 3. How confident are you that you will complete your qualification? 4. How confident are you that you will be able to solve problems you encounter in your learning? 5. How confident are you that you possess the skills necessary to cope in an ODeLHE environment? 6. How much information have you collected about ODeL? 7. How do you find the rigours of studying in an ODeL environment?
Active academic behaviour	Relates to the active behaviour adult learners use in their studies in order to master the learning material successfully.	8. What do you do when you struggle to understand the work? 9. What do you do when you do not understand what is required in an assignment question? 10. Why do you use the study guide? 11. How do you use the study guide? 12. How do you prepare for examinations?
Strategic resource utilisation	Relates to the strategic use of resources provided by the institution in order to facilitate success in learning.	13. When do you read your tutorial letters? 14. When do you use your study guide? 15. How do you use feedback tutorial letters in your studies?

5.8.2.1 *The original four-factor solution for the ALSDS vs the revised three-factor solution*

The initial master's study by Botha (2014) yielded a four-factor solution (35 items):

- (1) Strategic utilisation of officially provided resources (five items) measures when and how adult learners utilise the official resources provided by the university in their role as active learners (Botha, 2014; Botha & Coetzee, 2016; Coetzee & Botha, 2013).
- (2) Engaged academic activity (five items) measures the deliberate, planned learning actions of adult learners (Botha, 2014; Botha & Coetzee, 2016; Coetzee & Botha, 2013).
- (3) Success orientation for open distance learning (11 items) measures the behaviours of adult learners related to their study self-confidence, resilience and learning self-efficacy (Botha, 2014; Botha & Coetzee, 2016; Coetzee & Botha, 2013).
- (4) Academically motivated behaviour (13 items) relates to the behaviours associated with intrinsic or extrinsic academic motivation (Coetzee & Botha, 2013; Mishra, et al., 2013; Ning & Downing, 2010).

In the four-factor solution of the ALSDS (Botha, 2014), items 1, 2, 4, 5 and 6 all loaded onto Factor 2, which was labelled engaged academic activity. In the three-factor solution of the current doctoral study, all five items were discarded. The items concerned mostly how adult learners allocated their time and planned for time to study. The conclusion can be made that time management does not contribute to adult learner self-directedness in the ODeLHE milieu, although time management does contribute to academic success overall. However, Knowles (1975), Guglielmino (1977) and Garrison (1997) agree that learner self-responsibility for learning is a vital component of adult learner self-directedness. Time management and the ability to plan learning activities and learning workload proactively are consequently essential to adult learner self-directedness (Gu, 2016; Khiat, 2017). The seeming unimportance of time management in the ALSDS is therefore of concern.

In the four-factor solution of the ALSDS (Botha, 2014), items 3, 7, 8, 9 and 19 all loaded onto Factor 1 ('strategic utilisation of officially provided resources'). In the revised three-factor solution, item 3 was discarded, items 7, 8 and 9 loaded onto the factor strategic resource utilisation and item 19 now loads onto the new Factor 1 ('success orientation for ODeLHE'). Item 3 was discarded since it appears not to contribute to adult learner self-directedness. Item 3 also revolved around time allocation for academic activities. Gu (2016) indicates that procrastination is problematic in online learning contexts, however, planning for and committing to engage with the learning material are significant elements of adult learner self-directedness (Gu, 2016; Khiat, 2017). In addition, the

learners' perceptions of their own proficiency in learning is part of their ability to act agentically (Gu, 2016; Khiat, 2017). It is possible that lack of knowledge of the rigours of ODeLHE influenced the learners' responses on the items related to planning and time management of their learning.

In the four-factor solution (Botha, 2014), items 10 – 21 (with the exception of item 19) (11 items) loaded onto the Factor success orientation for ODeL. In the three-factor solution, seven items (items 14 – 20) now load onto the new factor success orientation for ODeLHE. Items 10 and 13, which related to the adult learners' preferred learning context or mode of study, were discarded. It appears that adult learners do not find the learning milieu as of consequence in adult learner self-directedness in ODeLHE. The conclusion is significantly different from the conclusion made on the initial four-factor model (Botha, 2014), where learning context apparently played a substantial role in adult learner self-directedness.

Item 11 related to how adult learners coped when family and work responsibilities interfered with their academic work. The encroachment of other responsibilities on academic activities does not appear to be influential in adult learner self-directedness in South African ODeLHE. According to Khiat (2017), it seems that adult learners are used to managing various life roles and claims on their time. Possibly, the respondents' life circumstances influenced their responses to item 11. However, since adult learners' competence in learning affect their self-directedness, it is also possible that lack of comprehension of the rigours of ODeLHE affected the learners' responses. Adult learners reportedly experience role stress because of the multiple life roles they play (Bourdeaux & Schoenack, 2016; Chen, 2017), consequently, the responses to item 11 should be investigated further.

Item 13, which related to how adult learners would utilise the knowledge they gained in their academic endeavours was discarded after further investigation since it appeared to have no effect on adult learner self-directedness in ODeLHE in South Africa. Adult learning principles advocate that adults learn because they want to achieve a personal goal. In addition, adult learners have rich life experiences that could be used fruitfully in the learning process (Chen, 2017; Knowles, 1975). The responses to item 13 are therefore puzzling. However, it is possible that the design of the learning materials made available to adult learners do not utilise their life experiences to create connections to the learning content, and therefore the respondents did not consider the responses to item 13 as significant for adult learner self-directedness.

Lastly, item 21 was discarded in the three-factor model. Item 21 related to the adult learners' perception about who was responsible for their academic success, but after rigorous investigation, appears to be inconsequential in adult learner self-directedness. Once again, this is a puzzling

outcome of the study. The capacity to assume personal responsibility for learning is the foundation of adult learner self-directedness (Chen, 2017; Khiat, 2017; Knowles, 1975). The apparent lack of importance to personal responsibility that is highlighted in this study consequently presents an anomaly that should be investigated further.

In the initial four-factor model (Botha, 2014), items 22 to 35 all loaded onto the factor academically motivated behaviour. In the three-factor model, only items 22, 25, 28, 29 and 33 were retained. Items 22, 25, 28, 29 and 33 all loaded onto the new factor active academic behaviour. Items 22 and 25 relate to adult learners' behaviour when they do not understand the work or what is required of them academically. Items 28 and 29 relate to why and how adult learners use the study guides provided by the academic institution and item 33 relates to how adult learners prepare for examinations. All the items concern how students cope with the demands of the academic work and how they use the main resource (the study guide) to further their understanding of the work in order to prepare for final assessments. Khiat (2017) identified interaction with the learning milieu (learning material) and preparation for assessments (assignments and examinations) as vital to adult learner self-directedness. The exclusion of 13 of the initial items for this factor may present a problem when considering the significance of learning material usage and preparation for assessments in adult learner self-directedness. However, it is also possible that the excluded items were redundant, and that the retained items were sufficient for assessing resource utilisation. Further investigation is required before a conclusion can be drawn.

Items 23, 24, 26, 27, 30, 31, 32, 34 and 35 were discarded in the three-factor model. Item 23 related to students' actions when they had not received all the official learning material, while item 24 related to students' actions when they encountered words or phrases in the academic material that they had difficulty understanding, both of which were associated with pro-active, agentic behaviour. It appears that pro-active behaviour as regards learning material acquisition and difficulty with understanding the language of instruction did not relate to academic self-directedness. This is an unusual result, since self-regulation is central to adult learner self-directedness (Alghamdi, 2016). It is possible that other items in the refined scale sufficiently assess Items 26 and 27 related to why adult learners decided to study and what motivated adult learners to study. Since both items were discarded in the three-factor model, it seems that students' motivation to study and reasons for studying had no effect on academic self-directedness in ODeLHE in South Africa.

Conversely, motivational orientations are tremendously important in adult learner self-directedness (Ng, 2017) and should be assessed in some way in a scale that is used to determine self-directedness. Items 30 and 31 related to adult learners' reaction when they did not do well in an assessment and when they became discouraged. Both of the items correlate with resilience, which

plays a significant role in self-belief and self-confidence (Ng, 2017). Since both items were discarded in the three-factor model, it seems that feelings of discouragement and/or failure did not affect adult learner self-directedness for the respondents. The exclusion of items related to self-belief is unusual of concern and should be investigated further.

Items 32 and 34 related to adult learners' actions when they struggled to access technology such as computers and when they realised that they had not worked sufficiently throughout the tuition period to be successful in the final assessment. Both items are associated with pro-active learning behaviour that forms a core component of adult learner self-directedness. Since both items were discarded, it seems that struggles with access to technology and not mastering the learning material sufficiently to ensure success in the final assessment were not related to academic self-directedness according to the respondents. The exclusion of items related to pro-active and agentic behaviour is unusual and raises concerns about whether the refined scale assesses all the elements of self-directedness. A conclusion can only be reached after further research. Item 35, which related to adult learners' actions when they wanted to improve their knowledge and skills, was also discarded, which indicates that this item does not relate to adult learner self-directedness. Since involvement in post-secondary education involves an improvement in knowledge and skills, it seems that the participants did not perceive this question as related to self-directedness. However, a pro-active attitude towards learning is vital to self-directedness (Chen, 2017; Khiat, 2017). Further investigation is required before a conclusion can be drawn.

In conclusion: the three-factor model seems to be a more refined version of the four-factor model. Apparently, adult learners do not relate the learning milieu with adult learner self-directedness, and struggles with various aspects of the learning milieu are consequently not associated with adult learner self-directedness. The finding is unusual, since writings on adult learner self-directedness focus on agentic behaviour, motivational orientation, interaction with the learning milieu and engagement with the learning material (Chen, 2017). It is possible that the participants in this study do not perceive struggle as important in adult learner self-directedness, because of their various life roles (Khiat, 2017). In terms of ODeLHE, the finding contributes a possible new insight into adult learner self-directedness, however further research should be done before a conclusion can be reached.

The various aspects that appear to relate to adult learner academic self-directedness in ODeLHE appear to be as follows:

Adult learners' confidence in their capacity to understand the learning material, solve problems they encounter in their learning and master the learning outcomes of their field of study. In addition, adult

learners' confidence that they possess the competencies required for success in ODeLHE, how they cope with the rigours of ODeLHE and the amount of information that they collected on ODeLHE seem to be significant in relation to adult learner self-directedness. Current research does not report information on how adult learners cope with the rigours of ODeLHE. In addition, the amount of information that adult learners collect on ODeLHE is not discussed in the research. The finding consequently contributes new insight into the complex composition of adult learner self-directedness and the views of South African adult learners on self-directedness in ODeLHE.

Adult learners' actions when they have difficulty to understand the academic work and the requirements for assessments seem to be related to their academic self-directedness. In addition, adult learners' active use (why and how) of the most important official resource (the study guide), and how adult learners prepare for the final assessment seem to be important in adult learner self-directedness. Chen (2017) indicates that active engagement in the learning material is associated with agentic behaviour and adult learner self-directedness. Adult learners' behaviour when they encounter difficulties relates to resilience, which is a component of self-efficacy and self-belief (Khat, 2017). The finding consequently supports existing research, conversely, reported research on self-efficacy related to self-directedness focus on specific self-efficacy, while the current study focused on specific academic behaviours that indicate academic self-efficacy.

Lastly, adult learners' strategic use of the official resources seems to be related to their academic self-directedness. Official resource utilisation include when adult learners read their tutorial letters (which provide feedback on formative assessments), how adult learners utilise the feedback tutorial letters in their studies and when they use their study guides (Botha, 2014). It is interesting that official resource utilisation and active academic activity appear to be two separate factors in adult learner self-directedness in South African ODeLHE. It seems that adult learners view the study guide and the tutorial letters (which are the university's main means of communication with the learners) as two separate resources and utilise them for two different purposes. However, a conclusion can only be drawn after further investigation. Since reported research focuses mainly on adult learner self-directedness in traditional tertiary educational settings, not ODeLHE, the information provides new insight into adult learner self-directedness in ODeLHE. In addition, the result indicates that South African adult learners in ODeLHE depend heavily on the officially provided resources; consequently, particular attention should be paid to the development and implementation of learning resources.

However, it is worrying that all the items related to time management and planning of learning were discarded in the three-factor model; since reported research indicates that time management is of concern to both students and academic teaching staff in the ODeLHE milieu (Chen, 2017; Khat, 2017). In addition, planning the learning journey is one of the cornerstones of adult learner self-

directedness (Alghamdi, 2016). It is possible that time management is unrelated to academic self-directedness, but a conclusion can only be drawn on further investigation. In addition, resilience revolves around how adult learners manage adverse circumstances (Chen, 2017). Since most of the items (five) that related to resilience were discarded (only two items were retained and they related only to understanding the academic work), it is possible that the three-factor ALSDS does not assess the entirety of adult learner academic self-directedness.

The advantage of the original four-factor ALSDS (Botha, 2014) seems to be that it may provide a more thorough assessment of the degree of adult learners' self-directedness in an ODeLHE context, including learning context, learner affect, learner motivation and learner learning behaviour. The unidimensionality and internal consistency reliability of the four-factor ALSDS were established in the master's study (Botha, 2014). However, the convergent and discriminant validity, assessment of common method bias, reliability and structural equivalence of the scale were not assessed in the master's study. Furthermore, the rating scale functionality and differential item functioning of the four-factor model of the ALSDS were not assessed in the master's study.

The advantage of the revised three-factor ALSDS seems to be that it provides a more streamlined and refined scale for the assessment of adult learner self-directedness. In addition, the unidimensionality, factorial validity, reliability and structural equivalence of the three-factor model have been established with some caveats as regards socio-biographical subgroups (gender, race and age). In addition, the rating scale functionality and differential item functioning of the three-factor ALSDS have been assessed. However, further research is indicated to refine the scale for various socio-biographical subgroups, and to determine whether the ALSDS comprehensively assesses the notion of adult learner self-directedness in ODeLHE.

5.8.2.2 The multi-dimensional nature of adult learner self-directedness

The statistical procedures provided evidence of the multi-dimensional nature of adult learner self-directedness as measured by the three-factor ALSDS. Both the self-directed learning readiness scale (SDLS) (Guglielmino, 1977) and the Oddi continuing learning inventory (OCLI) (Oddi, 1986) assess self-directed learning along various factors, such as a love of learning, drive to learn, self-confidence for learning and pro-active learning behaviour. Furthermore, both the SDLS and OCLI provide multi-dimensional scales for assessing learner self-directedness (or, in the case of the self-directed learning readiness scale, readiness for self-directed learning). In addition, the personal responsibility orientation to self-directed learning scale also produced four subscales, namely initiative, self-efficacy, control and motivation (Stockdale & Brockett 2011). The self-directed learning scale

(Lounsbury & Gibson, as cited in Lounsbury, et al., 2009) focuses on the personality characteristics of various types of learners (primary school, high school and college learners). The student self-directed learning questionnaire (De Bruin, 2008) is a unidimensional scale that was applied in a residential tertiary education context. Consequently, the multi-dimensional nature of the notion of self-directedness that is evident in the ALSDS is also revealed in more well-known scales. However, none of the scales focuses on assessing adult learner self-directedness in ODeLHE and particularly in the African/South African context.

