THE DEVELOPMENT OF A VALIDATED SCALE OF RESPONSIBLE TOURIST BEHAVIOUR IN CULTURAL HERITAGE TOURISM

by

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Submitted in accordance with the requirements for
the degree of

Doctor of Philosophy

in the subject

Management Studies

at the

UNIVERSITY OF SOUTH AFRICA

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2023

ACKNOWLEDGEMENTS

I would like to extend my heartfelt appreciation and gratitude to the following persons and institutions for their support and contributions towards this thesis.

The Lord Almighty: You promised us in the book of Isaiah 41:10, “I will strengthen you and help you; I will uphold you with my righteous right hand.” Thank you, God, for being the pillar of my strength.

My supervisor, Dr Elricke Botha, and my co-supervisor, Dr Nicolene Conradie, for their tireless efforts, leadership, guidance, and support. This project is a success because of your guidance, knowledge, and expertise. You are my inspiration.

The National Research Fund (NRF) for funding this research project and for granting me a sabbatical leave opportunity. Thank you for the opportunity of a lifetime.

The University of South Africa (UNISA) master’s and doctoral bursary scheme for covering my tuition and study material expenses. Thank you for your financial funding.

The Department of Tourism Management at the Tshwane University of Technology for administering the NRF fund and for supporting my career development.

All the experts in sustainable tourism and related fields who participated in Phase 1 of the study: Your invaluable feedback greatly contributed to the validity of the scale for responsible tourist behaviour in cultural heritage tourism.

The management of the Fossil Hominid Sites of South Africa (Maropeng and the Sterkfontein Caves), Mapungubwe National Park, and Robben Island Museum for granting me permission to conduct the study with their tourists.

The tourists who gave their precious time to participate in the survey of the study: I appreciate your patience. Your feedback contributed enormously to the development of the scale for responsible tourist behaviour in cultural heritage tourism.

Mr Erik van Zyl for assisting me in designing the survey instruments using LimeSurvey software.

Dr Dion van Zyl for his exceptional expertise and knowledge and his valuable advice during the data analysis process.

Ms Lydia Searle for the language editing of the thesis.

The Department of Applied Management and the College of Economic and Management Sciences at UNISA for their continued support and training programmes.

Mrs Leane Brown for assisting me with UNISA Library services, including Mendeley referencing.

Dr Antje Lenhard and Prof. Sue Geldenhuys—my number one supporters. Thank you for believing in me. You discovered potential that turned my life and my academic career around.

Lastly, my sincere gratitude goes to my family—my brother, Tom Maheso, my sister, Neo Bukenya, my husband, Lesego Ntshabeleng, and our two lovely kids, Letago and Masego—for their support, patience, and love throughout this research project.

DECLARATION

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I declare that the thesis titled “The Development of a Validated Scale of Responsible Tourist Behaviour in Cultural Heritage Tourism” is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

I further declare that I submitted the thesis to originality checking software and that it falls within the accepted requirements for originality.

I further declare that I have not previously submitted this work, or part of it, for examination at UNISA for another qualification or at any other higher education institution.

ABSTRACT

As cultural heritage tourism grows, inappropriate tourist behaviour threatens the sustainability of cultural heritage resources. To protect the cultural heritage sites effectively, management should measure responsible tourist behaviour in order to implement relevant and sustainable tourism practices that correct or adapt inappropriate behaviour. To date, progress has been made in measuring responsible behaviour regarding natural resources; however, cultural heritage tourism comprises both natural and cultural resources. There is limited evidence that a validated scale already exists for measuring behaviour relating to both natural and cultural resources in cultural heritage tourism settings. This study, therefore, aimed to develop a validated scale for responsible tourist behaviour in cultural heritage tourism.

The study applied an embedded mixed-method approach using three phases to develop the validated scale. In Phase 1, the initial pool of items was generated through a literature review. Two expert panels reviewed and revised the items to ensure (i) face validity, and (ii) content validity and analysed using the Fuzzy Delphi Method. For phases 2 and 3, data were collected from tourists who had visited one of South Africa's World Heritage Sites with cultural value (Fossil Hominid Sites, Robben Island, or Mapungubwe Cultural Landscape). The data were randomly divided into two samples. Phase 2 assessed construct validity and reliability of the proposed scale, while Phase 3 cross-validated the scale by mainly using factor analyses and t-tests.

The theoretical contributions that were made include (i) a definition of cultural heritage tourism, (ii) a scale for responsible tourist behaviour in cultural heritage tourism, and (iii) a contribution to the body of knowledge in the tourism management field on the topic 'responsible tourist behaviour in cultural heritage tourism settings'. Moreover, this study provided social science researchers with a set of procedures that will assist them in developing a new validated scale and improving the predictive capability of their existing scales by comparing their methods with the methods of the current study. Lastly, the developed validated scale will assist cultural heritage tourism sites in assessing responsible tourist behaviour and in employing sustainable tourism practices that will correct or adapt inappropriate behaviour.

Key terms: alternative tourism, cultural heritage tourism, heritage interpretation, responsible behaviour, scale development

OPSOMMING

Namate kultuurerfenistoerisme groei, bedreig onvanpaste toerismegedrag die volhoubaarheid van kultuurerfenishulpbronne al hoe meer. Ten einde kultuurerfenisterreine effektief te beskerm, moet bestuur verantwoordelike toeristegedrag meet met die oog op die implementering van relevante en volhoubare toerismepraktyke wat onvanpaste gedrag korrigeer of wysig. Daar is tot nou toe wel vordering gemaak om verantwoordelike gedrag met betrekking tot natuurlike hulpbronne te meet; kultuurerfenistoerisme betrek egter natuurlike sowel as kultuurhulpbronne. Daar is slegs beperkte getuienis dat ’n gevalideerde skaal bestaan om gedrag met betrekking tot sowel natuurlike as kultuurhulpbronne in kultuurerfenistoerisme-omgewings te meet. Hierdie studie was dus daarop gerig om ’n gevalideerde skaal vir verantwoordelike toeristegedrag in kultuurerfenistoerisme te ontwikkel.

Hierdie studie het ’n ingebedde gemengde-metode-benadering met drie fases gebruik om die gevalideerde skaal te ontwikkel. In Fase 1 is die aanvanklike poel items deur middel van ’n literatuuroorsig gegenereer. Twee panele van kundiges het die items beoordeel en hersien om (i) siggeldigheid, en (ii) inhoudsgeldigheid te verseker, en dit deur middel van die Fuzzy Delfi-metode ontleed. Vir Fases 2 en 3 is data ingewin van toeriste wat een van Suid-Afrika se Wêreldserfenisterreine met kultuurwaarde besoek het (Fossielhominiedterreine, Robbeneiland of Mapungubwe Kulturele Landskap). Die data is ewekansig in twee steekproewe verdeel. Fase 2 het konstrukgeldigheid en betroubaarheid op die voorgestelde skaal geëvalueer, terwyl Fase 3 kruisvalidering van die skaal behels het deur hoofsaaklik faktorontleding en t-toetse te gebruik.

Die teoretiese bydraes wat gemaak is, sluit in (i) ’n definisie van kultuurerfenistoerisme, (ii) ’n skaal vir verantwoordelike toeristegedrag in kultrerfenistoerisme, en (iii) ’n bydrae tot die bestaande kennismassa op die terrein van toerismebestuur oor die onderwerp ‘verantwoordelike toeristegedrag in kultuurerfenistoerisme-omgewings’. Daarbenewens het die studie sosialewetenskapnavorsers voorsien van ’n stel prosedures wat hulle sal help om ’n nuwe gevalideerde skaal te ontwikkel en die voorspellingsvermoë van hul bestaande skaal te verbeter deur hul metodes met die huidige studie te vergelyk. Laastens sal die ontwikkelde gevalideerde skaal kultuurerfenistoerismeterreine help om verantwoordelike toeristegedrag te evalueer en volhoubare toerismepraktyke toe te pas wat onvanpaste gedrag sal korrigeer of wysig.

Sleutelterme: alternatiewe toerisme, kultuurefernistoerisme, erfenisinterpretasie, verantwoordelike gedrag, skaalontwikkeling

KAKARETŠO

Maitshwaro ao e sego a maleba a baeti a tliša matšhošetši go poloko ya methopo ya setšo ka makaleng a boeti a bohwa bja setšo. Go šireletša mafelo a bohwa bja setšo ka katlego, bolaodi bo swanetše go lebelela maitshwaro a maleba a baeti gore bo kgone go bea melawana ya maitshwaro yeo e akaretšago magato a kgalemo go maitshwaro ao a sego a amogelega. Go fihla ga bjale, go na le kgatelopele ya go bea melawana ya boitshwaro mabapi le methopo ya tlhago; le ge go le bjalo, boeti bja bohwa bja setšo bo akaretša methopo ya tlhago le ya setšo. Go na le bohlatse bjo bo lekanyeditšwego bja gore sekala seo se kgonthišitšwego se šetše se le gona go lebelela maitshwaro a mabapi le methopo ya tlhago le ya setšo ka mafelong a boeti bja bohwa bja setšo. Maikemišetšo a nyakišišo ye ke go tlhama sekala sa kgonthišišo sa maitshwaro a maleba a baeti go boeti bja bohwa bja setšo.

Nyakišišo e šomišitše mekgwa ye e tswakantšwego ka dikgato tše tharo go tlhama sekala seo se kgonthišitšwego. Go kgato ya 1, dintlha tša mathomo di kgobokeditšwe ka go sekaseka lithereitšha. Dihlopha tše pedi tša ditsebi di sekasekile le go badišiša dintlha go netefatša (i) go nepagala ga ponagalo, le (ii) go nepagala ga diteng ka go šomiša Mokgwa wa Fuzzy Delphi. Go kgato ya 2 le 3, datha e kgobokeditšwe go tšwa go baeti bao ba bego ba etetše le lengwe la lefelo la Bohwa la Lefase la Afrika Borwa leo le lego bohlokwa go tša setšo (Fossil Hominid, Robben Island, goba Ponagalo ya naga ya setšo ya Mapungubwe). Datha e arotšwe ka dikarolo tša disampole tše pedi. Kgato ya 2 e sekasekile go netefala le go botega ga sekala seo se šišintšwego, mola Kgato ya 3 e sekasekile sekala ka dintlha le diteko tša t.

Diteori tša nyakišišo tšeo di dirilwego di akaretša (i) tlhalošo ya boeti bja bohwa bja setšo, (ii) sekala sa maitshwaro a maleba ka go boeti bja bohwa bja setšo, le (iii) kabelo ya tsebo ka go lefapha la taolo ya tša boeti ka thopiki ya ‘maitshwaro a baeti a maleba mafelong a bohwa bja setšo’. Godimo ga fao, nyakišišo ye e file banyakišiši bao ba dirago dinyakišišo tša disaense tša leago ditshepedišo tšeo di tlago go ba thuša go hlama sekala seo se netefaditšwego se se mpsha le go kaonafatša bokgoni bja go akanyetša bja dikala tša bona ka go bapetša mekgwa ya bona le mekgwa ya nyakišišo ya thuto ye. Sa mafelelo, sekala se se netefaditšwego seo se hlamilwego se tla thuša mafelo a boeti bja bohwa bja setšo go lekola maitshwaro a baeti a maleba le ka go šomiša mekgwa ya boeti ya go ya go ile yeo e tlago phošolla goba ya fetoša maitshwaro ao e sego a maleba.

Mantšu a bohlokwa: kgetho ya boeti, boeti bja bohwa bja setšo, tlhathollo ya bohwa, maitshwaro a maikarabelo, tlhabollo ya sekala

LIST OF ABBREVIATIONS

Amax	value of the fuzzy score
AVE	average variance extracted
CFA	confirmatory factor analysis
CFI	comparative fit index
CITC	corrected item-total correlation
CLF	common latent factor
CMIN/df	minimum discrepancy divided by degrees of freedom
CMV	common method variance
CR	construct reliability
EFA	exploratory factor analysis
FDM	Fuzzy Delphi Method
GOF	goodness-of-fit
HTMT	heterotrait-monotrait ratio of correlations
ICCROM	International Centre for the Study of the Preservation and Restoration of Cultural Property
ICOMOS	International Council on Monuments and Sites
IIC	inter-item correlation
IUCN	International Union for Conservation of Nature
KMO	Kaiser-Meyer-Olkin
MF	membership function
ML	maximum likelihood
NFI	normed fit index
NTHPUS	National Trust for Historic Preservation in the United States
NRF	National Research Funding
PAF	principal axis factoring
P-value	probability value
Ratio/SE	ratio of kurtosis to standard error
RMSEA	root mean square error of approximation
SR	standardised residual
SRMR	standardised root mean residual
TFN	triangular fuzzy number
TLI	Tucker-Lewis Index

UNESCO	United Nations Educational, Scientific and Cultural Organization
UNISA	University of South Africa
UNWTO	United Nations World Tourism Organization
USNAI	United States National Association for Interpretation

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1: INTRODUCTION AND BACKGROUND

1.1 BACKGROUND TO THE STUDY

Cultural heritage tourism is an important form of alternative tourism and accounts for approximately 40% of all tourism globally (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2021a). According to Timothy (2018), cultural heritage tourism is still expanding, and an increasing number of destinations recognise the benefits of sharing their heritage with the rest of the world. Among the many benefits of cultural heritage tourism is the development of the local economy and an increase in employment rates (Viljoen & Henama, 2017). As more people look to their past to contextualise their present and future (Lowenthal & Olwig, 2013; Nilson & Thorell, 2018; UNESCO, 2022a), cultural heritage tourism contributes to the development of many people’s distinct identities, self-actualisation, and social solidarity (Timothy, 2018). Similarly, Upen (2018) emphasises that cultural heritage tourism provides insight into the past and demonstrates how societies have evolved, allowing for a better understanding of humanity and culture.

The National Trust for Historic Preservation in the United States (NTHPUS) (2018) defines cultural heritage tourism as travelling to experience cultural, historical, and environmental resources with outstanding value. Cultural heritage tourism is an advocate of the local cultural heritage, and it plays an important role in attracting tourists who are interested in experiencing the various elements that represent the past and present periods of the destination (Global Heritage Fund, 2019; Genc & Gulertekin Genc, 2023). According to the United States National Association for Interpretation (USNAI) (2017) and the United Nations World Tourism Organization (UNWTO) (2018), cultural heritage tourism not only includes cultural values but also involves the *natural values* of a destination. It is thus important to keep the cultural and the natural resources at these destinations in mind.

While there are numerous cultural heritage tourism products, the focus of this study is on cultural heritage sites. According to Alsalloum (2018), the challenges pervading conservation efforts led to a worldwide collaboration being established in 1972 to identify, protect, and conserve heritage sites. World Heritage Sites are designated for their outstanding universal value, and together with the conditions of integrity and authenticity, it is the responsibility of the state party to ensure the effective management of that site and safeguard its outstanding universal value (UNESCO, 2021b). Although World Heritage Sites are designated for both their natural and cultural values, this study focused on World Heritage Sites with cultural values.

As cultural heritage tourism continues to grow, ever-increasing challenges are pervading conservation efforts (Istvandity, 2020). Stakeholders (researchers and managers) of cultural heritage sites must devise sustainable tourism practices to conserve the fragile, non-renewable resources of the cultural heritage sites for current and future generations (Kim, Park, Reisinger & Lee, 2018; Labadi, Giliberto, Rosetti, Shetabi & Yildirim, 2021). However, sustainable tourism has been criticised for only being theoretically applied in diverse tourism sectors (Higgins-Desbiolles, 2010; Ting, Jean, Meng, Cheah & Cheer, 2020). Numerous authors have, therefore, suggested that a shift from sustainable tourism to responsible tourist behaviour may assist in conserving resources within cultural heritage tourism sites such as World Heritage Sites (Gong, Detchkhajornjaroensri & Knight, 2019; Zhao, Wang & Ji, 2020; Alam, Avi & Bagchi, 2021). In view of the background outlined above, the problem statement of this study is presented.

1.2 PROBLEM STATEMENT

Before explaining responsible tourist behaviour at cultural heritage sites, it is important to provide the background to behavioural theories. Among the many models and theories of human behaviour (e.g. norm activation model, theory of reasoned action, and value-belief-norm theory), this study adapted the theory of planned behaviour developed by Schifter and Ajzen (1985) and Ajzen (1991) to understand and predict the responsible behaviour of cultural heritage tourists (see Figure 1.1).

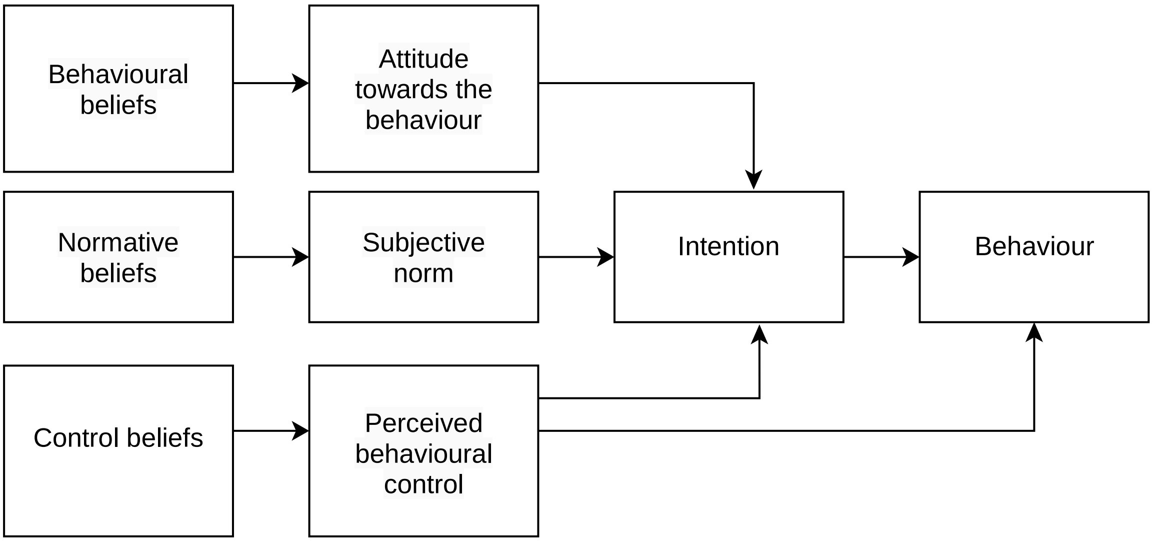

Figure 1.1: Theory of planned behaviour

Source: Adapted from Ajzen (1991:182)

As illustrated in Figure 1.1, by analysing behavioural, normative, and control beliefs, the theory of planned behaviour is an excellent basis for predicting human intentions, which in turn lead to behavioural actions. Behavioural beliefs are expected to determine attitudes towards the behaviour. Attitudes towards behaviours are concerned with an individual's assessment of whether or not performing the behaviour is appropriate and whether or not the individual agrees with performing the behaviour (Ajzen, 1991, 2006; Lau, 2004; Wang, Zhang, Yu & Hu, 2018). Conversely, normative beliefs refer to beliefs based on other people's expectations and the motivation to conform to those expectations (Ajzen, 1991, 2006). Normative beliefs are the underlying determinants of subjective norms. Lastly, control beliefs are about specific factors that can help or hinder behavioural performance, and they are expected to provide a comprehensive level of perceived control (Ajzen, 1991, 2006; Ajzen & Dasgupta, 2015). Figure 1.1 shows that human behaviour is directed by a person's attitude towards the behaviour, subjective norms, and perceived behavioural control (Ajzen, 1991, 2006, 2008). Despite the theory being an excellent basis to study human behaviour, there is limited research that applies the theory of planned behaviour to study tourist behaviour in the context of cultural heritage tourism (Duarte Alonso, Sakellarios & Pritchard, 2015; Zhang, Lee & Xiong, 2019; Girish & Lee, 2020).

Although the three main constructs of the theory of planned behaviour (attitudes, subjective norms, and perceived behavioural control) may have significant effects on behavioural intentions, Yuzhanin and Fisher (2016) emphasise that there is nothing in the theory of planned behaviour suggesting that all these constructs will contribute equally, mostly, and consistently towards behavioural intentions. As empirical research suggests, perceived behavioural control is a more effective construct to predict behavioural intention than attitudes and subjective norms (Talooki, Jamaludin & Aziz, 2018; Gkargkavouzi, Paraskevopoulos & Matsiori, 2020). Therefore, this study excludes attitudes and subjective norms. Among the three constructs of the theory of planned behaviour, perceived behavioural control is the only construct with a direct effect on the actual behaviour (Wang, Zhang, Cao, Duan & Hu, 2019). In the context of cultural heritage tourism, the management of cultural heritage sites have limited control over tourists' attitudes and subjective norms, but could influence perceived behavioural control. This is because management can offer the necessary resources and opportunities to perform a specific behaviour that will contribute to perceived behavioural control (Chiou, 1998; Seow, Choong, Moorthy & Chan, 2017; Miller, Freimund, Metcalf, Nickerson & Powell, 2019). Hence, this study incorporated heritage interpretation as the 'resource' or 'opportunity' of perceived behavioural control to have a positive impact on responsible tourist behaviour in the sphere of cultural heritage tourism.

Studies reveal that effective interpretation may prompt responsible behaviour among tourists (Cheng, Wang, Cao, Zhang & Bai, 2018; Zhao, Dong, Wu, Li, Su, Xia *et al.*, 2018; Alazaizeh, Hallo, Backman, Norman & Vogel, 2019; Alazaizeh, Jamaliah, Mgonja & Ababneh, 2019) and positively contribute towards the conservation of heritage sites (Rosli, Noor, Jaafar & Mohamed, 2014). In this sense, heritage interpretation can be used as a solution to help tourists to acquire information about heritage values (Hristov, Naumov & Petrova, 2018), to stimulate the development of stewardship and subsequently, to widen their support in protecting both natural and cultural resources (Meyer, 2018).

Substantial studies about responsible tourist behaviour focus on the protection of natural resources (also referred to as environmentally responsible behaviour) at cultural heritage sites (Lee, Jan & Yang, 2013; Jha-Thakur, Khosravi, Quattrone, Bandyopadhyay, Magedera & Garikipati, 2021; Qiu, Wang, Ren, Zhang & Wang, 2022; Wu, Wu, Hsieh & Ramkissoon, 2022). However, there is a paucity of research that focuses on responsible tourist behaviour with the aim of protecting cultural resources at cultural heritage sites (Brown, 1999; Chui, Abd Rahim, Khan, Cheng & Hassan, 2011; Teo, Khan & Rahim, 2014; Di Pietro, Mugion, Mattia & Renzi, 2015; Buonincontri, Marasco & Ramkissoon, 2017). In the context of the current study, this behaviour is referred to as responsible tourist behaviour in cultural heritage tourism settings. The tendency to ignore cultural resources emanates from limited knowledge and research on this subject (Deisser & Njuguna, 2016). When tourists visit cultural heritage sites, they may have an impact not only on natural (or environmental) resources but also on cultural resources (Alazaizeh, Jamaliah *et al.*, 2019). Alazaizeh, Hallo *et al.* (2019) and Alazaizeh, Jamaliah *et al.* (2019) assert that it is important for cultural heritage sites to encourage tourist behaviour that could significantly minimise negative impacts.

To date, reasonable progress has been made in measuring responsible behaviour with natural resources. Lee *et al.* (2013) developed a scale to measure environmentally responsible behaviour (commonly referred to as the ERB scale) of community-based tourists at two cultural heritage settings, Taomi and Smangus in China. Jha-Thakur *et al.* (2021) explored the role of strategic environmental assessment in cultural heritage tourism planning at the Srirangapatna-Mysore region in India. The study of Qiu *et al.* (2022) investigated the effect of destination and tourist-specific constructs on environmentally responsible behaviour in Shandong, China. Wu *et al.* (2022) explored the environmentally responsible behaviour of Chinese tourists who visited West Lake Cultural Landscape of Hangzhou. Although these studies were performed within cultural settings, they measured *environmentally* responsible behaviour, placing emphasis on natural resources at these cultural sites.

The research that seems to focus on responsible tourist behaviour in cultural heritage tourism, however, falls short of the definition (to include both natural and cultural resources) and rather focuses on the antecedents (e.g. attitudes or beliefs) of behaviour. For example, Brown (1999) investigated the antecedents (e.g. beliefs) of tourist behaviour that were incompatible with the host culture and used the findings to guide management interventions targeted at encouraging culturally appropriate tourist behaviour. Chui *et al.* (2011) developed a scale to assess tourists' attitudes towards responsible heritage tourism. Teo *et al.* (2014) investigated tourist behaviour at Melaka cultural heritage sites; however, this study used the scale of Chui *et al.* (2011), which focuses on attitudes towards behaviour to classify heritage visitors (tourists). Although Di Pietro *et al.* (2015) studied tourist behaviour regarding Italian cultural resources, their study did not focus on behaviour towards natural and cultural resources but rather on innovative products and services that would support the growth of the cultural heritage sector of Italy's economy. None of the studies outlined above integrate the intricacies of both natural and cultural resources as the definition of cultural heritage tourism suggests, and all of the studies only provide limited evidence of a validated scale to measure responsible tourist behaviour in cultural heritage tourism. In order to fill this gap, the aim of this study was to develop a validated scale for responsible tourist behaviour in cultural heritage tourism. The question emanating from the outlined research problem is as follows: Which dimensions of responsible tourist behaviour relating to cultural heritage tourism are included in a validated scale?

1.3 RESEARCH OBJECTIVES

The following primary and secondary objectives were formulated to guide the study.

1.3.1 Primary research objective

The study's primary objective was to develop a validated scale for responsible tourist behaviour in cultural heritage tourism.

1.3.2 Secondary research objectives

To achieve the primary objective of the study, the following secondary objectives were set:

1. To conduct a literature review of cultural heritage tourism and theories of tourist behaviour
2. To discuss the theoretical foundation of heritage interpretation and responsible tourist behaviour relating to the natural and cultural resources at a cultural heritage site

3. To explore the relevant research methods for developing a scale for responsible tourist behaviour in cultural heritage tourism

To achieve this secondary objective, the following three sub-objectives were envisioned:

   3.1. To generate an initial pool of items
   3.2. To assess the construct validity and reliability of the proposed measurement scale
   3.3. To conduct cross-validation of the measurement scale

4. To present and interpret the results of the empirical research
5. To make recommendations and draw conclusions for the study

The following section outlines the research design, methods and data analyses of the study.

1.4 RESEARCH DESIGN, METHODS, AND DATA ANALYSES

Before considering the development of a new scale, the researcher must determine whether relevant scales exist (Barry, Chaney, Stellefson & Don Chaney, 2011). In cases where a relevant scale does not exist or all existing scales are considered irrelevant to measure the target construct or concept, the researcher can then start with the process of developing a new scale. This study employed an embedded mixed method across three phases (see Figure 1.2) in order to develop a validated scale to assess responsible behaviour among tourists in cultural heritage tourism. The embedded mixed method entailed embedding a complementary qualitative study design (an open-ended questionnaire delivering written feedback on the items) within a primarily quantitative study design (a closed-ended questionnaire delivering numerical data) (Creswell & Plano Clark, 2011; Yu & Khazanchi, 2017).

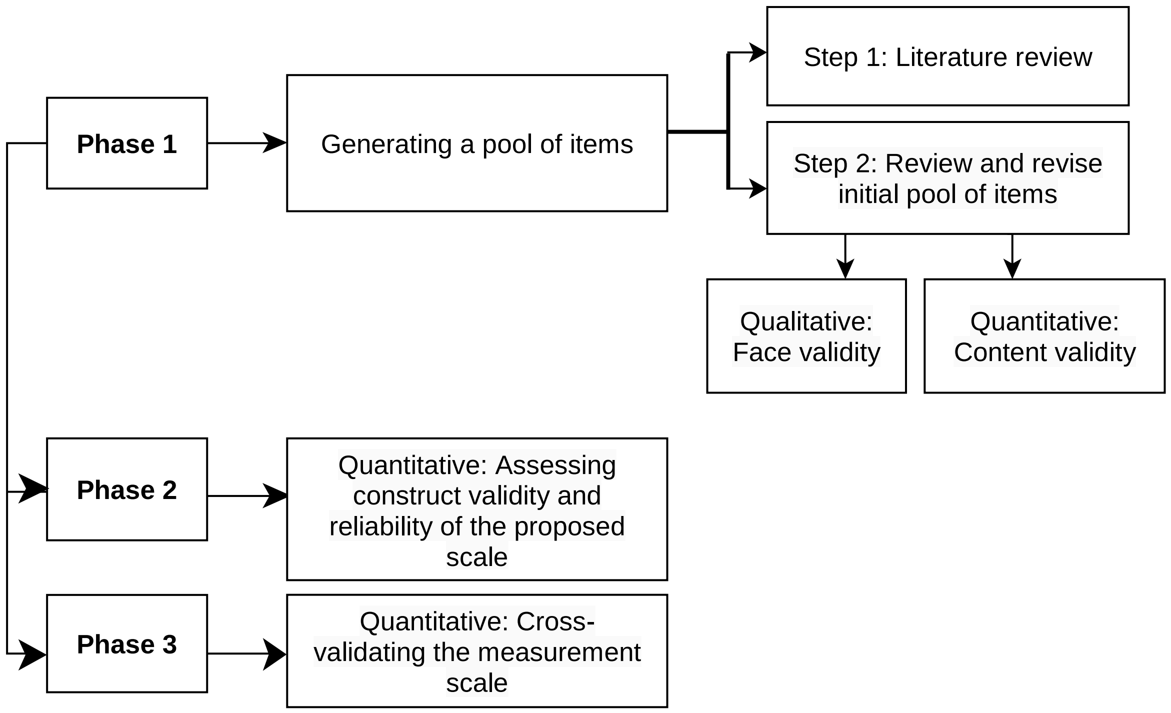

Figure 1.2: Methodological process of the study

Source: Adapted from Barry et al*. (2011), Lee* et al*. (2013), Morgado, Meireles, Neves, Amaral and Ferreira (2017), and Tsang, Royse and Terkawi (2017)*

The following sections (1.4.1 to 1.4.3) contain more detail on the methods, populations, samples, research instruments, ethics and fieldwork, and data analyses (where applicable) of each phase.