As stated in Chapter 3, section 3.2.3, the construct of academic self-directedness consists of the following four dimensions: the formal learning milieu, learner affect, learner engagement with the learning material, and learner autonomy (Alghamdi, 2016; Goldman, et al., 2017; Olafsen et al., 2017). The three-factor ALSDS assesses adult learner confidence or success orientation, active academic behaviour and strategic resource utilisation. However, learner affect related to resilience and motivation do not seem to be included in the three-factor ALSDS, as they were in the four-factor ALSDS (Botha, 2014). Since learner resilience and motivation are vital components of adult learner self-directedness, (Alghamdi, 2016; Chen, 2017; Khiat, 2017) the absence of items that assess resilience and motivation could constitute a serious shortcoming in the ALSDS. Furthermore, time management is associated with pro-active learner behaviour and therefore also with adult learner self-directedness (Khiat, 2017). The absence of items related to time management and planning could constitute a shortcoming in the three-factor ALSDS. Conversely, it is possible that the items as they were identified in the three-factor ALSDS do constitute all the elements of adult learner self-directedness in ODeLHE in South Africa, but a conclusion can only be drawn after further research.

The formal learning milieu is created by the tertiary institution, and in the case of the ALSDS manifests in strategic resource utilisation. The academic content of a course, as presented in the official learning material, indicates what is expected of adult learners and influences how learners choose to engage with the learning material (Daddow, 2016). The academic institution controls the learning environment and sets the tone for the learning journey. Consequently, the learning material can inculcate and encourage self-directed learning in the learners (Tan, 2017). ODeLHE contexts require a well-developed capacity for self-directed learning. The results indicate that the official learning material, and how learners are encouraged to engage with the learning material are vital in adult learner self-directedness (Song & Bonk, 2016). The learning context should include learners' life experiences in order to provide a connecting point for the learner to the learning content (Bernhardsson, et al., 2017). Furthermore, adult learners' preference to use their academic strengths and autonomously correct their academic weaknesses is positively related to their active use of the learning material (Mostert, et al., 2017). In general, in the ODeLHE context the learning material provided by the tertiary

institution represent the learning milieu. In the ALSDS, the factor strategic resource utilisation represents the learning milieu.

Learner affect significantly influences adult learner self-directedness (Alghamdi, 2016). Adult learners' emotions may fluctuate according to the apparent difficulty of a learning task and learners use coping strategies when confronted with difficult tasks (Rothes, et al., 2017). The use of coping strategies for the management of negative emotions associated with learning indicate resilience and learners' capacity for self-regulation (Bhayat & Madiba, 2017; Pidgeon & Pickett, 2017). In addition, intrinsic motivational orientations are directly related to academic success (Olafsen, et al., 2017). The three-factor ALSDS presents a paucity of items associated with the assessment of learner resilience and motivational orientations overall, which is an area of concern.

Learner engagement is the time and effort learners invest in essential learning activities and on active learning. Learner engagement involves motivation, positive self-belief and effective study behaviour and has a substantial effect on academic success (Bore & Munro, 2016.) The more time adult learners spend on their academic activities and the deeper their immersion in their learning, the higher is the probability that they will develop and implement an effective plan for their learning in order to ensure success (Bore & Munro, 2016). In addition, deep engagement has a positive influence on adult learner self-efficacy in ODeLHE (Coetzee & Oosthuizen, 2013). Furthermore, the academic institution is pivotal in learner engagement, since the academic teachers decide on learning content, learning material design and assessment strategies (Bore & Munro, 2016; Kahu, et al., 2013). The learning context, course content and adult learners' awareness of the intellectual demands of learning activities influence learning behaviour and immersion in the learning material. In addition, learners' personal characteristics, for example resilience, diligence, efficiency and intellect, appear to equip learners with the resources to utilise effective learning behaviours, regardless of the learning environment (Bore & Munro, 2016). Consequently, the lack of items related to time management, planning and resilience are currently underrepresented in the three-factor ALSDS.

Learner autonomy is adult learners' capacity to manage their learning process independently (Alghamdi, 2016; Bernhardsson, et al., 2017; Knowles, 1975). Autonomous learners automatically and efficiently plan their own learning and independently implement those plans. Autonomous learners furthermore accept responsibility for the results of their plans, reflect on their learning and adapt their learning strategies to suit specific circumstances (Du Toit-Brits, 2016; Firat, et al., 2016). Autonomous learners are able to triumph over the challenges created by past learning experiences, socio-cultural contexts and poor basic education (Alghamdi, 2016). Self-determination, self-efficacy, intrinsic motivation and learner empowerment are just some of the variables that affect learner autonomy (Turula, 2017). Five of the items in the three-factor ALSDS relate to learner autonomy.

However, further investigation into the scale is required in order to find out whether these five items sufficiently assess learner autonomy for ODeLHE self-directedness, since these items are also related to academic engagement.

5.8.2.3 Items on the three-factor ALSDS with low factor loadings

Factor loadings indicate the shared variance that an item contributes to a factor (Salkind, 2016). Items with lower factor loadings consequently contribute less to the factor than items with higher factor loadings. In the three factor ALSDS, five items presented with factor loadings lower than .05, which is generally used as the cut-off for factor loadings. However, these items were retained in the ALSDS because of the large sample size ($n = 747$). The items that presented with low factor loadings, and the factors onto which they load, are summarised in Table 5.33.

Table 5.33

Items with Low Factor Loadings

Factor	Item	Factor loading
Success orientation for ODeLHE	6. How much information have you collected about ODeLHE?	.48
	7. How would you describe the rigours of ODeLHE?	.46
Active academic behaviour	10. How do you prepare for the examination?	.47
	11. What do you do when you struggle to understand the work?	.41
	12. What do you do when you don't understand what is required in an assignment question?	.33

From Table 5.33, it is clear that the items with low factor loadings mostly present with a factor loading of close to .30, which is commonly used as the cut-off. Because of the sample size, it is possible to retain the relevant items in the three-factor ALSDS. The items in question are item 6 (.48 – ‘How much information have you collected about ODeLHE?’) and item 7 (.46 – ‘How do you find the rigours of studying in an ODeL environment?’), which load onto the factor ‘success orientation for ODeLHE’. The retention of these two items is of particular importance since item 6 relates to pro-active behaviour and item 7 relates to resilience. However, in the assessment of rating scale functionality, item 7 presented with infit statistics that indicate overfit and therefore possible redundancy. Furthermore, in the differential item functioning, indications were that respondents found this item difficult to respond to. Consequently, item number 7 should be investigated further in order to decide whether it should be retained in the three-factor ALSDS.

In Factor two (active academic behaviour), item number 10 (‘How do you prepare for the examination’) had a factor loading of .47). In addition, in the assessment of rating scale functionality,

item number 10 had a negative measurement intensity, and presented underfit indicating that item 10 is problematic in the overall scale. Since item number 10 relates to planning and agentic behaviour it should be investigated further in order to attempt to retain the item. Items 11 (.41 – ‘What do you do when you don’t understand the work?’) and 12 (.33 – ‘What do you do when you don’t understand what is required of you in an assignment question?’) both relate to agentic behaviour. However, since they appear to assess an almost similar construct, it is possible that item 12 could be removed because of its low factor loading. The decision can be made after further investigation of the scale.

The assessment of differential item functioning is of particular importance in South Africa when rating scales are developed. Since the South African society is heterogeneous and multi-cultural, all assessment scales should be proven to be unbiased in terms of gender and race. In addition, the Employment Equity Act requires that all scales used in the assessment of psychological attributes should be unbiased. In addition, all rating scales should be valid and reliable across socio-biological groups, specifically race (Coetzee, 2010).

5.8.2.4 Evidence of convergent and discriminant validity

Irrespective of the challenges identified above, the three factors of the ALSDS indicated good convergent validity on the overall construct of adult learner self-directedness in ODeLHE. In addition, the results provided evidence of good discriminant validity between the three factors. The evidence of discriminant validity was provided by the PATH loadings (estimates) which indicated a convergence estimate of $> .50$ to $> .70$, indicating good convergence of the three factors of the ALSDS onto the overall construct of self-directedness. The items of each sub-factor produced average ($> .30$) to excellent ($> .70$) convergence onto the respective sub-factors. The overall conclusion is that the three-factor ALSDS is a valid measure for the construct of adult learner self-directedness in ODeLHE. Furthermore, the results provided proof of good discriminant validity between the three factors of the ALSDS. Discriminant validity is established when $MSV < AVE$ and $ASV < AVE$ (DeVellis, 2016). For all three factors of the ALSDS, $MSV < AVE$ and $ASV < AVE$, consequently confirming the discriminant validity of the three-factor ALSDS, leading to the overall conclusion that the three-factor ALSDS is a valid measure of adult learner self-directedness in ODeLHE.

5.8.2.5 Evidence of the homogeneity and internal consistency reliability of the three-factor ALSDS

The homogeneity and internal consistency reliability of the three-factor ALSDS were proven by the person and item infit/outfit values of the three subscales, as well as for the overall scale, which were close to 1.00. In addition, the responses neither underfitted (≥ 1.30) nor overfitted ($\leq .70$), providing

evidence that the participants responded to the items in a consistent manner. The outfit statistics (below 2.00) indicated that the scale produced worthwhile information. The data provided information that the internal consistency reliability of the overall scale and Factor 1 (success orientation for ODeLHE) were good.

In addition, the person separation index provided further evidence of the internal consistency reliability for the factor 'success orientation for ODeLHE' (2.00) and for the overall scale (1.84 - close to 2.00). However, the person reliability coefficients for 'success orientation for ODeLHE' (factor 1) and 'strategic resource utilisation' (Factor 3) were below the threshold value ($\geq .70$). In addition, the factors 'active academic behaviour' and 'strategic resource utilisation' did not produce evidence of acceptable internal consistency reliability. Consequently, the reliability of the two factors should be investigated further in order to improve the reliability.

Both the item reliability (well above .90) and the separation indices (well above 2.00) were acceptable, indicating that the items could discriminate well across the investigated variables. The person and item infit/outfit means for the overall scale were sufficiently close to 1.00 to draw the conclusion that the overall scale neither underfitted (≥ 1.3) nor overfitted ($\leq .70$), indicating that for the overall three-factor ALSDS, the participants responded to the items in a consistent manner.

Overall, the RASCH statistics provided evidence in support of the homogeneity, acceptable internal consistency reliability and usefulness of the three-factor scale for the purposes of the present research. Nevertheless, further refinement of the scale in terms of Factors 2 and 3 is required.

The internal consistency reliability of the original four-factor ALSDS (Botha, 2014) was determined by using the Cronbach's Alpha coefficient. The internal reliability of the Four-factor ALSDS was as follows: strategic utilisation of officially provided resources (.60; five items); engaged academic activity (.60; five items); success orientation for open and distance learning (.77; 11 items) and academically motivated behaviour (.71; 14 items). For the overall scale, the Cronbach's Alpha coefficient was .91 (35 items). Consequently, the four-factor ALSDS produced good internal consistency reliability for all four factors. However, the internal consistency reliability of a factor may be influenced by the number of items loading onto it, which could account for the high reliabilities produced by the Four-factor ALSDS. Conversely, the small number of factors, which comparatively loaded onto the three-factor ALSDS, could explain the low reliabilities reported for the revised three-factor model.

Using either a practical or an empirical approach can maximise the reliability of a scale. The practical approach focuses on the questionnaire items – whether the questions are sufficiently easy for the respondents to answer, or about issues, they care about. Whether the language is sufficiently simple

or the questions and/or indicators are formulated in such a way that they are easily understood (DeVellis, 2016). Furthermore, the number of items that load onto a factor can be increased in order to improve the reliability of the scale. In the case of the three-factor model of the ALSDS, five items load onto Factor 2 ('active academic behaviour') and only three items load onto the factor 'strategic resource utilisation', which could have contributed to the low reliabilities of these two factors.

The empirical approach focuses on using statistical analyses to improve the reliability of items and consequently the overall scale. One example of an empirical approach is to use a stepwise removal approach in each sub-scale (Raubenheimer, 2004; Strauss, et al., 2016). In the stepwise removal approach, the least reliable item is deleted (indicated by the expected increase in the Cronbach's alpha if the item is removed) and the improvement in the reliability is noted. The process is then repeated for the next least reliable item in the scale, until the removal of none of the items indicate an increase in the Cronbach's alpha coefficient of the subscale. Next, exploratory factor analysis (EFA) can be used to evaluate and maximise the convergent and discriminant reliability of each individual subscale. A similar stepwise approach can be followed with the EFA. In the case of the EFA, the purpose is to identify and remove each item that loads significantly onto more than one factor.

Split-half reliability can also be used to improve the reliability of a scale. Split-half reliability assesses the consistency between two halves of the same scale. The items related to a construct can be randomly split into two sets. The entire scale can then be administered to an appropriate sample of participants. After the administration, the total score for each half of the scale for each respondent can be calculated and the correlation between the total score in each half is established (DeVellis, 2016). Since the rating scale functionality and differential item functioning have already been assessed on the three-factor ALSDS, and the removal of items could further adversely affect the reliability, appropriate methods of improving the reliability of a scale should be thoroughly investigated before attempts are made to further increase the reliability of the three-factor ALSDS.

5.8.3 Evidence of structural equivalence

This section discusses the findings of empirical research aim 2, namely to assess whether the factorial structure of the ALSDS is equivalent for diverse adult learner socio-demographic groups (gender, race and age).

The assessment of the structural equivalence of a psychological scale for various socio-demographic groups is a vital requirement in South Africa. The Employment Equity Act requires that any

psychological assessments used in South Africa should be proven to be unbiased and reliable across race groups in order to prevent bias (Coetzee, 2010).

The three-factor ALSDS yielded sufficient evidence of construct validity for the gender, race and age groups in the subsample, although the construct equivalence for the female group was better than that of the male group. However, scalar invariance and metric invariance for the gender, race and age groups have not been sufficiently established. When assessed separately, the metric and scalar invariance for the gender groups indicated that the ALSDS produced better full-score equivalence (scalar invariance) and better measurement unit equivalence (metric invariance) for the female than for the male group.

The construct equivalence for the ALSDS indicated acceptable construct equivalence for the race groups, but indicated better construct equivalence for the white group. Scalar invariance (full-score equivalence) and metric invariance could not be proved for the combined group, but both scalar and metric invariance produced a better fit for the white group than for the black group.

The construct equivalence for the age groups for the ALSDS was acceptable, but indicated better fit for the 31 to 50 years age group than for the 18 to 30 years group. As far as scalar and metric invariance were concerned, neither scalar invariance (full-score equivalence) nor metric invariance were proven for the combined group, however, the model had a better fit for the 31 to 50 years group than the 18 to 30 years group for both scalar and metric invariance.

Overall, although the construct equivalence for the three-factor ALSDS was acceptable for the gender, race and age groups, the absence of scalar and metric invariance for the three groups indicated that that the scale should be investigated and refined further. The lack of scalar and metric invariance created difficulties in making meaningful comparisons between the various groups. Multi-group structural equivalence tests can point out items that created complications in a scale; however, they do not provide explanations for the difficulties reported in comparisons across groups (Meitinger, 2017).

According to Meitinger (2017), when configural invariance has been proven, the baseline model of multigroup confirmatory factor analysis (MCFA) can be used by comparing it with more confined models. The difference in the comparative fit index (CFI) and root mean square error of approximation (RSMEA) values of the various tests are established (Δ CFI and Δ RMSEA). A difference in the CFI of more than .01 and in the RSMEA of more than .015 indicate problematical values. In addition, when the goodness of fit indices are not acceptable, modification indices (MI) can be used in MCFA in order to establish the constraints that can be released in order to enhance the model fit. MIs are easily affected by sample size, which should be taken into consideration when this approach is followed

(Meitinger, 2017). Furthermore, multiple indicators multiple causes (MIMIC) models can be used. MIMIC models assess whether problematic items are influenced by personal variables and checks differential item functioning. Multilevel structural equation models can describe nonvariance by using theoretical predictor variables in a multilevel analysis, however this requires large sample sizes (Meitinger, 2017). Meitinger (2017) suggests using qualitative approaches to determine the origins of the differences.

5.8.4 Assessing significant mean differences

This section discusses research aim three, namely to assess whether the various demographic groups differ significantly regarding the sub-scale dimensions of the scale. The results in this section are interpreted with caution due to the lack of scalar invariance.

The tests for significant differences between the means of the three groups gender, race and age for the three factors of the ALSDS indicate that significant differences existed for the gender, race and age groups for the factor “success orientation for ODeLHE”. In addition, significant differences were reported for the factor “strategic resource utilisation”.

For the factor ‘success orientation for ODeLHE’, the tests for mean differences indicated that the male participants scored significantly higher than the female participants did. The gender roles that are socialised in African women could play a role in the low self-confidence for academic activities reported by the African females. African females experience a sense of alienation in tertiary education contexts and may not receive the support offered to African males (Akala & Divala, 2016). In addition, the African learners scored significantly lower than the Indian and white participants for success orientation for ODeLHE. The lower scores for the African participants can possibly be ascribed to the lack of preparedness for higher education that contributes to the poor success rate of African learners in tertiary education milieus.

The lack of preparedness for higher education is caused by socio-demographic variables such as poor secondary education, lack of role models from whom the African participants can gain an understanding of the competencies required in academia and lack of social and financial support structures (Mpofu, 2016). However, African learners feel uncomfortable in a learning context that they describe as based in colonialist values and are unwilling to approach academic staff for assistance (Daniels & Damons, 2011). Older learners scored significantly higher on success orientation for ODeLHE than younger learners. This finding supports Botha’s (2014) findings, and Knowle’s (1975) assumption that self-directedness increases with age. The reason for the finding can possibly be attributed to the ability of adult learners to tap into their life experiences to manage their own learning.

It is also possible that older adult learners have been exposed to more learning experiences and consequently possess self-belief and self-confidence for learning that more inexperienced younger adults may lack (Ainscouch, et al., 2017).

The Indian participants scored significantly higher than the white and African (black) groups on the factor 'strategic resource utilisation'. This is an interesting finding, and requires further research before any conclusions can be made, since other research in this regard could not be found. As culture appears to affect self-directedness (Ahmad & Majid, 2010), it is possible that Indian learners are exposed to cultural examples that emphasise the prominence of the learning resources provided for effective learning. How students utilise their academic resources is associated with self-regulation and planning in learning (Ainscouch, et al, 2017). This finding consequently provided new insights into how African (black) groups and white adult learners use their learning material and should be considered in the learning design and provision of learner support.

The African perspective of autonomy and knowledge may differ from that of Western and Eastern cultures. Ntseane (2011; 2012), believes that learning theories should in general be applied and interpreted in a culturally aware manner in the African context, since Africans have a social connectedness that seems to be reinforced in the process of knowledge acquisition, assimilation and transfer. Furthermore, gender roles and expectations in the African context influence knowledge assimilation. Learning and learner agency can consequently manifest differently in the African milieu than in the Western milieu, where most learning theories and models of self-directedness are developed (Merriam & Ntseane, 2008; Ntseane, 2012).

In South Africa, Dumais and Ward (2010) found that pioneer students struggle with the information seeking for learning that is expected in the tertiary education milieu. Academic teaching staff are regarded as wardens of the academic culture and its secrets (Dumais & Ward 2010). Economically disadvantaged pioneer students in South Africa perceive tertiary institutions as culturally exclusive, which may lead to reduced individual learner agency, particularly for female learners (Akala & Divala, 2016; Daniels & Damons, 2012). In the ODeLHE milieu, Botha (2014) reported that Indian male students tended to report much higher levels of belief in their capacity to complete their tertiary qualifications successfully than did African females. However, the personal dispositions of economically disadvantaged adult learner seems to have a more profound effect on learners' academic success than cultural influences (Gaddiss, 2012). Since the current research did indicate significant differences between the means of the gender and race groups, the differences should be investigated further. However, the lack of scalar invariance in the ALSDS precludes the making of any significant conclusions at this stage.

As regards age, Botha (2014) reported significantly higher levels of self-directedness for the age group over 50 than for the age group younger than 50, which supported the assumption by Knowles (1975) that older adult learners would possess more highly developed self-directedness capacities. As the current study also found significant differences between the over 50 and under 50 age groups, the differences should be investigated further, since the lack of scalar invariance reported in the current study precludes the drawing of any meaningful conclusions at this stage.

5.8.5 Evidence of socio-demographic variables as predictors of self-directedness

This section addresses the fourth and last empirical research aim, namely to report on whether any of the socio-biographical variables listed below significantly predicted adult learner self-directedness:

- gender
- race
- age
- employment status
- occupation
- socio-economic situation
- being depended upon financially
- access to a library
- access to a computer
- proficiency in English
- number of modules for which the learner is enrolled
- who is paying for the learner's studies

The results indicated that 'mark for English' (the language of instruction) and 'gender' were significant in explaining high levels of 'success orientation in ODeLHE'. In addition, 'access to a library', 'the number of modules for which a learner was registered' and 'being depended upon financially' explained higher levels of 'active academic behaviour'. Lastly, 'access to a library' explained overall adult learner self-directedness. The findings provide new insights since it appears that socio-biographical variables are significant in predicting adult learner self-directedness. Although research has shown that cultural aspects affect self-directedness (Ng, 2017), no studies have yet proven that gender, mark for English (indicating proficiency in the language of instruction), being dependent upon financially, number of modules for which the learner is registered and/or access to a library affect self-directedness. The findings indicate a new direction for research in ODeLHE in South Africa.

South African studies have revealed that African females may struggle with learner agency and requesting assistance from academic staff (Akala & Divala, 2016; Dumais & Ward, 2010). Consequently, the results of this study contribute to the body of knowledge on best practice guidelines for the design and development of ODeLHE learning material in order to facilitate the inculcation of adult learner self-directedness in previously disadvantaged adult learners. In addition, for workplace learning application, the results can be utilised in the design and implementation of workplace learning opportunities in order to facilitate the inculcation of adult learner self-directedness. Specifically, the use of online and e-learning applications and delivery methods should be investigated thoroughly in order to ensure that vulnerable adult learners are not disadvantaged further by the use of these delivery methods.

5.8.6 Implications for theory, research and practice

5.8.6.1 Implications for theory

The current doctoral research study refined the original four-factor ALSDS (35 items) developed by Botha (2014) to a three-factor model (15 items). The three-factor ALSDS model produced acceptable internal consistency reliability and good convergent validity on the overall construct of adult learner self-directedness in ODeLHE. The evidence further supported good discriminant validity between the three factors.

The four-factor model produced factors on adult learner utilisation of resources, active academic behaviour, and success orientation and on motivational orientation. In the three-factor model, motivational orientation fell away and the factors that remained were labelled 'success orientation for ODeLHE' (focusing on self-efficacy beliefs), 'active academic behaviour' (focusing on learner agency) and 'strategic resource utilisation' (focusing on when learners utilised the official learning material).

The evidence indicates that adult learner academic self-directedness in ODeLHE is a multi-dimensional construct, supporting the evidence of international research into learner self-directedness in residential tertiary institutions (Alghamdi, 2016; Xiao, 2017). Success orientation for ODeLHE is the strongest factor in the three-factor model (as was the case in the four-factor model), indicating that self-efficacy beliefs and resilience contribute significantly to adult learner self-directedness in ODeLHE, which is in line with international research on learner self-directedness (Alghamdi, 2016; Cassidy, 2011; Greene, 2015). The factor 'active academic behaviour' relates to learner agency and is the second strongest factor. International research indicates that learner agency plays a significant role in learner self-directedness (Goldman, et al., 2017; Olafsen, et al.,

2017); consequently, the findings of the three-factor ALSDS are in line with reported research on learner self-directedness. The factor 'strategic resource utilisation' indicates the interaction of the learner with the learning milieu, and although only three items in the refined ALSDS load onto this factor, the findings are aligned with reported research on learner self-directedness, which emphasises the significance of the learning milieu (Daddow, 2016).

Professionals in ODeLHE and workplace learning development and implementation for adult learners have to be mindful of adult learners' competence in English (indicated by mark for English), and the fact that reading and writing in a language differs from learning effectively in that language. Furthermore, the gender of participants should be considered in the development and facilitation of learning. Both mark for English and gender are significant indicators of success orientation for ODeLHE. Success orientation for ODeLHE focuses mainly on adult learners' confidence in their capacity to be successful in their learning endeavours, as well as resilience for ODeLHE. The nurturing of learner self-belief supports self-regulatory behaviour and is closely associated with adult learner self-directedness (Alt, 2015). Male adult learners reported higher levels of success orientation for ODeLHE. It appears that female learners need more support for developing success orientation for ODeLHE. Female learners in general seem to struggle with higher education in South Africa (Akala & Divala, 2016), but this study provided new insight into the variables that should be addressed in an ODeLHE context to support female learners.

Access to a library is significant in active academic behaviour. Active academic behaviour revolves around the pro-active agentic behaviours adult learners use to ensure that they understand the learning material and are prepared for examinations. As far as could be established, access to a library has not been assessed within the context of adult learner self-directedness. Consequently, the findings contributed new insights into the broader context of the learning environment and how adult learners can be supported in ODeLHE contexts. Further to this, the number of modules for which learners register, and being dependent on financially were additional significant factors in active academic behaviour.

Ainscough, et al. (2017) indicate that adult learners experience several difficulties in their tertiary learning experiences, including academic workload and financial responsibilities. In addition, Ainscough, et al., (2017) indicate that learners who fail to plan their academic activities effectively are more likely to do poorly in their studies and opt out of tertiary education. The capacity to plan for academic workload is a cognitively complex function, since it involves the ability to estimate how much time should be devoted to studies in terms of the complexity and volume of work, as well as assessing current competence (knowledge and skill) in a particular subject. Students with poorly developed individual agency struggle with estimating the amount of time they will need to master the

learning material of a particular subject (Ainscough, et al., 2017). Consequently, the finding that number of modules affects active academic behaviour contributes new insight into the complexity of adult learner self-directedness.

Ainscough, et al. (2017) further indicate that adult learners in tertiary education are easily distracted by factors outside the learning environment, such as financial responsibilities and paid work, which take up their time. However, learners who are more resilient and agentic in their learning behaviour are able to adapt their learning behaviours more easily and consequently they can overcome pressures such as being dependent upon financially more easily. The current study therefore corroborates the findings by Ainscough, et al. (2017) and contributes new insight into how important academic workload (number of modules) and financial pressure (being dependent on financially) are in the context of adult learner self-directedness in ODeLHE. In addition, variables that are usually classified as obstacles to learning appear to be significant in adult learner self-directedness in ODeLHE contexts, which indicates that the concepts of obstacles to learning and adult learner self-directedness should be investigated more carefully in order to establish other correlations and predictors between the two concepts.

Overall, the doctoral research study contributed valuable information on the self-directedness of adult learners in the South African ODeLHE context. The following new insights were identified:

- Adult learner self-directedness in South African ODeLHE consists of success orientation to ODeLHE, active academic behaviour and strategic resource utilisation.
- Adult learners in South African ODeLHE seem to consider an ideal learning context, time management, pro-active planning behaviour, the capacity to manage adverse learning experiences and the ability to manage outside influences on their academic ventures as unimportant in adult learner self-directedness.
- Significant differences exist between gender, race and age groups as regards the three components of adult learner self-directedness, as well as the overall construct of adult learner self-directedness.
- Socio-demographic variables (gender, race, access to a library, being dependent upon financially and number of modules for which learners register) significantly predict adult learner self-directedness in ODeLHE contexts in South Africa.
- Socio-demographic variables that are frequently classified in the research literature as obstacles to adult learning success seem to predict adult learner self-directedness and should possibly be investigated within the context of adult learner self-directedness.

5.8.6.2 Implications for research

The three-factor ALSDS can be used in practice as a shortened version of the ALSDS. The three-factor ALSDS has been proven to be a valid and internally consistent and reliable scale for assessing adult learners' self-directedness in an ODeLHE context. However, the metric and scalar invariance of the scale should be investigated further. In particular, the factors 'active academic behaviour' and 'strategic resource utilisation' should be researched rigorously in order to improve their reliabilities and the overall reliability of the three-factor ALSDS. The factor 'success orientation for ODeLHE' produced two items with infit statistics indicating overfit; consequently, the factor 'success orientation for ODeLHE' should be refined further in order to reduce the redundancy in items highlighted by the overfit.

In addition, the differential item functioning assessment indicated problems for all three socio-biographical groups for the item 'how do you find the rigours of studying in and ODeL environment?', loading onto the factor 'success orientation for ODeLHE'. Problems were also identified for the items 'what do you do when you struggle to understand the work?' and 'what do you do when you struggle to understand what is required in an assignment question?', both loading onto the factor 'active academic behaviour'. The apparent difficulty experienced with the three items should be investigated in more depth in order to refine the scale and reduce any possibility of bias for diverse groups.

The tests for mean differences reported in this study, along with the low metric and scalar invariance indicate that the scale should be further investigated in order to improve the metric and scalar invariance and the usefulness of the scale across diverse gender, race and age groups. An assessment of differences between means of diverse groups cannot produce significant results until the metric and scalar invariance of the three-factor ALSDS are improved.

The assessment of the predictive value of the socio-biographical variables 'gender', 'access to a library' and 'mark for English' for the factors in the three-factor ALSDS, as well as for the overall scale, indicate that the variables that impact on adult learner self-directedness in the South African ODeLHE milieu should be investigated more fully. Furthermore, the concept of adult learner self-directedness in the African context should be explored in more detailed. The current study highlighted that possible significant differences exist between the accepted description of self-directedness in learning and the African conceptualisation of the notion.