1.4.1 Phase 1: Generating a pool of items

As illustrated in Figure 1.2, Phase 1 dealt with ‘generating a pool of items’, which is commonly applied in present research (Lee *et al.*, 2013; Morgado *et al.*, 2017; Dias, Aldana, Pereira, Lopes da Costa & António, 2021). Huang and Choi (2019) state that the initial pool of items may be generated using a deductive and/or an inductive approach.

According to Saunders, Lewis and Thornhill (2019), a deductive approach is selected if the researcher wishes to adopt a clear theoretical position that he/she will test through the collection of data. Melnikovas (2018) maintains that a deductive approach is used to test existing theory. On the contrary, the inductive approach is used to reveal aspect/s of the research topic that are less known or have no clear theoretical explanation (Saunders *et al.*, 2019). This study initially employed a deductive approach by using a literature review to generate an initial pool of measurement items for responsible tourist behaviour at cultural heritage tourism destinations (see section 1.4.1.1). Thereafter, an inductive approach was applied to review and revise the initial pool of items using two expert panels (see sections 1.4.1.2 and 1.4.1.3).

1.4.1.1 *Literature review*

Wallace and Wray (2016) state that a literature review is a constructive and critical analysis of published literature that develops a strong argument regarding what is known about the research topic. For the purpose of this study, the literature review is presented in chapters 2 and 3.

Because the definition of cultural heritage tourism refers to both natural and cultural resources, an initial pool of items was generated for both these resources. The items for responsible tourist behaviour towards natural resources were generated from the following authors: Doganer (2013), Lee *et al.* (2013), Lee and Jan (2015a and 2015b), Han and Hyun (2017), Lawhon, Taff, Newman, Vagias and Newton (2017), Cheng *et al.* (2018), Kastenholz, Eusébio and Carneiro (2018), Kim and Coghlan (2018), Ma, Chow, Cheung and Liu (2018), Wang, Zhang, Yu and Hu (2018), Zhao *et al.* (2018), Alazaizeh, Hallo *et al.* (2019), Alazaizeh, Jamaliah, *et al.* (2019), Li and Wu (2019), Lladó Colombàs (2019), Wang, Zhang, Cao, Yu and Hu (2019), Zhang *et al.* (2019), Lin and Lee (2020), Zhao *et al*. (2020), Panwanitdumrong and Chen (2021), Yin, Zhang and Chang (2021), and Burhanudin and Unnithan (2022). Refer to section 3.3.2.

Items for responsible tourist behaviour towards cultural resources were based on the works of Adventure Travel Trade Association (2013), Teo *et al.* (2014), Mazzola (2015), Mustafa (2015), Srivastava (2015), Buonincontri *et al.* (2017), Gao, Huang and Zhang (2017), Cheng *et al.* (2018), Gursoy, Zhang and Chi (2019), Megeirhi, Woosnam, Ribeiro, Ramkissoon and Denley (2020), Rifat-Ur-Rahman (2021), Srivastava (2021), and Zhenrao, Chaoyang, Qian and Fulong (2021). Refer to section 3.4.2.

As mentioned, the deductive approach (literature review) outlines what is known (existing literature), while the inductive approach reveals aspect/s of the research topic that are less known. This involved a review and a revision of the initial pool of items by two expert panels. The first panel focused on face validity of the scale (Step 1), while the second panel addressed content validity of the scale (Step 2).

1.4.1.2 *First expert panel (face validity)*

Face validity is concerned with the appearance of the measurement tool (Lam, Hassan, Sulaiman & Kamarudin, 2018). To reduce measurement errors, experts are consulted to review the language grammar (Barry *et al.*, 2011), the degree of difficulty, suitability, and the ambiguity of questions or statements on a scale (Bahariniya, Ezatiasar & Madadizadeh, 2021).

The four sections that follow explain the population and sampling (1.4.1.2.1), the research instrument (1.4.1.2.2), the ethics and fieldwork (1.4.1.2.3), and the reviewed modifications (1.4.1.2.4) regarding face validity.

1.4.1.2.1 *Population and sampling*

Saunders *et al.* (2019) refer to a target population as all the cases from which a sample is drawn. The target population for Phase 1 of the study was experts in the subject area (cultural heritage tourism, cultural tourism, sustainable tourism development, ecotourism, heritage interpretation, and/or tourism and environmental management). Unfortunately, there is no available database of these experts. Therefore, sampling for Phase 1 was guided by

- empirical studies that applied a similar methodological process (Clayton, 1997; Lee *at al.*, 2013; Tsang *et al.*, 2017; Mustaffa & Ghani, 2021); and
- applying a snowball sampling technique for an expert panel (Habibi, Jahantigh & Sarafrazi, 2015; Cardullo, Wang, Burton & Dong, 2021).

Snowball sampling is a non-probability method that depends on referrals from the initial sampled respondents to other people whom they believe to have the characteristic of interest (Anieting & Mosugu, 2017). This validity step (face validity) was guided by current studies (Clayton, 1997; Belton, MacDonald, Wright & Hamlin,

2019) and used a sample of academic and industry experts in the fields of cultural heritage tourism, cultural tourism, sustainable tourism development, ecotourism, heritage interpretation, tourism and environmental management, and other related fields. According to Clayton (1997) and Belton *et al.* (2019), a heterogeneous population (persons demonstrating competence in regard to a topic but from diverse sectors of the profession such as academia and industry) should include between five to twenty experts. For the purpose of this study, five experts were sampled.

1.4.1.2.2 *Research instrument*

This round involved an online open-ended questionnaire. Section A consisted of questions pertaining to the demographic information of the expert. Section B included possible items about responsible tourist behaviour towards natural resources, and Section C comprised potential items regarding responsible tourist behaviour towards cultural resources. The items of sections B and C were based on the authors mentioned in section 1.4.1.1.

1.4.1.2.3 *Ethics and fieldwork*

Cilliers and Viljoen (2021) indicate that the researcher must ensure that the data are collected responsibly and ethically. Before fieldwork was conducted, the Ethics Review Committee of the College reviewed the research project, and ethics clearance was obtained (see Annexure A): Reference number 2021_CRERC_048 (FA). The online questionnaire included an information sheet that contained the researcher's and the supervisors' identities, the aim of the study, the purpose of selecting prospective experts and their role in the study, and the expected duration of completing the questionnaire. The information sheet also explained voluntary participation with no penalty or loss, the benefits of the study, minimal risk posed to the expert; withdrawal from the study prior to submission of the questionnaire, and no compensation or reimbursement possibilities. The period for which records would be kept, the assurance of confidentiality, and publication possibilities together with how feedback could be obtained were clarified. An informed consent statement was included, and if in agreement to participate, the expert could proceed to the questions. These questions did not require any sensitive or harmful information.

An e-mail invitation was sent out in December 2021 to the five experts, with a unique electronic questionnaire link that was available until 31 January 2022. The link was created using LimeSurvey software and was automatically set for a single participation. Feedback was captured and saved after the respondent clicked the submit button. After completing the questionnaire, a message to thank the respondent was automatically sent. All five experts responded.

1.4.1.2.4 *Reviewed modifications*

The responses of the expert panel informed some minor amendments to the initial pool of items. The researcher first reviewed the changes that were recommended by the experts to preserve the items and the original meaning of the concept. Thereafter, a language editor reviewed the grammar of the questionnaire, and a statistician was consulted to enhance the questionnaire's quality and accuracy in addition to making it appropriate for the intended purpose.

1.4.1.3 *Second expert panel (content validity)*

Content validity provides evidence for the validity of the measurement tool by assessing how well the tool is suited to and representative of the concept being measured (Kandi, 2022). According to Bahariniya *et al.* (2021), this validity step investigates the necessity and significance of retaining an item in a scale. The following four sections describe the population and sampling (1.4.1.3.1), the research instrument (1.4.1.3.2), the ethics and fieldwork (1.4.1.3.3), and the data analysis (1.4.1.3.4) of the content validity.

1.4.1.3.1 *Population and sampling*

The population and sampling for content validity were the same as for face validity. In the second round (content validity), the study used the Fuzzy Delphi Method (FDM) to obtain consensus on the initial pool of items. Yusoff, Hashim, Muhamad, and Hamat (2021) point out that the minimum sample of experts in FDM studies must be 10 in order to obtain high uniformity among the experts. In this study, a sample size of 25 experts was envisaged, and the realised sample size amounted to 22 completed questionnaires.

1.4.1.3.2 *Research instrument*

The second round of experts participated in an online, closed-ended questionnaire to help with the content validity of the proposed measurement scale. Similar to the first round, Section A focused on the demographic information of the experts. Section B pertained to responsible tourist behaviour towards natural resource items and Section C to cultural resource items. Regarding sections B and C, the items were based on the authors, as previously explained, and were modified according to the first round of experts. The experts in round two were required to evaluate each item's inclusion (or exclusion) in the scale by using a 5-point Likert scale (where 1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, and 5 = Strongly agree).

1.4.1.3.3 *Ethics and fieldwork*

The ethics principles that were followed in the face validity step were also applicable in the content validity step. The fieldwork for content validity was carried out from February to March 2022 and followed the same online process as the face validity step.

1.4.1.3.4 *Data analysis*

The FDM uses triangulation statistics to determine the distance between the levels of consensus within an expert panel (Mustaffa & Ghani, 2021). Nashir, Mustapha, and Yusoff (2015) argue that these statistics have proved to be stable, and they can be applied in several research fields, including tourism (Dias *et al.,* 2021; Rahmayanti, Ahmad, Aswidra & Yola, 2021; Said, Nasser & Alkhulaidi, 2021). In this study, two techniques of the FDM were followed to analyse the data, namely a triangular fuzzy number (TFN) and the defuzzification process (Manakandan, Rosnah, Mohd & Priya, 2017; Said *et al.*, 2021; Yusoff *et al.*, 2021). Yusoff *et al.* (2021) refer to a TFN as a process of converting experts' agreement from a Likert scale to fuzzy numbers (see Chapter 4). These fuzzy numbers are used to calculate (i) the threshold value (d-Construct)—experts' agreement on each construct, and (ii) experts' consensus on each item. Conversely, defuzzification is the process of calculating the fuzzy score value (Amax), which represents the average of a fuzzy number (Dawood, Sharif, Ghani, Zulzalil, Zaidan & Zaidan, 2021). See Chapter 4 for further details.

Subsequent to the evaluation of the face and content validity of the initial pool of items, Phase 2 focused on assessing the construct validity and reliability of the proposed measurement scale (see Figure 1.2).

1.4.2 Phase 2: Assess construct validity and reliability of the measurement scale

After refining the items, it is recommended to re-analyse the retained items of the proposed scale using a new sample of respondents (Churchill, 1979; Tsang *et al.*, 2017). Morgado *et al.* (2017) indicate that validating a measurement scale can be achieved by assessing whether the proposed scale has construct validity and reliability. This was assessed in Phase 2.

Hair, Black, Babin, and Anderson (2019) explain construct validity as the degree to which a scale accurately represents the concept of interest. However, reliability is an assessment of the degree of consistency between numerous measurements of a given variable (Hair *et al.*, 2019). The following four sections contain details regarding the population and sampling (1.4.2.1), the research instrument (1.4.2.2), the ethics and fieldwork (1.4.2.3), and the data analysis (1.4.2.4) applied in Phase 2.

1.4.2.1 *Population and sampling*

The target population for Phase 2 (and Phase 3) was tourists who have visited one of the World Heritage Sites in South Africa that were designated for their cultural value (Fossil Hominid Sites [Maropeng and/or Sterkfontein Caves], Robben Island, or Mapungubwe Cultural Landscape). The Richtersveld Cultural Landscape and ǂKhomani Cultural Landscape were excluded from the study as both sites currently offer limited to no heritage interpretation services (Marais, 2018), which form an integral part of this study. Unfortunately, a database of such tourists is not available, and the tourists were sampled using the non-probability convenience sampling method. Casteel and Bridier (2021) refer to convenience sampling as the process of collecting data from an appropriate sampling frame that is accessible and readily available to the researcher.

According to Morgado *et al.* (2017), to achieve construct validity and reliability, the data should be collected using a large and suitably representative sample of the target population. The study required independent samples for exploratory factor analysis (EFA) in Phase 2 and confirmatory factor analysis (CFA) in Phase 3. Since the population size of this study was unknown, the following three guidelines were used to calculate the sample size for phases 2 and 3:

(i) The absolute size of the dataset (Hair *et al.*, 2019; Lakens, 2022): Hair *et al.* (2019) point out that researchers should not conduct factor analysis using a sample of less than 50 observations. It was, therefore, necessary to consider the next guideline for sample size.

(ii) The observation-to-variable ratio (Hair *et al.*, 2019): This study used at least five times as many observations as variables (63 items x 5 responses = 315) for factor analysis (Gorusch, 1983; Hatcher, 1994; Hair *et al.*, 2019). However, to account for the data analysis of Phase 3 as well, this study required a larger sample size than only 315 and thus opted for 630 (315 x 2).

(iii) The 'strength' of the factor analysis results as defined by a variable's communality in a factor (Hair *et al.*, 2019): The study aimed for communalities greater than 0.40, with at least four high loadings per factor (>0.40). According to Fabrigar and Wegener (2009), a sample size of 200 is adequate if all communalities are greater than 0.40. As a result, a minimum of 315 independent samples (for EFA and CFA) were sufficient in this study.

This study obtained a sample size of N = 839. In order to conduct data analyses for Phase 2 (EFA) and Phase 3 (CFA), independent samples were required (Hair *et al.*, 2019; Tellegen, Ma, Day, Hodges, Panahi, Mazzucchelli *et al*., 2022). This sample was, therefore, randomly divided into two sub-samples, with Phase 2 using the first sub-sample (n = 350) and Phase 3 using the remaining sub-sample of 489 (n = 489).

1.4.2.2 *Research instrument*

The research instrument was an online, closed-ended questionnaire that was designed using LimeSurvey software. The questionnaire had four screening questions to ensure that no minors participated and that the correct respondents contributed to the study (the respondent has visited a World Heritage Site, experienced interpretation services, and has not participated previously). If the respondents met the requirements of all four screening questions, they were able to proceed with the questionnaire.

Sections A, B, and C of the questionnaire required the respondents to indicate their level of agreement with each item using a 5-point Likert scale (where 1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, and 5 = Strongly agree). Section A consisted of 23 heritage interpretation items for the site that the respondent had most recently visited, and these items were based on the work of previous authors. The authors included Asfaw and Gebreslassie (2017), Alazaizeh, Jamaliah *et al.* (2019), Enseñat-Soberanis, Frausto-Martínez, and Gándara-Vázquez (2019), Orabi and Fadel (2020), and Weng, Liang, and Bao (2020). This section was only used in Phase 3 for the data analysis. Section B focused on responsible tourist behaviour towards natural resources, and Section C addressed responsible tourist behaviour towards cultural resources. Sections B and C were based on the revised items from Phase 1. Section D included questions on the respondents' demographic information (e.g. gender, level of education, and place of residence) and was based on the work of Carr (2002), Xu, Kim, Liang, and Ryu (2018), and Liu, Qu, Meng, and Kou (2022).

1.4.2.3 *Ethics and fieldwork*

Since this study was conducted in three phases, the researcher applied for ethics amendments with the Ethics Review Committee of the College prior to the fieldwork in Phase 2. These amendments included a new sample, methods, fieldwork process, respondent information sheet, and research instrument in addition to gatekeeper letters for both Phase 2 and Phase 3. The fieldwork for phases 2 and 3 was carried out from May to July 2022.

The survey involved the study sites posting or distributing the online questionnaire link on their social media page(s). This was redistributed after 14 days and 28 days. The researcher also conducted onsite fieldwork at the Fossil Hominid Sites of South Africa. After visiting the interpretation facilities, tourists were given a smartphone, tablet, or laptop that were connected to the internet in order to complete the online questionnaire.

1.4.2.4 *Data analysis*

The completed questionnaires were automatically captured into Microsoft Excel and imported into IBM SPSS and IBM AMOS Version 28 for data analysis. The data analysis for Phase 2 used the first sub-sample (n = 350). The analysis process began with item descriptive statistics to provide an understanding of the data distribution, to assist in the detection of outliers and errors, and to prepare the study for further statistical analyses (Kaur, Stoltzfus & Yellapu, 2018; Sarka, 2021). Next, common method variance (CMV) was assessed using the Harman's single-factor test. This test is a technique that loads all items into an EFA to check whether a single factor reports most of the covariance among the measures; if not, the assertion is that CMV is not a prevalent issue (Jordan & Troth, 2020). Thereafter, EFA was used to condense a large number of variables into a smaller set of factors and provide an empirical estimate of the factorial structure (Hair *et al.*, 2019). Finally, the internal consistency of the measurement scale was assessed using the Cronbach's alpha coefficient, inter-item correlation (IIC), and corrected item-total correlation (CITC) (Nunnally, 1978; Piedmont, 2014; Zijlmans, Tijmstra, Van der Ark & Sijtsma, 2019). These analyses helped with the construct validity and reliability of the measurement scale.

It is worth noting that the EFA results delivered two possible scale structures, and it was, therefore, critical to validate the EFA results. This was done by using a CFA as an additional step to confirm these structures and to select the best structure to reach the aim of the study. After assessing the CMV, conducting an EFA, and assessing internal consistency reliability, the final phase (Phase 3) of the study was to cross-validate the proposed measurement scale.

1.4.3 Phase 3: Cross-validating the measurement scale

Figure 1.2 elucidates the final phase (Phase 3) that dealt with cross-validation of the proposed scale. Cross-validation is the statistical procedure that is used to show that the accuracy of a model in two or more random samples taken from the same population is consistent (Acar, 2014). The following four sections contain details regarding the population and sampling (1.4.3.1), the research instrument (1.4.3.2), the ethics and fieldwork (1.4.3.3), and the data analysis (1.4.3.4) applied in Phase 3.

1.4.3.1 *Population and sampling*

The second sub-sample (n = 489) was used for the population and sampling in Phase 3 of the study, as discussed in section 1.4.2.1.

1.4.3.2 *Research instrument*

The research instrument for Phase 3 was discussed in section 1.4.2.2.

1.4.3.3 *Ethics and fieldwork*

The ethics and fieldwork process applied in Phase 3 was discussed in section 1.4.2.3.

1.4.3.4 *Data analysis*

As previously explained, the data of the second sub-sample (n = 489) was analysed using IBM SPSS and IBM AMOS Version 28. Phase 3 data analysis started with item descriptive statistics for demographic information with the goal of providing an understanding of the data distribution, thus aiding in the detection of outliers and errors and preparing the study for further statistical analyses (Kaur *et al.*, 2018; Sarka, 2021).

Next, a multifactor CFA was used to investigate the presence of a measurement theory (Orçan, 2018) on the previously established structures in the EFA with a new data set. It was critical to validate the EFA results of both scale structures as an additional step in order to confirm these structures and to select the best structure to reach the aim of this study.

Thereafter, convergent and discriminant validity were evaluated to ensure that the measurement model used across the population produced corresponding depictions of the exact construct (Babin, Boles & Robin, 2000). In this regard, the use of an average variance extracted (AVE) assisted in describing the degree to which the measures were distributed among the construct (Hair *et al.*, 2019). For discriminant validity, the Fornell-Larcker criterion (Fornell & Larcker, 1981) and the heterotrait-monotrait ratio of correlations (HTMT) (Henseler, Ringle & Sarstedt, 2015) were applied.

Following on from this, a CFA was used to detect possible CMV using the common marker variable technique, which enables the researcher to include measures that are thought to influence the source of the bias (Eichhorn, 2014). Thereafter, measurement invariance was established using configural, metric and scalar invariance (Lee, 2018) to determine if respondents from different groups interpreted the same measure in a conceptually similar way (Bialosiewicz, Murphy & Berry, 2013).

Thereafter, construct and scale descriptive statistics were used to gain insights into the data distribution and to calculate construct and overall scale scores (Hair *et al.*, 2019). The overall scale score aids in providing a standard range (Labrague & De Los Santos, 2020) that allows direct and fair comparisons of tourists' responsible behaviour within a cultural heritage site. Calculating the total scale score for responsible tourist behaviour in cultural heritage tourism thus required the development of the second-order factor model to accommodate the overall scale construct of responsible tourist behaviour in cultural heritage tourism. Therefore, in the next step, the CFA second-order factor model was applied to demonstrate the two layers of latent constructs (Hair *et al.*, 2019).

Since scale validity is an ongoing process, this study used group difference statistics to validate the scale's predictive capability further while adhering to its dimensionality (Boateng, Neilands, Frongillo, Melgar-Quiñonez & Young, 2018). Therefore, the independent-sample t-test was used to assess group differences between demographic variables (gender and educational level)[1] and the constructs and overall scale (Sangthong & Klubnual, 2021).

Finally, the scale was validated further by calculating the strength of the correlation between the distinct construct, heritage interpretation, and the scale for responsible tourist behaviour in cultural heritage tourism (Saunders *et al.*, 2019). The assumption was that there would not be a strong correlation between heritage interpretation and the constructs/scale for responsible tourist behaviour in cultural heritage tourism.

1.5 DEFINITIONS OF TERMS

The following sections present the definitions of the terms that are used throughout this study.

1.5.1 Alternative tourism

Alternative tourism is "broadly defined as forms of tourism that are consistent with natural, social, and community values and which allow both hosts and guests to enjoy positive and worthwhile interaction and shared experiences" (Smith & Eadington, 1992:3).

1.5.2 Cultural heritage tourism

Cultural heritage tourism is a form of alternative tourism (Jovicic, 2016; Fang, 2020). The National Trust for Historic Preservation in the United States (2018) defines cultural heritage tourism as travelling to experience the places, artefacts and activities that genuinely represent the present and historical stories and people, including the cultural, historical, and natural resources that make up heritage tourism sites.

1.5.3 Responsible tourist behaviour

Said (2018:62) defines responsible tourist behaviour as follows:

[1] The category 'other' from the gender data was too little and was excluded in the measurement invariance and group differences analyses; while the data from educational levels was transformed into two groups namely higher (i.e. postgraduate diploma/honours, master's degree, doctoral degree, and post-doctoral degree) and lower (i.e. no school, some schooling, matric/secondary school, undergraduate diploma/degree, and technical education) educational levels and used in the measurement invariance and group differences analyses.

> "Understanding the impact of his behaviour, acting by the destination norms, collecting information before travel, appreciating the lifestyle and culture of the host community, improving the welfare of residents, conserving the natural environment, adopting conservation lifestyle actions, political pro-environmental actions and education, and supporting environmental policies."

In the context of cultural heritage tourism, Said's (2018) definition is adapted to behaviour that considers the impact of actions on the natural and cultural heritage resources and that appreciates and conserves these resources for current and future generations.

1.5.4 Heritage interpretation

Tilden (1977:8) defines interpretation as "an educational activity which aims to reveal meaning and relationships through the use of original objects, by first-hand experience, and by illustrative media, rather than simply to communicate factual information." Similar to the definition of interpretation, heritage interpretation is defined as a wide variety of communication activities that intend to raise awareness and reinforce the audience's understanding of the heritage (International Council on Monuments and Sites [ICOMOS], 2008; Almuhrzi, Hughes & Ballantyne, 2020).

1.5.5 Scale development

Scale development is a particular process that seeks to define a set of variables that represents a concept that cannot be accurately measured by a single variable (DeVellis, 2003; Hair *et al.*, 2019). It typically involves both exploratory and confirmatory analyses (Hair *et al.*, 2019).

1.6 STUDY OUTLINE

The thesis comprises six chapters. In Chapter 1, the background, problem statement, primary and secondary objectives, research design, methods and data analyses, definitions of terms, and the outline of the study are presented.

Chapter 2 presents a literature review on cultural heritage tourism and theories of tourist behaviour. Initially, the chapter differentiates between the two forms of tourism, namely mass tourism and alternative tourism to contextualise cultural heritage tourism.

Thereafter, behavioural theories and models are presented, followed by a discussion of the theory of planned behaviour as applied in the context of cultural heritage tourism. Finally, the chapter ends with a theoretical framework for the development of a scale for proposed responsible tourist behaviour in cultural heritage tourism and a discussion on scale development.

Chapter 3 focuses on the theoretical foundation for interpretation and responsible behaviour towards natural and cultural resources at a heritage site. The chapter begins by exploring the literature on heritage interpretation. Thereafter, the chapter identifies measurement items related to natural and cultural resources at heritage sites.

Chapter 4 contains a discussion on the research methods that were applied in three phases: Phase 1 focused on item generation; Phase 2 dealt with the development of a proposed measurement scale; and Phase 3 involved the cross-validation of the scale. The results of these three phases are provided in Chapter 5.

Using literature and the research results, Chapter 6 draws conclusions and makes recommendations regarding the scale for responsible tourist behaviour in cultural heritage tourism. The chapter also provides the contributions and limitations of the study in addition to prospects for further research.

CHAPTER 2: CULTURAL HERITAGE TOURISM AND THEORIES OF TOURIST BEHAVIOUR

2.1 INTRODUCTION

Based on the first secondary research objective (see section 1.3.2), the purpose of this chapter is to present a literature review on cultural heritage tourism and theories of tourist behaviour. The chapter commences with contextualising cultural heritage tourism within alternative tourism. Cultural heritage tourism is often used interchangeably with terms such as ‘cultural tourism’ and ‘heritage tourism’ to explain cultural heritage offerings at tourism destinations (Viljoen & Henama, 2017). In the context of this study, the term cultural heritage tourism is used to explain these tourism offerings. Cultural heritage tourism plays an important role in the tourism industry because of its significance in economic, cultural, and environmental dimensions (Jagodzińska, Sanetra-Szeliga, Purchla, Van Balen, Thys, Vandesande *et al.*, 2015; De Medici, De Toro & Nocca, 2019; Weng, He, Liu, Li & Zhang, 2019). This study focuses on World Heritage Sites as an important initiative to ensure the conservation and protection of cultural heritage sites (UNESCO, 2019). Stakeholder behaviours within these sites play a significant role in the sustainability of World Heritage Sites (Prendergast, Lam & Ki, 2016; Buckley, 2018; Gong *et al*., 2019). It is, therefore, essential for tourism managers to understand the fundamentals of tourist behaviour. Hence, this chapter elaborates on common tourist behaviour theories and models and presents the theory of planned behaviour in the context of cultural heritage tourism. The chapter concludes with the development of a proposed theoretical framework and a discussion on scale development. Figure 2.1 elucidates the layout of this chapter.