In addition, since the results of the exploratory structural equation model (ESEM) discussed in section 5.1.1.2 also produced three factors, but with different items loading onto each factor, the factor structure produced by the ESEM should be investigated thoroughly in order to assess whether it

produced a valid and reliable measure for assessing adult learner self-directedness in ODeLHE contexts in South Africa.

5.8.6.3 Implications for practice

In practice, the three-factor ALSDS can provide useful information on the degree or level of self-directedness of adult learners in ODeLHE contexts. Since the scale currently includes only 15 items, it is sufficiently short to be administered to busy adults studying via ODeLHE while also working and fulfilling family responsibilities. Knowledge about the degree of self-directedness of adult learners could prove useful in the development and implementation of ODeLHE learning material and assessments that would inculcate adult learner self-directedness.

The significant differences in the means between the socio-biographical groups gender, race and age for the factor 'success orientation for ODeLHE' and the significant differences between the age groups for the factor 'active academic behaviour' indicate that participants from diverse gender race and age groups may have to be treated differently in the ODeLHE context, where a certain degree of self-directedness is assumed to be evident in the adult learners. However, the reported differences should currently be treated with caution until the scalar and metric invariance of the three-factor ALSDS has been improved.

The socio-biographical variables that predict adult learner self-directedness indicate that culture and adult learners' specific socio-economic circumstances, as well as proficiency in the language of instruction should all be considered carefully in the design and delivery of learning material and assessments, as well as in the provision of learner support. Overall, African learners, specifically female African learners should be given additional support to develop and nurture adult learner self-directedness.

5.9 CHAPTER SUMMARY

Chapter five provided evidence for empirical research aims 1 to 4 and research hypotheses 1 to 4.

Research aim 1: To assess the psychometric properties (factorial structure/construct validity and internal consistency reliability) of the ALSDS as a valid and reliable instrument for measuring adult learners' self-directedness in ODeLHE for diverse groups of adult learners. Overall, the statistical analyses provided evidence in support of research hypothesis H1: The ALSDS is a valid and reliable

instrument for measuring adult learners' self-directedness in ODeLHE for diverse groups of adult learners.

Research aim 2: To assess whether the factorial structure of the ALSDS is equivalent for diverse groups of adult learners as regards their gender, race and age. Overall, the statistical analyses provided partial evidence in support of research hypothesis H2: The factorial structure of the ALSDS is equivalent for diverse student socio-demographic groups (age, race and gender). Evidence in terms of construct equivalence was supported but not for metric invariance and scalar invariance.

Research aim 3: To assess whether the various socio-demographic groups differ significantly regarding the sub-scale dimensions of the ALSDS. Overall, the statistical analyses provided partial evidence in support of research hypothesis H3: The various demographic groups differ significantly regarding the sub-scale dimensions of the scale.

Research aim 4: To explore whether the various socio-demographic variables such as: employment status, occupation, socio-economic situation, being depended upon financially, access to a library, access to a computer, proficiency in English, number of modules for which the learner was enrolled and who was paying for the learner's studies significantly predict adult learner self-directedness in ODeLHE. Overall, the statistical analyses provided partial evidence in support of research hypothesis H4: The demographic variables significantly predict adult learner self-directedness.

In addition, the research results were discussed and the implications of the results for theory, research and practice were pointed out. In the next chapter, the last research aim will be addressed. Research aim 5: to formulate recommendations regarding the use of the ALSDS in both organisational HRD and ODeLHE teaching and learning practices, and furthermore to indicate what further research may evolve from the findings of the study are addressed.

CHAPTER 6 CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

This chapter addresses research aim 5, namely to formulate recommendations regarding the use of the ALSDS in both organisational HRD and ODeLHE teaching and learning practices. It also indicates the further research that may evolve from the findings of the study. The chapter commences with a discussion of the conclusions relating to the literature review and the empirical study. Next, the conclusions with regard to the research hypotheses are discussed, followed by conclusions related to the field of adult learning in human resource development and open distance and e-learning higher education practices. Next, the limitations of the literature review and empirical study are pointed out and recommendations are made for practice and future research. Lastly, the research study is evaluated.

6.1 CONCLUSIONS

This section highlights the conclusions based on the literature and empirical research according to the research aims, as outlined in Chapter 1.

6.1.1 Conclusions relating to the literature review

The general aims of this research study were to examine the literature on adult learning to conceptualise the concept of adult learning in the contemporary business environment, and to conceptualise adult learner self-directedness in the open distance and e-learning higher education (ODeLHE) context. The literature was reviewed in order to establish what constitutes self-directed learning for adults in the ODeLHE and workplace contexts, in order to investigate the psychometric properties (structural validity and internal consistency reliability) of the adult learner self-directedness scale (ALSDDS) (Botha, 2014). The ALSDDS was developed in the master's study (the first phase of a larger research project). The second phase (the doctoral study), focused on investigating the psychometric properties of the ALSDDS (Botha, 2014) in order to produce a valid and reliable scale for the assessment of adult learner self-directedness in the ODeLHE milieu. Furthermore, the research study aimed to assess whether the structure of the ALSDDS (Botha, 2014) was equivalent for gender, race and age groups; and lastly, to establish whether diverse socio-biographical factors predict the self-directedness of adult learners in an ODeLHE context.

Conclusions were drawn for each of the specific aims with regard to the multidimensional nature of adult learner self-directedness, and the implications of adult learner self-directedness for ODeLHE and the workplace learning milieu were explained.

The literature indicates that the hypercomplex, interconnected business environment requires of employees to possess global competencies, including a lifelong learning orientation and the capacity to agentically manage their own learning (Cascio & Boudreaux, 2016). In addition, tertiary institutions involved in ODeLHE are becoming increasingly aware of the significance of adult learner self-directedness in adult learner success, particularly in the ODeLHE context (Lin et al., 2016). However, in the African and South African milieus adult learners involved in ODeLHE face significant difficulties related to socio-economic, educational, and technological disadvantages (Mpofu, 2016). Based on the literature review, the following conclusions can be drawn on adult learning in the contemporary business environment:

6.1.1.1 Research aim 1: To conceptualise adult learning in the context of the contemporary business environment as discussed in the literature

- The contemporary business context is globally connected, hypercomplex and requires employees that are capable of managing their own learning and continued employability (Cascio & Boudreaux, 2016). The globalised, connected business context creates challenges concerning socio-cultural diversity, corporate social responsibility and a vulnerability to the ebbs and flows of the global economy. The interconnectedness of the global business world means that employment is not necessarily bound to a specific place. Furthermore, human capital has become a major source of a business organisation's competitive advantage (Cascio & Boudreaux, 2016).
- Africa is unable to compete effectively in the global economy because of social inequality, poverty, poor quality education, high rates of illiteracy and dependence on a largely agrarian and resource-based economy (World Economic Forum, 2015a). In addition, Africa is lagging behind in technological development, further limiting access to quality education and employment (World Economic Forum, 2015a).
- Despite the limited access to technology, access to ODeLHE could be the answer to Africa's poor competitiveness profile, (Adekanmbi, 2015; Atkins, et al., 2016). In order for Africa's population to gain from increased access to higher education, potential students and adult learners in workplace learning contexts need to cultivate certain competencies, such as self-directedness, that will facilitate higher education success and lifelong learning attitudes (Atkins, et al., 2016).

- South Africa is considered to be a technological hub on the African continent, but it still struggles to compete successfully in the global marketplace (World Economic Forum, 2015a). One of the reasons for South Africa's poor competitiveness profile is the poor uptake of post-secondary education opportunities. Socio-economic inequalities are partially to blame for the situation, but the changing student profile also plays a role.
- Pioneer students struggle with the acquisition and application of academic literacies and to access the social support necessary to be successful in higher education. Previously disadvantaged students feel alienated in academic institutions (Letseka & Pitsoe, 2014).
- A lack of sufficient graduates with the necessary competencies to find and maintain employment further exacerbates the situation (Coetzee & Esterhuizen, 2010; Kraak, 2013a). The specialised competencies required in a globalised labour market create barriers to entry for newly qualified inexperienced graduates. These obstacles amplify the rising rate of graduate unemployment (Baldry, 2016; Coetzee & Esterhuizen, 2010; Tshilongamulenzhe, 2012).
- The knowledge economy requires internal, almost invisible changes from employees and prospective employees. Historically, people were confronted with changes in work practices brought about by technology, and changes in the social order. Today, people are confronted with having to investigate and possibly adapt their perceptions about their own existence and how they can ensure their own future survival in a world constantly in flux. The capacities for metacognition and self-directed or agentic behaviour in these situations are crucial to personal development (Coetzee 2016).

6.1.1.2 Research aim 2: To conceptualise adult learner self-directedness in HRD initiatives in the workplace context as discussed in the literature

- In order for employees and prospective employees to take charge of their own learning and careers, they should be self-directed learners (James, et al., 2013). Furthermore, HRD professionals should create learning contexts and learning experiences that inculcate individual agency and self-directedness (Yorks & Barto, 2015).
- Restricted access to technology may disadvantage already disadvantaged individuals, consequently the provision of continued learning in the workplace context is vital.
- HRD professionals need to build their knowledge about adult learner self-directedness. Since South Africa has a historically disadvantaged population who struggle with access to technology, it is imperative for business organisations to know more about adult learner self-

directedness in order to put measures in place to inculcate self-directedness in their employees (Yorks & Barto, 2015).

- Adult learning occurs in diverse settings and usually continues throughout life, sometimes unconsciously and sometimes in a planned and/or formal fashion (Brammoh, 2010). However, it would be a mistake to assume that all adults wish to adopt an attitude of continued learning (Billett, 2010). On the other hand, from the individual learner's perspective, adult learning is an act of hope and an investment in a potentially better future (Kasworm, 2008).
- According to adult learning principles, learning should be personally meaningful, lead to personal development and take into account that individuals possess multiple worldviews; consequently, knowledge is not cast in stone.
- In order to inculcate individual agency and self-directedness, adult learners should be given more personal control of their learning as they progress on their learning journey. Such an approach will inculcate metacognition, self-regulation and eventually critical thinking capacity (Anderson, et al., 2014).
- Diverse variables affect individual capacity to be successful in adult learning. The variables include cultural context, socio-economic influences, time management, gender, race, proficiency in the language of instruction and individual differences in learning experiences and learning competencies (Akala & Divala, 2016; Daniels & Damons, 2011; Desai, 2016; Geduld, 2016; Ntseane, 2011).
- The global business environment is challenging. Africa as a whole and South Africa in particular are struggling to compete effectively in the global business context. Employees in a business milieu that is constantly in flux should possess capacities such as self-directedness, meta-cognition, individual agency and meta-cognition.
- The socio-economic, educational and technological disadvantages faced by many previously disadvantaged employees and prospective employees in South Africa requires a thorough investigation into the socio-biographical variables that affect adult learning.
- HRD professionals should be conversant with the difficulties faced by previously disadvantaged adult learners in the workplace and adult education milieus in order to provide a context where individual agency can be inculcated.

6.1.1.3 Research aim 3: Conceptualise adult learner self-directedness in an ODeLHE context as discussed in the literature

- Self-directed lifelong learning is a vital competence in modern-day adult learners (Alghamdi, 2016). Adult learner self-directedness is the capacity of individual learners to manage their learning experiences by developing and implementing learning goals and strategies, and reflecting on the success of those learning strategies in both tertiary education and workplace learning contexts (Firat, et al., 2016; Knowles, 1975; McCray, 2016).
- Despite the descriptions usually provided in the research literature, the concept of adult learner self-directedness is multi-faceted, difficult to describe accurately and hard to assess (Du Toit-Brits & Van Zyl, 2017a). Various models have been put forward to explain adult learner self-directedness, representing the concept from the perspective of learning context, learner behaviour or learning characteristics (Firat, et al., 2016).
- The models available focus mainly on learners in residential tertiary education institutions. In addition, the models are based on Western and Eastern notions of individual agency.
- A variety of scales is available for assessing adult learner self-directedness. However, the scales usually focus on tertiary education learners in a Western or Eastern context, and do not take the rigours and challenges of ODeLHE into account (Botha, 2014).
- Various socio-cultural and individual variables influence adult learners' success in learning and may influence adult learner self-directedness (Alghamdi, 2016; Botha & Coetzee, 2016; Boudreaux & Schoenack, 2016; Papageorgiou, 2017). In addition, adult learners in ODeLHE face a multitude of challenges that complicate their learning journey (Alghamdi, 2016).
- Given that socio-cultural aspects may influence adult learner self-directedness, models and measurement instruments developed in and for Western and Eastern cultural contexts may not be suitable for use in the African context, where the perspective on individual agency may vary from those provided in the research literature (Mpofu, 2016).
- Only two scales for the assessment of self-directedness have been developed in and for South Africa, namely the student self-directed learning questionnaire (SSDL) (De Bruin, 2008), which was developed and used for assessing the self-directedness of students at a residential university. The sample on which the SSDL (De Bruin, 2008) was used, and the fact that it was developed for and implemented in a residential tertiary institution raised concerns about the effectiveness of its application in the complex ODeLHE context for older adults (Botha, 2014). In addition, the learner self-directedness in the workplace scale (LSWS) was developed for use in workplace learning contexts and was unsuitable for the current research study (Botha, 2014).

6.1.1.4 Research aim 4: To conceptualise the implications of the measurement of adult learner self-directedness for human resource development in the workplace and tertiary ODeL teaching practices

- Since most of the adult tertiary education learners in South Africa depend on ODeL to advance their education, it is imperative to develop a valid and reliable measurement instrument to assess adult learner self-directedness in the ODeLHE context (Botha & Coetzee, 2016).
- The following four elements of learner self-directedness are accentuated in the reported research: personal inclination (such as motivation and self-efficacy), individual agency (including self-regulation), learning context and learner learning practices (Alghamdi, 2016).
- Existing scales are usually developed for use in residential tertiary institutions, and from a Western perspective of learning, self-directedness and individual agency. It is possible that the complexity of ODeLHE requires a scale developed specifically for use in ODeLHE contexts. In addition, since cultural and socio-biographic factors affect adult learner success, it is possible that culture and socio-economic situation also affect adult learner self-directedness.
- The ALSDS (Botha, 2014) was developed specifically for the diverse South African ODeLHE milieu. Furthermore, the scale strives to include all the dimensions of adult learner self-directedness that have been investigated and reported in research, namely personal inclination, individual agency, learning context and learning practices. The all-inclusive approach used in the development of the ALSDS aims to provide an instrument for the holistic assessment of adult learner self-directedness in South African ODeLHE. The ALSDS (Botha, 2014) indicated that adult learner self-directedness consisted of the following four factors, namely strategic utilisation of officially provided resources, engaged academic activity, success orientation for ODeL, and academic motivation.
- The capacity to assess adult learner self-directedness in ODeLHE contexts can provide information for the development of adult learning opportunities in ODeLHE and workplace environments (Botha, et al., 2015).
- The identification of the significance of variables that have been classified as obstacles to learning in predicting adult learner self-directedness indicate that the concept of adult learner self-directedness is complex and that various factors both in the learning environment and the learners' life worlds influence individual capacity for self-directed learning.