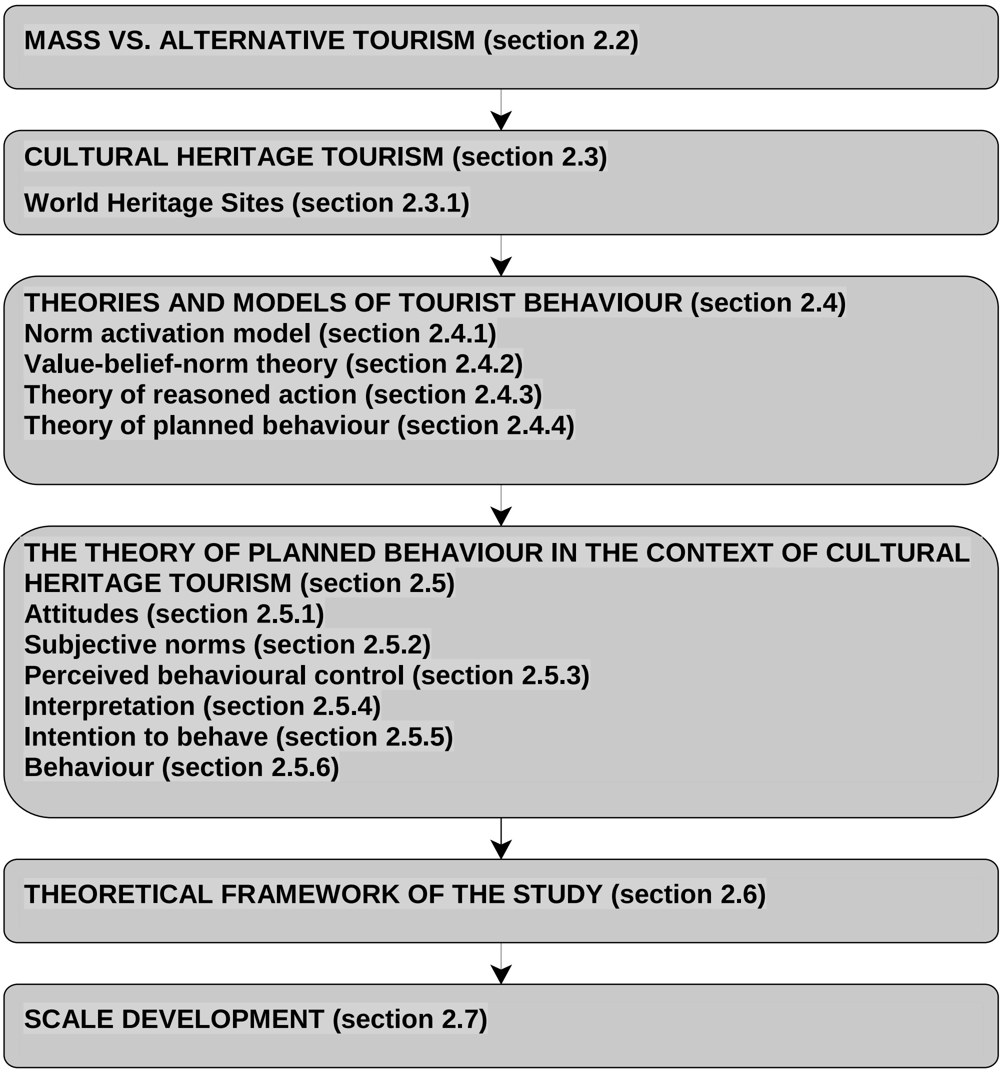

Figure 2.1: Layout of the chapter

Source: Author's own creation

2.2 MASS VS. ALTERNATIVE TOURISM

There are two main tourism categories: mass tourism and alternative tourism (Fang, 2020; Georgakopoulou & Delitheou, 2020). Chong (2020) asserts that mass tourism carries substantial economic benefits for the host community. In the same notion, Jeffrey and Bleasdale (2017) agree that the massive arrival of tourists supports the employment of the host community. However, Theng, Qiong, and Tatar (2015) refer to mass tourism as an extreme concentration of tourists in a destination and claim that an over-capacitated destination can easily lead to its degradation and the loss of its attractiveness. Social, cultural, and ecological dilemmas are also associated with mass tourism, and this has opened up prospects for the research of alternative tourism

(Jovicic, 2016; Prendergast *et al.*, 2016; Kim *et al.*, 2018). According to Smith and Eadington (1992), alternative tourism includes forms of tourism that encourage the conservation of natural and sociocultural values and let both the host community and the tourist share and enjoy valuable experiences. The different approaches to alternative tourism started in the early 1980s and led to proposals and models intending to increase the optimistic influences of tourism on the environment and the livelihoods of the local people (Jovicic, 2016; Kim *et al.*, 2018). A summary of the definitions of some of the approaches to alternative tourism is presented in Table 2.1.

Table 2.1: Approaches to alternative tourism

Approach	Definition	Author/s
Cultural heritage tourism	This form of tourism represents the stories and people of the past and present and includes the cultural, historical, and natural resources that make up heritage tourism sites.	National Trust for Historic Preservation in the United States (NTHPUS) (2015, 2018)
Ecotourism	This form of tourism deals with natural areas that protect the environment and sustain the well-being of the local communities; ecotourism includes interpretation and education.	Lubowiecki-Vikuk, De Sousa, Đerčan, and Leal Filho (2021)
Ethical tourism	This form of tourism focuses on the mutual understanding and respect between tourists and the host societies.	Sun, Deng, and Zhang (2019)
Green tourism	This form of tourism is increasingly aware and sympathetic towards environmental problems.	López-Sánchez and Pulido-Fernández (2016)
Responsible tourism	Responsible tourism aims to minimise negative economic, environmental, and social impacts; to generate economic benefits for local people; to contribute towards the conservation of natural and cultural heritage; and to provide enjoyable experiences for tourists through more meaningful connections with local people and a greater understanding of local, cultural, social, and environmental issues. Responsible tourism provides access for physically challenged people, is culturally sensitive, engenders respect between tourists and hosts, and builds local pride and confidence.	Goodwin (2014)
Sustainable tourism	"… tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities."	United Nations World Tourism Organization (UNWTO) (2013:10)

From Table 2.1 above, one can conclude that the different alternative tourism approaches (cultural heritage tourism, ecotourism, ethical tourism, green tourism, responsible tourism, and sustainable tourism) improve circumstances and preserve the authentic appearance of the tourism destination (Theng *et al.,* 2015; Jovicic, 2016; Fang, 2020).

Scholars concur that cultural heritage sites must implement sustainable tourism practices to strengthen the three pillars of sustainability, namely environmental, socio-cultural, and economic, with the goal of striking a balance of positive and negative tourism effects (Labadi *et al.*, 2021; Schönherr, Eller, Kallmuenzer & Peters, 2023). However, sustainable tourism has been criticised for lacking practical virtues (Higgins-Desbiolles, 2010; Ting *et al.*, 2020). Gong *et al.* (2019), Zhao *et al.* (2020), and Alam, *et al.* (2021) have thus proposed that a shift from sustainable tourism to other alternative tourism approaches (see Table 2.1), which may practically aid in the conservation of resources within cultural heritage tourism sites. Hence, the focus of this study is cultural heritage tourism, which implies the responsibility to respect and develop local cultures and communities, boost their social and economic development, and protect them from over-commercialisation and unreasonable and overexploited patterns. Sifolo (2020) points out that it is, therefore, imperative to preserve and conserve invaluable and unique cultural heritage for future generations.

2.3 CULTURAL HERITAGE TOURISM

Cultural heritage tourism is described as a new academic research topic (Timothy, 2018) that has become a global phenomenon (Trinh & Ryan, 2016; Torre & Scarborough, 2017; Sifolo, 2020). Cultural heritage tourism is a blend of three concepts, namely culture, heritage, and tourism. The first concept, *culture,* can be defined as the ideas, customs, and social behaviour of specific people or society (Upen, 2018). Thus, culture incorporates every aspect of people's way of life. According to Jagodzińska *et al.* (2015), culture can unite people and can become a strategic tool for the protection of the identity and the authenticity of places and local communities. Upen (2018) further states that culture is reflected in human values, beliefs, customs, languages, and traditions and in the way that people express ideas and creativity, their history, and their heritage.

The second concept, *heritage* is defined as "our legacy from the past, what we live with today, and what we pass on to future generations" (Wang, Lasaponara, Luo, Chen, Wan, Yang *et al*., 2020:565-566). The principal distinction between culture and heritage is that culture focuses on what the people make, and heritage is based on what the people inherit by nature, history, or culture (Upen, 2018).

Tourism (the third concept) is an industry that offers a platform to promote culture and heritage (or cultural heritage) (Ruhanen & Whitford, 2019). According to Saha and Khare (2020), when cultural heritage is used for tourism-related reasons, it is called cultural heritage tourism.

Although many definitions of cultural heritage tourism are presented in academic literature, there is no universal definition because of the complexities of the elements of cultural heritage tourism (Seyfi, Hall & Rasoolimanesh, 2020). Standard definitions or interpretations of the concept of cultural heritage tourism that are explained from different stakeholder perspectives are frequently used in tourism literature (Ballantyne, Hughes, Ding & Liu, 2014; Ismail, Masron & Ahmad, 2014; UNWTO, 2018). McNulty and Koff (2014:8) define cultural heritage tourism as "the coordinated and mutually supportive application of cultural, heritage and tourist resources for the improvement of the overall quality of community life." The United Nations World Tourism Organization (2018:44) defines cultural heritage tourism as

> "all aspects which represent over-arching, and clearly defining, ways of life and lifestyle of a population both past and present, with implicit carry-forward into the future. Importantly, they go beyond the curio/arts and craft stereotypes to reflect aspects of identity, both visible and invisible, daily and special occasion. Ultimately, they are aspects which give the people of a nation/region a sense of identity, community, belonging and pride."

These definitions place the interests of the community at the centre of cultural heritage tourism.

Ömüriş, Karsavuran, and Dirlik (2016) define cultural heritage tourism as a type of tourism that depends on the ability of a destination's cultural heritage resources to be consumed by tourists. In the same notion, the Global Heritage Fund (2019) explains cultural heritage tourism as a tourist experience that involves visiting destinations and participating in activities that authentically represent the past and present stories and the people. These two definitions maintain that cultural heritage tourism focuses only on cultural resources.

In contrast, the USNAI (2017) and UNWTO (2018) explain cultural heritage tourism as a component of tourism that encompasses both the natural and cultural historical values of a destination and occurs in a wide variety of landscapes and settings. Similarly, Weng *et al.* (2019) refer to cultural heritage tourism as a significant component of the tourism industry because of its outstanding value in cultural, historical, and environmental dimensions. Bourdeau, Gravari-Barbas, and Robinson (2016) describe cultural heritage tourism as a form of tourism that includes cultural and natural resources, stories, and events. The National Trust for Historic Preservation in the United States (2015, 2018) defines cultural heritage tourism as travelling to experience the places, artefacts, and activities that genuinely represent the stories and the people of the past and present and the cultural, historical, and natural resources that make up the heritage tourism sites.

It is clear from the above definitions that cultural heritage tourism is centred on not only cultural resources but also natural resources. Therefore, in this study, cultural heritage tourism is defined as *the travelling to or visiting of cultural heritage sites, which are rich in unique cultural and natural resources that are representative of the ways of life of the people and other species who live or lived there.*

According to UNESCO (2018), cultural heritage tourism is recognised by the international scientific community, numerous international and national government bodies, and non-governmental organisations as an essential factor in the identity of societies and groups. The United Nations Educational, Scientific and Cultural Organization (2018) highlights that cultural heritage tourism should align with Goal 11 (in particular 11.4) of the United Nations Sustainable Development Goals 2030, namely strengthening efforts to protect and safeguard the world's cultural heritage. Cultural heritage sites significantly contribute to sustainable growth and the social and economic well-being of host communities, including their sense of identity (O'Reilly, 2020). This means that it is crucial to evaluate the sustainability of cultural heritage sites for tourism development (Georgakopoulou & Delitheou, 2020). As a result, national and international activities were initiated to conserve heritage by designating World Heritage Sites.

2.3.1 World Heritage Sites

International activities in heritage management have resulted in a constant stream of international heritage standard setting (UNESCO, 2019). The standards are established and disseminated by key international organisations such as UNESCO, ICOMOS, the International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM), and the International Union for Conservation of Nature (IUCN) (UNESCO, 2019). It is beyond the scope of this study to delve deeper into each one of these organisations and their responsibilities towards heritage standard setting.

According to UNESCO (2019), the World Heritage Convention became effective in 1972, with the main aim being “the identification, protection, conservation, presentation and transmission to future generations of cultural and natural heritage of outstanding universal value” (UNESCO, 2019:10). The United Nations Educational, Scientific and Cultural Organization (2019) refers to outstanding universal value as cultural and/or natural significance that is extraordinary in transcending national boundaries and being of common significance for present and future generations of all humanity. Alsalloum (2018) mentions that state parties are guided by the World Heritage Convention in producing a tentative list of properties to be designated for the World Heritage List. Thereafter, the proposed property compiles and submits a nomination document to show how it will manage the outstanding universal value of the property by responding to issues raised in the nomination document and by indicating the presence of a management plan or system that is suitable for protecting the property (Elfadaly, Shams & Lasaponara, 2020). A site is selected for the World Heritage List as cultural, natural, or mixed heritage (Alsalloum, 2018). Post-inscription requires the state party to respect its commitment to conserving the outstanding universal value of the property through effective long-term management and through a succession of World Heritage procedures that permits this protection to be confirmed (UNESCO, 2013; Iamandi, 2015).

The country of South Africa is one of the state parties that endorsed the World Heritage Convention in 1997 (Republic of South Africa, 2015). South Africa hosts 10 UNESCO World Heritage Sites (UNESCO, 1992–2023; Odeku, 2018). Five of the ten World Heritage Sites are listed on the World Heritage List as cultural heritage sites (the Fossil Hominid Sites of South Africa, Mapungubwe Cultural Landscape, Richtersveld Cultural and Botanical Landscape, Robben Island, and ǂKhomani Cultural Landscape). Moreover, four of the World Heritage Sites are listed as natural heritage sites (Barberton Makhonjwa Mountains, Cape Floral Region Protected Areas, iSimangaliso Wetland Park, and Vredefort Dome), and one is listed as a mixed heritage site (Maloti-Drakensberg Park) (UNESCO, 1992–2023).

The cultural heritage sites on the World Heritage List are found within different cultural landscapes. The United Nations Educational, Scientific and Cultural Organization (2007) defines *cultural heritage landscapes* as the collective works of nature and man, and these landscapes demonstrate an extensive and close relationship between humans and their natural environment. Thus, cultural heritage landscapes have close interrelationships between culture and natural environments (Mitchell, Rössler & Tricaud, 2009), thus supporting the argument that cultural heritage tourism incorporates both cultural and natural resources. The collective works of nature within these landscapes include natural resources (e.g. flora and fauna) and cultural resources such as the tangible (e.g. historical artefacts) and intangible (e.g. historical stories) heritage of humanity (UNESCO, 2018). Chapter 3 delves deeper into the literature on tangible and intangible heritage. Since December 1992, the World Heritage Committee has incorporated three categories of cultural landscapes into their operational guidelines (Rössler, 2000; Mitchell *et al.*, 2009). Refer to Table 2.2.

Table 2.2: Cultural landscape categories

Category	Incorporated aspects	Reason(s) for development
Garden and parkland landscapes	Associated with religious or other monumental buildings and ensembles	Constructed for aesthetic reasons
Organically evolved landscape	Embraces an initial social, economic, administrative, or religious imperative and has developed its present form by association with and in response to its natural environment	Present form by association with and in response to its natural environment
Associative cultural landscape	Powerful religious, artistic, or cultural relations of the natural element instead of material cultural evidence	Justifiable by virtue

Source: Adapted from Mitchell et al*. (2009:20)*

According to Pătru-Stupariu, Pascu, and Bürgi (2019), most of these cultural heritage landscapes are used for tourism purposes. Laue, Challis, and Mullen (2018) explain that sites that are open to the public do not remain undisturbed. Moreover, Baral, Hazen, and Thapa (2017) point out that tourists participate in visits that may affect the sustainability of the site. Caust and Vecco (2017) concur, stating that World Heritage Sites suffer environmental and cultural effects that are caused by an influx of tourists. Timothy (2017) points out that although there are economic benefits associated with cultural heritage tourism, it is necessary to find a balance between conservation and the use of these landscapes for tourism. According to Kempiak, Hollywood, Bolan, and McMahon-Beattie (2017), tourism management is important in the sustainability of heritage sites. This means that the managers of World Heritage Sites must understand the larger, international context of heritage sites (Leung, Spenceley, Hvenegaard & Buckley, 2018). To ensure sustainability, UNESCO (2015) requires World Heritage Sites to meet and maintain the World Heritage Convention standards.

Considering the above, Buckley (2018), Gong *et al.* (2019), and Prendergast *et al.* (2016) argue that the emphasis on ethical behaviours or actions taken by tourism stakeholders, including destination residents, government, tourism businesses, and tourists, plays a significant role in the sustainability of these sites. In this regard, it is essential for tourism managers to understand the fundamentals of tourist behaviour and how to observe and measure this behaviour in order to allow managers to plan tourism offers and sustainably manage tourists effectively (Juvan, Omerzel & Maravić, 2017).

2.4 THEORIES AND MODELS OF TOURIST BEHAVIOUR

Literature suggests that the most common and accepted theories in the cultural heritage tourism domain for understanding tourist behaviour include the norm activation model, the value-belief-norm theory, the theory of reasoned action, and the theory of planned behaviour (Buonincontri *et al.*, 2017; Han & Hyun, 2017; Tan, Md Noor, Rasoolimanesh & Mustafa, 2020).

2.4.1 Norm activation model

The norm activation model was proposed by Shahlom Schwartz in 1977. This theory was originally used to explain altruistic behaviour. The personal norms are the fundamental part of this model. Schwartz (1977) refers to these norms as feelings of moral obligation that are not exclusive to altruistic behaviour. These personal norms are used in the norm activation model to envisage individual behaviour. According to the model, the awareness of performing a particular behaviour has certain consequences (awareness of consequences), and the feelings of responsibility for performing the specific behaviour (ascription of responsibility) are the antecedents of these personal norms (see Figure 2.2).

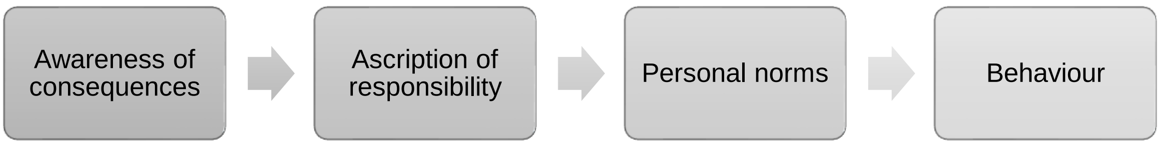

Figure 2.2: Causal structure of norm activation model

Source: Adapted from De Groot and Steg (2009:427)

According to Schwartz (1977), becoming aware of one's negative consequences on others fosters a sense of commitment. The second step of the norm activation model suggests that a person must acknowledge some responsibility for their actions and the consequences (Zhang, Zhang, Ye, Wu, Jin & Zhang, 2016; Qiao & Gao, 2017; Mehdizadeh, Nordfjaern & Mamdoohi, 2019). Existing research presents two interpretations for ascription responsibility (Gong *et al.*, 2019). The first interpretation focuses on feelings of responsibility for not taking the initiative to avoid negative consequences (Bamberg & Schmidt, 2003). The second interpretation explains the actions that people can initiate to avoid negative consequences (Stern, 2000). Personal norms are the immediate antecedent of intention or behaviour and comprise the main aspect of the norm activation model (Liu, Sheng, Mundorf, Redding & Ye, 2017; Mehdizadeh *et al.*, 2019). Schwartz (1977) explains personal norms as feelings of moral obligation to perform a helping behaviour provided by internalised norms or values. Existing literature also uses terms such as moral norm, moral obligation (Han, 2015), feeling of responsibility (Kaiser, Ranney, Hartig & Bowler, 1999), perception of responsibility (Eden, 1994), and responsibility (De Groot & Steg, 2009) to refer to personal norms.

De Groot and Steg (2009) interpreted the norm activation model as either a mediator or a moderator model to predict pro-social behaviour. The mediator model suggests that a person's awareness of consequences influences personal norms through the ascription of responsibility. Chee, Ho, Leow and Wong (2018) mention that a person has to be cognisant of the effects of a behaviour before feeling responsible for it. This simply refers to a person's perception or judgement of the probability of a threat and the severity thereof (De Groot & Steg, 2009; Qiao & Gao, 2017). Other research shows that feelings of responsibility trigger personal norms, which may prompt a person's behaviour (Onwezen, Antonides & Bartels, 2013). Park and Shin (2017) argue that personal norms often appear to be the immediate precursor of pro-social intention or behaviour.

Later research on this moderation theory focused on pro-environmental behaviour (Gao *et al.*, 2017; Esfandiar, Pearce & Dowling, 2019). In the context of tourism, Juvan and Dolnicar (2017) define pro-environmental behaviour as the behaviour of tourists that promotes the protection of the natural setting and resources when the tourists are on a vacation. Drawing on the norm activation model in an attempt to determine tourists' pro-environmental behaviour when visiting natural heritage sites in China, Gao *et al.* (2017) explored the correlation between tourists' perceptions of the negative effects of tourism and their perceived responsibility. The results revealed that the former positively influenced tourists' ascription of responsibility, and this positively influenced their perceptions of responsibility (Gao *et al.*, 2017). Esfandiar *et al.* (2019) incorporated elements of the norm activation model to determine pro-environmental binning behaviour of visitors in national parks. Esfandiar *et al.* (2019) deliberate that pro-environmental binning behaviour is a socially responsible behaviour (e.g. assisting people). Moreover, Lee, Lee, and Yoo (2020) applied the norm activation model to underscore the influences of personal norms on pro-sustainable behaviours.

The norm activation model claims that a person's behaviour is determined by the extent of their personal responsibility for such behaviour, and this is reflected in personal norms (Liu *et al.*, 2017). According to Liu *et al.* (2017), based on how constant a person's behaviour is with their personal norms, a sense of pride or guilt may arise. People measure their behaviours based on the general notion of values and norms, and these may influence direct behaviour in specific settings (Do Paço, Shiel & Alves, 2019). Chen (2020) and Stern, Dietz, Kalof, and Guagnano (1995) recognise that egoistic, social, and biospheric value orientations collaborate to be the immediate powerful antecedents of people's willingness to act in a pro-environmental way. As a result, Stern, Dietz, Abel, Guagnano, and Kalof (1999) developed the value-belief-norm theory to describe the effect of people's values on behavioural intentions or behaviour in an environmental setting (Ghazali, Nguyen, Mutum & Yap, 2019).

2.4.2 Value-belief-norm theory

The value-belief-norm theory was suggested by Stern *et al.* (1999). According to Han, Olya, Cho, and Kim (2018) and Megeirhi *et al.* (2020), the value-belief-norm theory originates from environmental psychology and environmental social psychology literature. This theory is common in tourism research exploring pro-environmental behaviours and emphasises morality. The theory incorporates the value and norm components from the values theory (Schwartz & Bilsky, 1987) and the norm activation model (Schwartz, 1977; Ünal, Steg & Gorsira, 2018; Nordfjærn & Rundmo, 2019). The values theory explains that people's attitudes and behaviours are the result of constant and trans-situational beliefs regarding the main goal of social interaction (Landon, Woosnam & Boley, 2018). This implies that values are suitable variables to anticipate beliefs and attitudes (Schwartz, 1994). The norm activation model and the value-belief-norm conceptual frameworks describe moral norms as the predictor of pro-environmental actions (Stern *et al.*, 1999; De Groot & Steg, 2009). Figure 2.3 elucidates the causal structure of the value-belief-norm theory.

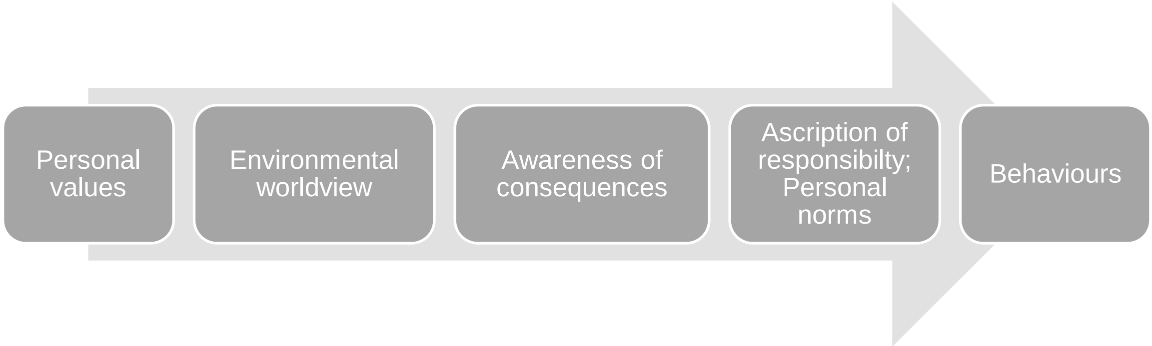

Figure 2.3: Causal structure of value-belief-norm theory

Source: Adapted from Stern (2000:412)

As illustrated in Figure 2.3, the value-belief-norm causal structure suggests that *personal values* (e.g. egoistic, altruistic, and biospheric) influence beliefs, which are operationalised through an environmental worldview (Schultz, 2002). Schultz (2002) refers to *egoistic values* as individuals' beliefs about themselves in relation to nature (Stern *et al.*, 1999). In other words, egoists' own interests and thoughts are prominent (Gupta & Sharma, 2019). *Altruistic values* focus on the well-being of others such as family, friends, society, and future generations (Schultz, 2002). *Biospheric values* are concerned with all living things such as vegetation, the biosphere, and the ecosystem (Schultz, 2002). Altruistic and biospheric values have shown positive effects on the environmental worldview, while the opposite can be said about egoistic values (Gupta & Sharma, 2019). According to Stern *et al.* (1999), the environmental worldview influences awareness of behavioural consequences and the ascription of responsibility, which leads to the activation of personal norms.

The study of Megeirhi *et al.* (2020) offers support for the use of the value-belief-norm theory in the context of cultural heritage tourism. Megeirhi *et al.* (2020) deepen the understanding of the conceptual framework with the addition of the complex variable, cultural worldview, to explain a reasonable deviation in behavioural intentions that assists cultural heritage tourism. In contrast, other studies that have adopted the value-belief-norm theory in the domain of cultural heritage tourism report that the theory limits the assessment of actual behaviour in cultural heritage tourism and simply stops at behavioural intentions (Kiatkawsin & Han, 2017; Han *et al.*, 2018; Landon *et al.*, 2018). For these reasons, Martin Fishbein's (1967) theory of reasoned action is considered.

2.4.3 Theory of reasoned action

Human behaviour is influenced by attitudes (Abdullah, Samdin, Ho & Ng, 2020). The theory of reasoned action is among the popular theories of behaviour that include the effect of human attitudes (Brown, 1999). The theory was first proposed by Martin Fishbein in 1967 (Brown, 1999; Yoopetch & Kongarchapatara, 2021) and later, Fishbein and Ajzen (1975) and Ajzen and Fishbein (1980) provided comprehensive details of the theory.

Ajzen and Fishbein's theory suggests that behaviour arises from the formation of specific behavioural intentions (Ajzen & Fishbein, 1980; Dragan, Luo, Ivascu & Ali; 2021). The theory claims that *personal* and *social factors* are the two main factors that influence the intention to behave. Based on the theory of reasoned action, the *personal factor* refers to attitudes towards behaviour (Lau, 2004; Ajzen & Fishbein, 2005) and involves an individual's judgement on whether performing the behaviour is appropriate or not and whether such an individual agrees or disagrees with performing the behaviour (Lau, 2004). The *social factor* is termed a subjective norm (Ajzen & Fishbein, 2005). This involves the societal pressures placed on an individual to carry out the behaviour in question, which is significantly affected by personal norms (Ajzen, 1991; Brown, 1999). Figure 2.4 illustrates the theory of reasoned action.