6.1.2 Conclusions relating to the empirical study

The empirical aim of this research study was to achieve the following five research aims:

- To assess the psychometric properties (factorial structure/construct validity and internal consistency reliability) of the ALSDS as a valid and reliable instrument for measuring adult learner self-directedness in ODeLHE for diverse groups of adult learners. This research aim tested research hypothesis H1.
- To assess whether the factorial structure of the ALSDS is equivalent for diverse groups of adult learners as regards their gender, race and age. This research aim tested research hypothesis H2.
- To assess whether the various socio-demographic groups differ significantly regarding the sub-scale dimensions of the ALSDS. This research aim tested research hypothesis H3.
- To explore whether the various socio-demographic variables such as employment status, occupation, socio-economic situation, being depended upon financially, access to a library, access to a computer, proficiency in English, number of modules for which the learner was enrolled and who was funding the learner's studies significantly predict adult learner self-directedness in ODeLHE. This research aim tested research hypothesis H4.
- To formulate recommendations regarding the use of the ALSDS in both organisational HRD and ODeLHE teaching and learning practices, and furthermore to indicate what further research may evolve from the findings of the study.

6.1.2.1 Research aim 1: To assess the psychometric properties (factorial structure/construct validity and internal consistency reliability) of the ALSDS as a valid and reliable instrument for measuring adult learner self-directedness in ODeLHE for diverse groups of adult learners

Conclusions: The construct (convergent and discriminant) validity of the ALSDS was supported by the research findings. Nevertheless, because of the low values of the AVEs, it appears that advanced scale item refinement would be necessary in future scale validation research studies.

6.1.2.2 Research aim 2: To assess whether the factorial structure of the ALSDS is equivalent for diverse groups of adult learners as regards their gender, race and age

Conclusions: Overall, the construct equivalence for the three-factor ALSDS was acceptable for the gender, race and age groups. However, the absence of acceptable scalar and metric invariance for the three socio-biographical groups indicate that further research and refinement are necessary.

6.1.2.3 Research aim 3: To assess whether the various socio-demographic groups differ significantly regarding the sub-scale dimensions of the ALSDS

Conclusions: Males appear to have strongly developed success orientation for ODeLHE, while the white and Indian participants seem to have significantly higher levels of success orientation for ODeLHE than African adult learners do. Adult learners over 50 possess notably higher levels of success orientation for ODeLHE compared to younger adult learners. In addition, Indian participants seem to practice strategic resource utilisation more effectively than the white and black (African) groups. However, because of the low metric and scalar invariance of the ALSDS, the results should be interpreted with caution.

6.1.2.4 Research aim 4: To explore whether the various socio-demographic variables such as employment status, occupation, socio-economic situation, being depended upon financially, access to a library, access to a computer, proficiency in English, number of modules for which the learner was enrolled, and who is paying for the learner's studies

Conclusions: Gender and mark for English are important factors to consider in enhancing adult learners' success orientation for ODeLHE, particularly in the design of learning material. Furthermore, the capacity of adult learners to comprehend the learning material for assimilation and application in their learning and work contexts should be considered carefully in learning material and assessment design and implementation. Access to a library, number of modules and whom the student supports financially are important in active agentic engagement in the learning material, while gender and access to a library are important in overall adult learner self-directedness. Clearly, adult learners in ODeLHE's socio-economic and personal circumstances affect their capacity for self-directedness in learning and careful consideration should be given to learner characteristics in learning material development and to the provision of learner support.

6.1.3 Conclusions relating to the research hypotheses

The conclusions relating to the research hypotheses are summarised in Table 6.1.

Table 6.1

The Conclusions Relating to the Research Hypotheses

Hypothesis	Conclusion
H1: The ALSDS is a valid and reliable instrument for measuring adult learners' self-directedness in ODeLHE for diverse groups of adult learners.	Overall, the statistical analyses provided evidence in support of research hypothesis H1.
H2: The factorial structure of the ALSDS is equivalent for diverse student socio-demographic groups (age, race and gender).	Overall, the statistical analyses provided partial evidence in support of research hypothesis H2. Evidence in terms of construct equivalence was supported but not for metric invariance and scalar invariance.
H3: The various demographic groups differ significantly regarding the sub-scale dimensions of the scale.	Overall, the statistical analyses provided partial evidence in support of research hypothesis H3.
H4: The demographic variables significantly predict adult learner self-directedness.	Overall, the statistical analyses provided partial evidence in support of research hypothesis H4.

6.2 LIMITATIONS

The limitations of the literature review and empirical study of this research project are discussed in the following sections.

6.2.1 Limitations of the literature review

The research on the validity and multigroup equivalence of the adult learner self-directedness scale in the South African ODeLHE context was limited by the following aspects:

- The absence of a scale to assess adult learner self-directedness in the South African ODeLHE context and the paucity of research on adult learner self-directedness in South African tertiary education and workplace learning contexts limited the information available for investigation.
- The context of the research was adult learner self-directedness in the South African ODeLHE and workplace learning contexts. The paradigmatic perspective of the research was limited to the interpretation of the findings within the boundaries of adult learning in ODeLHE and workplace learning milieus.

- The development of the ALSDS was limited to the assumed behaviours of adult learners in an ODeLHE milieu, as indicators of the underlying construct of adult learner self-directedness. The assumed behaviours isolated self-efficacy beliefs, utilisation of the learning material provided and agentic behaviours.
- The development of the ALSDS was based on the humanistic-educational perspective within the disciplinary boundary of business management. Future research could consider identifying constructs from other disciplinary stances and examine patterns of constructs that emerge.

6.2.2 Limitations of the empirical study

The findings of the empirical study were limited by the following:

- The cross-sectional nature of the study and the self-report data gathering method limit the findings of the research study to the sample that was used. Further research involving different population groups in various educational and occupational settings will be required before generalisations can be made to the broader population.
- The research data were secondary data used for an earlier phase of a bigger research project to develop a scale to assess adult learner self-directedness in ODeLHE milieus, which limits the generalisability of the findings to other learning contexts.
- The sub-group variables were limited to gender, race and age. Although the sample size ($n = 747$) was sufficiently big to analyse the validity, reliability and multigroup equivalence of the ALSDS, the sample was limited to adult learners in an ODeLHE learning milieu. A sample including adult learners from other educational institutions and workplace learning contexts could have facilitated more meaningful intergroup comparisons.
- The research findings in general indicated that the ALSDS provided useful information, and was answered in a similar way by all respondents. However, some of the items on the scale indicated overfit, which points to redundancy in the scale. Consequently, the ALSDS scale items should be investigated in further detail in order to reduce redundancy.
- The multigroup equivalence of the scale (metric and scalar invariance) was not sufficiently established, making useful comparisons between diverse groups difficult. Future cross-validation research should investigate ways to improve the metric and scalar invariance of the ALSDS.

- When the metric and scalar invariance of the ALSDS has been established, further investigation should probe significant mean differences between the gender, race and age groups.
- The predictive capacity of socio-demographic variables on adult learner self-directedness in South Africa should be investigated in more depth once the metric and scalar invariance of the scale have been improved.
- The CFA confirmed that the theoretical model underpinning the scale corresponds with the observed data. Nevertheless, future cross-validation studies should investigate the validity and reliability of the ALSDS compared to other assessment instruments that measure adult learner self-directedness. Future research should focus on improving the model fit of the theoretical model that forms the foundation of the ALSDS.
- The study was based on a sample taken in 2011. In order to ensure that technical advances in educational technologies are addressed, future studies should take technological advances in ODeLHE into account.

6.3 RECOMMENDATIONS

This section addresses research aim 5, namely to formulate recommendations regarding the use of the ALSDS in both organisational HRD and ODeLHE teaching and learning practices, and furthermore to indicate what further research may evolve from the findings of the study.

The assessment of adult learner self-directedness in ODeLHE and workplace learning contexts is essential in the South African milieu. Historically, socio-economic circumstances have an adverse effect on adult learners in ODeLHE milieus (Mpofu, 2016). The historically adverse effect restricts adult learners' access to quality employment that can assist in the improvement of their socio-economic situation.

The research study found notable differences between gender, race and age groups as regards the ALSDS and its sub-dimensions. In addition, gender and access to a library predict adult learner self-directedness in the South African ODeLHE environment. Although the ALSDS is a valid scale for assessing adult learner self-directedness in South African ODeLHE, the lack of metric and scalar invariance requires further investigation in order to make meaningful comparisons between diverse groups.

6.3.1 Recommendations for the field of adult learning in human resource development

The following recommendations are made for workplace learning design and implementation:

- Careful consideration should be given before providing online or e-learning workplace learning opportunities in order to ensure that low-skilled employees are not further disadvantaged by poor access to technology and poorly developed technological competence.
- Socio-biographic variables such as access to a library, financial dependents, competence in the language of learning (and business) and gender influence adult learner self-directedness. Learners' personal circumstances and learner characteristics should form a central part in learning material and assessment design.
- It appears that African females and African learners overall need more support in learning situations to develop the capacity for self-directed learning, particularly to develop success orientation for ODeLHE. The provision of meaningful self-reflective and self-assessment activities, with supportive and informative feedback on the latter, contribute to the development of self-directedness (Ainscough, et al., 2017).
- In addition, learner self-efficacy can be inculcated by providing increasingly difficult learning tasks, supported with encouragement and timely and appropriate feedback.
- Cultural aspects are important in the planning of learning activities. Since the data indicated that African adult learners in ODeLHE tend to register for more programmes or modules than they can easily manage, assistance with planning for formal education opportunities in the workplace is a vital form of learner support.
- The planning of study time is a complex cognitive exercise, since it involves not only the capacity to realise that adequate study time should be planned for, but also the self-knowledge to be realistic about individual competence levels (Ainscough, et al. 2017). Consequently, adult learners should be guided in the planning for study time and receive adequate feedback to indicate whether they have mastered learning materials sufficiently to progress to more advanced levels or more difficult material.
- The study highlighted three components that comprise adult learner self-directedness, namely success orientation for ODeLHE, active academic behaviour and strategic resource utilisation. Success orientation for ODeLHE provides information on adult learners' self-belief and confidence in their capacity to be successful in ODeLHE. Active academic behaviour provides information on adult learners' pro-active and agentic engagement with the learning context and strategic resource utilisation provides information on how and why learners use the academic resources provided for them. In practical terms, when African adult learners are

provided with learning opportunities that involve ODeLHE contexts, learner support should be provided at the workplace in order to facilitate academic success.

- In practical terms, for workplace learning contexts, care should be taken to ensure that African adult learners, particularly female learners, receive the relevant support for workplace learning (for example by providing mentoring programmes that include the inculcation of the three components of adult learner self-directedness.)
- The principles of adult learning should prevail in the design and delivery of workplace learning experiences and employees should be given the opportunity to take increasing responsibility for their own learning.
- Learning environment where adults can feel safe to learn and experiment should be created in a workplace-learning context.
- Where informal workplace learning is concerned, the adoption of a workplace culture that allows individuals to learn from mistakes is beneficial to the development of self-efficacy and subsequent self-directedness capacity in adult learners.
- The official or unofficial mentoring of adult learners by employees who are self-directed in their learning will provide examples of the required attitudes and behaviours to inculcate adult learner self-directedness.
- The learning context should be more comprehensive and include access to a library and instruction in how to utilise learning material meaningfully and effectively in order to inculcate and nurture adult learner self-directedness.

6.3.2 Recommendations for the field of adult learning in ODeLHE teaching practices

The following recommendations are made for ODeLHE teaching and assessment practices:

- It seems that gender predicts adult learner self-directedness in the ODeLHE context; consequently, particular attention should be paid to the pro-active design of learning material and assessments for adult learners to include the inculcation of adult learner self-directedness in the learning experience.
- Overall, the black (African) learners seem to struggle with adult learner self-directedness. Since ODeLHE is for many students the only access to a tertiary education, the nurturing of adult learner self-directedness is vital to ensure learner success. African learners require additional support in order to cultivate all the elements of adult learner self-directedness.
- Adult learner self-directedness should be inculcated in ODeLHE contexts by giving adult learners increasing control over their learning journey, for example by providing a range of

academic resources to be consulted in order to complete an assessment, instead of a limited number of sources.

- Self-efficacy, which is a significant dimension of adult learner self-directedness, should be nurtured by giving students increasingly more difficult tuition and assessment tasks to complete. According to self-determination theory, it is possible to cultivate self-efficacy by providing adult learners with challenging, yet achievable learning activities and assessments. In addition, the provision of personalised and motivational feedback on academic activities play a role in the development of self-efficacy beliefs in learning (Deci, et al., 2017).
- The inclusion of meaningful self-reflective and self-assessment activities in learning material, augmented by appropriate support and informative feedback, contribute to the cultivation of self-efficacy (success orientation for ODeLHE) (Ainscough, et al. 2017).
- Atkinson (2017) is of the opinion that the learning context of adult learning can influence the academic confidence of adult learners. Since gender and competence in the language of instruction influences success orientation for ODeLHE, careful planning and design of learning material and assessments are required.
- According to adult learning principles, adults learn best when they feel safe, when they have some control of their learning and when the learning content is linked with their lived experiences (learning context). Consequently, the learning milieu of adult learners should be carefully designed to create a safe learning environment for the nurturing of success orientation and thus adult learner self-directedness (Abraham & Komattil, 2017).
- Adult learner self-directedness grows over time, consequently an entire programme offered by an ODeLHE institution should be designed to inculcate and support the three components of adult learner self-directedness in ODeLHE in South Africa.
- Socio-demographic factors such as access to libraries, capacity to understand and learn in English which is the language of instruction, the number of modules for which a learner registers and the number of people who depend financially upon an adult learner in ODeLHE clearly affect the learners' capacity for self-directed learning. Attention should be paid to learner characteristics and learners' personal circumstances in the design and implementation of learning materials and assessments, and in learner support.
- The current study highlighted three important factors that comprise adult learner self-directedness in ODeLHE in South Africa, namely success orientation for ODeLHE, active academic behaviour and strategic resource utilisation.
- Success orientation for ODeLHE is a vital component of adult learner self-directedness, indicating adult learners' belief in their capacity to be successful in ODeLHE. The design of learning material, assessments and feedback that include self-reflective and self-assessment

activities, as well as increasingly difficult learning activities supported by timely, informative and meaningful feedback and support contribute to the inculcation of success orientation for ODeLHE.