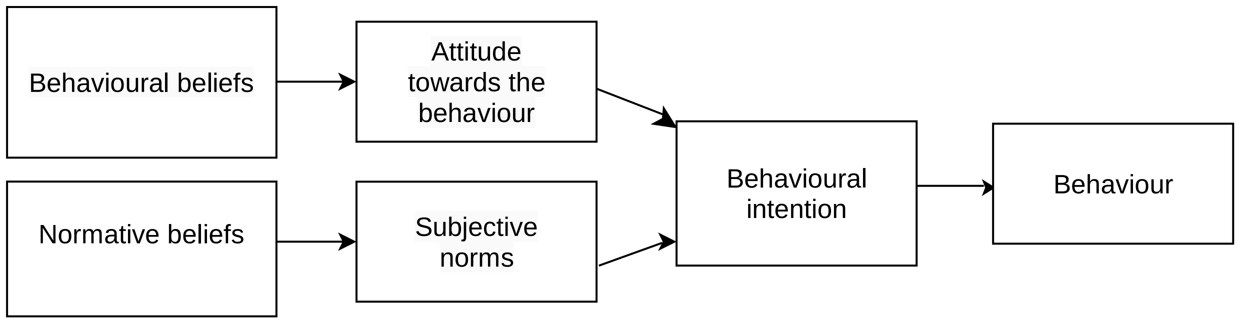

Figure 2.4: Theory of reasoned action

Source: Adapted from Ajzen and Fishbein (1980:99)

According to the theory of reasoned action, behavioural beliefs underlie an individual's attitude towards the behaviour (Poudel & Nyaupane, 2017). In other words, behavioural beliefs relate to an individual's beliefs that a particular behaviour leads to certain outcomes and the individual's evaluation of these outcomes (Hsu & Huang, 2012). Ajzen and Fishbein (2005) assert that normative beliefs underlie an individual's subjective norm. In the same notion, Hsu and Huang (2012) concur that such beliefs relate to an individual's belief that particular people or societies think that they should carry out the behaviour and their motivation to comply with the specific referents. Thus, behavioural beliefs and evaluations of behavioural outcomes lead to attitudes towards behaviour, whereas normative beliefs and the motivation to comply with specific referents lead to subjective norms (Liao & Satchabut, 2017). Both attitudes and subjective norms determine an individual's intention, which is subsequently the precursor to behaviour (Liao & Satchabut, 2017). In general, favourable behavioural beliefs are more likely to prompt favourable attitudes towards carrying out the behaviour in question (Ajzen, 2020). Similarly, unfavourable behavioural beliefs will induce an unfavourable attitude towards the performance of the behaviour (Ajzen & Dasgupta, 2015). Although the theory of reasoned action has corroborated that there is a relationship between individual behaviour, attitudes, and subjective norms, the theory has its own limitations. Ajzen (1991) claims that the theory of reasoned action does not consider the effect of external factors on people's behaviours. Hence, Ajzen (1991) added *perceived behavioural control* to the theory of reasoned action and proposed the theory of planned behaviour.

2.4.4 Theory of planned behaviour

Ajzen (1991, 2006, 2008) argues that the theory of planned behaviour is a good basis to predict individuals' intentions, which in turn, lead to behavioural action through analysing these behavioural, normative, and control beliefs (refer to Figure 2.5).

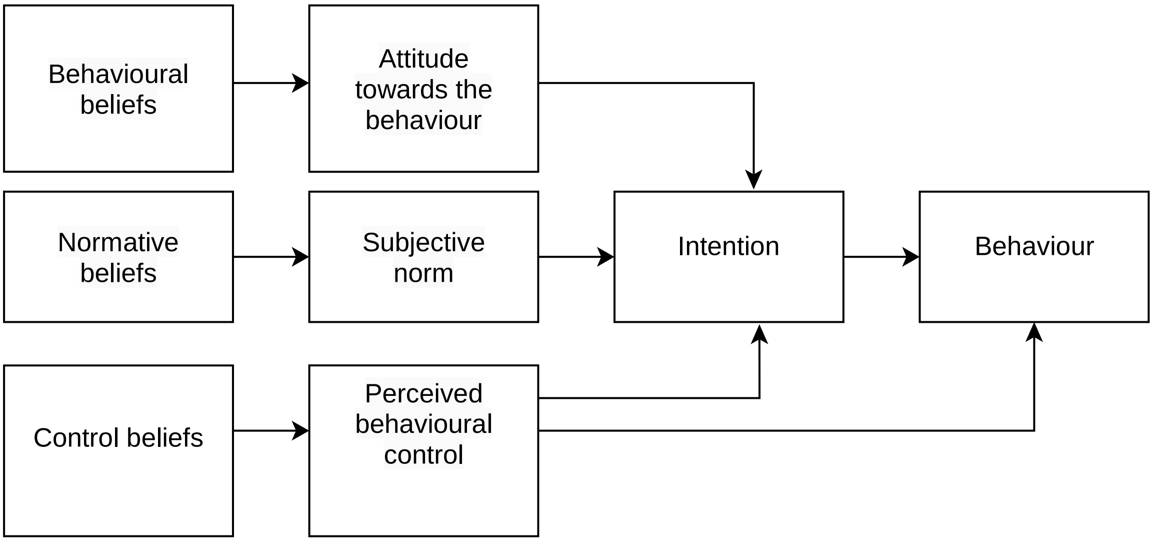

Figure 2.5: Theory of planned behaviour

Source: Adapted from Ajzen (1991:182)

Building on the theory of reasoned action, *behavioural beliefs* are beliefs about the probable consequences of the behaviour, also referred to as outcome evaluations (Ajzen, 1991, 2006; Ajzen & Dasgupta, 2015). *Normative beliefs* refer to beliefs based on the expectations of other people or specific groups and include the motivation to conform to those expectations (Ajzen, 1991, 2006). *Control beliefs* (see Figure 2.5) refer to beliefs regarding specific factors that may facilitate or interfere with behavioural performance, and they are believed to provide a comprehensive level of perceived control (Ajzen, 1991, 2006; Ajzen & Dasgupta, 2015). Perceived control frequently serves as a proxy to the extent that perceptions of control reasonably reflect actual control, and this may facilitate or interfere with behavioural performance according to current conditions (Ajzen & Dasgupta, 2015). This means that perceived behavioural control is a person's perception as to whether engaging in a specific behaviour is difficult or simple (Wang *et al.*, 2018). Ajzen (1991, 2006) believes that perceived behavioural control can be based on experiences, prospective difficulties, and complications. Moreover, Chiou (1998), Seow *et al.* (2017), and Miller *et al.* (2019)

reveal that perceived behavioural control can be determined by the availability of the resources and opportunities that are required to carry out a certain behaviour.

Although the three main constructs of the theory of planned behaviour (attitudes, subjective norms, and perceived behavioural control) may have significant effects on behavioural intentions, Yuzhanin and Fisher (2016) caution that there is nothing in the theory of planned behaviour that implies that all these constructs will contribute evenly, largely, and concurrently to behavioural intentions. Furthermore, the theory of planned behaviour suggests that perceived behavioural control is the only aspect among the three main constructs of the theory of planned behaviour that has a direct impact on behavioural action (refer to Figure 2.5).

The theory of planned behaviour suggests that intention is another immediate precursor of behaviour (Ajzen, 1991). Behavioural intention is a person’s motivation to carry out a certain behaviour, and it captures all the motivational factors of the preceding components (Yuzhanin & Fisher, 2016). For example, if a person’s attitude, subjective norms, and perceived behavioural control towards performing a certain behaviour are positive, it is likely that the person will have a positive and strong intention towards performing that behaviour.

Although the success of the theory of planned behaviour has been proved and it is regarded as a proxy for predicting a person’s behaviour (Han & Hyun, 2017), the theory has disadvantages and faces criticism. For example, the theory does not acknowledge the time frame between intent and behavioural action (Yuzhanin & Fisher, 2016; Esfandiar *et al.*, 2019; LaMorte, 2019). Although limitations have been raised, Ajzen (2020) argues that the theory of planned behaviour is, in principle, open to the inclusion of additional predictors, provided they contribute towards behavioural intention or behaviour.

Many tourism studies that apply the theory of planned behaviour have actively tried to integrate constructs that are essential to predicting intentions, while other studies have integrated constructs that are antecedents to attitude, subjective norms, and/or perceived behavioural control. For example, Han, Lee, and Lee (2011) incorporated the construct ‘expectation of tourist visa exemption’ to predict explicitly the intentions of mainland Chinese travellers to visit Korea. Hsu and Huang (2012) included 'tourist motivation to choose travel destination'. The latter study investigated the relationships between the constructs of the theory and tourist motivation for visiting a tourism destination (Hsu & Huang, 2012). Quintal, Thomas, and Phau (2015) incorporated the construct 'winescape' to determine its effect on the attitudes of wine tourists towards the winery. These studies show that employing additional constructs may better the predictive power of the theory in the tourism context (Yuzhanin & Fisher, 2016). Similarly, advocates of the theory of planned behaviour suggest its improvement through the introduction of behaviour-specific constructs (Ajzen, 2015; Rhodes, Beauchamp, Conner, De Bruijn, Kaushal & Latimer-Cheung, 2015; Halpenny, Kono & Moghimehfar, 2018). For the purpose of this study, the theory of planned behaviour is explained within the context of cultural heritage tourism.

2.5 THE THEORY OF PLANNED BEHAVIOUR IN THE CONTEXT OF CULTURAL HERITAGE TOURISM

Despite existing research using the theory of planned behaviour to explore tourists' motivations (Sparks, 2007; Han *et al.*, 2011; Hsu & Huang, 2012) and attitudes (Quintal *et al.*, 2015) in different tourism contexts, Duarte Alonso *et al*. (2015) opine that there is a scarcity of studies in cultural heritage tourism that employ the theory of planned behaviour. Among the limited contributions to date, Zhang *et al.* (2019) integrated the theory of planned behaviour with self-regulation and social capital as the extension variables to explain the formation of behavioural frameworks for conflict resolution at the Chengqi Earth building, a UNESCO World Heritage Site. Duarte Alonso *et al.* (2015) studied tourist behaviour (motivation) in visiting a heritage building in the United Kingdom using the theory of planned behaviour. Shen, Schüttemeyer, and Braun (2009) added constructs of previous experience and cultural tour involvement to the theory of planned behaviour in order to study visitors' intentions to visit World Cultural Heritage Sites in China. In the same context, Girish and Lee (2020) included the construct of 'authenticity' to understand the relationships between the main constructs of the theory of planned behaviour. The following sections discuss how the theory of planned behaviour can explain responsible tourist behaviour in the context of cultural heritage tourism.

2.5.1 Attitudes

The classical work of Ajzen and Fishbein (2000) defines attitude as an individual's level of favourableness towards a specific behaviour. Given the ambiguities of individuals' emotional states, Abdullah *et al.* (2020) argue that it is not possible to observe attitudes directly; they need to be gauged from individuals' responses.

According to Ajzen and Fishbein (2005), the attitude construct includes cognitive, affective, and conative attitudes. Tourists' attitudes can be *cognitive* in nature, reflecting perceptions or beliefs. Qiao and Gao (2017) reveal that tourist perception affects behavioural norms, which in turn, increases the tourists' intentions to perform the behaviour in question. Qiao and Gao (2017) describe tourist perception as the tourist's awareness of consequences. In support of this description, Espino-Rodríguez and Ramírez-Fierro (2019) state that a positive perception of the destination positively influences tourist attitude towards the destination. Joo, Cho, and Woosnam (2019) claim that tourists' perceptions of a tourism destination may be influenced by their emotional state, and in this regard, attitude can be *affective* in nature, reflecting tourists' evaluations and feelings. This suggests that when tourists feel welcomed and emotionally connected to a destination, they may uphold favourable perspectives of that destination (Joo *et al.*, 2019). Lastly, an attitude that is *conative* in nature indicates how a tourist intends to perform the actual behaviour. Ajzen and Driver (1992) argue that assessing attitude in one factor (cognitive, affective, or conative) does not give a precise representation of attitudes because the pessimistic cognitive attitude and the optimistic affective attitude may have an impact on one another and vice versa, and this, in turn, will affect conative attitude.

Although not within the context of cultural heritage tourism, Wang *et al.* (2019) studied the effect of behavioural reference on tourists' responsible environmental behaviours, and the study revealed that tourists' attitudes towards environmental behaviour significantly affected the responsible environmental behavioural intention of tourists. Duarte Alonso *et al.* (2015) conducted research on the theory of planned behaviour in the context of cultural heritage tourism, and the results corroborate the validity and the impact of attitudes on behavioural intention. The study of Zhang *et al.* (2019) explores a conflict resolution model for sustainable heritage tourism, and the results show that attitudes positively influence intentions to seek conflict resolution. In contrast, Shen *et al.* (2009) reveal that attitude is not a valid predictor of a tourist's intention to visit a World Cultural Heritage Site. Although the study of Duarte Alonso *et al.* (2015) confirmed the effect of attitudes on behavioural intention (a precursor of actual behaviour) in a cultural heritage tourism setting, it is worth noting that the theory acknowledges that an individual's positive attitudes or intentions do not always result in behavioural action (Yuzhanin & Fisher, 2016). It is against this background and the fact that tourism businesses and/or destination managers have limited control over tourists' attitudes that this study did not focus on attitudes in a cultural heritage tourism setting.

2.5.2 Subjective norms

As a precursor of behavioural intentions, subjective norms (also referred to as social influences) represent the significance of people's reactions to behavioural intention (Halpenny *et al.*, 2018). Ajzen (1991) states that the most important referents that influence tourist behavioural intentions include the people or groups within the individual's society. Halpenny *et al.* (2018) mention that these people or groups can be friends, family, or travel professionals. In the same notion, Wang *et al.* (2018) concur that people are most likely to comply with the propositions or sentiments of their family, colleagues, or friends in terms of engaging in a specific behaviour according to the perceived social pressure.

Existing tourism research confirms the efficacy of subjective norms in influencing behavioural intentions within a cultural heritage tourism context. Duarte Alonso *et al.* (2015) suggest that subjective norms have an impact on behavioural intention to visit a heritage building. The results revealed that tourists were persuaded by other individuals to become involved in the visitation of a heritage building (Duarte Alonso *et al.*, 2015). Moreover, the study of Zhang *et al.* (2019) asserts that subjective norms have a positive and significant correlation with intention to seek conflict resolution. According to Zhang *et al.* (2019), external stakeholders, including senior government officers and external investors, can assist in conflict resolution between cultural heritage management and residents by way of teamwork achieved through social networking. The study of Megeirhi *et al.* (2020) investigates the intentions of residents to support sustainable cultural heritage tourism, and the results suggest that subjective norms are antecedents of intentions to support cultural heritage tourism. Megeirhi *et al.* (2020) expose that the intentions of Carthage residents to support sustainable cultural heritage tourism are influenced by the opinions of people whom they value such as the government, local tourism planning organisations, family members, and other residents. However, the study by Shen *et al.* (2009) reveals that subjective norms do not have an influence on tourists' intentions to visit a World Cultural Heritage Site.

According to Hsu, Kang, and Lam (2006), subjective norms may be in the form of reference groups or different information sources such as the advice of travel professionals (travel consultants), word-of-mouth (family and friends), advertisements (printed and social media), and non-tourism sources (books and movies). Since there was no significant correlation between subjective norms and tourists' intentions to visit Suzhou cultural heritage site (Shen *et al.*, 2009), this could suggest that measuring subjective norms in a cultural heritage tourism setting might not provide the necessary guidance that managers need to manage specific tourism behaviours. In addition, considering that tourism businesses and/or destination managers have little control over tourists' social influences, this study did not focus on social norms in a cultural heritage tourism setting.

2.5.3 Perceived behavioural control

As explained in section 2.4.4, perceived behavioural control is the only construct in the theory of planned behaviour that directly affects both intentions to behave and behaviour. In their study regarding the effect of behavioural reference on responsible environmental behaviours of tourists, Wang *et al.* (2019) found that perceived behavioural control is an immediate precursor of responsible environmental behaviour. From a cultural heritage tourism perspective, Duarte Alonso *et al.* (2015) and Shen *et al.* (2009) both established that perceived behavioural control is a valid antecedent of behaviour.

As mentioned, empirical studies reveal that perceived behavioural control can be determined by the availability of the necessary resources and opportunities to engage in a behaviour (Chiou, 1998; Seow *et al.*, 2017; Miller *et al.*, 2019). Since perceived behavioural control is the only predictor in the theory that can directly affect both intentions to behave and behaviour and seems to be the only aspect over which tourism businesses and/or destination managers have control, specific attention was given to this construct in this study. Although the precise behaviour within the context of cultural heritage tourism is explained later (see section 2.5.6), it is necessary to understand here that cultural heritage tourism products and/or destinations (such as World Heritage Sites) require tourists to behave in a responsible way in order to conserve both natural and cultural resources, as the definition of cultural heritage tourism suggests.

Existing studies indicate that heritage-interpretation services and facilities (a visitor management strategy) not only manage tourists' experiences (Rosli *et al.*, 2014; Hristov *et al.*, 2018; Tan *et al.*, 2020) but also lead to responsible tourist behaviour (Black, 2018; Thom & Mearns, 2018), thus, minimising tourists' impacts on cultural heritage sites (Kausar & Gunawan, 2018; Meyer, 2018; Thom & Mearns, 2018). It is against this background that this study incorporated heritage interpretation (as explained in section 2.5.4) as the 'experience', 'resource', or 'opportunity' of perceived behavioural control to influence responsible tourist behaviour positively in a cultural heritage tourism setting.

2.5.4 Interpretation

The path from interpretation to perceived behavioural control is based on the premise that external factors have a significant influence on perceived behavioural control (Zolait, 2014; Wang *et al.*, 2019). Although Chapter 3 provides an in-depth literature review on heritage interpretation, this section presents a brief description of the concept in general.

Tilden (1977:8), who is considered the pioneer of interpretation, defines interpretation as "an educational activity, which aims to reveal meanings and relationships through the use of original objects, by firsthand experience, and by illustrative media, rather than simply to communicate factual information." Recently, USNAI (2017:1) defined interpretation as "a mission-based communication process that forges emotional and intellectual connections between the interests of the audience and meanings inherent in the resource”. Interpretation may take place at different tourist attractions such as visitor centres, museums, World Heritage Sites, or game sanctuaries (Tilkin, 2017). Interpretation may be executed by applying diverse personal and/or non-personal communication methods such as guided tours, signage, or audio-visual media (Interreg, 2018).

Among many other goals, the goal of interpretation is to help promote sustainable tourist behaviour on and off the site (Rosli *et al.*, 2014). As Timothy (2017) explains, good interpretation services promote conservation values by reducing tourists’ negative impacts on the environment. Several studies concur that effective interpretation enhances the experiences of tourists by increasing their knowledge, which results in their behavioural change (Moscardo, 2014; Kausar & Gunawan, 2018). This means that interpretation must not only entail educating tourists about the importance of the sites and their resources (Kausar & Gunawan, 2018) but must also provide tourists with platforms such as recycling bins, energy-efficient lighting, and recycled paper for on-site brochures to enable them to contribute towards conservation (Batabyal, 2018).

Cheng *et al.* (2018) point out that tourists visiting cultural heritage sites usually rely on interpretation to understand the authentic meaning and significance of the site, which assists them in enjoying a valuable and unforgettable experience. Weiler and Walker (2014) acknowledge that an interpretation service is a key point in the quality of service offered to tourists at the sites. Rosli *et al.* (2014) argue that effective heritage interpretation should be orientated towards a tourist’s cognitive state (e.g. factual character comprising trust and knowledge of the physical attributes of a destination) and emotional state. Rosli *et al.* (2014) indicate that interpretation that contains only opportunities for cognitive connections would not be very effective for someone who discovers relevance and significance in an emotional way. Cognitive connections can lead to insight, discovery, perceptiveness, and enlightenment (Taylor & Norman, 2019). Emotional connections may result in amazement, anger, despair, empathy, or wonder (Rosli *et al.*, 2014). A tourist’s connection with heritage involves moments of cognitive and emotional disclosure, perception, insight, or discovery (Shalaginova, 2012). Interpretation facilitates the connection between the interests of tourists and the meanings of a site, including its tangible and intangible resources (Stewart, Hayward, Devlin & Kirby, 1998). This suggests that when effective interpretation programmes are made available to tourists, interpretation will positively affect perceived behavioural control, and this is expected to form behavioural intention or directly affect responsible tourist behaviour in cultural heritage tourism. Therefore, it is important for cultural heritage sites to ensure that the values of the area are highlighted in interpretation programmes and to align these values with the overall goals and objectives of the site and/or the system of which it is a part (Leung *et al.*, 2018).

2.5.5 Intention to behave

Behavioural intention is a person’s motivation to carry out a certain behaviour (Yuzhanin & Fisher, 2016). Wang *et al.* (2019) point out that there may be little evidence of a positive relationship between behavioural intention and actual behaviour. Although the success of the theory of planned behaviour has been proved, the theory is only a proxy for predicting a person’s behaviour (Han & Hyun, 2017), and it is thus necessary to measure actual behaviour. Moreover, Yuzhanin and Fisher (2016) mention that it is important to explain the desired behaviour accurately. Hence, the following subsection elaborates on tourist behaviour in the cultural heritage tourism context.

2.5.6 Behaviour

In many instances, cultural heritage sites are fragile (Ribaudo & Figini, 2017) with unique, authentic, and non-renewable resources offering mindful and engaging experiences to tourists (Buonincontri *et al.*, 2017; Rosli *et al.*, 2014). Timothy (2017) points out that tourist visitation at cultural heritage sites may cause damaging impacts and thus calls for responsible tourist behaviour. Responsible tourist behaviour contributes significantly towards protecting cultural heritage sites (Prapasawasdi, Wuttisittikulkij, Borompichaichartkul, Changkaew & Saadi, 2018).

Responsible tourist behaviour is defined as tourist behaviour that considers

> “…the impact of his behaviour, acting by the destination norms, collecting information before travel, appreciating the lifestyle and culture of the host community, improving the welfare of residents, conserving the natural

environment, adopting conservation lifestyle actions, political pro-environmental actions and education, and supporting environmental policies" (Said, 2018:62)

Scholars use similar concepts (culturally intelligent behaviour, cultural significant behaviour, and cultural responsible behaviour) to explain tourist behaviour aimed at protecting cultural heritage (Chui *et al.*, 2011; Teo *et al.*, 2014; Thomas, Liao, Aycan, Cerdin, Pekerti, Ravlin *et al.*, 2015). Thomas *et al.* (2015:1101) opine that *culturally intelligent behaviour* comprises "knowledge and skills, developed in specific cultural (intercultural) contexts, but is dependent on the culture general process of cultural metacognition". Teo *et al.* (2014) describe *cultural significant behaviour* as caring for cultural heritage, belonging to a community that has significant culture and history, and believing in preserving others' cultural heritage. Chui *et al.* (2011) explain that *cultural responsible behaviour* is when an individual believes in preserving others' cultural heritage, in maintaining others' architecture and authentic atmosphere, in becoming part of a community that is culturally and historically wealthy, and in sharing cultural heritage with others. Zgolli and Zaiem (2018) refer to cultural responsible behaviour as the willingness to protect the cultural heritage of the visited areas. Since cultural heritage tourism encompasses both natural and cultural resources (see section 2.3), one would agree that responsible tourist behaviour affects both these resources. However, there is limited evidence that includes both resources in measurement scales.

Although substantial research indicates progress in understanding tourists' actions regarding environmentally responsible behaviour (see Chapter 3) at cultural heritage sites (Lee *et al.*, 2013; Timothy, 2017; Wang, Lasaponara *et al.*, 2020), there is a paucity of research in understanding tourist behaviour and its impact in relation to cultural resources (Brown, 1999; Chui *et al.*, 2011; Teo *et al.*, 2014; Di Pietro *et al.*, 2015; Buonincontri *et al.*, 2017). For this study, the concept 'responsible tourist behaviour in cultural heritage tourism' is used to differentiate this study from studies that do not include both resources. The current study integrates appreciation and conservation of natural and cultural heritage resources (see section 2.3) into Said's (2018) definition and refers to *responsible tourist behaviour in cultural heritage tourism* as tourist behaviour that considers the impact of actions on the natural and cultural heritage resources and appreciates and conserves these resources for current and future generations.

2.6 THEORETICAL FRAMEWORK OF THE STUDY

It is evident from the literature above that to minimise the negative impacts of tourists on cultural heritage tourism destinations such as World Heritage Sites, an investigation of tourists' responsible behaviour is required. It is against this background and the literature review outlined above that the theoretical framework was developed (see Figure 2.6).

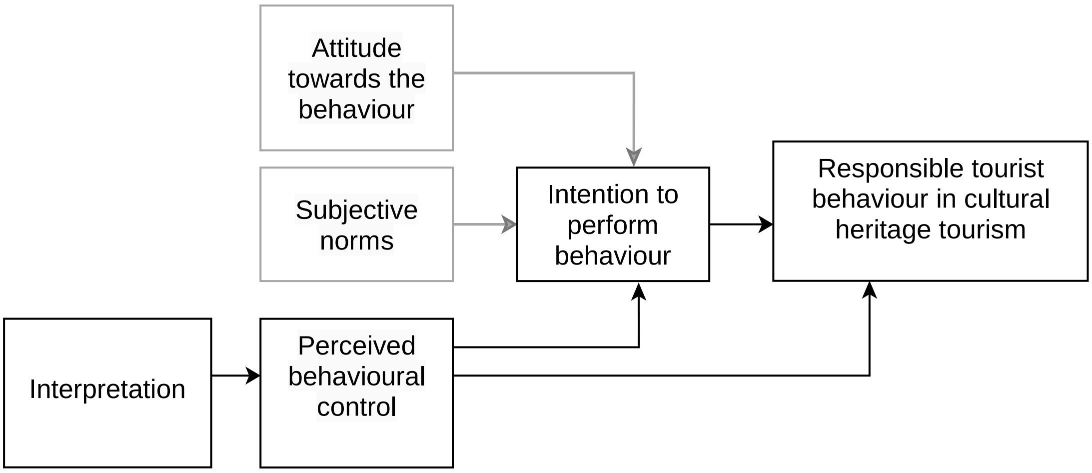

Figure 2.6: Theoretical framework for predicting responsible tourist behaviour in cultural heritage tourism

Source: Adapted from Ajzen (1991:182)

As elucidated in Figure 2.6, the theoretical framework developed in this study adopted the theory of planned behaviour (see section 2.5). Although attitudes, subjective norms, and perceived behavioural control are all antecedents of behavioural intentions, tourism businesses and/or destination managers have little control over tourists' attitudes and subjective norms. Hence, to a degree, perceived behavioural control is the only construct of the theory that destination managers may influence to enhance not only intentions to behave but also actual behaviour (see section 2.5.3). Section 2.4.4 highlights that perceived behavioural control could be determined by the availability of necessary resources and opportunities to engage in a behaviour. Interpretation is an appropriate construct to influence perceived behavioural control (see Figure 2.6). When effective interpretation programmes are made available to tourists, interpretation will positively affect perceived behavioural control, which is expected to form behavioural intention or directly affect behaviour in cultural heritage tourism. Yuzhanin and Fisher (2016) argue that it is important to explain the desired behaviour.

This study adapts Said's (2018) definition of responsible tourist behaviour to define responsible tourist behaviour in cultural heritage tourism. The study integrates appreciation and conservation of natural and cultural heritage resources (see section 2.3) into Said's (2018) definition (see section 2.5.6) and refers to responsible tourist behaviour in cultural heritage tourism as "tourist behaviour that considers the impact of actions on the natural and cultural heritage resources and appreciates and conserves these resources for current and future generations." This highlights the importance of developing an appropriate scale to measure responsible tourist behaviour in cultural heritage tourism.

Although substantial research indicates progress in understanding tourists' environmental responsible behaviour, there is a paucity of research in understanding tourist behaviours and their impact in relation to cultural resources. Because heritage sites require responsible behaviour from tourists, it is imperative to measure these behaviours from both a natural and a cultural perspective. This implies that a validated scale to measure responsible tourist behaviour in cultural heritage tourism needs to be developed.

2.7 SCALE DEVELOPMENT

Scale development is important in the field of research because it has substantial consequences on research conclusions and inferences (Boateng *et al.*, 2018). DeVellis (2003) and Hair *et al.* (2019) refer to scale development as a process that aims to define a set of variables that represents a concept that cannot be accurately measured by a single variable. This process gathers the most appropriate set of items to be used as test questions for the target population (DeVellis, 2017).

Several researchers concur that the scale development process comprises multifaceted and systematic procedures that necessitate a theoretical and rigorous methodology (Barry *et al.*, 2011; Morgado *et al.*, 2017; Tsang *et al.*, 2017). Generally, the scale development process consists of three basic steps: item development, scale development, and scale evaluation (Boateng *et al.*, 2018). According to Irwing and Hughes (2018), in practice, steps within the various stages can be classified differently and completed in different orders, and numerous steps in the process are continuous. As outlined by Barry *et al.* (2011), the scale development process is completed in four phases: outline the construct, develop the scale design and structure, generate sample items, and pre-test the scale. Lee *et al.* (2013) conducted three studies in order to develop a scale: generating an initial pool of scale items, developing a measurement scale, and cross-validating the measurement scale. Morgado *et al.* (2017) divided the process into three steps: item generation, theoretical analysis, and psychometric analysis. Tsang *et al.* (2017) propose three steps as an efficient process for developing a scale, namely preliminary considerations, development/translation process, and validation. Whichever process researchers employ in the development of their scales, it must demonstrate adequate validity to ensure that it measures the unobservable construct that it is intended to measure in addition to reliability to ensure that it does so consistently and precisely (Morgado *et al.*, 2017; Kyriazos & Stalikas, 2018). Both reliability and validity are criteria that are used to assess the adequacy and accuracy of the measurement process (Boateng *et al.*, 2018).