- Active academic activity focuses on the agentic learning behaviours of adult learners that facilitate their success in ODeLHE. Active academic activity influences adult learner success and can be nurtured through a supportive and empowering learning environment where learners are given increasing control over their learning activities.
- Strategic resource utilisation is concerned with when and how adult learners use the resources provided by the ODeLHE institution in their learning. Strategic resource utilisation is an active driver of success, since the resources provide the learning context within which the adult learners acquire the necessary academic knowledge and competence to function effectively in the ODeLHE learning context and eventually the workplace. Adult learners should be guided in how to use the learning material to interpret, assimilate and apply new knowledge in order to achieve success. Learner support should include prompts to use the official learning material and information on how to use the official learning material effectively.
- Since access to a library, number of modules and who depends financially on the student are important in active agentic engagement in the learning material, learners' personal circumstances should be considered carefully when planning and implementing learning material and assessments and providing support.
- Adult learners should be guided in their choice of qualification and number of courses (modules) for which they register in order to ensure that the academic workload is manageable within the context of personal circumstances.
- Linking the content of learning material and assessment activities with adult learners' life experiences will assist in effective engagement with learning material.
- Furthermore, timely, supportive and informative feedback on learning and assessment activities will contribute to the inculcation and nurturing of adult learner self-directedness (Skipper & Leman, 2017).
- The capacity of critical thinking should be developed through the learning material and assessments. Comparisons between opposing opinions or critique of current information should be encouraged in the learning material and assessment, followed by meaningful feedback that contribute to learning.
- Reflective activities that guide adult learners to think critically about what and how they learn are significant components of a learning milieu that nurtures adult learner self-directedness.
- Learning self-directedness includes the capacity to be pro-active in the planning and implementation of learning. Adult learners in ODeLHE should be given the responsibility of

planning their own workload and study commitments. In order to achieve this aim, adult learners should be supplied with as much information as possible on their chosen field of study, the options available and the time required to complete the various components of the learning course.

- Early prompts to adult learners who are not coping with their academic workload and additional support should be considered.
- An integrated approach towards learning material and assessment design and implementation is essential for the inculcation of adult learner self-directedness. Each component of a learning programme should support the nurturing of adult learner self-directedness in order to facilitate success (Asino, Giacumo & Chen, 2017).
- In South Africa, individuals from poor socio-economic circumstances have poorer access to technology and academic libraries (Mpofo, 2016), which should be taken into account in the development and implementation of learning material.
- Younger adult learners appear to need additional support in the development of the capacity for self-directedness. Mentoring programmes can be used fruitfully in this regard.
- African adult learners, particularly female learners should be supported in ways that assist the inculcation of self-directedness, particularly in the development of self-belief and self-confidence in ODeLHE learning contexts.

6.3.3 Recommendations for future research

In this section, recommendations for future research on adult learner self-directedness are put forward.

- In order to improve the reliability of the ALSDS, further rigorous research into the metric and scalar invariance of the scale is necessary. In addition, cross-validation studies are needed to improve the generalisability of the scale to other learning contexts and populations.
- The theoretical underpinning of the ALSDS should be investigated in order to ensure that it provides a comprehensive assessment of adult learner self-directedness in ODeLHE contexts.
- The variables that affect and predict adult learner self-directedness in South African ODeLHE should be thoroughly investigated in order to expand the body of knowledge on adult learner self-directedness in South Africa and inform ODeLHE and workplace learning and assessment practices.

- Longitudinal studies to assess the growth of self-directedness in adult learners over time should be investigated thoroughly, as well as the effect of specific interventions through learning material and assessment on adult learner self-directedness over time.
- Studies on the predictive validity of other scales on adult learner self-directedness in adult learning contexts, and the adult learner characteristics and socio-demographic factors that predict adult learner self-directedness should be researched in order to build a strong body of knowledge on adult learner self-directedness in South African adult learning milieus- both in workplace learning and in ODeLHE contexts.

6.4 EVALUATION OF THE STUDY

This study focused on investigating the psychometric properties of the ALSDS from a humanist-educational perspective. Adult learner self-directedness was investigated within a multidimensional frame of reference, encompassing adult learning in both the ODeLHE and workplace learning milieu. The dimensions of adult learner self-directedness that were explored are the following: the learning context, learner affect, learner interaction with the learning material, and learner agency. In addition, the ALSDS was assessed for factorial invariance, construct equivalence, metric and scalar invariance. The research results indicated that adult learner self-directedness could be assessed in a valid manner; however, the reliability of the scale needs further investigation.

The research findings further indicated the existence of significant differences between the gender, race and age groups that participated in the study. In addition, the research findings showed that the socio-demographic variables of age and access to a library predict adult learner self-directedness. Gender and mark for English predict success orientation for ODeLHE, while access to a library, number of modules and who the learner supports financially are significant predictors of adult learner self-directedness. The socio-demographic variables should be kept in mind in the development of learning materials and assessments, as well as in the implementation of learner support programmes.

Overall, it appears that African learners, and particularly African women, should receive specialised or personalised support in their ODeLHE learning activities in order to grow academic self-directedness. Furthermore, younger adult learners appear to need more assistance for the development of self-directedness than older adult learners do.

6.4.1 Value added at a theoretical level

The literature review explored adult learning and adult learner self-directedness in both the ODeLHE and workplace learning contexts. The existing models of adult learner self-directedness and the scales that are used to assess adult learner self-directedness were critically evaluated to determine their relevance to the South African workplace and ODeLHE learning environments. The literature review indicated a severe lack of research in South Africa in the field of adult learner self-directedness in workplace learning and ODeLHE. A model that can be used to explain adult learner self-directedness in the ODeLHE context in South Africa was discussed. The model has added new insight into the field of adult learning in South Africa.

Furthermore, the ALSDS, which assesses adult learner self-directedness in the South African ODeLHE context, was rigorously investigated in order to establish the validity and multi-group equivalence of the scale. The ALSDS is the first instrument developed specifically for the South African ODeLHE milieu, thus contributing a new scale that can be assessed for application in practice. The study indicated that adult learner self-directedness in South African ODeLHE contexts comprise success orientation for ODeLHE, active academic behaviour and strategic resource utilisation.

Success orientation, which focuses on adult learners' self-belief and academic self-confidence in their capacity to achieve academic success, was identified as the strongest factor. Gender and mark for English predict adult learner self-directedness, indicating that gender and capacity in the language of instruction are essential in developing self-efficacy beliefs and academic self-confidence. Active academic behaviour is about the adult learners' agentic and pro-active management of learning opportunities. Adult learners' access to a library, the number of modules for which they register and whom they support financially explain active academic behaviour. Strategic resource utilisation focuses on how the adult learners use the resources provided and consequently interact with the learning context. In addition, the study indicated that gender, race and age affect adult learner self-directedness.

Overall, African adult learners, and specifically African female learners and young adults need to cultivate adult learner self-directedness in order to facilitate academic success. Furthermore, the study highlighted that specific attention should be paid to the socio-economic and cultural circumstances of adult learners in order to develop learning material that enhance success orientation, facilitate active academic behaviour and support the effective use of officially provided learning resources. In addition, in the workplace context and in ODeLHE environments, adult learners should be advised and guided to plan carefully for learning experiences in order to ensure that they have sufficient time available to invest in their learning endeavours.

The study contributed insights into the composition of adult learner self-directedness in ODeLHE contexts in South Africa. In addition, the study indicated that cultural and socio-demographic factors play a significant role in adult learner self-directedness in ODeLHE. Further studies should provide additional insights into the factors that affect adult learner self-directedness in South Africa.

6.4.2 Value added at an empirical level

The doctoral study utilised advanced statistical techniques to rigorously assess the psychometric properties of the ALSDS. The study provided empirical evidence of a three-factor structure that can provide useful (reliable) information in a valid manner on the self-directedness of adult learners in the South African ODeLHE context. In addition, the research findings indicate that significant differences exist between various gender, race and age groups on the construct of adult learner self-directedness. The empirical study highlighted core socio-demographic variables that may influence adult learners' self-directedness in the ODeLHE context. The empirical study further highlighted psychometric concerns such as lack of metric and scalar invariance that should be considered when interpreting comparisons between biographical groups. Recommendations for future research were made.

6.4.3 Value added at a practical level

At a practical level, the ALSDS contributes to the field of adult learning in HRD and ODeLHE by providing a scale for assessing adult learner self-directedness in ODeLHE contexts. The three-factor structure provided a refined shorter version of the original ALSDS. A shorter more refined scale may be more cost-effective to use because it addresses the three core factors of self-directedness that were identified in this study.

Practically, ODeLHE teaching and assessment practices should consider socio-demographic variables in the design and implementation of learning material and assessment. In particular, the adult learners' mark for English received at school (indicating existing capacity in the language of instruction), access to a library, number of modules and who the student supports financially are of importance in learning material and assessment design and implementation. In addition, thought should be given to the mentioned socio-demographic variables in the in learning design and delivery, as well as in the provision of learner support. Furthermore, African students in general and adult female African learners need additional support in order to facilitate the development and nurturing of adult learner self-directedness. In general, adult learners' personal circumstances and learner

characteristics should be considered carefully in the design and delivery of learning material and assessment activities.

In conclusion, it is anticipated that the findings of the research study will provide a starting point towards a better comprehension of adult learner self-directedness in ODeLHE through the assessment of adult learner self-directedness. I hope that academics involved in the tuition and assessment of adult learners in ODeLHE milieus and HRD professionals in workplace learning contexts will be able to utilise the new knowledge and insights in the planning and implementation of learning programmes offered to adult learners.

6.4.4 Reflection on doctorateness

Enrolling for a doctorate qualification is the start of a challenging learning journey into the unknown. Tertiary education at undergraduate level exposes a learner to learning practices that are roughly similar to those endured in the primary and secondary education contexts. A master's degree exposes a learner to the concepts and processes involved in research. On the other hand, the process of researching and completing a doctorate degree exposes a learner to concepts that may be unfamiliar and, if not unfamiliar, at the very least daunting. A doctorate candidate does not only have to prove the capacity to do research at an advanced level, but must also provide proof of critical and innovative thinking.

One can almost say that involvement in doctoral studies is an evolutionary progression from dependent thinker to (hopefully) independent thinker. For the researcher, the journey through the doctoral qualification was an active learning experience that was transformative in nature. The journey involved the study of theoretical concepts, followed by the thorough investigation of those concepts through the empirical study in order to produce original thoughts and suggestions on a topic that is not only personally meaningful but also of national significance in South Africa. The transformative nature of the learning journey lies in the change of cognition on adult learner self-directedness that this research study produced. Furthermore, the cognitive growth involved in the development and refinement of the ALSDS from the master's to the doctoral study as regards the items that were excluded and the implication of those items for the conceptualisation of adult learner self-directedness was significant. In addition, the involvement in only a part of the research that encompasses scale development was both a challenge and a triumph. The challenge was to master the processes involved in assessing the suitability of a scale and the interpretation of the statistical analyses in order to come to appropriate conclusions and make meaningful suggestions for practice. The triumph lay

in being able to make suggestions that can be applied in practice and the realisation that learning by doing (as regards the interpretation of statistical analyses) is and always will be the best way to learn.

Since South Africa is a culturally diverse country, with specific socio-demographic challenges, the notion of what constitutes adult learner self-directedness may differ from the ideas previously held by the researcher. The idea that the research reported in Euro-centric cultures can be transferred unchanged into the South African (and possibly African) context was challenged and produced a host of questions for the researcher about personal opinions on adult learners in ODeLHE and their self-directedness.

Affectively, the completion of the doctorate developed the learner's own success orientation for ODeLHE and opened the door to further growth and development. Since the researcher has been an ODeLHE learner for a significant part of her adult life, the development and initial assessment of the ALSDS is a personal achievement that is bested only by being a parent. The completion of such a challenging learning venture is similar to the climbing of a mountain, although most of the effort is cognitive and self-reflective in nature, instead of physical. Indeed, the researcher has proudly conquered a personal Kilimanjaro.

6.5 CHAPTER SUMMARY

In Chapter 6, the research aim, namely to formulate recommendations regarding the use of the ALSDS in both organisational HRD and ODeLHE teaching and learning practices, and furthermore to indicate what further research may evolve from the findings of the study were addressed.

The conclusions and limitations of the research study were explained and recommendations were made for adult learning practice and future research on adult learner self-directedness in South Africa. The limitations of the theoretical and empirical study were explained and the research study was evaluated on a theoretical, empirical and practical level. The validity of the ALSDS as a measure of adult learner self-directedness in ODeLHE contexts was explained, and the problematic reliability of the scale was highlighted and recommendations were made for future research to improve the reliability of the scale. In addition, it was pointed out that the research indicated the existence of differences in self-directedness between the gender, race and age groups of the sample. Lastly, the predictive capacity of five socio-biographical variables for adult learner self-directedness was noted. To conclude, the contribution of the research for theoretical, empirical and practical purposes was indicated.

This concludes the research project.

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APPENDIX A

ETHICS CLEARANCE CERTIFICATES FOR THE STUDY

COLLEGE OF ECONOMIC AND MANAGEMENT SCIENCES
RESEARCH ETHICS REVIEW COMMITTEE

18th April 2016

Ref #: 2016_HRM_001

Name of applicant: Jo-Anne Botha

Student number #: 07722168

Dear Ms Jo-Anne Botha

Decision: Ethics Approval

Name: Jo-Anne Botha, bothaj1@unisa.ac.za, 074 215 9868

Proposal: Validation the Adult Learner Self-Directedness Scale

Qualification: DCOM Degree

Thank you for the application for research ethics clearance to the Research Ethics Review Committee of the Department of Human Resource Management. Your application was referred to the particular committee to the Research ethics Review Committee of the College of Economic and Management Sciences Research Ethics Review Committee for review and a decision. After your application has been reviewed and thoroughly discussed by the latter committee, final approval is granted from **13th April 2016 to 12 April 2018**.

For full approval: The revised application was reviewed in compliance with the Unisa Policy on Research Ethics by the CRERC on 13TH APRIL 2016.

The proposed research may now commence with the proviso that:

- 1) The researcher/s will ensure that the research project adheres to the values and*



principles expressed in the UNISA Policy on Research Ethics.

- 2) *Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study, as well as changes in the methodology, should be communicated in writing to the CRERC.*
- 3) *An amended application could be requested if there are substantial changes from the existing proposal, especially if those changes affect any of the study-related risks for the research participants.*
- 4) *The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study.*

Note:

The reference number **2016_HRM_001** should be clearly indicated on all forms of communication [e.g. Webmail, E-mail messages, letters] with the intended research participants, as well as with the CRERC.

Kind regards,



Prof JS Wessels

Chairperson of the CRERC, CEMS, UNISA
012 429-6099 or wessejs@unisa.ac.za



Prof M.T. Mogale

Executive Dean: CEMS
mogalmt@unisa.ac.za



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RESEARCH PERMISSION SUB-COMMITTEE OF SRIPDC

7 July 2016

Dear Ms. Jo-Anne Botha,

**Decision: Research Permission
Approval from July 2016 until 31
December 2018.**

Ref #: 2016_RPSC_036

Ms. Jo-Anne Botha

Student #: 07722168

Staff #: 90053818

Principal Investigator:

Ms. Jo-Anne Botha

Department of Human Resource Management

School of Management Sciences

College of Economic and Management Sciences

UNISA

Bothaj1@unisa.ac.za, (012) 429-4318/ 074 215 9868

Supervisor: Prof Melinde Coetzee

Coetzm1@unisa.ac.za, (012) 429-8204/ 083 500 8621

A study titled: "Validation of the Adult Learner Self-Directedness Scale."