In simple terms, scale development consists of a series of standardised questions, the responses to which are then added up to produce a numerical score (Morgado *et al.*, 2017; Kyriazos & Stalika, 2018). Item score is the number allocated to performance on the item, task, or stimulus (Dorans, 2018). The scale items are indicators of the measured construct, so the score also serves as an indicator of the construct (Singh, Junnarkar & Kaur, 2016). For this study, the construct ‘responsible tourist behaviour in cultural heritage tourism’ was measured with a series of questions relating to responsible tourist behaviour towards natural and cultural resources. These questions (for item generation and scale development) were generated from the approach explained in Chapter 4. It is worth explaining here that heritage interpretation was used as a construct in the cross-validation process to establish whether the scale measured responsible tourist behaviour in cultural heritage tourism or not (see Chapter 4).

2.8 CONCLUSION

As a form of alternative tourism (see section 2.2), cultural heritage tourism is defined as "the travelling to or visiting of cultural heritage sites, which are rich in unique cultural and natural resources that are representative of the ways of life of the people and other species who live or lived there" (see section 2.3). Furthermore, World Heritage Sites are identified as one of the prevalent initiatives to ensure the sustainability of cultural heritage sites (see section 2.3.1).

Given the significant role played by tourists in cultural heritage tourism, Chapter 2 reviewed common theories and models of tourist behaviour (norm activation model, value-belief-norm theory, theory of reasoned action, and theory of planned behaviour) (see section 2.4). The theory of planned behaviour was identified as the most appropriate theory for this study (see section 2.5). As presented in the theoretical framework (see section 2.6), destination managers have limited control over attitudes and subjective norms and, therefore, these aspects were not considered in this study. Emphasis was rather placed on perceived behavioural control, which is an immediate precursor of behaviour. Perceived behavioural control can be determined by the availability of necessary resources and opportunities to engage in a behaviour. This study, therefore, incorporated heritage interpretation as the 'experience' (resource or opportunity) of perceived behavioural control that positively influences responsible tourist behaviour in a cultural heritage tourism setting.

Responsible tourist behaviour in cultural heritage tourism is the type of tourist behaviour that conserves both natural and cultural resources at a cultural heritage site by supporting environmental and cultural conservation strategies. Since there is limited evidence to measure the natural and cultural resources to which the definition of cultural heritage tourism refers, specific emphasis was placed on the need for a validated measurement scale for responsible tourist behaviour in cultural heritage tourism (see section 2.7). The following chapter provides an in-depth theoretical foundation of heritage interpretation and responsible tourist behaviour towards natural and cultural resources in cultural heritage tourism, as presented in the theoretical framework of this chapter.

CHAPTER 3: THEORETICAL FOUNDATION OF HERITAGE INTERPRETATION AND RESPONSIBLE TOURIST BEHAVIOUR RELATING TO NATURAL AND CULTURAL RESOURCES AT A CULTURAL HERITAGE SITE

3.1 INTRODUCTION

The purpose of this chapter is to address the second secondary objective (see section 1.3.2), namely to discuss the theoretical foundation of heritage interpretation and responsible tourist behaviour relating to the natural and cultural resources at a cultural heritage site. Heritage interpretation is an important approach in conveying the significance of natural and cultural resources in order to motivate tourists' responsible behaviour (Weng *et al.*, 2020). As explained in Chapter 2, this study used heritage interpretation as the resource or opportunity to strengthen responsible tourist behaviour in cultural heritage tourism.

Chapter 3 presents the three constructs, namely heritage interpretation (section 3.2), natural resources at the heritage site (section 3.3), and cultural resources at the heritage site (section 3.4). The literature on natural resources and cultural resources is investigated to identify an initial pool of measurement items for the scale to measure responsible tourist behaviour in cultural heritage tourism, while the literature on heritage interpretation assists with measurement items to cross-validate these items against the proposed scale.

3.2 HERITAGE INTERPRETATION

To understand what is meant by heritage interpretation, this section presents an in-depth explanation of interpretation in general. This is followed by a discussion on its categories (section 3.2.1) and elements (section 3.2.2), providing more detail on the goals of heritage interpretation and responsible behaviour (section 3.2.3). Lastly, literature on the measurement items for heritage interpretation (section 3.2.4) is introduced.

As early as 1957, Tilden referred to interpretation as an educational experience gained directly to convey more than factual information by way of authentic objects and demonstrative media. Interpretation is a communication process that aims to form both emotional and intellectual links among the audience and the resources in place (NTHPUS, 2018). Keyton (2017) describes communication as a complex process of information exchange whereby individuals use verbal and/or non-verbal messages to create meanings within and across different backgrounds, cultures, channels, and media. Figure 3.1 reiterates Keyton's (2017) explanation of communication and highlights essential elements of the communication process.

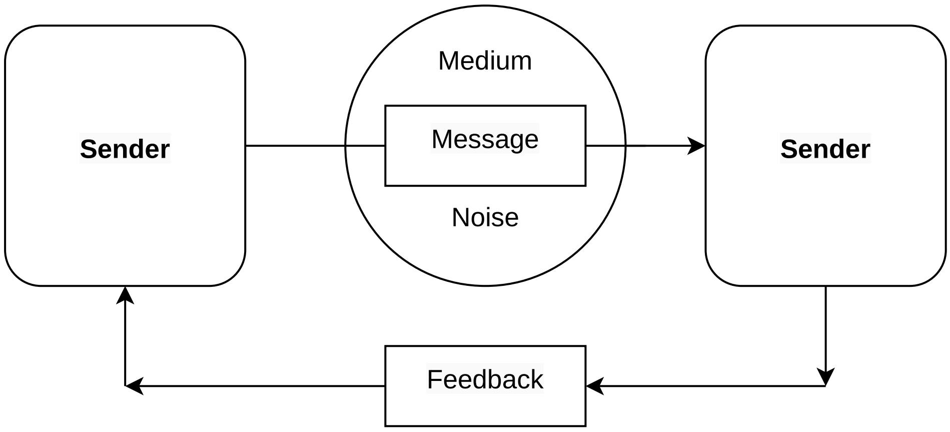

Figure 3.1: Communication process

Source: Adapted from Lunenburg (2010:2)

The sender and the receiver are the key elements of the communication process (Lunenburg, 2010; Swart, Hairbottle, Scheün, Erasmus-Kritzinger & Mona, 2019). The sender is a person or organisation who initiates communication, and the receiver is the one to whom the message is directed (Dutton, 2020). By choosing phrases, signs, or body language, the sender creates a message verbally and/or nonverbally (Lunenburg, 2010). The medium or channel (e.g. video or text message) is the tool used to send the message (Dutton, 2020). The different types of communication mediums are explained in sections 3.2.1 and 3.2.2.5. The sender composes the message according to the requirements of each medium or channel (Van Ruler, 2018) and the comprehension levels and information needs of the receiver (Swart *et al.*, 2019). Messages are, however, subject to noise interferences (physical, emotional, mental, or language barriers) and may not achieve their intended goal (Dutton, 2020).

Lastly, after the message has been transmitted and disseminated to the receiver, the sender expects feedback (Van Ruler, 2018). Through feedback, the sender can establish whether their message reached the targeted receiver and whether it was well interpreted (Dutton, 2020).

According to Veverka (2005), interpretation is a communication process that can be used to explain anything (any subject) and to create a recreational learning experience. Interpretation was initially applied in the nature conservation field and hence, most definitions are significantly linked to natural heritage (Markovska, 2020). Although interpretation has been applied in cultural heritage since the 1930s (Esen, 2003), the term 'heritage interpretation' has only been used since the 1940s to present information formally and to offer educational services at natural and cultural heritage sites (Tilkin, 2017). Similar to the definition of interpretation, heritage interpretation is defined as a wide variety of communication activities that intend to raise awareness and reinforce the audience's understanding of the heritage (ICOMOS, 2008; Almuhrzi, *et al.*, 2020). It is against this background that the concept of heritage interpretation is used in this study to refer to the interpretation of both natural and cultural heritage.

3.2.1 Categories of heritage interpretation

According to Tilden (1957,1977), Jarolímková and Míšková (2018), and Huang and Weiler (2020), categories of heritage interpretation consist of *personal* (also known as attended, verbal, or interpersonal) and *non-personal* (also referred to as no-personal, unattended or non-personal) interpretations. Personal interpretation is an interpretation service that comprises information presented face-to-face through conducted activities, lectures, and discussions (Mohamed, Noor, Jaafar & Mohamed, 2014; Jarolímková & Míšková, 2018; Weng *et al.*, 2020), while non-personal interpretation is non-verbal and is in the form of printed materials at the site (Mohamed *et al.*, 2014). Stewart *et al.* (1998) categorise interpretation into primary, secondary, and tertiary. *Primary interpretation* refers to first-hand interpretation, whether personal or non-personal (Stewart *et al.*, 1998; Yiamjanya, 2019). *Secondary interpretation* involves any form of information that creates a site experience from pre-entry to after the visit (Yiamjanya, 2019). Stewart *et al.* (1998) explain *tertiary interpretation* as a concealed, unclear, and indirect interpretive activity that has an impact upon the tourist's experience of the site, for example, a site advertisement either on television or radio (Stewart *et al.*, 1998). Furthermore, Kuo (2002) classifies interpretation into *hard interpretation*, which is aimed at regulating tourist activities, and *soft interpretation*, which is aimed at educating tourists. Regardless of the category of interpretation, effective heritage interpretation should include the elements explained in section 3.2.2.

3.2.2 Elements of heritage interpretation

Heritage interpretation should be considered a means of communication (Markovska, 2020) that needs to focus on a combination of five interpretive approach qualities: the theme (to offer paths to deeper meaning), the phenomenon (to turn phenomena into experiences), the media (to deliver messages), the participants (to provoke resonance in participants), and the interpreter (to foster respect for all heritage). Figure 3.2 illustrates these five basic qualities.

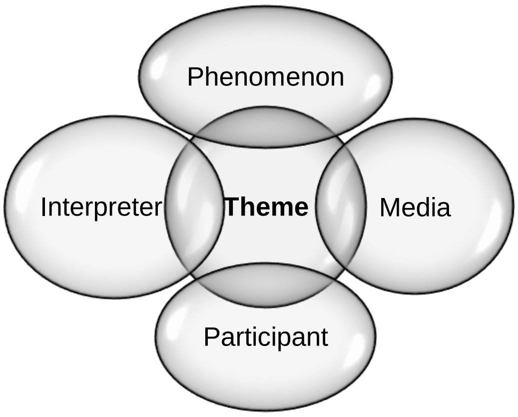

Figure 3.2: Interpretive approach qualities

Source: Adapted from Tilkin (2017:15)

3.2.2.1 *Theme*

The notion of an interpretive theme is any experience, display, or presentation (Heritage Destination Consulting International, 2008). Consequently, the theme is the core of the interpretive approach (see Figure 3.2). Although the terms 'theme' and 'topic' are closely related and frequently used synonymously, they are different and require an explanation before detailing the construct 'theme'.

A theme is a *key message* that is supposed to disclose the topic (Shalaginova, 2012). A topic is built around numerous connected themes. World Heritage Sites, for example, will use the outstanding universal values as topics and categorise these topics into several themes for tourists to understand them better. Themes within the communication process attempt to extract the meaning of the message (Ababneh, 2018; Interreg, 2018), and this can create either mindful or mindless tourists (Moscardo, 1996; Walker & Moscardo, 2014). Themes are at the core of stories that can be derived from different phenomena (Spitzer, 2007).

3.2.2.2 *Phenomenon*

The word ‘phenomenon’ had been used by Plato, Kant, and other philosophers for the sensually experienceable (Kant, 2007). In different languages, the word is also used for something that is of significant relevance (Tilkin, 2017). In heritage interpretation, the term was first introduced with the European Union Training of Protected Area Staff as a synopsis of first-hand experiences of tangible and intangible heritage (UNESCO, 2019). When communicating the message to the participants, the interpreter should make connections between the tangible or intangible resource of the heritage and the meanings it represents (Interreg, 2018). The message within the communication process should explain the phenomenon within a World Heritage Site to express the essence of the outstanding universal value. The message of this phenomenon should in some way touch people’s hearts and create first-hand experience (Tilkin, 2017). When tourists can empathise with a tangible or intangible resource, it assists them in gaining a better experience than when they only hear or see (Rosli *et al.*, 2014). Since World Heritage Sites attract diverse tourists (participants), Markovska (2020) argues that streamlined heritage interpretation should be developed in a way that accommodates participants’ diversities.

3.2.2.3 *Participant*

Based on the communication process, the participant or tourist is the receiver (refer to Figure 3.1). Tilkin (2017) points out that tourists to cultural heritage sites can be domestic or international tourists with very different cultural backgrounds. Tourists can be exceptionally different, ranging from extremely motivated individuals who have passion and prior knowledge of the topic to individuals who are simply accompanying family or friends to a heritage site that they would otherwise not have visited (Tilkin, 2017). It is against this background that heritage sites must ensure that the participation and engagement of tourists involves a learning experience through heritage interpretation that personally connects with or is relevant to the tourists (Tilden, 1977; Moscardo, 1996). For more information on tourist demographic characteristics in designing effective interpretation refer to Xu, Cui, Ballantyne, and Packer (2013), Force, Manuel-Navarrete, and Benessaiah (2018), Alazaizeh, Jamaliah *et al.* (2019), and Almuhrzi *et al.* (2020).

3.2.2.4 *Interpreter*

The interpreter, the sender in the communication process (see Figure 3.1), is one of the key figures in the interpretive approach. At a high level, it can be the organisation (e.g. tourist exhibition centre or museum) behind the different interpretive media (personal and non-personal) (Tilkin, 2017). From a strategic business point of view, an interpreter is

> "a person able to use the heritage interpretation as a communication tool in such a way that visitors of an area, location or element of heritage interest feel interested in the heritage they are visiting and develop attitudes of appreciation and custody towards it." (Interreg, 2018:18)

Whether in person (as a tourist guide during the tour) or not (using information panels or brochures) (Interreg, 2018), the interpreter plays an important role in establishing an intellectual, emotional, and spiritual connection between tourists and the sites they visit (Athula Gnanapala & Sandaruwani, 2016).

3.2.2.5 *Media*

Once the heritage site has a clear idea of its interpretation theme, the phenomenon (tangible or intangible resources), and the tourists it intends to address, it should determine the interpretive media (Interreg, 2018). The interpretive media are primarily meant to trigger and facilitate the communication process that disseminates the message to tourists (Gomez-Oliva, Alvarado-Uribe, Parra-Meroño & Jara, 2019). For more information on the intricacies of personal or non-personal media, refer to Jarolímková and Míšková (2018), Huang and Weiler (2020), and Weng *et al.* (2020).

Integrating the five interpretive qualities (theme, phenomenon, participant, interpreter, and media) to provide heritage information may remind tourists to engage in responsible behaviour (Fernández-Llamazares, Fraixedas, Brias-Guinart & Terraube, 2020).

3.2.3 Heritage interpretation and responsible behaviour

Heritage interpretation information provides details regarding the culture, how the heritage was constructed, ancient heritage stories, facts (Ballantyne *et al.*, 2014), and the surrounding environment (Wang *et al.*, 2018). Tilden (1977) claims that heritage interpretation information must include research-based knowledge, and it must do more than present facts. Therefore, it can be concluded that interpretation is not just the presentation of information (Almuhrzi *et al.*, 2020). Heritage interpretation information should be presented in a manner that strengthens tourists' appreciation and understanding of heritage (Almuhrzi *et al.*, 2020). Ham (1992:2) argues that heritage interpretation "involves translating the technical language of a natural science or related field into terms and ideas that people who aren't scientists can readily understand." As early as the 1950s, Tilden (1957) asserted that heritage interpretation information should be used as an art for conveying a message.

The knowledge acquired through the different forms or categories of interpretation should minimise unfavourable tourist behaviour and encourage responsible behaviour without compromising the tourist's experience (Orams, 1996; Rosli *et al.*, 2014). Gursoy *et al.* (2019) claim that people with knowledge of correct behaviour are prone to behave responsibly in order to minimise their impacts. Little, Bec, Moyle, and Patterson (2020) concur that heritage interpretation provides information aimed at educating tourists about favourable behaviours onsite. Following the interpretation experience, tourists should understand and appreciate the heritage, and the information acquired may enhance their support for heritage protection (Buonincontri *et al.*, 2017; Black, 2018).

Chairerk (2020) affirms that the presentation of heritage information should enhance tourists' understanding of the value and importance of heritage assets. Heritage information plays a significant part in enhancing the experience of tourists (Pakdeepinit & Kitiwong, 2021). Interpretive information not only creates and enhances memorable experiences but also stimulates tourists' learning processes and their acquisition of knowledge (Kempiak *et al.*, 2017). Essentially, knowledge assists tourists in appreciating the heritage (Almuhrzi *et al.*, 2020; Chairerk, 2020). Kim and Coghlan (2018) reveal that interpretation increases tourists' awareness of conservation, changes tourists' appreciation of the site, makes tourists want to minimise their negative impact, and most likely influences site-specific behaviours more than general behaviours (see section 3.3). Wang *et al.* (2018) and Zhao *et al.* (2018) reveal that interpretive information has a positive significant influence on responsible tourist behaviour.

Interpretation information should promote positive messaging (Fernández-Llamazares *et al.*, 2020) that allows tourists to learn more about conservation results first-hand and to focus on problem-solving approaches to minimise or avoid future impacts (Force *et al.*, 2018). For example, Jacobson, Morales, Chen, Soodeen, Moulton, and Jain (2019) report that there is a link between donating more money and time and positively framed messages. When developing interpretive information, it is worth noting that the effect of message framing is crucial in encouraging people's support for conservation. Pelletier and Sharp (2008) refer to message framing as a communication approach that is tailored to influence information in a way that affects individuals' perceptions. Weng *et al.* (2020) disclosed that heritage interpretation information significantly affects heritage value perception. Costa and Carneiro (2021) explored the influence of interpretation on cultural heritage values (aesthetic, historical, spiritual, and social values). Their results revealed that interpretation may change tourists' perceptions and expand their knowledge of cultural heritage values, and this may have a positive effect on their behavioural action to protect the cultural heritage values in question (Costa and Carneiro, 2021). Section 3.4.1 provides more detail relating to the various types of heritage values.

Jacobson *et al.* (2019) accurately opine that to encourage conservation, message framing should stress either the advantages of engaging in a specific behaviour or the limitations (or repercussions) of not engaging in that behaviour. Equally, Tannenbaum, Hepler, Zimmerman, Saul, Jacobs, Wilson *et al*. (2015) agree that messaging that does not emphasise conservation information may obstruct desirable behavioural change and action. Moreover, Fernández-Llamazares *et al.* (2020) suggest that to ensure that tourists take conservation action, heritage interpretation should provide practical and actionable information. Huang, Weng, and Bao (2022) state that heritage interpretation should provide factual knowledge regarding heritage resources, and it should also inform tourists about the condition of the heritage site and the impacts of their visits. Based on these studies, the goal of heritage interpretation is to disseminate information that improves the tourist's experience (Liu, 2020), which will lead to a mindful tourist. Existing literature reveals that mindful tourists have an appreciation and empathy towards heritage sites and are likely to have a sense of attachment and stewardship towards the conservation of the heritage sites (Rosli *et al.*, 2014; Meyer, 2018).

3.2.4 Measurement items for heritage interpretation

Studies have been carried out to investigate the efficacy of heritage interpretation information at heritage sites (Asfaw & Gebreslassie, 2017; Alazaizeh, Jamaliah *et al.*, 2019; Enseñat-Soberanis *et al*., 2019; Orabi & Fadel, 2020; Weng *et al.*, 2020). Alazaizeh, Jamaliah *et al.* (2019:1715) measured items such as "notified code of conducts to the visitors to ensure no or minimum disturbance to the local environment" in order to establish the influence of tour guides' heritage interpretation information on tourist behaviour at heritage sites. Alazaizeh Jamaliah *et al.* (2019) found that heritage interpretation information that maximises tourists' appreciation and enjoyment minimises their negative effects on heritage sites. In the same notion, Asfaw and Gebreslassie (2017:142) explain that introducing common practices regarding visitor management (raising "awareness on the values of heritage interpretation and presentation" and improving "information provided at tourist information center/s") can foster tourists' appreciation and conservation of the heritage.

To measure performance of information that is interpreted to tourists at archaeological sites in Alexandria, Orabi and Fadel (2020:334-335) applied the following variables: "provides several services that enhancing the tourist's experience", "provides a better understanding of the historical value of the archaeological sites", "discusses with us the possible impacts of visitors' behavior at archaeological sites", "points out to the most sensitive and fragile areas in the site", "encourages us to act responsibly towards monuments", "explains how to respect cultural heritage", "advises us how to act responsibly towards the culture environment", "reports some instructions and guidelines to ensure no or minimum disturbance in the site", and "prevents the emergence of tension between visitors and local people or site staff". The study revealed that interpretive information (presented by a tourist guide) is effective in influencing tourists' responsible behaviour (Orabi & Fadel, 2020).

Furthermore, in an effort to encourage heritage conservation, Enseñat-Soberanis *et al.* (2019:347) developed a tourist flow management process, and the last section of the process evaluated the interpretative strategy to minimise the negative impacts on a heritage site. Their findings revealed that "communicating the importance of heritage values of the site" can reduce the negative effects on the heritage site and enhance tourist experience (Enseñat-Soberanis *et al.*, 2019). Weng *et al.* (2020:7) used seven variables to determine whether heritage interpretation information influences heritage value perception: "introduce the beauty appreciation of a heritage site", "introduce scientific knowledge of biodiversity", "introduce the process of natural changes in a heritage site", "introduce the influence of a heritage site on religious beliefs of locals", "introduce the local social culture", "introduce the popularity of a heritage site", and "introduce the famous people who have visited a heritage site". Since heritage interpretation is an effective approach to convey information on natural and cultural heritage to tourists (Nowacki, 2021), the following two sections focus on identifying and explaining responsible tourist behaviour in regard to natural and cultural resources at a heritage site.

3.3 NATURAL RESOURCES AT THE HERITAGE SITE

Heritage sites have diverse natural resources that offer opportunities for leisure, entertainment, ecological education, and intellectual stimulation (Goodbody & Smith, 2002; Lin & Lee, 2020). However, these resources are threatened by the inappropriate behaviours of tourists (Yin *et al.*, 2021). Lee and Jan (2015b) point out that unfavourable environmental impacts arising from tourism activities are significantly increasing and to reduce such impacts, research that focuses on assessing and improving environmental behaviour at heritage settings is required.

3.3.1 Models to describe environmental behaviour

Alazaizeh, Jamaliah *et al.* (2019) state that a number of models are used to describe tourist behaviour aimed at protecting the environment (natural resources). These models include pro-environmental behaviour, environmentally sustainable tourism behaviour, and environmentally responsible behaviour.

Steg, Bolderdijk, Keizer, and Perlaviciute (2014:104) define pro-environmental behaviour as "any action that affects the quality of the environment, in either a positive or negative way, either resulting or not resulting from pro-environmental intent." According to Ramkissoon, Mavondo, and Uysal (2018), individuals who knowingly engage in pro-environmental behaviour are those who behave in a manner that minimises the negative environmental effects and maximises the positive environmental effects. While the influence of attitude on people's pro-environmental behaviour has been regularly emphasised, its relevance in the tourism context is inconclusive (Li & Wu, 2019). Existing research (Barr, Gilg & Shaw, 2012; Miller, Merrilees & Coghlan, 2015; Dolnicar, Knezevic Cvelbar & Grün, 2019) confirms that people at home may have pro-environmental attitudes and engage in pro-environmental actions but the opposite may occur when they visit tourism destinations. However, pro-environmental behaviour seems to be included as a dimension in other environmental studies (see Lee *et al.*, 2013) which gives the impression that it addresses some dimension of responsible tourist behaviour but is not the only dimension. As a result, it was important to explore other models in the environmentalism context such as environmentally sustainable tourism behaviour and environmentally responsible behaviour.

Juvan and Dolnicar (2016:7) refer to environmentally sustainable tourism behaviour as "intent of the behavioural change to keep negative environmental impact low." Environmentally sustainable tourism behaviour focuses on the intention of protecting the environment rather than the actual behaviour (Juvan & Dolnicar, 2016). The study revealed that values and beliefs are vital in explaining the environmentally sustainable tourism intention; however, they are insufficient for determining environmentally sustainable tourism behaviour (Juvan & Dolnicar, 2016). As mentioned, empirical evidence shows that behavioural intentions do not always determine actual behaviour

(Wang *et al.*, 2019). Furthermore, environmentally sustainable tourism behaviour appears to be included as a dimension in other environmental studies (see Lee *et al.*, 2013), giving the impression that it covers some but not all dimensions of responsible behaviour. It is for these reasons that this study did not make use of environmentally sustainable tourism behaviour model, instead it focused on environmentally responsible behaviour.

Hungerford and Volk (1990) conceptualised the concept of environmentally responsible behaviour to explain behavioural actions that are motivated by the aspiration to act within the environment in ways that are more responsible. Stern (2000) defines environmentally responsible behaviour as people's actions to enhance the biosphere or ecosystems. In 2013, Lee *et al.* developed a reliable and valid measurement scale for environmentally responsible behaviour in order to assess the environmentally responsible behaviour of community-based tourists in Taiwan. In response to Lee *et al.*'s (2013) recommendation to develop a general scale to be tested in different countries, Buonincontri *et al.* (2017) generated 43 environmentally responsible behaviour items to develop a conceptual framework aimed at assessing sustainable heritage behaviour of tourists from a demand-based perspective. The study of Buonincontri *et al.* (2017) underlines the significant impact of heritage experiences and place attachment to cultural heritage sites but does not consider the types of behavioural actions affected by external factors.

3.3.2 Measurement items for responsible behaviour towards natural resources

Although Lee *et al.* (2013) developed a reliable and valid environmentally responsible behaviour scale, the authors recommended that a general scale be developed that could be used in different countries. It is against this background that literature on the measurement of responsible tourist behaviour towards natural resources was consulted to generate environmental items for the scale to measure responsible tourist behaviour in cultural heritage tourism.

Although Barr, Shaw, and Coles (2011) and Becken (2007) suggest that some individuals may engage in environmentally responsible behaviour at their homes (general environmentally responsible behaviour), they may be reluctant to take part in similar commitments when visiting tourism sites. Contrarily, Bem's (1972) spillover effect theory suggests that participating in environmentally responsible behaviour in a specific place may encourage support for similar behaviour in other places. The spillover effects are substantiated by extensive research that found a positive relationship between site-specific environmentally responsible behaviour and general environmentally responsible behaviour (Thøgersen & Ölander, 2003; Hergesell, Edwards & Zins, 2018; Pearce, Huang, Dowling & Smith, 2022). Similar to Lee *et al.* (2013), this study indicated the need to develop a scale that can assess both general and site-specific responsible behaviour towards natural resources in order to understand tourist behaviour thoroughly. *General environmentally responsible behaviour* are actions undertaken by people in their daily routines to minimise negative environmental impacts (Steg & Vlek, 2009; Lee *et al.*, 2013; Lee & Jan, 2015a). Smith-Sebasto and D'Costa (1995:15-16) classify general environmentally responsible behaviour into six different constructs: "civil action" (political opportunities), "education action" (acquisition of knowledge or information), "financial action" (exchange of money), "legal action" (enforcement of environmental law), "physical action" (motor effort), and "persuasive action" (encouraging other people).

Furthermore, Zhao *et al.* (2018) argue that to understand specific heritage conservation efforts, it is essential to conduct research on the specific behaviour at the respective site. *Site-specific environmentally responsible behaviour* refers to the responsible actions that tourists engage in when they are at their destination sites (Buonincontri *et al.*, 2017). Lee *et al.* (2013:458), Lee and Jan (2015b:1069), and Ma *et al.* (2018:5) propose that site-specific environmentally responsible behaviour should include "sustainable behaviour" (respect, conserve, and reduce), "pro-environmental behaviour" (preventative action) and "environmentally friendly behaviour" (taking action).

Several authors suggest that general and site-specific environmentally responsible behaviour are inter-related and that both should be studied to understand the intricacies of tourists' environmentally responsible behaviour thoroughly when visiting a heritage site (Lee *et al.*, 2013; Lee & Jan, 2015b; Lladó Colombàs, 2019). Kim and Coghlan (2018) reveal that tourists are more open-minded towards conservation messaging that comprises information relating to site-specific environmentally responsible behaviour than general environmentally responsible behaviour. Lee and Jan (2015b) propose that favourable site-specific environmentally responsible behaviour can minimise negative environmental impacts and enhance general environmentally responsible behaviour. Table 3.1 illustrates the measurement items for responsible behaviour towards natural resources that are categorised into general and site-specific dimensions.