Your application regarding permission to conduct research involving UNISA employees and data in respect of the above study has been received and was considered by the Research Permission Subcommittee (RPSC) of the UNISA Senate Research and Innovation and Postgraduate Degrees Committee (SRIPDC) on 30 June 2016.

It is my pleasure to inform you that permission has been granted for the study. You may gain access to and use in your study the aggregate secondary data on the undergraduate adult students registered at the College of Economic and Management Sciences (CEMS).

You are requested to submit a report of the study to the Research Permission Subcommittee (RPSC@unisa.ac.za) within 12 months of completion of the study.

The personal information made available to the researcher(s)/gatekeeper(s) will only be used for the advancement of this research project as indicated and for the purpose as described in



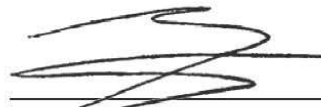
this permission letter. The researcher(s)/gatekeeper(s) must take all appropriate precautionary measures to protect the personal information given to him/her/them in good faith and it must not be passed on to third parties.

Note:

The reference number 2016_RPSC_036 should be clearly indicated on all forms of communication with the intended research participants and the Research Permission Subcommittee.

We would like to wish you well in your research undertaking.

Kind regards,



Prof L Labuschagne – Chairperson: RPSC

Email: llabus@unisa.ac.za

Tel: (012) 429-6368



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TO: Prof JPR Joubert
BMR Research Director
TvW Building
B1-05

FROM: Prof DH Tustin
BMR Executive Research Director
TvW Building
B1-03

DATE: 10 October 2012

APPLICATION FOR ETHICAL CLEARANCE: UNISA COLLEGE OF ECONOMIC AND MANAGEMENT SCIENCES GRADUATENESS AND EMPLOYABILITY SURVEY 2011 (PROJECT: IR007)

In March 2011, the BMR Research Ethics Committee (REC) reviewed the research proposal on the Unisa College of Economic and Management Sciences graduateness and employability survey 2011 and was satisfied that the proposal complied with the research ethics requirements. The research team was granted permission to proceed with the study that complied with the research principles as outlined in the BMR Research Ethics Policy.

Regards,



Prof DH Tustin
Executive Research Director

APPENDIX B

THE MEASURING INSTRUMENT: THE ADULT LEARNER SELF-DIRECTEDNESS SCALE

ADULT LEARNER SELF-DIRECTEDNESS SCALE

The *Learner Self-directedness Inventory* is designed to help identify your motivation for studying at Unisa and also your study preferences and attitudes. Your results will enable lecturers to identify better ways of providing guidance and support with regard to your studies at Unisa.

INSTRUCTIONS

- In this questionnaire you are asked to make judgements about how and why you are studying at Unisa. There are no right or wrong answers. Your honest and accurate responses will enable us to identify your study preferences.
- Answer all 35 statements.
- Read each statement carefully and choose one of the responses that best corresponds with the extent to which the statement is true for you.

PLEASE NOTE THAT ONLY ONE ANSWER IS REQUIRED FOR EACH OF THE FOLLOWING QUESTIONS.

PLEASE INDICATE YOUR OPTION OR ANSWER WITH ONE 'CROSS' (X). PLEASE ANSWER ALL QUESTIONS.

1. How many hours per week do you devote to your studies at Unisa?

1	2	3	4	5
Less than one	One to two	Two to three	Three to four	More than four

2. How much time do you devote to each module/course per week?

1	2	3	4	5
Less than one	One to two	Two to three	Three to four	More than four

3. According to the credits they carry, how many hours are you required to devote to each module per week?

1	2	3	4	5
I do not know	One to two	Two to three	Three to four	More than four

4. How do you plan your study time?

1	2	3	4	5
I do not plan my time, I just sit down and study when I have time	I use the due dates of assignments and plan around them	I use the plan provided in the study material	I use the examination date to plan my studies	I start studying a month to two weeks before the examination

5. When do you submit assignments?

1	2	3	4	5
I always submit assignments before the due date	I always submit assignments on the due date	I sometimes submit assignments late	I always submit assignments late	I hardly ever submit assignments

6. How much time do you allow yourself to prepare for examinations?

1	2	3	4	5
8 hours or less	9 -24hours	25 - 40 hours	41 - 80 hours	More than 80 hours

7. When do you read your tutorial letters?

1	2	3	4	5
Never	Before the assignments are due	Before the examination date	In the study time allotted for that module	As soon as I receive them

8. When do you use your study guide?

1	2	3	4	5
I don't use the study guide	Before the assignments are due	Before the examination date	Before assignment due dates and before the examination	In my planned weekly study sessions

9. How do you use feedback tutorial letters in your studies?

1	2	3	4	5
I do not read feedback tutorial letters	I read them briefly when I receive them and then I forget about them	I memorise the feedback provided on assignments for the examination	I incorporate the information provided in the tutorial letters in my examination preparation	I incorporate the information provided in the tutorial letters when I complete the next assignment and in my examination preparation

10. Which of the following describes the learning situation in which you are the most comfortable?

1	2	3	4	5
When I am provided with specific content and questions that should be mastered, and when work is scheduled on a daily basis	When I receive clear guidance on what I should do to succeed and clear time frames to which to adhere	When I receive sufficient guidelines to ensure success but am also able to work at my own pace	When I receive sufficient guidelines regarding the learning content and success factors but am able to study at my own pace, using my own methods and techniques	When I am given the minimum standards required for success and left to my own devices

11. What do you do when you experience a problem such as a family crisis or an unexpected heavy workload and you are not able to submit an assignment on time?

1	2	3	4	5
I do not submit the assignment	Submit the assignment late and hope for the best	Contact the lecturer on the due date to request an extension	Contact the lecturer before the due date to request an extension	I never submit assignments late because I plan for unexpected events when I plan my study time

12. How would you describe your preferred mode of study?

1	2	3	4	5
Attend lectures where I am told exactly what I should know in order to pass a module	Occasionally attend lectures so as to ensure that I am still on the right track	Study in a group where we discuss issues and explain difficult parts of the work to each other	Study by myself, with the option of contacting the lecturer or a fellow student when I struggle with something	Study by myself, using the prescribed material

13. How will you use the knowledge you have gained in your studies in your work situation?

1	2	3	4	5
Not able to use this knowledge, it is just a passport to better job opportunities	Not able to use it in my work as I am never able to remember anything I have learnt after the examination	Able to remember the theory when asked to do so	Able to refer to the relevant theory in the books in order to cope in my work situation	Apply my knowledge to various situations at work

14. How confident are you that you will understand the learning material?

1	2	3	4	5
I do not know whether will be able to understand the learning material	I do not feel very confident that I will be able to understand the learning material	I hope I will be able to understand the learning material	I am moderately confident that I will understand the learning material	I know I will understand the learning material

15. How confident are you that you will master all the learning outcomes of your field of study?

1	2	3	4	5
I do not know whether I will be able to master all the learning outcomes	I hope I will be able to master most of the learning outcomes sufficiently to pass all the modules	I think I will be able to master all the learning outcomes well enough to pass all the modules	I am moderately confident that I will master all the learning outcomes sufficiently to pass all the modules	I am very confident that I will master all the learning outcomes sufficiently to pass all the modules

16. How confident are you that you will complete your qualification?

1	2	3	4	5
I am not sure that I will complete my qualification	I hope I will be able to complete my qualification	I am moderately sure that I will be able to complete my qualification	I am fairly sure that I will be able to complete my qualification because I have been successful in the past	I am certain that I will complete my qualification

17. How confident are you that you will be able to solve problems you encounter in your learning?

1	2	3	4	5
I am not sure that I will be able to solve problems I encounter in my learning	I hope I will be able to solve problems I encounter in my learning	I am moderately sure that I will be able to solve problems I encounter in my learning	I am fairly sure that I will be able to solve problems I encounter in my learning because I have done so in the past	I am certain that I will be able to solve problems I encounter in my learning

18. How confident are you that you possess the skills necessary to cope in an open distance learning environment?

1	2	3	4	5
I am not sure that I possess the skills necessary to cope in an open distance learning environment	I hope I have the skills necessary to cope in an open distance learning environment	I am moderately sure that I have the skills to cope in an open distance learning environment	I am fairly sure that I have the skills necessary to cope in an open distance learning environment	I am certain that I will be able to cope in an open distance learning environment

19. How much information have you collected about open distance learning?

1	2	3	4	5
None	Very little	Some	I consulted a few sources	As much as I could

20. How do you find the rigours of studying in an open distance learning environment?

1	2	3	4	5
I find it extremely difficult to cope	I find it somewhat difficult to cope	Some days I cope better than others	I find it easy to cope	If find it extremely easy to cope

21. Who do you think is responsible for ensuring your success as a student?

1	2	3	4	5
The lecturer is solely responsible for ensuring that I am successful	The lecturer is partly responsible to ensure that I am successful	Both the lecturer and I are responsible for ensuring that I am successful	I am partly responsible for ensuring that I am successful	I am solely responsible for ensuring that I am successful

PLEASE NOTE THAT MORE THAN ONE ANSWER MAY BE GIVEN FOR QUESTIONS 22-36.

PLEASE INDICATE YOUR OPTION(S) OR ANSWER(S) WITH ONE OR MORE 'CROSSES' (X).

PLEASE ANSWER ALL QUESTIONS.

22. What do you do when you struggle to understand the work?

1	2	3	4	5
I become discouraged and stop working	I contact a friend for assistance	I contact the lecturer for assistance	I read through the material again and, if I still do not understand, I contact the lecturer	I never struggle to understand the work

23. What do you do when you find out that you have not received all the tutorial letters?

1	2	3	4	5
I contact the lecturer to request another copy	I phone the Contact Centre to request another copy	I download another copy from <i>myUnisa</i>	I make a copy of a friend's tutorial letter	I always receive all my tutorial letters

24. What do you do when you encounter words or phrases in the prescribed book, study guide or tutorial letters that you do not understand?

1	2	3	4	5
I contact the lecturer to explain them to me	I ask a friend or colleague to explain them to me	I read them more than once in order to understand them	I consult a dictionary or thesaurus to find out what they mean	I never encounter words or phrases that I do not understand

25. What do you do when you do not understand what is required in an assignment question?

1	2	3	4	5
I leave out the question	I complete the question the way I understand it	I consult a friend to find out what I should do	I consult the lecturer to find a solution	I try to find the solution myself and, if I am unsuccessful, I consult the lecturer

26. Why did you decide to study?

1	2	3	4	5
I do not know	My family requires me to study	A friend decided to study and I decided to join him/her	I can only be promoted at work if I have a qualification	I want to improve my chances of finding a good job

27. What motivates you to study?

1	2	3	4	5
My friend convinced me to join him/her	My family expects me to do well	My employer requires me to study	I want to find a better job	I want to improve my life

28. Why do you use the study guide?

1	2	3	4	5
I do not use the study guide	To find out what chapters I can leave out	To find out the learning outcomes	To see on which parts of the work I should focus	To help me to understand the work

29. How do you use the study guide?

1	2	3	4	5
I do not use the study guide	To find out the learning outcomes	I follow the guidelines in the study guide closely	I complete all the activities in the study guide	I use the study guide as a guideline but follow my own study techniques

30. How do you react when you do badly in an assessment (assignment or examination)?

1	2	3	4	5
I complain to my family and friends about the poor tutorial matter	I become demotivated and do not study for a while	I contact the lecturer to find out if a mistake has been made with my assignment	I consult the feedback tutorial letter to find out what I did wrong	I use the knowledge I gained in order to improve my performance in the next assignment

31. What do you do when you become discouraged about your studies?

1	2	3	4	5
Worry that I will not complete my studies and become more discouraged	Discuss my feelings with my family or friends and they cheer me up	Contact my lecturer and explain my situation as he/she should be able to cheer me up	Reflect on my past successes and manage to find courage again	I do not become discouraged about my studies

32. What do you do if you struggle to find sources and access to technology such as computers and the internet?

1	2	3	4	5
Nothing	Contact the lecturer to find out what I should do	Ask a friend or colleague for assistance	Visit my library	I do not struggle to find sources or gain access to technology

33. How do you prepare for examinations?

1	2	3	4	5
Read through the prescribed book	Turn the learning outcomes into questions, work out the answers and then memorise them	Memorise answers to old examination questions	Memorise answers to old examination and assignment questions	Use the study guide to understand the work, make summaries, memorise the work and then work out answers to old examination questions

34. What do you do when you realise you have not worked sufficiently throughout the year/semester and are unprepared for an examination?

1	2	3	4	5
I am absent from the examination	I write the examination and hope for the best	I write the examination and hope to get a supplementary examination	I contact the lecturer and enquire about the parts of the work on which I should focus	I contact the university and find out what I can do

35. What do you do when you want to improve your knowledge and skills?

1	2	3	4	5
I enrol for a formal, accredited qualification	I attend a course presented by my employer	I attend a course presented by an expert in the field	I study as many books as possible on the subject	I exchange ideas and knowledge with an interest group or club focusing on the subject

APPENDIX C

**THE EFA ANALYSES RESULTS AND SCREE PLOTS OF BOTHA'S 2014 FOUR-FACTOR MODEL
FOR THE ALSDS**

Table C1

*Principal-Axis Factor Analysis Results for the Adult Learner Self-Directedness Scale: Items 1 to 21
(Four-Factor Model)*

Item number	Item	Factor 1	Factor 2	Factor 3
Q1	How many hours per week do you devote to your studies at Unisa?		.78	
Q2	How much time do you devote to a module/course per week?		.80	
Q3	According to the credits they carry, how many hours are you required to devote to each module per week?	.46		
Q4	How do you plan your study time?		.70	
Q5	When do you usually submit assignments?		.82	
Q6	How much time do you allow yourself to prepare for the examination?		.39	
Q7	When do you read your tutorial letters?	.77		
Q8	When do you use your study guide?	.69		
Q9	How do you use the feedback tutorial letters in your studies?	.53		
Q10	Which of the following describes the learning situation in which you feel the most comfortable?			.76
Q11	What do you do when you experience a problem such as a family crisis or unexpected heavy workload?			.78
Q12	How would you describe your preferred mode of study?			-.71
Q13	How will you use the knowledge you have gained in your studies in your work situation?			.47
Q14	How confident are you that you will understand the learning material?			.65
Q15	How confident are you that you will master all the learning outcomes of your field of study?			.69
Q16	How confident are you that you will complete your qualification?			.74
Q17	How confident are you that you will be able to solve problems you encounter in your learning?			.76
Q18	How confident are you that you possess the skills to cope in an open distance learning environment?			.78
Q19	How much information have you collected about open distance learning?	.53		
Q20	How do you find studying in an open distance learning environment?			.56
Q21	Who do you think is responsible for ensuring your success as a student?			.36

Eigenvalues	4.36	1.90	1.51
Individual total variance %	20.74	9.03	7.17
Cumulative total variance %	20.74	29.77	36.94

Source: Botha (2014)

Figure C1 illustrates the scree plot for the principal component analysis on the first phase of the initial EFA (Botha, 2014).