Table 3.1: Measurement items for responsible behaviour towards natural resources

General dimension
• I vote for political parties that support environmental protection. • I sign a petition that support environmental protection. • I participate in community meetings that address local environmental issue. • I am part of community clean-up efforts. • I am a member of organisation/s that support and protect the environment. • I participate in voluntary work to assist with environmental issues. • I contribute time to assist a pro-environmental protection organisations. • I invest in organisation/s that use green technologies. • I read published reports regarding the environmental problems. • I watch television programs regarding environmental problems. • I read books and other printed media regarding environmental problems. • I learn about protection of the environment from people whose opinion matter. • I learn about the recycling facilities around my area. • I attend community meetings focusing on environmental protection. • I read about the environmental protection on the Internet, or news. • I read about solutions related to resolving environmental problems. • I read about environmental protection. • I assist other people to learn about environmental protection. • I do not use or purchase products that have negative impacts on the environment. • I do not purchase products known to cause pollution. • I purchase products from pro-environmental organisations. • I purchase environmentally friendly products. • I purchase products wrapped in reusable or recyclable packages. • I purchase products created of recyclable resources. • I purchase products in refillable containers. • I purchase clothes made of organic materials. • I purchase conservation devices, such, low-flow shower heads.

- I purchase locally produced products.
- I protect the environment albeit costing more money and time.
- I donate money to protect the environment.
- I donate money to organisations protecting and improving the environment.
- I pay more money for environmental protection.
- I report people infringing laws that protect the environment to the relevant authorities.
- I report any environmental pollution or destruction to the relevant authorities.
- I comply with the rules and regulations regarding environmental protection.
- I persuade other people to protect the natural environment.
- I persuade other people to sign a petition about environmental problems.
- I persuade other people to recycle rubbish.
- I persuade other people to respect the environment.
- I persuade other people not to damage vegetation.
- I persuade other people to purchase locally produced products.
- I persuade other people to purchase in reusable or recyclable packages or refillable containers.
- I persuade other people to save water by using a shower or switching off the tap while washing dishes.
- I pick up litter thrown by other people.
- I sort trash according to the recycling bins in my household.
- I appropriately dispose wastes incurred in the course of my travel.
- I participate in community-based clean-up workshops.
- I have installed devices that promote environmental conservation in my household.
- I save water, e.g. I use a shower or switching off the tap while washing dishes.
- I switch off lights when I leave a room for over 10 minutes.
- I participate in reduction of energy usage.
- I participate in reduction of carbon dioxide.
- I save electricity, e.g. I keep windows open for ventilation instead of utilising electrical devices, such as air-conditioner.
- I utilise biodegradable laundry detergent.
- I reuse or recycle items as much as possible to decrease the quantity of my household trash.
- I participate to help environment.
- I participate in efforts to conserve the natural environment.
- I participate in environmental protection activities.
- I take public transport (or low-carbon transport) or I carpool whenever possible.

Site-specific dimension

- I respect natural resources at the heritage site.
- I buy products made of recyclable, reusable and/or refillable materials.
- I stop other people' damage behaviour.

- I obey the rules and regulations of the heritage site.
- I stay on labelled pathways established by the heritage site.
- I stay away from restricted areas at the heritage site.
- I pick up other people’s litter.
- I sacrifice activities I like doing if they damage the natural environment.
- During my visit, I buy locally produced products.
- During my visit, I utilise products with eco-labels.
- I lower my voice during the visit not to disturb other people or vegetation onsite.
- I participate in environmental clean-up efforts at a specific heritage site.
- I persuade other people to protect the natural environment at a specific heritage site.
- I comply with the rules and regulations regarding environmental protection.
- I minimise my interference with the local environment.
- I avoid most visited spot if it requires to recover from environmental damage.
- I visit less visited spot if it needed to recover from environmental damage.
- I choose to visit frequently visited spot less if it needed to recover from environmental damage.
- I do not remove flora and fauna specimens from the heritage sites.
- I do not remove rock, fossil or dried wood at the heritage site randomly or without permission.
- I do not distract any creature and vegetation onsite.
- I do not damage flora.
- I do not buy products that are well-known to be the cause of pollution.
- I tell other people not to damage vegetation.
- I intervene if I notice other people’s bad or unethical behaviour which could harm the environment.
- I report people who violates laws that protect the environment to the staff onsite.
- I report any environmental pollution or destruction to the staff onsite.
- I use public transport (low-carbon transport) to visit the heritage site.
- After the visit, I leave the heritage site the same way I found it.
- I do not litter.
- I sort trash according to the recycling bins during my visit.

Adapted from: Doganer (2013); Lee et al*. (2013); Lee and Jan (2015a, 2015b); Han and Hyun (2017); Lawhon* et al*. (2017); Cheng* et al*. (2018); Kastenholz* et al*. (2018); Kim and Coghlan (2018); Ma* et al*. (2018); Wang* et al*. (2018); Zhao* et al*. (2018); Alazaizeh, Hallo* et al*. (2019); Alazaizeh, Jamaliah* et al*. (2019); Li and Wu (2019); Lladó Colombàs (2019); Wang* et al*. (2019); Zhang* et al*. (2019); Lin and Lee (2020); Zhao* et al*. (2020); Panwanitdumrong and Chen (2021); Yin* et al*. (2021); and Burhanudin and Unnithan (2022)*

As illustrated in Table 3.1, the items cover responsible tourist behaviour within environmental settings. However, many authors (see Cheng *et al.*, 2018; Alazaizeh, Hallo *et al.*, 2019; Alazaizeh, Jamaliah *et al.*, 2019; Zhao *et al.*, 2020) have used some of these items to measure responsible tourist behaviour at heritage sites that also contain cultural resources. Miller, Freimund, Crabtree, and Ryan (2021) warn that not only do tourism activities have negative impacts on the environment but tourists also engage in deviant behaviours (social taboos, graffiti, collecting of artefacts, and other forms of damage) that threaten cultural heritage resources. As explained in Chapter 2, cultural heritage landscapes are intertwined with natural environments. The natural and cultural resources at cultural heritage sites are difficult to separate (Cheng, Jin & Wong, 2014). Therefore, it is essential to understand responsible tourist behaviour towards both natural and cultural resources (Goffi, Osti, Nava, Maurer & Pencarelli, 2020). It is against this background that this study integrates the responsible tourist behaviour measurement items for natural resources (see Table 3.1) with the responsible tourist behaviour measurement items for cultural resources.

3.4 CULTURAL RESOURCES AT THE HERITAGE SITE

Conservation at a heritage site calls for the management to monitor the dynamic association between the natural resources (refer to section 3.3) and the cultural resources (Fletcher, Johnson, Bruce & Khun-Neay 2007). The cultural significance at a heritage site is evoked by its tangible and intangible cultural values (Rosli *et al.*, 2014; De la Torre & Mason, 2002). Díaz-Andreu (2017:2) defines cultural heritage values as “the meanings and values that individuals or groups of people bestow on heritage, including collections, buildings, archaeological sites, landscapes, intangible expressions of culture, such as traditions”.

Cultural heritage values have been an important element in the legitimation of cultural heritage conservation (Díaz-Andreu, 2017). Dai, Zheng and Yan (2021) argue that when tourists are completely aware of the cultural heritage values, they are capable of reasonably assessing these values from the conservation point of view. Conservation of cultural heritage values helps communities to preserve cultural identities, continuity (Barakat, 2021), sense of belonging and place, and parts of memory and spiritual relations (Jones, 2017). It is therefore, important to explain the different types of values at cultural heritage sites.

3.4.1 Typology of heritage values

Cultural heritage values are often associated with cultural heritage and conservation issues (ICOMOS, 2013; Jones, 2017). However, it cannot be assumed that each heritage site contains all types of values (Mason & Avrami, 2002). According to Ababneh (2016), the assessment of heritage values must allow management to point out the possible values of the heritage accurately. If these values are inadequately identified, their decisions may lead to some values being side-lined, others being over-rated, or the significance of the heritage being completely degraded. De la Torre and Mason (2002) and Dümcke and Gnedovsky (2013) explain that there are two types of heritage values, namely sociocultural and economic values.

Sociocultural values are multi-faced, unsteady, and disputed; they do not have a common definition or unit of account and may comprise components that are not easy to express in line with any quantitative or qualitative scale (Throsby, 2003; Angelini & Castellani, 2019). Although there is no universal consensus regarding the definition of sociocultural value, this study is guided by De la Torre and Mason's (2002) description. Sociocultural values

> "are at the traditional core of conservation; values attached to an object, building, or place because it holds meaning for people or social groups due to its age, beauty, artistry, or association with a significant person or event or (otherwise) contributes to processes of cultural affiliation." (De la Torre & Mason, 2002:11)

Sociocultural values include the following:

- *Historical values* are the main source of heritage (ICOMOS, 2013). Correspondingly, Sánchez Royo (2011) relates historical values to the concept of authenticity. Tourists may experience historical values in several ways, namely the age of the heritage assets, through relationships with society or events, rareness and/or distinctiveness, scientific and technology-based potential, or the presence of archives or documentaries (Sánchez Royo, 2011). These values help tourists to define identity by providing relatedness with the past and disclosing the origins of the present (El Gammal, 2007). There are two types of historical values: educational or academic value and artistic value (ICOMOS, 2013). The educational value of heritage persists in the prospect of acquiring information regarding the past in the future, for instance, through archaeological, architectural, and scientific means (Jones, 2017). Artistic value is placed upon heritage objects that are distinct and aesthetically the best, for example, unique artwork reflecting the past (Stecker, 2019).

- *Cultural or symbolic values* refer to the implicit or explicit shared abstract ideas regarding what is appropriate or inappropriate in a society (Mosleh, 2015). Cultural values are used to build cultural identity and an association with the community (El Gammal, 2007). For instance, ideas (e.g. customs), materials (e.g. artefacts) and habits (e.g. greeting habit) passed through time can be used to build cultural identity and an association in the present and can be historical, political, ethnical, or related to other aspects of a community that lives together. In a cultural-heritage setting, objects are displayed as repositories or conveyors of meaning (De la Torre & Mason, 2002). In this regard, Mosleh (2015) points out that cultural or symbolic value are joint descriptions related to heritage, but in this typology, they are not necessarily historical (associated with the sequential heritage meanings and information).
- *Social values* can be defined as the foundation of a community or specific group. The social values of heritage enable social relations and communication in a community (Sánchez Royo, 2011). These values generally involve the use of a physical place or location for social gatherings (De la Torre & Mason, 2002; Sánchez Royo, 2011). For example, World Heritage Sites may serve as settings where tourists share and develop social relationships, and the exhibits onsite may evoke a sense of connection between them (Angelini & Castellani, 2019). Tourists' social relationships and their recognition regarding a specific heritage site affect their appreciation of the site's values and their attachment to the site (Lee, Joo, Lee & Woosnam 2020). Place attachment is an emotional, attitudinal reaction and a perceived closeness to a place and can be caused by practical, physical factors and/or social interactions (Lee *et al.*, 2020).
- *Spiritual or religious values* can be derived from the beliefs and teachings of an arranged religion. However, these values can also comprise non-religious

experiences of wonder, astonishments, and many other feelings that can be formed through an experience with a heritage site (De la Torre & Mason, 2002; Bond & Worthing, 2016; Costa & Carneiro, 2021). For example, the value of an artwork may differ according to its importance to members of religious and non-religious groups (Angelini & Castellani, 2019).

- *Aesthetic values* refer to an extensive variety of qualities (ICOMOS, 2013). El Gammal (2007) explains aesthetic value as the beauty possessed and displayed by the heritage site whether that quality is in some way intrinsic or simply exists to be used by the viewer. For example, a wide variety of vegetation within a heritage site enhances the diversity and beauty of the landscape (Economics for the Environment Consultancy, 2005). Aesthetic values may be related to other visual aspects such as the shape of a building at a heritage site, the colours used to decorate a heritage site, and the architectural style (Costa & Carneiro, 2021). Furthermore, De la Torre and Mason (2002) argue that the classification of the aesthetic value can be explained more broadly to include the sensory experience offered (smell and sound) and feeling.

The second category of values is *economic values.* An economic value is what people view as having value and improving their well-being (Gisselman, Cole, Blanck, Kniivilä, Skjeerna & Fornbacke, 2017). Economic values correspond significantly with sociocultural values, and their differences are gauged by the various financial profits produced by the cultural goods and services (Van der Hoeven & Hitters, 2019). Gisselman *et al.* (2017) mention that economic values consist of either (i) the direct or indirect *use values* of cultural goods and services, and (ii) the *non-use values* they may produce:

- *Use values* of a heritage asset involve the "goods and services that flow from it that are tradable and priceable in existing markets" (De la Torre & Mason, 2002:13). *Direct use values* (also referred to as market values) are measured in terms of market prices (Belfiore & Firth, 2014). Direct use values have numerous quantifiable benefits for the heritage site (e.g. entrance prices), employees (e.g. workforce productivity), local communities (e.g. by living or working at the heritage site), and tourists (e.g. opportunities for tourism activities) (SGS Economics & Planning, 2018; Throsby, 2019). In contrast, *indirect use values* are understated and less quantifiable values. These values are pertinent to the people who do not necessarily live or work at the heritage site but for whom, the heritage forms a familiar and defining element of their community and is connected with their regular lifestyle (SGS Economics & Planning, 2018). Examples of indirect use values are the social benefits stemming from having a renowned heritage site that encourages unity in the community.

- *Non-use values* refer to economic values that are non-tradable in markets or not captured by markets and consequently, they are not easily expressed in terms of price (Sánchez Royo, 2011; Throsby, 2019). For example, most of the sociocultural value qualities explained above can also be defined as non-use values (Sánchez Royo, 2011). These values are classified as economic values due to people's willingness to pay a specific amount of money to experience and/or protect them (Sánchez Royo, 2011). Non-use values are frequently divided into the following three parallel categories to specify precisely which qualities of heritage encourage economic results (El Gammal, 2007). *Existence values* are values that people place on the knowledge that heritage resources exist, although they themselves may not directly use the resources or their services (Dana, 2004; Van Zanten, Laclé, Van Duren, Soberon & Van Beukering, 2018). For example, some individuals are simply satisfied by knowing that a heritage site and its resources (e.g. fossils and rare species) are in existence. In contrast, *option values* of a heritage site refer to the value that people place on having the option to use or experience the heritage resources in the future (Australian Government Productivity Commission, 2006; Van Zanten *et al.*, 2018). For example, individuals may contribute to conservation of a heritage site to ensure that such sites are available for their own use in the future. *Bequest values* (legacy values) emanate from securing the existence of a heritage asset for the future generation (O'Garra, 2009; Van Zanten *et al.*, 2018). For example, individuals must avoid taking part in any activity that may contribute to climate change because this will degrade and damage heritage and jeopardise the opportunity for future generations to experience it.

The sociocultural and economic values are not distinct, separate groups of values. Sociocultural and economic are two unorthodox ways of explaining and labelling the extensive variety of cultural heritage values. However, the significance of cultural heritage may differ from one individual, group, community, or generation to another (Król, 2021). According to Holtorf (2018) and Mason and Avrami (2002), cultural heritage values serve as an important reminder of where humans come from, who they are, and who they want to be. According to Qiu, Zheng, Xiang, and Zhang (2020:138), there is a significant positive relationship between individuals' knowledge of cultural heritage values ("aesthetic value", "educational and spiritual value", "social and economic value", "historical value") and their behavioural action. As a result, it was important to consult literature pertaining to responsible tourist behaviour towards cultural resources in order to generate items for the scale to measure responsible tourist behaviour in cultural heritage tourism.

3.4.2 Measurement items for responsible behaviour towards cultural resources

Few studies to date have sought to collect data on tourist behaviour in relation to conservation of cultural resources. The studies that did investigate the behaviour towards cultural resources at cultural heritage sites include Brown (1999), Chui *et al.* (2011), Teo *et al.* (2014), and Di Pietro *et al.* (2015). Brown (1999) investigated visitors' beliefs associated with culturally appropriate tourist behaviour at the UNESCO World Mixed Heritage Site, Uluru-Kata Tjuta National Park. This study focused on beliefs associated with behaviour rather than the actual behaviour. Chui *et al.* (2011) developed a scale for responsible heritage tourism in the context of the Melaka World Cultural Heritage Site and primarily examined attitudes towards behaviour rather than actual behaviour. Teo *et al.* (2014) used the scale of Chui *et al.* (2011) in their study to investigate visitor behaviour at cultural heritage sites in Melaka. Moreover, Di Pietro *et al.* (2015) studied the behaviour of tourists who consume Italian cultural resources. The authors explored a basis to develop innovative products and services that would support the revitalisation of the cultural heritage sector of Italy's economy rather than responsible tourist behaviour in cultural heritage tourism. The authors of the aforementioned studies did not investigate both general and site-specific tourist behaviour towards cultural resources. As explained by Bem's (1972) spillover effect (see section 3.3.2) in order to understand fully how tourists behave, both general and site-specific environmentally responsible behaviour should be studied.

Following on from the literature regarding environmentally responsible behaviour and studies on cultural heritage, the current study finds it necessary to explain the general and site-specific dimensions of tourists' responsible behaviour towards cultural resources at heritage sites. The construct of this research, *general responsible behaviour towards cultural resources*, was derived from several studies. Teo *et al.* (2014:6) employed three variables, namely "feel good about the way we care for our cultural heritage", "believe in being part of a community rich in culture and history", and "believe in preserving one's cultural heritage" to investigate tourists' responsible behaviour towards cultural resources at cultural heritage sites. Gao *et al.* (2017:284) propose the following item to explore the link between tourists' perceptions of the negative impacts on cultural heritage resources and their perceived responsibility: "tourists have the responsibility to minimize the use of rare local resources". Gursoy *et al.* (2019:2348) included, "I will stop people from destroying the heritage", "I will try to convince others to protect the heritage", "I am willing to take part in the heritage protection activities", and "I am willing to organise people to protect the heritage", as items for the construct of responsible behaviour towards cultural resources. Megeirhi *et al.* (2020:1362) adapt numerous cultural related variables (e.g. "I feel a sense of obligation to help protect culture and heritage", "I would be influenced by government guidance to participate in efforts to support cultural heritage tourism", and "support the creation of laws and regulations protecting cultural heritage resources") to explore residents' intentions to support sustainable cultural heritage tourism. Other authors such as Mustafa (2015:191) included the item, "become a member in any organization or society that aims at protecting archaeological sites and heritage" while Cheng *et al.*'s (2018:6327) study used "willingness to donate money to protect the cultural heritage" and "willingness to learn about the protection of cultural heritage via Internet, or news" to study behavioural intentions in the context of cultural heritage sites. Although these authors studied intentions to behave responsibly, their items were adapted in this study to measure actual behaviour (e.g. 'willingness to donate money' was amended to 'I donate money').

In addition to the already mentioned items for general responsible behaviour towards cultural resources, it is important to identify measurement items for *site-specific responsible behaviour towards cultural resources*. Adventure Travel Trade Association (2013:7) suggests that tourists can contribute towards the protection of cultural heritage resources by implementing the following behavioural actions: “to refrain from climbing, sitting, or standing on heritage structures or remains”, “to refrain from removing anything from a heritage site”, “to refrain from entering areas where there are active excavations”, “to refrain from buying illegal authentic objects”, “to respect all signage and fences onsite”, “to carry all their belongings and trash away”, “to walk on designated trails”, and “to report vandalism at the site to relevant authorities”. Furthermore, tourists’ support for local crafts and their participation in tourism activities designed to enrich and supplement the site may assist in conserving the cultural heritage site and its resources (Adventure Travel Trade Association, 2013). Srivastava (2015) points out that to protect cultural resources at a heritage site, tourists must be aware of the fragility of these resources. In this regard, tourists must avoid or report looting and vandalism of the resources in question (Srivastava, 2015, 2021). Mazzola (2015) opines that for tourists to care about specific cultural heritage resources, they should be somewhat familiar with the cultural aspects that the site represents.

Mustafa (2015:191) uses measurement items such as “willingness to walk in designated accesses”, “willingness to leave artifacts without picking them up”, “willingness to avoid climbing on monuments and other features”, “willingness to avoid painting or draw graffiti in the archaeological sites”, “willingness to touch inscriptions and decorative elements in archaeological sites”, “willingness to participate as a volunteer in archaeological sites’ excavations”, and “willingness to become a member of any organisation or society that aims at protecting archaeological sites and heritage”. These items were originally developed to measure behavioural intentions of tourists when visiting archaeological sites and were adapted in this study to measure responsible tourist behaviour towards cultural resources.

Buonincontri *et al.* (2017:14) applied the following site-specific items to conceptualise the sustainable behaviour of heritage consumers: “I usually join in community efforts dedicated to protect a specific cultural heritage site”, “I do volunteer work for a group that helps the protection of a specific cultural heritage site", "I support the protection of a specific cultural heritage site with money", "I would be willing to pay much higher entrance tickets to visit a specific cultural heritage site", "I donate money to support a specific cultural heritage site", "after visiting a specific cultural heritage site, I leave the place as it was before", and "I convince someone to respect the specific cultural heritage site they are visiting". Once again, where the items reflected intention to behave, these items were amended in this study to portray actual behaviour. According to Rifat-Ur-Rahman (2021), to conserve and preserve cultural heritage sites, tourists should support the replicas that are arranged at the site and should not be allowed to enter the sensitive spots all at once. Tourists can protect sensitive spots at specific cultural heritage sites by using digital methods such as three-dimensional technology instead of physically visiting those spots (Zhenrao *et al.*, 2021).

3.5 CONCLUSION

This chapter discussed the theoretical foundation of heritage interpretation (see section 3.2) and responsible tourist behaviour towards the natural resources (see section 3.3) and the cultural resources (see section 3.4) at heritage sites. In the context of this study, heritage interpretation was used to strengthen tourists' responsible tourist behaviour in cultural heritage tourism settings (section 3.2.3). Items relating to information regarding heritage interpretation (section 3.2.4) were identified for use in the cross-validation process of the proposed scale to measure responsible tourist behaviour in cultural heritage tourism.

Since cultural heritage landscapes are closely linked to their natural surroundings, it is difficult to separate natural and cultural resources at cultural heritage sites. This makes it critical to comprehend tourists' responsible behaviour towards both natural and cultural heritage resources. Although there is significant research on responsible behaviour relating to natural resources (e.g. environmentally responsible behaviour), there is only limited research on responsible behaviour relating to cultural resources. Therefore, to identify measurement items for natural resources at heritage sites, literature relating to environmentally responsible behaviour were consulted (section 3.3.2). General environmentally responsible behaviour focused on actions undertaken by individuals in their daily routines, while site-specific environmentally responsible behaviour dealt with actions undertaken by tourists when visiting a specific tourist site. Following on from the environmentally responsible behaviour dimensions (general and site-specific), the items relating to responsible behaviour with cultural resources were identified (section 3.4.2). Accordingly, this study aimed to integrate items relating to responsible behaviour with natural and cultural resources in order to develop a scale to measure responsible tourist behaviour in cultural heritage tourism. The following chapter presents the methods that were applied to develop the proposed scale.

CHAPTER 4: RESEARCH METHODS FOR DEVELOPING A SCALE TO MEASURE RESPONSIBLE TOURIST BEHAVIOUR IN CULTURAL HERITAGE TOURISM

4.1 INTRODUCTION

The purpose of this chapter is to address the third secondary objective (see section 1.3.2), namely to explore the relevant research methods for developing a scale for responsible tourist behaviour in cultural heritage tourism. To achieve this secondary objective, the following three sub-objectives were envisioned: (i) to generate an initial pool of items; (ii) to assess the construct validity and reliability of the proposed measurement scale; and (iii) to conduct cross-validation of the measurement scale.

Lee *et al.* (2013) and Tsang *et al.* (2017) assert that the development of a validated scale should first focus on preliminary considerations regarding the concept or construct (in this study, responsible tourist behaviour in cultural heritage tourism) to check if a validated scale exists. If a validated scale does not exist, the second step is to develop the scale, and the last step is to validate the proposed scale (Barry *et al.*, 2011; Lee *et al.*, 2013; Morgado *et al.*, 2017). As explained in chapters 1 and 2 (see sections 1.2 and 2.6), the current study placed specific emphasis on the need for a validated scale to measure responsible tourist behaviour in cultural heritage tourism.

To develop a validated scale, this study applied a mixed-method approach (embedded design) using three phases. According to Creswell and Plano Clark (2011:411) an embedded design is an approach in which the "researcher collects and analyses both quantitative and qualitative data within a traditional quantitative or qualitative design to enhance the overall design". In this study, the traditional approach was a quantitative design (using a closed-ended questionnaire to deliver numerical data) with an embedded qualitative design (using an open-ended questionnaire delivering written feedback on the items). Figure 4.1 elucidates the research process to develop the proposed scale of this study.

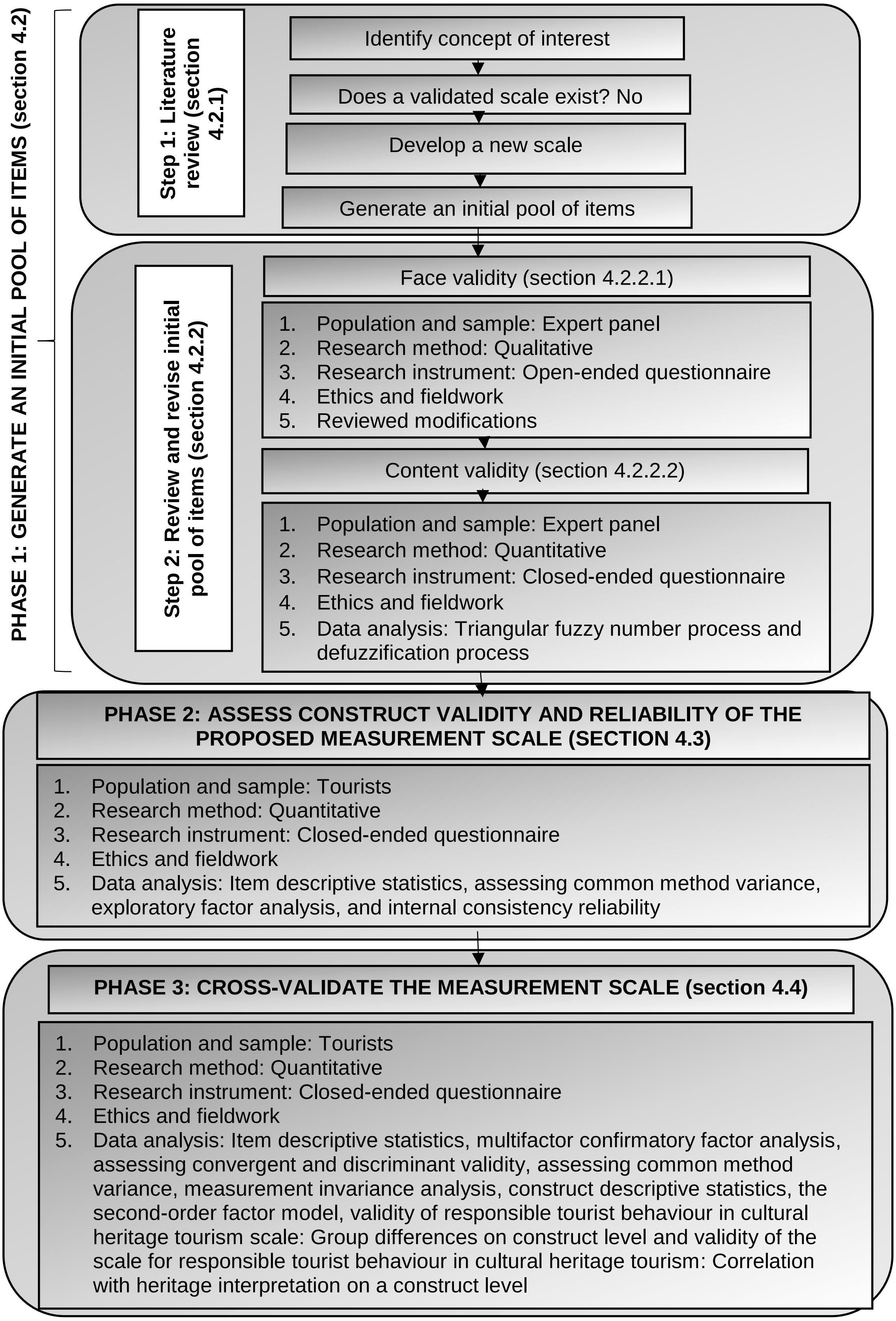

Figure 4.1: Phases of the scale development

Source: Adapted from Barry et al*. (2011); Lee* et al*. (2013); Morgado* et al*. (2017); and Tsang* et al*. (2017)*

As illustrated in Figure 4.1, Phase 1 focused on the generation of the pool of items. This involved (i) a literature review, and (ii) a review and revision of the initial pool of items. The literature review that was conducted on the topic was presented in chapters 2 and 3. The review revealed that a validated scale for responsible tourist behaviour in cultural heritage tourism does not exist. Using existing literature, the study proceeded with the development of a scale by generating the initial pool of items (see sections 3.3.2 and 3.4.2). The second step in Phase 1 dealt with reviewing and revising the initial pool of items using expert judgements to address (i) the face validity, and (ii) the content validity of the proposed scale. A small panel of experts determined face validity using a qualitative approach (see section 4.2.2.1), while a larger panel of experts quantitatively assessed content validity using the TFN process and the defuzzification process (FDM) to reach consensus on the items (see section 4.2.2.2).

According to Churchill (1979) and Tsang *et al.* (2017), upon refining the items, it is necessary for the retained items to be re-analysed using a new sample of subjects. Therefore, Phase 2 assessed the construct validity and reliability of the proposed measurement scale by testing the scale on tourists who had visited cultural heritage tourism sites (see section 4.3). Construct reliability (CR) and validity concentrate on the measurement's accuracy and consistency (Hair *et al.*, 2019). The results of the first sub-sample of tourists were used to assess construct validity (assessing CMV, EFA and further internal consistency reliability using Cronbach's alpha coefficient, IIC, and CITC). Refer to sections 4.3.5.2 to 4.3.5.4.

It is critical to validate the EFA results by using a CFA as an additional step to confirm the measurement structure. Hence, using a second sub-sample of the same population, Phase 3 focused on cross-validation of the measurement scale (refer to section 4.4). This procedure was performed to demonstrate that the model's accuracy was consistent, to predict how the model would perform in practice, and to identify and resolve possible measurement errors (Acar, 2014; De Rooij & Weeda, 2020). The cross-validity analyses included multifactor CFA (section 4.4.5.2), assessing convergent and discriminant validity (section 4.4.5.3), assessing CMV (section 4.4.5.4), and measurement invariance analysis (section 4.4.5.5).

After the measurement scale was validated, the descriptive statistics for the construct were analysed, and the score for the scale to measure responsible tourist behaviour in cultural heritage tourism was calculated (section 4.4.5.6). The scale score helps facilitate the interpretation of a standard range (Labrague & De Los Santos, 2020). According to Albano (2020), the individual scale constructs may be limited in some ways or may only present a small piece overall, but when combined, the resulting score is more comprehensive and easier to reproduce in subsequent measurements. For this study, the score for responsible tourist behaviour in cultural heritage tourism indicated whether tourists behave responsibly within cultural heritage tourism settings. Scale validity should determine the scale's predictive capability while adhering to its dimensionality when applying the scale to different circumstances (Boateng *et al.*, 2018). Successively, the final three analytical analyses focused on the second-order factor model (section 4.4.5.7) and further validation of the scale for responsible tourist behaviour in cultural heritage tourism by determining group differences on the construct level (section 4.4.5.8), and the correlation with a different construct (e.g. heritage interpretation) (section 4.4.5.9).

The three research phases illustrated in Figure 4.1 are explained in the following sections.

4.2 PHASE 1: GENERATE AN INITIAL POOL OF ITEMS

The study used a literature review to generate an initial pool of items that was subjected to the processes of face validity (see section 4.2.2.1) and content validity (see section 4.2.2.2) as explained below.

4.2.1 Literature review

The literature review aided in identifying the concept of interest, namely responsible tourist behaviour in cultural heritage tourism. Given that there is no validated scale to measure responsible tourist behaviour in cultural heritage tourism, this study moved forward with the development of a scale by generating an initial pool of items. According to Huang and Choi (2019), an initial pool of items can be produced using a deductive and/or an inductive approach.

A deductive strategy is employed when the researcher wishes to embrace a defined theoretical position that will be tested through data collection (Saunders *et al.*, 2019). Melnikovas (2018) claims that existing theories are tested using this logical technique. This study used a deductive approach to develop an initial pool of measuring items for responsible tourist behaviour at cultural heritage tourism sites, starting with a literature review. A literature review provides a background of existing knowledge; it identifies pertinent theories, methods, and gaps in the research (McCombes, 2019). In the same notion, Wallace and Wray (2016) assert that a literature review entails a constructive critical analysis that results in a strong argument about what the published literature considers to be known and unknown about the research topic. For this study, the literature review was presented in two chapters, chapters 2 and 3. Chapter 2 focused on a literature review about cultural heritage tourism and theories of tourist behaviour, whereas Chapter 3 laid the theoretical foundation for heritage interpretation and responsible tourist behaviour towards natural and cultural resources at a cultural heritage site. From the literature cited in Chapter 3, an initial pool of items (see sections 3.3.2 and 3.4.2) was generated by following the process explained below.

Scientific databases, such as Science Direct, EBSCOHost, Emerald, and Google Scholar, were consulted to find relevant publications related to the study. In addition, scientific textbooks and other literature sources that relate to heritage tourism (government periodicals, dissertations, theses, and internet sources) were consulted.

The measurement items for responsible behaviour towards natural resources were adopted from existing literature regarding the measurement of environmentally responsible behaviour (refer to Table 3.1). Keywords that were used to carry out the literature search for responsible behaviour towards natural resources included the following:

- Environmentally responsible behaviour
- Pro-environmental behaviour
- Environmentally friendly behaviour
- Environmentally sustainable tourism behaviour
- Eco-friendly behaviour
- Sustainable behaviour

The following authors' works were used to identify an initial pool of items for responsible behaviour towards natural resources: Doganer (2013), Lee *et al.* (2013), Lee and Jan (2015a, 2015b), Han and Hyun (2017), Lawhon *et al.* (2017), Cheng *et al.* (2018), Kastenholz *et al*. (2018), Kim and Coghlan (2018), Ma *et al.* (2018), Wang *et al.* (2018), Zhao *et al.* (2018), Alazaizeh, Hallo *et al.* (2019), Alazaizeh, Jamaliah *et al.* (2019), Li and Wu (2019), Lladó Colombàs (2019), Wang *et al.* (2019), Zhang *et al.* (2019), Lin and Lee (2020), Zhao *et al.* (2020), Panwanitdumrong and Chen (2021), Yin *et al.* (2021), and Burhanudin and Unnithan (2022). See section 3.3.2.

To identify the measurement items for responsible behaviour towards cultural resources (see section 3.4.2), the following keywords were used to conduct the literature search:

- Cultural heritage conservation
- Cultural heritage management
- Cultural heritage protection
- Cultural heritage values
- Responsible tourist behaviour
- Cultural responsible behaviour
- Culturally significant behaviour
- Culturally intelligent behaviour

The initial pool of items was identified based on the following sources: Adventure Travel Trade Association (2013), Teo *et al.* (2014), Mazzola (2015), Mustafa (2015), Srivastava (2015), Buonincontri *et al.* (2017), Gao *et al*. (2017), Cheng *et al.* (2018), Gursoy *et al.* (2019), Megeirhi *et al.* (2020), Rifat-Ur-Rahman (2021), Srivastava (2021), and Zhenrao *et al.* (2021). Refer to section 3.4.2.

The initial pool generated during the literature review consisted of 136 items (82 items for natural resources and 54 items for cultural resources). Items with similar meanings were removed, leaving a total of 125 items (73 items for natural resources and 52 for cultural resources). Results regarding these items are presented in Chapter 5 (see section 5.2.1).

While the deductive approach focuses on what is known (existing literature), the inductive approach was used to uncover aspects of the research topic that are less known or lack a clear theoretical explanation (Saunders *et al.*, 2019). This was accomplished using expert panels who reviewed and revised the initial pool of items.

4.2.2 Review and revise initial pool of items

After compiling an initial pool of items, experts who are familiar with the topic were consulted to evaluate the validity of the items (Tsang *et al.*, 2017; Lam *et al.*, 2018). This was to ensure that the items were measuring the concept as intended (Othman & Harun, 2021). According to Mustaffa and Ghani (2021), this may generate new knowledge and ideas for the research.

Two types of validity, namely face validity (see section 4.2.2.1) and content validity (see section 4.2.2.2), were considered (Bolarinwa, 2015; Lam *et al.*, 2018). According to Souza, Alexandre, and Guirardello (2017), to assess face and content validity, researchers firstly use a qualitative approach through the assessment of experts, followed by a quantitative approach.

4.2.2.1 *Face validity*

Face validity focuses on the suitability of the measurement tool's appearance (Lam *et al.*, 2018). Face validity reviews the degree of difficulty, suitability, and vagueness of the questions or statements in a scale (Bahariniya *et al.*, 2021). Generally, word shifting may improve face validity to a certain degree (Bahariniya *et al.*, 2021). According to Bradburn, Sudman, and Wansink (2004:3), "the precise wording of questions plays a vital role in determining the answers given by respondents." Barry *et al.* (2011) state that items that are poorly worded may increase measurement errors, and hence, it is important to ask experts to express their views on the language and grammar.

The face validity step of the research is discussed by referring to the population and sample (the expert panel), the research method (qualitative), the research instrument (open-ended questionnaire), the ethics and fieldwork, and the reviewed modifications (see sections 4.2.2.1.1 to 4.2.2.1.5).

4.2.2.1.1 *Population and sample: Expert panel*

A population is all the people, items, or elements that the researcher wishes to study while a sample is a portion of the population selected for investigation (Rahi, 2017; Saunders *et al.*, 2019). Although there is no universal consensus regarding the composition of experts (the population for this step), a dominant pattern recognises the use of experts from both academia and the industry who demonstrate competence and knowledge on the topic (Habibi *et al.*, 2015; Elangovan & Sundaravel, 2021; Othman & Harun, 2021). According to Lötter and Jacobs (2020), respondents must have relevant knowledge in order to provide insightful input and make informed decisions about the topic. For this survey, a combination of academia and industry experts in the field of cultural heritage tourism, cultural tourism, sustainable tourism development, ecotourism, heritage interpretation, tourism and environmental management, and related fields were consulted. These experts assisted in validating the appropriateness and importance of the individual items to the construct and the accuracy of the individual items in measuring the concept, in determining the inclusion or removal of items, and in establishing the logical order of the items (Barry *et al.*, 2011). Elangovan and Sundaravel (2021) state that experts also validate the way that the instrument can measure the concept between different groups of respondents and assess individual items for their unfairness to particular groups.

In cases where there is no current list of the experts (population), Habibi *et al.* (2015) and Cardullo *et al.* (2021) recommend snowball sampling as a suitable sampling technique for an expert panel. Anieting and Mosugu (2017:34) define snowball sampling as a non-probability "method that relies on referrals from initially sampled respondents to other persons believed to have the characteristic of interest." In this technique, the researcher makes the first contact with a small group of eligible experts and requests that those individuals to suggest other experts in the field of the research topic (Rahi, 2017).

In terms of the sample size, Tsang *et al.* (2017) point out that there is no universal agreement when surveying experts for face (and content) validity. Clayton (1997) reports that an acceptable number for a heterogeneous population (individuals with expertise on a topic but from different fields of the profession, for example, academia and industry) should be between five and ten experts. Relatedly, Belton *et al*. (2019) recommend the use of five to twenty experts. Guided by existing studies (Clayton, 1997; Belton *et al.*, 2019), this validity step (face validity) in the current study used a sample of five experts in the fields identified above. See section 5.2.2 for the results.

4.2.2.1.2 *Research method: Qualitative*

The face validity step used a qualitative research method in the form of an open-ended questionnaire in order to reveal new information regarding the research topic (Sproull, 1988; Cardullo *et al.*, 2021). According to Augustovski, Argento, Rodríguez, Gibbons, Mukuria, and Belizán (2022), the qualitative research method in the context of face validity is aimed to explore participants' views on the items and understand how the participants interpreted these items. Similarly, Teshome, Birhanu, and Kebede (2022) agree that during face validity, a qualitative method helps to investigate how research participants comprehend and interpret the items and comment on the wording of the items and the overall format of the measurement tool.

4.2.2.1.3 *Research instrument: Open-ended questionnaire*

The online questionnaire consisted of three main sections. Section A was designed to obtain the demographic profiles of the experts (educational level, field of expertise, years of experience, and whether in academia or industry) to determine their type and level of experience. Section B comprised 73 items regarding responsible tourist behaviour towards natural resources, and Section C focused on 52 items relating to cultural resources, which were obtained from the literature review. For sections B and C, experts were required to review the items' accuracy, clarity, and grammar and ensure that the items did not contain content that may be perceived as offensive or biased by a particular group of respondents (Tsang *et al.*, 2017). During this data collection, respondents were asked either to leave the item as is (in circumstances where they had no modifications to make to the question) or to make modifications to the question in a manner that made it relevant to the topic under investigation.

Moreover, at the end of sections B and C, the experts were asked to recommend any additional items and provide any additional comments for the proposed scale. Since this step of the study used a snowball sampling technique, the last question in the questionnaire provided an opportunity to recommend eligible experts in the subject area to whom the questionnaire could be forwarded. See Annexure B for the questionnaire of the first group of experts.

4.2.2.1.4 *Ethics and fieldwork*

Kapiszewski and Wood (2022) point out that researchers bear sole responsibility for the ethics of their research-related activities. Accordingly, the researcher's responsibilities and the code of ethics guiding the conduct of this research that involved humans (fieldwork) followed the policy of the University of South Africa (UNISA) on research ethics (UNISA, 2016) and the procedures for master's and doctoral degrees (UNISA, 2018). These documents require the researcher to obtain ethical clearance, permission from the gatekeepers, and informed consent from the participants or respondents before the start of the fieldwork. The Ethics Review Committee of the College reviewed the research project, and ethical clearance was obtained. Refer to Annexure A for the ethical clearance certificate: 2021_CRERC_048 (FA).

Once ethical clearance was obtained, the fieldwork commenced and took place from December 2021 to January 2022. An e-mail invitation was sent to the five experts together with a unique electronic questionnaire link (created with LimeSurvey software). The distinguishing link contained an information sheet (including research aim and ethics details), a request for informed consent, and the research questions. Before being directed to the questionnaire, the expert was required to click either the 'Yes' button to indicate their consent to participate in this study or the 'No' button to withdraw from the study. To avoid spam, the link was automatically set for single participation, and feedback was collected and saved after the expert clicked the submit button. Following the completion of the questionnaire, a thank-you message was automatically sent. Each of the five experts responded.

4.2.2.1.5 *Reviewed modifications*

The researcher reviewed any modifications to generate clear and inclusive questions that still maintained the original meaning. If the expert suggested modifications that altered the meaning of the original item, the researcher created an additional item to reflect the new idea while retaining the initial item. After revising the feedback from the face validity, the construct responsible tourist behaviour towards natural resources comprised 74 items while the construct responsible tourist behaviour towards cultural resources remained at 52 items. Thereafter, the questionnaire was sent to a language editor to review its grammar and spelling, to determine any terminological inconsistencies, and to address the questionnaire's inner logic and cohesion (see Annexure F for proof of questionnaire language editing). Furthermore, the questionnaire was sent to a statistician to improve its quality, accuracy, and adequacy and to make it suitable for the purpose for which it was designed.

4.2.2.2 *Content validity*

Content validity (Phase 1, Step 2) (see Figure 4.1) provides evidence regarding the validity of an instrument by assessing the extent to which the instrument is appropriate to and representative of the topic it is intended to measure (Kandi, 2022). Bahariniya *et al.* (2021) state that content validity examines the necessity and significance of including the item in a scale.

The content validity step of the research is discussed by referring to the population and sample (expert panel), the research method (quantitative), the research instrument (closed-ended questionnaire), the ethics and fieldwork, and the data analysis (see sections 4.2.2.2.1 to 4.2.2.2.5).

4.2.2.2.1 *Population and sample: Expert panel*

The criteria of eligible experts (population), their field/s of expertise, and the sampling method were the same as in the face validity step (refer to section 4.2.2.1.1).

Habibi *et al.* (2015) point out that there is no universal agreement regarding the sample size when conducting FDM studies, as applied in this step of Phase 1 (see section

4.2.2.2.5). According to Hogarth (1978), between six and twelve experts are sufficient when using the FDM. However, Strasser, London, and Kortenbout (2005) considered less than 10 experts to be adequate in their study that applied the FDM. To obtain high uniformity among experts, Adler and Ziglio (1996) recommended a minimum sample of 10 experts when applying the FDM. In contrast, the study of Rowe and Wright (1999) revealed that no consistent relationship between sample size and effectiveness criteria was established. In contrast, Yusoff *et al.* (2021) maintain that the minimum sample of experts in applying the FDM must be 10 in order to obtain high uniformity among the experts; 17 experts were used in their study to obtain experts' opinions. According to Mustaffa and Ghani (2021), an increased sample size can reduce measurement errors, ensure the consistency of the research findings, and verify the quality of consensus. It is against this background that this step of content validity sampled 25 prospective experts to achieve high consistency. Refer to section 5.2.3 for the results.

4.2.2.2.2 *Research method: Quantitative*

This content validity step made use of a quantitative research approach using a questionnaire with mostly closed-ended questions (see section 4.2.2.2.3). Queirós, Faria, and Almeida (2017) state that quantitative methods tend to acquire accurate and reliable measurements that allow for statistical analysis. Questions using this method are easier and quicker to answer; they provide a better understanding through answer options; they assist in discarding irrelevant answers; they provide comparable answers; and most importantly, they provide measurable and quantitative data (Hyman & Sierra, 2016).

4.2.2.2.3 *Research instrument: Closed-ended questionnaire*

Similar to Step 1, this step also made use of an online questionnaire. Section A obtained the demographic profiles of the experts (educational level, field of expertise, years of experience, and whether in academia or industry) to determine their type and level of experience. After revising the feedback from the face validity step, Section B of the questionnaire comprised 74 items regarding responsible tourist behaviour towards natural resources, and Section C remained the same, with 52 items focusing on responsible tourist behaviour towards cultural resources.

For the purposes of this step, sections B and C were closed-ended questions. Experts were required to indicate their level of agreement on a 5-point Likert scale on whether or not each item should be included in the proposed scale for responsible tourist behaviour in cultural heritage tourism (1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, and 5 = Strongly agree). Tsang *et al.* (2017) point out that it is essential to consider which response scale is suitable for data analysis. The Likert scale that was employed in this phase has been used in previous studies that applied the FDM, and the respondents were able to discriminate meaningfully between options (Rattanalertnusorn, Thongteeraparp & Bodhisuwan, 2013; Manakandan *et al.*, 2017; Mustaffa & Ghani, 2021). According to Clayton (1997), making use of a 5-point Likert scale enables the researcher to work within an interval or quasi-interval scale of measurement. Othman and Harun (2021) mention that in a study applying the FDM, five scale options regarding the items' suitability and significance are required to evaluate content validity quantitatively. See Annexure C for the questionnaire that was used for the second group of experts.

4.2.2.2.4 *Ethics and fieldwork*

The ethics principles followed in the face validity step (see Annexure A for the ethical clearance certificate: Reference Number 2021_CRERC_048 [FA]) were also applicable in the content validity step. The fieldwork for content validity was carried out from February 2022 to March 2022. The same process was followed as in the face validity step. An e-mail invitation was sent out with a unique electronic questionnaire link to the 25 experts. This distinctive link included an information sheet, a request for informed consent, and the research questions. Before the experts were directed to the questions, they were required to click the 'Yes' button to indicate that they consented to participate in the study.

4.2.2.2.5 *Data analysis*

Statistical techniques such as the content validity ratio, the FDM, and nominal group are commonly accepted techniques that are used to reach expert consensus, the content validity index for measuring proportional agreement, and Cohen's coefficient kappa for measuring inter-rater or expert agreement (Boateng *et al.*, 2018; Mustaffa & Ghani, 2021; Yusoff *et al.*, 2021). Nashir *et al.* (2015) argue that the FDM has proved to be stable and can be applied in several research fields. Empirical research in tourism has applied the FDM to assist with decisions in uncertain circumstances and/or to reach consensus (Dias *et al.*, 2021; Rahmayanti *et al.*, 2021; Said *et al.*, 2021). Accordingly, this study applied the FDM in Phase 1 (content validity step) to establish expert consensus regarding the proposed measurement items for responsible tourist behaviour in cultural heritage tourism.

Linstone and Turoff introduced the FDM in 1975. According to Hsu and Sandford (2007), the FDM is a commonly accepted and used approach to gather data for a study based on the consensus of a group of experts. In the context of this study, consensus among experts was determined by indicating their level of agreement regarding the items that must be included or excluded from the proposed scale to measure responsible tourist behaviour in cultural heritage tourism.

Saffie, Shukor, and Rasmani (2016) report that the FDM is an altered and improved form of the traditional Delphi technique; the FDM corrects or avoids the inadequacy of the traditional Delphi method (e.g. low convergence in retrieving outcomes, loss of important information, and slow progress of investigation). The FDM protects the anonymity of each panel member in order to minimise bias in the research (Colton & Hatcher, 2004; Yaakub, Mohd Hamzah & Mohd Nor, 2020). In addition, the FDM increases the recovery rate of items and provides the experts with the opportunity to communicate their sentiments without vagueness or favouritism, which enhances the extensiveness and consistency of the experts' results (Manakandan *et al.*, 2017).

To conduct the FDM, the respondents' data were captured and analysed using Microsoft Excel. Two techniques were followed in this regard, namely a TFN and the defuzzification process (Manakandan *et al.*, 2017; Said *et al.*, 2021; Yusoff *et al.*, 2021).

4.2.2.2.5.1 Triangular fuzzy number process

Yusoff *et al.* (2021) refer to a TFN as a process of converting each expert's response from a Likert scale to fuzzy scorings using membership functions (MFs) (see Table 4.1).

Table 4.1: The fuzzy scoring

Likert scores	Linguistic variables	Fuzzy scoring		
		n1	n2	n3
1	Strongly disagree	0.0	0.0	0.2
2	Disagree	0.0	0.2	0.4
3	Neither agree or disagree	0.2	0.4	0.6
4	Agree	0.4	0.6	0.8
5	Strongly agree	0.6	0.8	1.0

Source: Adapted from Manakandan et al*. (2017:230)*

According to Said *et al.* (2021), the concept of MF is used to convert the experts' Likert scale responses and incorporate their judgement. The MF values range between zero and one. Similar to Ghasemi and Alizadeh (2017), Manakandan *et al.* (2017), and Said *et al.* (2021), this study defined MF using three values, namely the average minimum value (n1), the most reasonable value (n2), and the maximum value (n3). The lower the agreement level score (e.g. 1 = Strongly disagree), the closer to zero (0) was the MF value (e.g. n1 = 0.0, n2 = 0.0, n3 = 0.2), and the higher the agreement level score (e.g. 5 = Strongly agree), the closer to one (1) was the MF value (e.g. n1 = 0.6, n2 = 0.8, n3 = 1.0) (Said *et al.*, 2021).

The FDM criteria values were based on previous research but were adapted for this study. These included the threshold value (d) of a construct ≤0.2 (Cheng & Lin, 2002), the experts' consensus ≥80% (Chu & Hwang, 2008; Manakandan *et al.*, 2017; Dawood *et al.*, 2021), and the fuzzy average score (Amax) ≥0.5 (Dawood *et al.*, 2021), which is explained under the defuzzification process (see section 4.2.2.2.5.2).

- Threshold value

The first criterion, which is the threshold value (d) of a construct (d-Construct), focuses on the experts' agreement for each construct (Manakandan *et al.*, 2017; Dawood *et al.*, 2021). A value of (d) >0.2 indicates that the construct was not accepted, and a value of (d) ≤0.2 indicates that the construct was accepted (Cheng & Lin, 2002). Before determining the threshold value of a construct (e.g. general responsible behaviour towards natural resources), the threshold value of each item was calculated. This was done by calculating the difference between the average fuzzy number and each expert's fuzzy number using the following formula:

$$d\,(\overline{m},\overline{n}) = \sqrt{\frac{1}{3}\left[(m1-n1)^2+(m2-n2)^2+(m3-n3)^2\right]}$$

Note: d = threshold value; m = average fuzzy number; n = expert fuzzy number

The threshold value (d) of all experts for each item should be ≤0.2 (Cheng & Lin, 2002). After the threshold value of each item was acquired, a threshold value (d-Construct) was calculated using the following formula:

$$\text{d-Construct} = \frac{\Sigma\, Average\ threshold\ value\ (d) for\ each\ item}{Total\ experts \times Total\ items\ in\ construct}$$

The first criterion was the acceptability of the construct, and this was determined according to the threshold value (d) whereby a construct was accepted only if the d-Construct was ≤0.2 and if >0.2, the d-Construct was not accepted.

- Consensus

The second criterion focuses on whether to retain or discard specific items. This is determined by the percentage of expert agreement. For example, in the case of 5 = Strongly Agree, the score is converted into n1 = 0.6, n2 = 0.8, and n3 = 1.0 (refer to Table 4.1), which indicates that the experts' agreement with the item is 60%, 80%, and 100%, respectively. Typically, each item should have ≥75% expert agreement to be retained, and items with less than 75% should be discarded (Chu & Hwang, 2008; Manakandan *et al.*, 2017; Dawood *et al.*, 2021). However, the percentage varies in different studies according to the researcher's opinion. Because of the high number of items in this study, the expert agreement was increased from 75% to 80%. This means that the second criterion required each item to have ≥80% expert agreement; items with less than 80% expert agreement were discarded.

4.2.2.2.5.2 Defuzzification process

Defuzzification is the process of determining the value of the fuzzy score (Amax), which represents the average of a fuzzy number (Dawood *et al.*, 2021). According to

Said *et al.* (2021), this process helps to determine whether to retain or discard certain items. To fulfil the third criterion, the fuzzy scores were averaged as specified by the m1, m2, and m3 values for the defuzzification process (Manakandan *et al.*, 2017; Dabiri, Oghabi, Sarvari, Sabeti, Kashefi & Chan, 2021; Said *et al.*, 2021). In this regard, this study applied the formula of Manakandan *et al.* (2017):

Amax = $\frac{1}{3} \times (m1 + m2 + m3)$

Dawood *et al.* (2021) claim that the cut-off for Amax is subjectively defined based on the needs of the study. In the context of this study, if the Amax was ≥0.5, the item was accepted, and if it was <0.5, it was discarded (Dawood *et al.*, 2021). See sections 5.2.3.2 and 5.2.3.3 for the results. In this study, for a construct to be retained, it had to achieve the criterion, threshold value ≤0.2, and for items to be retained, the two criteria, percentage of experts' agreement ≥80% and Amax ≥0.5, had to be achieved.

Phase 2 of the study was to assess the construct validity and reliability of the proposed measurement scale (see Figure 4.1). Churchill (1979) and Tsang *et al.* (2017) recommend that after refining the items, the retained items should be re-analysed using a new sample of subjects. Thus, for Phase 2, a survey was carried out on cultural heritage tourists, and the data were analysed to assess construct validity (assessing CMV, EFA, and internal consistency reliability). The following section presents the process for Phase 2.

4.3 PHASE 2: ASSESS CONSTRUCT VALIDITY AND RELIABILITY OF THE PROPOSED MEASUREMENT SCALE

The process of developing a measurement scale entails both an EFA, which was covered in Phase 2, and a CFA, which was covered in Phase 3, in order to explain a set of variables that describes a notion that cannot be accurately quantified by a single variable (Hair *et al.*, 2019). This section explains the procedure for assessing construct validity (assessing CMV and EFA) and reliability (internal consistency reliability) (see Figure 4.1).

Construct validity is an essential concept to assess the validity of a proposed measure (Hair *et al.*, 2019). Grobler and Joubert (2018) define construct validity as the degree to which a set of measured items exhibit the theoretical latent constructs. Thus, construct validity deals with how accurate the measurement is (Hair *et al.*, 2019). Achieving construct validity means that the construct will meet the reliability and validity requirements in all the circumstances in which it is applied (Hair *et al.*, 2019). The statistical analyses used in Phase 2 to evaluate the validity and reliability of the measured constructs included the Harman's one-factor test and the CFA (one-factor solution) for the assessment of CMV, EFA, and internal consistency reliability.

The following five sections (4.3.1 to 4.3.5) discuss the population and sampling (tourists), the research method (quantitative), the research instrument (closed-ended questionnaire), ethics and the fieldwork process, and the data analysis process.