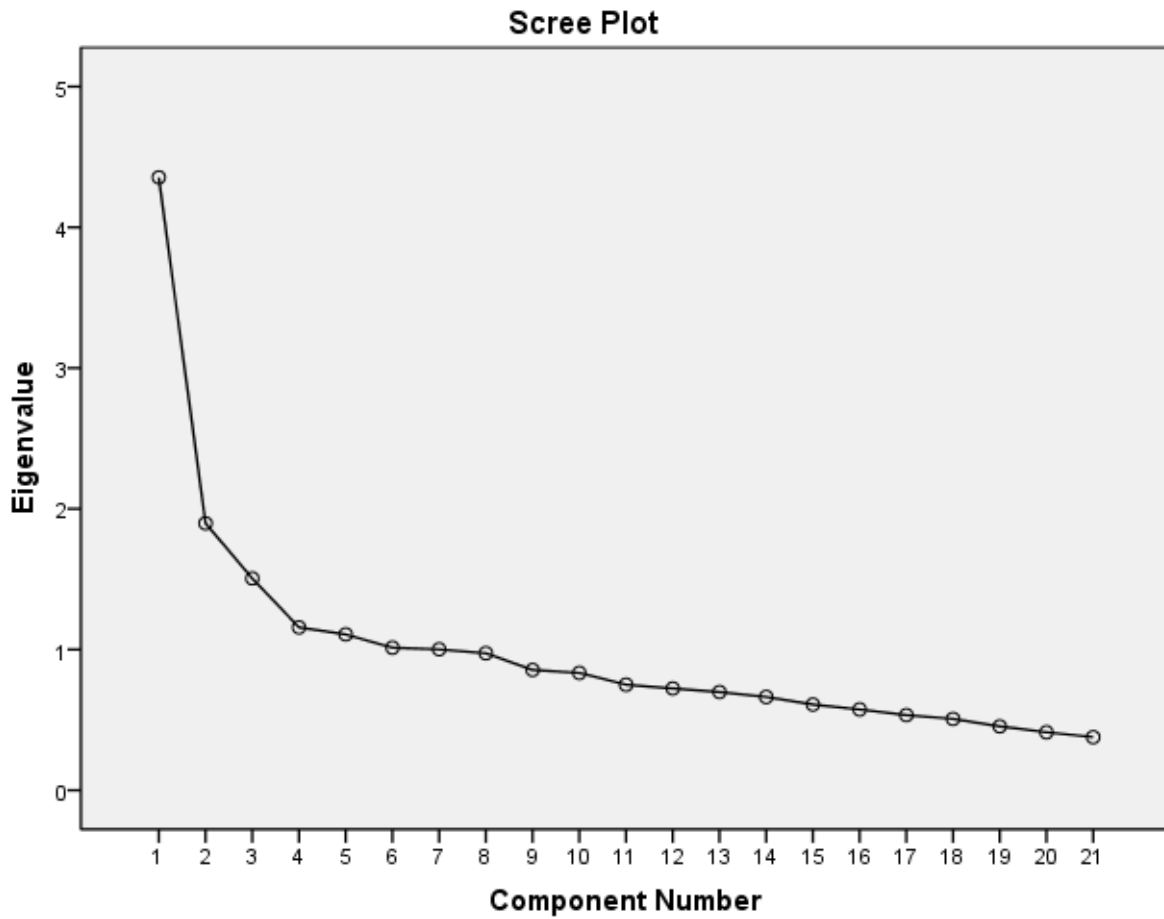


Figure C1 Scree lot for the principle component analysis on the first phase of the four-factor model of the ALSDS (items 1 to 21).

Table C2

Principal-Axis Factor Analysis Result for the Second Phase of the EFA of the ALSDS (Four-Factor Model) (Items 22 – 35)

Item number	Item	Factor 4 (Component 1 of EFA Phase 2)
Q22	What do you do when you struggle to understand the work?	.55
Q23	What do you do when you find that you have not received all the tutorial letters?	.58
Q24	What do you do when you encounter words or phrases in the prescribed book, study guide or tutorial letters that you do not understand?	.40
Q25	What do you do when you do not understand what is required in an assignment question?	.49
Q26	Why did you decide to study?	.41
Q27	What motivates you to study?	.50
Q28	Why do you use the study guide?	.59
Q29	How do you use the study guide?	.58
Q30	How do you react when you do badly in an assessment (assignment or examination)?	.49
Q31	What do you do when you become discouraged about your studies?	.50
Q32	What do you do if you struggle to find sources and access to technology such as computers and the internet?	.48
Q33	How do you prepare for examinations?	.54
Q34	What do you do when you realise you have not worked sufficiently throughout the year/semester and are unprepared for the examination?	.44
Q35	What do you do when you want to improve your knowledge and skills?	.35
Eigenvalue		2.91
Individual total variance %		20.80
Cumulative total variance %		20.80

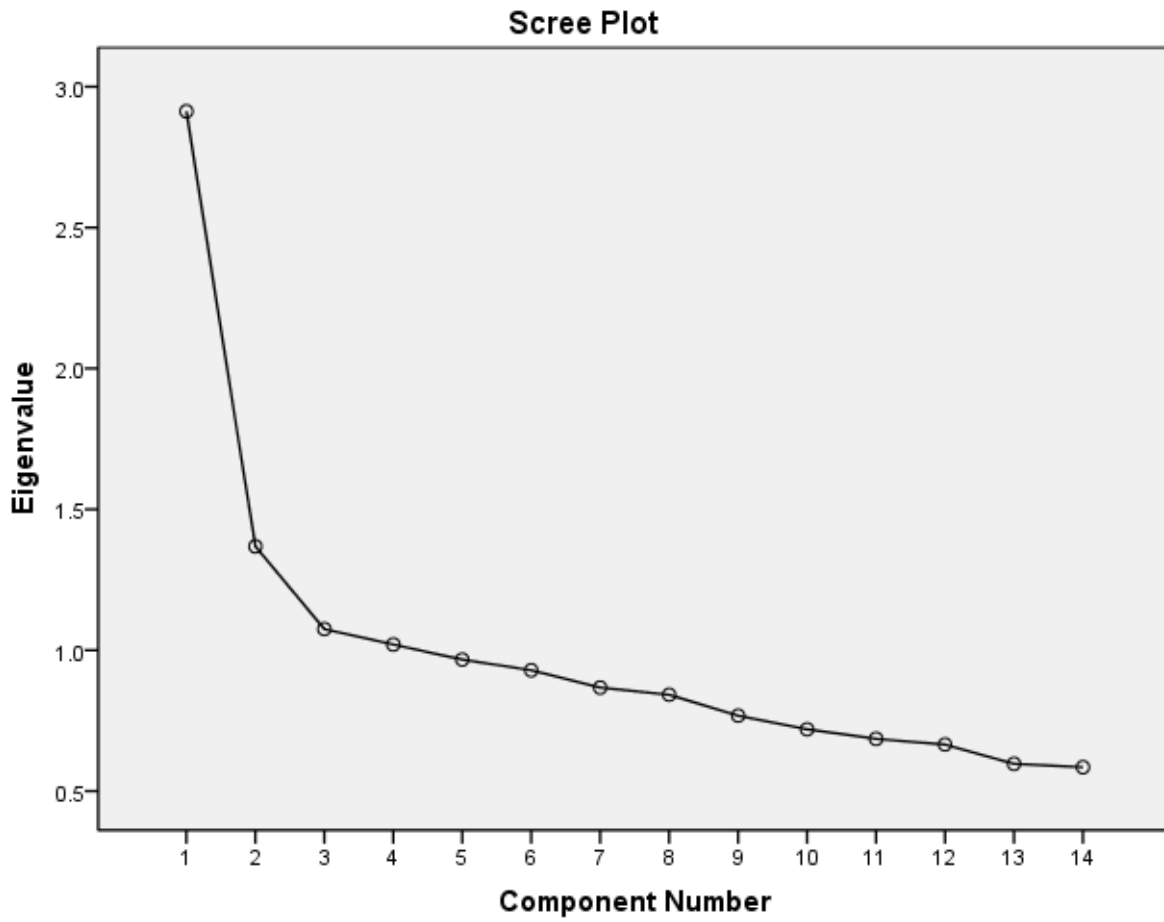


Figure C2. Scree plot for principle component analysis on the ALSDS (Items 22 to 35)

Table C3

Principal Axis Factoring: EFA (n= 747) Test 1

Factor matrix										
Question	Factor									
	1	2	3	4	5	6	7	8	9	10
B16: How confident are you that you will complete your qualification?	0.76									
B18: How confident are you that possess the skills necessary to cope in an open distance learning enviroment?	0.72									
B17: How confident are you that you will be able to solve problems you encounter in your learning?	0.71									
B15: How confident are you that you will master all the learning outcomes of your field of study?	0.59									
B14: How confident are you that you will understand the learning material?	0.48									
B19: how much information have you collected about ppen distance learning?	0.39									
B20: How do you find studying in an open distance learning enviroment?	0.33									
B21: Who do you think is responsible for ensuring your success as a student?	0.30									
B28A: Why do you use the study guide?		0.65								

B29A: How do you use the study guide?		0.56							
B33A: How do you prepare for the examinations?		0.33							
B07: When do you read your tutorial letters?			0.61						
B09: How do you use feedback tutorial letters in your studies?			0.52						
B08: When do you use your study guide?			0.50						
B13: How will you use the knowledge you gained in your work studies in your work situation?									
B02: How much time do you devote to the module/ course per week?				0.863					
B01: how many hours per week do you devote to your studies at Unisa?				0.659					
B06: How much time do you allow yourself in preparing for the exam?									
B11: What do you do when you experience a problem such as a family crisis or unexpected heavy workload?									
B05: When do you submit assignments?					0.57				
B26A: Why did you decide to study?						0.67			
B27A: What motivates you to study?						0.45			
B12: How would you describe your most preferred mode of study?									
B31A: What do you do when you get discouraged about your studies?									

B10: Which of the following describes the learning situation where you are most comfortable?										
B03: According to the credits they carry, how many hours are you required to spend on each module per week?										
B25A: What do you do when you don't understand what is required in an assignment question?									0.411	
B22A: What do you do when you struggle to understand the work									0.39	
B04: How do you you're your study time?									0.31	
B34A: What do you do when you realise you have not worked sufficiently throughout the year/semester and are unprepared for the exams?										
B35A: What do you do when you want to improve your knowledge and skills?										
B32A: What do you do if you struggle to find access to technology such as a computer and the internet?										0.334
B24A: What do you do when you encounter words or phrases in the prescribed book ,study guide or tutorial letters that you don't understand?										0.334
B30A: How do you react when you do badly in an assessment or exam?										

B23A: What do you do when you find out that you have not received all the tutorial letters?										
Eigenvalues	4.96	2.52	2.02	1.64	1.32	1.24	1.22	1.12	1.10	1.06
Individual total variance	14.18	7.29	5.80	4.70	3.70	3.55	3.50	3.20	3.12	3.03
Total variance explained	14.18	24.10	27.14	31.81	35.60	39.12	42.61	45.81	48.94	52.01

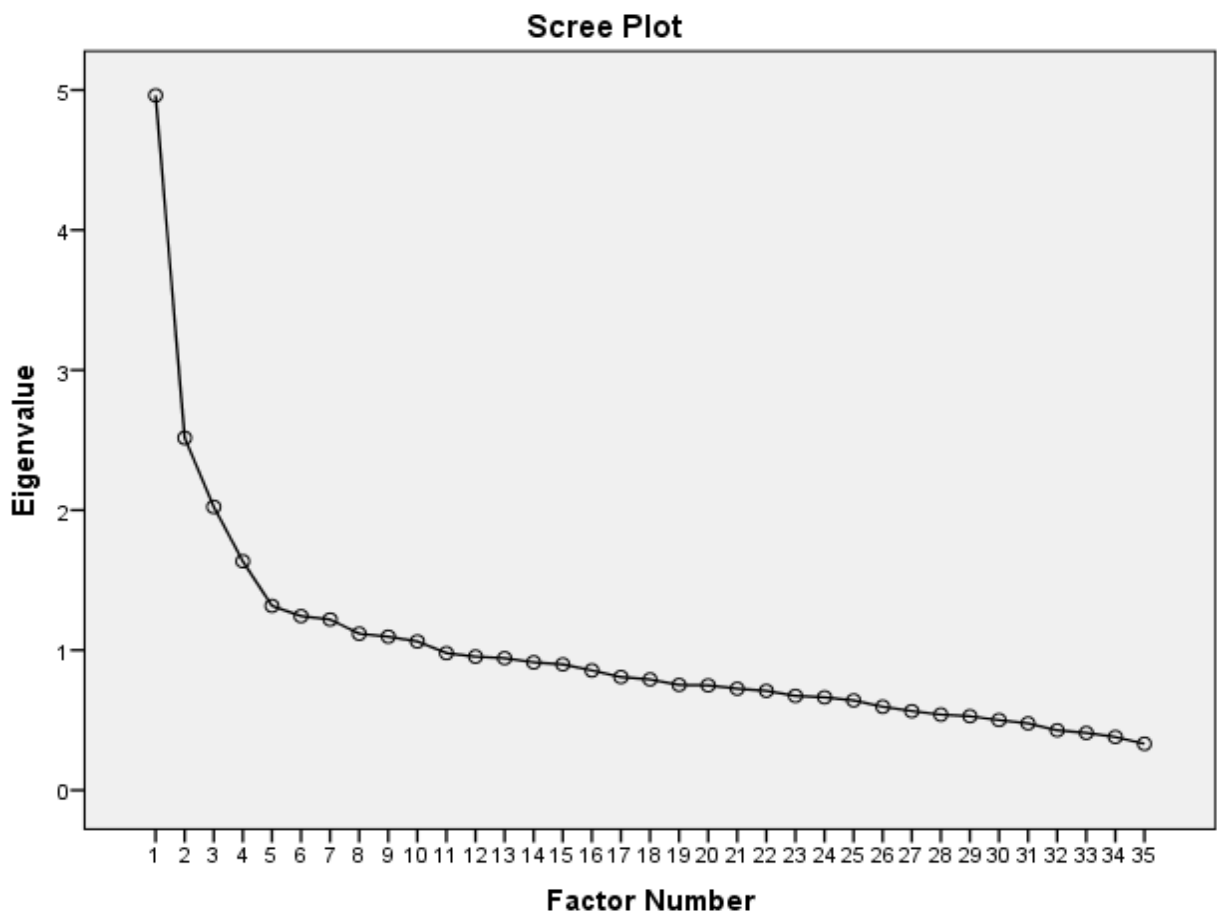


Figure C3 Scree plot: EFA (n = 747), Test 1.