4.3.1 Population and sample: Tourists

As already mentioned, it is important for research respondents to have pertinent knowledge and experience in order to be able to make informed judgements and offer meaningful contributions (Lötter & Jacobs, 2020). Therefore, Phase 2 (and Phase 3) targeted a population of tourists who had acquired cultural heritage tourism knowledge and experience by visiting a cultural heritage tourism site. The target population for this study was tourists who had visited one of the World Heritage Sites in South Africa designated for their cultural value (e.g. Fossil Hominid Sites [Maropeng and/or the Sterkfontein Caves], Robben Island, Mapungubwe Cultural Landscape, Richtersveld Cultural Landscape, and ǂKhomani Cultural Landscape) (see Figure 4.2). However, after consultation with the management of each site, the Richtersveld Cultural Landscape and ǂKhomani Cultural Landscape were excluded from the study because both sites offered limited to no heritage interpretation services (Marais, 2018), and these formed an integral part of this study. On this basis, only tourists who had visited the Fossil Hominid Sites of South Africa (particularly Maropeng and/or the Sterkfontein Caves), Robben Island, or Mapungubwe Cultural Landscape participated in the study.

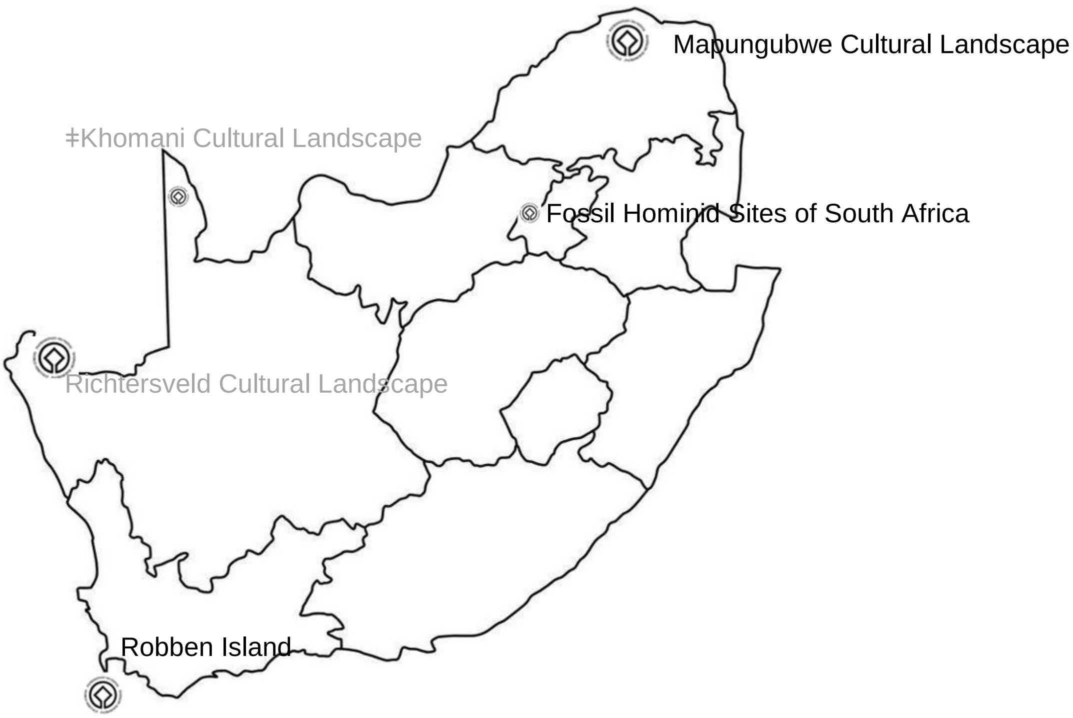

Figure 4.2: Study sites

Source: Adapted from Newebcreations (2022)

The *Fossil Hominid Sites of South Africa* (see Figure 4.2), also known as the Cradle of Humankind, comprise 15 separate sites situated in different provinces (Gauteng, Limpopo, and North West) (UNESCO, 2022b). Thirteen sites (Sterkfontein Caves, Kromdraai, Swartkrans Cave, Cooper's Site, Wonder Cave, Motsetse, Drimolen, Gladysvale, Gondolin, Plover's Lake, Haasgat, Bolt's Farm, and Minnaar's Caves) were added to the UNESCO World Heritage Site list in 1999, and two sites, Taung and Makapansgat Valley, were added in 2005. According to Caruana and Stratford (2019), the fossil evidence contained within these sites proves conclusively that the African continent is the undisputed Cradle of Humankind. For the purpose of this study, Sterkfontein Caves and the Maropeng Visitor Centre, which are located in Gauteng, were used as the study sites. The Maropeng Visitor Centre is approximately 10 km from the Sterkfontein Caves. This visitor centre was officially opened as a 'sales pitch' or 'interpretive centre' for the Cradle of Humankind World Heritage Site (Gauteng Provincial Government, 2017). Both Maropeng Visitor Centre and the Sterkfontein Caves were selected as study sites because they are accessible and they offer heritage interpretation that incorporates the surrounding environment with the cultural heritage (Gauteng Provincial Government, 2017).

Mapungubwe Cultural Landscape is located at the northern border of South Africa in the Limpopo province (see Figure 4.2). Mapungubwe Cultural Landscape was declared a UNESCO World Heritage Site in 2003 (UNESCO, 2022b). Mapungubwe is an open, expansive savannah landscape that demonstrates the rise and fall of the first indigenous kingdom in Southern Africa between 900 AD and 1 300 AD (UNESCO, 2022b). Besides the cultural values, Mapungubwe is also home to an immensely rich flora and fauna (Selkou, 2019). The site has an interpretation centre that merges the natural location with the site's cultural heritage (South African National Parks, 2022).

The third World Heritage Site that formed part of this study is *Robben Island*. As illustrated in Figure 4.2, Robben Island is located in Table Bay in the Western Cape. Robben Island was converted into a museum (interpretation centre) and declared a national monument in 1997 (Loke, Pallav & Haldenwang, 2021), and in 1999, it was declared a UNESCO World Heritage Site (UNESCO, 2022b). Between the 17th century and the 20th century, Robben Island was used as a prison, a hospital for socially unacceptable groups, and a military base (UNESCO, 2022b).

Unfortunately, the population size of the tourists visiting these sites (the Fossil Hominid Sites of South Africa, Mapungubwe Cultural Landscape, and Robben Island) is unknown because there is no database of such tourists. The sampling method that was applied was non-probability convenience sampling. Convenience sampling is defined as selecting participants based on their proximity to the researcher and recruiting from an opportune sampling frame (Casteel & Brider, 2021). Because non-probability convenience sampling was used, only data regarding people who felt strongly about the research topic at the time of the survey were obtained (Manna & Mete, 2021).

Because no population size was available, Phase 2 (and Phase 3) of the study was conducted using a sufficient sample size to support the data analyses. A large sample size increases the likelihood for each model to converge and produce reliable results (Armstrong, 2019). The number of respondents can be determined using the following three guidelines: (i) the absolute size of the dataset; (ii) the ratio of cases to variables; and (iii) the 'strength' of the factor analysis results (Hair *et al.*, 2019).

The first guideline focuses on the absolute size, and in this regard, Hair *et al.* (2019) point out that researchers should not conduct factor analysis using a sample of less than 50 observations. The appropriate sample size should be 100 or more (Hair *et al.*, 2019). Hinkin (1995) mentions that a sample size of 150 to 200 should be sufficient to obtain an accurate solution when analysing the validity (exploratory factor and confirmatory factor analyses) of a new scale. As the number of variables and expected factors increases, researchers propose much larger samples (200 or more) (Hair *et al.*, 2019; Lakens, 2022).

The observation-to-variable ratio suggests that research uses a minimum of five times as many observations as the number of variables (a ratio of 5:1) for factor analysis (Gorusch, 1983; Hatcher, 1994; Hair *et al.*, 2019). However, these studies acknowledge that greater ratios (e.g. 10:1 or 20:1) are usually better. In this study, the total number of variables was 63. This suggests that a minimum of 315 responses (63 items x 5 responses = 315) was required for this phase to account for the low number of variables per latent factor and/or the low communality scenario (Mundfrom, Shaw & Ke, 2005). However, to account for the required sample for the data analysis in Phase 3 (see section 4.4.1), this study required a larger sample size than 315.

The third guideline concerns the 'strength' of the factor analysis results, which is defined by the communality of a variable within a factor (Hair *et al.*, 2019). The communality for a specified variable can be referred to as the proportion of variation in that variable that is explained by the factors (Watkins, 2018). To compute the sample size using communalities, Fabrigar and Wegener (2009) provide three recommendations. First, if the total communalities are equal to or more than 0.70, a sample size of 100 is sufficient, and each factor should have at least three items with high loadings. Second, if all communalities are less than 0.40, a sample size of 200 is sufficient. Third, if the communalities are less than 0.40 and there are few high loadings for each factor, sample sizes of up to 400 are adequate. As already mentioned, Phase 2 of this study aimed to obtain a minimum of 315 responses and communalities that were greater than 0.40 with at least four high loadings per factor (>0.40).

In order to conduct data analyses for Phase 2 (EFA) and Phase 3 (CFA), independent samples were required (Hair *et al.*, 2019; Tellegen *et al.*, 2022). This study thus aimed to collect a minimum sample of 630 (315 x 2). Refer to section 5.3 for the results.

4.3.2 Research method: Quantitative

The research method that was used for both Phase 2 and Phase 3 was quantitative in nature. The method involves collecting and measuring facts, observable data, and phenomena, and examining causal relationships (Truong, Xiaoming Liu & Yu, 2020). Guided by existing studies in cultural heritage tourism (Rosli *et al.*, 2014; Cheng *et al.*, 2018; Tan *et al.*, 2020), this study used an online survey based on a cross-sectional approach to collect the primary data.

4.3.3 Research instrument: Closed-ended questionnaire

Similar to Phase 1, a questionnaire was designed using LimeSurvey software (see sections 4.2.2.1.3 and 4.2.2.2.3).

The survey had four screening questions (see Annexure E) to ensure that the correct respondents participated. To ensure that no minors (under the age of 18 years) completed the questionnaire, respondents were asked for their year of birth. The second screening question asked the respondents which World Heritage Site they had visited most recently, with the option of “none of the above”. A list of the World Heritage Sites with cultural value was provided. The third screening question related to single participation in the survey. The last screening question asked the respondent if they had participated in any heritage interpretation. If the respondents met the requirements of all four questions, they were able to proceed with the survey.

The questionnaire consisted of four sections:

- Section A: This section pertained to 23 heritage interpretation statements for the site that the respondent had most recently visited. (This section was only used in Phase 3 for data analysis). The heritage interpretation statements were based on the following authors: Asfaw and Gebreslassie (2017), Alazaizeh, Jamaliah *et al.* (2019), Enseñat-Soberanis *et al.* (2019), Orabi and Fadel (2020), and Weng *et al.* (2020). The statements were rated using a 5-point

Likert scale to indicate the level of agreement (where 1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, and 5 = Strongly agree).

- Section B and Section C: Section B focused on responsible tourist behaviour towards natural resources, and Section C addressed responsible tourist behaviour towards cultural resources. Both Section B and Section C were based on the revised items from Phase 1. Respondents were asked to use a 5-point Likert scale to indicate their level of agreement (where 1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, and 5 = Strongly agree).
- Section D: This section required the respondents to provide their demographic information, and the questions were based on previous literature (Carr, 2002; Xu *et al*., 2018; Liu *et al.*, 2022). The questions related to gender, highest level of education, and place of permanent residence and were closed-ended questions.

Refer to Annexure E for the questionnaire that was used for the tourists.

4.3.4 Ethics and fieldwork

Before the fieldwork was conducted, the researcher applied for amendments. These amendments included a new sample (see section 4.3.1), methods, fieldwork process, information sheet, and research instrument (see sections 4.3.2 to 4.3.4) for both Phase 2 and Phase 3. The College of Economic and Management Sciences Research Ethics Review Committee (CEMS RERC) at UNISA reviewed the ethics amendments, and an approval to conduct the fieldwork was obtained.

The fieldwork took place from May 2022 to July 2022. An electronic questionnaire link was created on LimeSurvey software, which initially presented the screening questions. Respondents who met the requirements for all the screening questions were able to continue with the survey. An information sheet (including research and ethics details) followed. Thereafter, there was a request for informed consent. The research questions formed the last part of the survey. After completing the questionnaire, an automatic thank-you message was delivered to the respondent.

The study sites (the Fossil Hominid Sites of South Africa, Mapungubwe Cultural Landscape, and Robben Island) assisted with distributing the online questionnaire using their social media platforms (e.g. Facebook, Twitter, and Instagram) and/or via e-mail. The research sites agreed to repost or redistribute the online questionnaire on their social media platforms after 14 days and 28 days to remind respondents of the study. Moreover, the research sites granted permission to conduct the fieldwork onsite. Since the UNISA COVID-19 guidelines for researchers did not allow the use of fieldworkers (Meyiwa, 2020) at the time of the survey, the researcher was only able to conduct onsite fieldwork at the Fossil Hominid Sites of South Africa (Maropeng and the Sterkfontein Caves) due to their proximity. The researcher approached tourists to participate in the survey after they had experienced the onsite tour. The respondents were provided with a smartphone, tablet, or laptop that had internet access to complete the survey onsite.

4.3.5 Data analysis

The completed questionnaires were captured in Microsoft Excel, and the data were imported into IBM SPSS and IBM AMOS Version 28 for analysis. The data analysis of Phase 2 consisted of item descriptive statistics (section 4.3.5.1) and the assessment of CMV (section 4.3.5.2), EFA (section 4.3.5.3), and internal consistency reliability (section 4.3.5.4).

4.3.5.1 *Item descriptive statistics*

Descriptive statistics in this study were used to provide an idea of the distribution of the data and to aid in the detection of outliers and errors, preparing the study for further statistical analyses (Kaur *et al.*, 2018; Sarka, 2021). Mishra, Pandey, Singh, Gupta, Sahu, and Keshri (2019) mention that descriptive statistics summarise information using three dimensions: (i) measures of frequency, (ii) measures of central tendency, and (iii) measures of dispersion or variation.

Measures of frequency are often used for categorical data (Sharma, 2019). Mishra *et al.* (2019) state that frequency analysis is an important area of statistics that deals with the number of occurrences (frequency) and the percentage. Conversely, *measures of central tendency* identify a single number that summarises the whole data set or the measurements that are central to the entire set (Mishra *et al.*, 2019). According to Sharma (2019), the frequency of the data point is analysed in the distribution, using the mean (the average value of the data set), the median (the middle value), and the mode (the value that happens most frequently), measuring the most common patterns of the analysed set of data. Another measure is *dispersion* or *variation*, which is used to indicate variation in a set of data by displaying absence of representation of measures of central tendency typically for mean or median (Mishra *et al.*, 2019). Measures of dispersion use variance (an average of the squared difference from the mean), standard deviation (SD) (the degree to which values are from its mean value), and standard error (an estimated variance between sample mean and population mean) as standard parameters. In this study, a relatively low SD indicated that the distribution of responses was on the ‘disagreement’ side, while a relatively high SD indicated that the distribution of responses was on the ‘agreement’ side.

Furthermore, the calculated statistics included skewness and kurtosis. Skewness is defined as a measure of asymmetry in a distribution (Barus & Dalimi, 2021). Data are perfectly symmetrical if skewness is zero (0). Positive skewness results from the tail being longer on the right side of the curve, whereas negative skewness results from the tail being longer on the left side of the curve (Orçan, 2020; Shreffler & Huecker, 2023). In the context of this study, positive skewness indicated that the responses were weighted more towards the ‘disagreement’ side, whereas negative skewness indicated that responses were weighted more towards the ‘agreement’ side. In addition to the skewness value, this study used the ratio of kurtosis to standard error (Ratio/SE) to test for normality. Kurtosis is referred to as a measure of a curve’s peakedness in a distribution (Barus & Dalimi, 2021), in other words, how often outliers occur in the data. According to George and Mallery (2009), normality is acceptable if the Ratio/SE is between -2 and +2. These values are also applicable for skewness. A large positive ratio value for kurtosis indicates that the tails of the distribution are longer than the tails of a normal distribution, and a negative value for kurtosis indicates that the tails are shorter.

In the context of Phase 2, each demographic variable (see section 5.3.2 for results) was discussed by depicting the frequency distribution and percentage of responses in order to present a profile of the sample characteristics. Moreover, descriptive statistics on the items and constructs for sections B and C of the questionnaire (refer to section 5.3.3 for results) were discussed by depicting mean, SD, skewness, and kurtosis. These statistics were calculated to help make sense of the variation in the data. Subsequent to the descriptive statistics of the study, CMV was assessed (section 4.3.5.2) and an EFA was performed (section 4.3.5.3) to test the validity of all the dimensions or constructs in the scale. The results of the EFA were subsequently used to examine the internal consistency reliability of the scale (section 4.3.5.4).

4.3.5.2 *Assessing common method variance*

Common method variance is explained as variations in responses that are caused by the instrument rather than the actual predispositions of the respondents that the instrument intends to reveal (Podsakoff, MacKenzie, Lee & Podsakoff, 2003; Bozionelos & Simmering, 2022). Common method variance may arise for several reasons such as the respondent's social desirability tendencies, consistency, leniency, acquiescence, and mood (Podsakoff, MacKenzie & Podsakoff, 2012). Sources of CMV such as survey design with item ambiguity, length of the survey, and wrong survey method can be detrimental to the reliability and validity of the research findings (Edwards, 2008; Kock, Berbekova & Assaf, 2021). Therefore, it is important to employ procedural and statistical controls that minimise CMV (Podsakoff *et al.*, 2012).

Procedural controls are performed before the data collection, while statistical controls are employed after the data collection. Kock *et al.* (2021) refer to procedural controls as those remedies that are intended to minimise or prevent CMV by means of thoughtful questionnaire design. These remedies include explaining the research purpose and the instructions to the respondents, improving scale item clarity, removing common scale properties, balancing positive and negative items or including reversed coded items, using different data sources for predictor and criterion variables, and separating the data collections (Podsakoff *et al.*, 2003; Podsakoff *et al.*, 2012; Jordan & Troth, 2020). Procedural controls for this study included explaining the research purpose and the instructions to the experts (Phase 1) and to the tourists (phases 2 and 3) prior to their completion of the questionnaire (see respondent information sheets in annexures B, C, and E). Furthermore, Phase 1 of the study focused on improving scale item clarity, removing common scale properties, and balancing positive and negative items (refer to section 4.2.2). Although the data for all phases of the study were collected using a single source (LimeSurvey link), respondents used different platforms to access the survey invitation (i.e. Facebook, Twitter, and Instagram pages of the study sites and devices provided by the researcher at Maropeng or the Sterkfontein Caves for the survey with tourists) (see section 4.3.4).

If the effects of CMV are not minimised through the use of the procedural remedies, Podsakoff *et al.* (2012) recommend statistical controls as the next group of remedies. As mentioned, statistical techniques are performed after data collection. For this study, the statistical techniques were performed after the data collection of phases 2 and 3. According to Fuller, Simmering, Atinc, Atinc, and Babin (2016), Harman's single-factor test, also referred to as the one-factor test, is the most extensively used statistical technique in detecting CMV (see section 5.3.4 for results). Harman's single-factor test is a technique that loads all items from individual constructs into an EFA to check whether a single factor does occur or whether one general factor reports most of the covariance among the measures, and if not, the assertion is that CMV is not a prevalent issue (Jordan & Troth, 2020). All items are confined into a single factor and are constrained so that no rotation occurs (Podsakoff *et al.*, 2003). If the factor explains more than half (50%) of the variance, CMV may exist (Eichhorn, 2014). Podsakoff *et al.* (2003) and Eichhorn (2014) claim that this procedure is comparable with a CFA; it tests whether a single factor describes the majority (>50%) of the variance in the measurement items.

At this point in the study, the model fit statistics were assessed. If the data fits the model, given certain adopted criteria, then some judgement can be made regarding the contribution of acceptable validity. However, model fit itself is not an indicator of validity. In many, if not most cases, good-fitting models yield consistent results on a variety of indices (Tabachnick & Fidell, 2013). This study applied absolute, incremental, and parsimonious fit indices. Absolute fit indices included root mean square error of approximation (RMSEA) and standardised root mean residual (SRMR), while the incremental fit indices comprised the normed fit index (NFI), the Tucker-Lewis Index (TLI), and the comparative fit index (CFI). The parsimonious fit indices included the minimum discrepancy divided by degrees of freedom (CMIN/df).

Absolute fit indices evaluate the extent to which the specified model replicates the sample data (Kenny & McCoach, 2003; Marmara, Zarate, Vassallo, Patten & Stavropoulos, 2022). The RMSEA avoids the concerns regarding sample size by analysing the difference between the theoretical model, with ideally adjusted parameter estimates, and the population covariance matrix (Hair *et al.*, 2019). Values of RMSEA of <0.08 indicate good model fit (Hu & Bentler, 1999; Awang, 2014; Hair *et al.*, 2019). The SRMR converts the residuals into a standardised metric so that standardised residuals (SRs) are directly comparable (Hair *et al.*, 2019). The average SR value is 0, implying that both positive and negative residuals can occur, making SRMR a badness-of-fit measure in some cases. The SRMR of ≤0.05 indicates a good fit (Schumacker & Lomax, 2016). Awang (2014) states that the acceptable value of the chi-square probability value (p-value) is >0.05.

In contrast with the absolute fit indices, incremental fit indices assess how well the estimated model fits in comparison with an alternative baseline model (Hu & Bentler, 1999; Hair *et al.*, 2019). The NFI is among the first incremental fit indices. It is a ratio of the chi-square value difference between the fitted model and a null model divided by the chi-square value of the null model (Hair *et al.*, 2019). It ranges from 0 to 1; the NFI value of 0 or close to 0 shows no fit, and values close to 1 or 1 indicate a perfect fit model (Schumacker & Lomax, 2016; Hair *et al.*, 2019). The NFI value >0.90 was used for this study. The TLI is theoretically similar to the NFI but differs in that it is a comparison of the normed chi-square values for the null and specified models and considers model complexity to some extent (Hair *et al.*, 2019). However, because the TLI is not normed, its value can fall below 0 or exceed 1. A value of 0 indicates no fit, while a value close to 1 indicates a perfect fit (Awang, 2014; Schumacker & Lomax, 2016). A TLI value of >0.90 was used for this study. The CFI is a better version of the incremental fit index of the NFI (Hair *et al.*, 2019). The CFI is normed, with values ranging from 0 to 1; values closer to 0 indicate no fit and higher values (>0.90) indicate better fit (Hu & Bentler, 1999; Awang, 2014). A CFI value of >0.90 was used for this study.

The third category of indices is parsimonious fit, which compares the fit of competing models on a common basis. In this study the CMIN/df (Awang, 2014) is examined.

According to Hu and Bentler (1999), a good threshold for CMIN/df is <3, and this value was used for this study.

West, Wu, McNeish, and Savord (2023) point out that the suggested cut-offs for goodness-of-fit (GOF) indices do not always perform optimally. Therefore, for a model to be considered acceptable in a study, most of the indices must be met. Following the assessment of the CMV, an EFA was carried out to reduce the large set of measurement items and to remove the highly correlated items, in other words, to assist in the process of identifying the most parsimonious set of items that can measure the construct.

4.3.5.3 *Exploratory factor analysis*

Exploratory factor analysis is a statistical technique that is used to show the interrelationships between a large number of variables and to define their common underlying factors (De Winter, Dodou & Wieringa, 2009; Watson, 2017; Bandalos & Finney, 2018). Hair *et al.* (2019) assert that the main aim of the EFA is to help researchers to find a way of summarising the data of a number of variables into a smaller set of factors without losing significant information. Since the EFA provides an empirical estimate of the structure of the measured variables, it is, therefore, an objective basis for creating summated scales (Hair *et al.*, 2019). In this study, the EFA process followed the five basic steps indicated by Watson (2017), namely assessing the factorability of the interrelationship matrix, indicating the criteria for the number of factors to extract, choosing a suitable factor rotation method, explaining the structure of factors, and giving the factors names/labels.

4.3.5.3.1 *Assessing the factorability of the interrelationship matrix*

The first step of an EFA is to use a correlation matrix, also referred to as factorability of R, to analyse the dimensions of the variables that are not easily observed (Watson, 2017). In this regard, the current study used Pearson product-moment correlation coefficient. Tabachnick and Fidell (2013), Pallant (2016), and Hair *et al.* (2019) suggest an assessment of the correlation matrix for evidence of coefficients >0.30. Moreover, prior to the extraction of the factors, several tests should be conducted to assess the factorability of data (Lose & Mapuranga, 2022). These include the Kaiser-Meyer-Olkin (KMO) and Bartlett's test of sphericity.

The KMO is a test used to check the sampling adequacy of data that are to be used for factor analysis (Hair *et al.*, 2019; Arora & Ahlawat, 2022). Chandak, Khan, and Bhadade (2022) refer to Bartlett's test of sphericity as a test that is used to check the null hypothesis that the correlation matrix is an identity matrix (variables are unrelated and not ideal for factor analysis). Pallant (2016) and Hair *et al.* (2019) recommend that for a factor analysis to be suitable, the significance level for the Bartlett's test should be <0.05 and the KMO value should be >0.60.

4.3.5.3.2 *Criteria for the number of factors to extract*

After determining the suitability of variables for the EFA, researchers recommend certain criteria (eigenvalue, cumulative percentage of the total variance, Kaiser's rule, scree plot, and parallel analysis) to determine the number of factors to be removed and retained (Pallant, 2016; Hair *et al.*, 2019; Goretzko, Pham & Bühner, 2021). This was followed in the current study.

The first criterion is the *eigenvalue* (also referred to as the Kaiser Guttman criterion) of a factor, which is the sum of the squared loadings of variables on that factor (Shrestha, 2021). Factors that account for less variance than a single variable should not be retained. Therefore, factors having eigenvalues greater than 1 are deemed significant, and those below 1 are excluded (Hair *et al.*, 2019; Shrestha, 2021).

The second criterion is the *cumulative percentage of the total variance*. This method focuses on attaining a specified cumulative percentage of total variance by successive factors (Hair *et al.*, 2019), thus ensuring practical significance for the derived factors. Usually, in the social sciences, to be considered a satisfactory cumulative percentage explained by the factors, the total variance should be greater than 60% (Hair *et al.*, 2019; Goretzko *et al.*, 2021). However, there are no strict guidelines (Hinkin, 1995). De la Cruz del Río Rama, García, Rodríguez, and Fraiz (2015) state that a cumulative percentage of variance above 50% is acceptable.

The third criterion, the *Kaiser rule*, states that a factor should account for the variance of at least one variable if it is to be retained for interpretation (Hair *et al.*, 2019). Each variable adds a value of 1 to the total eigenvalue for all variables in principal component analysis. Only factors with latent roots greater than one are deemed significant (Hair *et al.*, 2019).

The fourth criterion is a *scree plot* graphical test (Cattell, 1966). The scree test determines the number of factors that can be extracted before the unique variance begins to dominate the common variance structure (Shrestha, 2021). Hair *et al.* (2019) state that this test plots the eigenvalues against the number of factors in the order of their extraction and results in a curve that is used to determine the cut-off point. The plot of the eigenvalues is analysed to identify an inflection point in the pattern denoting subsequent factors that are not distinguishable, which makes them less appropriate for retention (Hair *et al.*, 2019).

The last criterion is *parallel analysis*, and this method was formed to create a stopping rule guided by the sample size and the number of variables being studied (Horn, 1965). Monte Carlo principal component analysis was used to perform this analysis. Parallel analysis compares the size of the eigenvalues with those derived from a randomly generated data set of the same size (Pallant, 2016; Hair *et al.*, 2019). Each dataset is then factored using principal components, and only eigenvalues that are greater than those of the corresponding values from the random data set are kept (Pallant, 2016; Hair Jr, Matthews, Matthews & Sarstedt, 2017).

4.3.5.3.3 *Choosing a suitable factor rotation method*

Following satisfaction of the criteria to extract a number of factors, it is important to determine the closest approximation possible to the simple structure of factors by means of factor rotation (Yong & Pearce, 2013; Watson, 2017). This study used principal axis factoring (PAF) as a suitable way to extract the factors. The benefits of using PAF include the ability to identify latent factors underlying the variables in the study and the method's ability to produce reliable solutions regardless of whether communalities are high or low (Watson, 2017). According to Tabachnick and Fidell (2013) and Hair *et al.* (2019), there are two rotation approaches that deliver either orthogonal (uncorrelated) or oblique (correlated) factor solutions. This study applied the oblique factor solution, oblimin rotation. The oblique factor solution allows for correlation between the rotated factors and is often seen as generating more accurate findings for research on human behaviours (Pallant, 2016; Lloret, Ferreres & Tomás, 2017; Hair *et al.*, 2019). The oblimin rotation uses a delta as a parameter that controls the degree of obliqueness among the factors (Fabrigar, Wegener, MacCallum & Strahan, 1999; Garson, 2022). Negative values reduce factor correlations where 0 is the default in the software package, and positive values (not higher than 0.8) allow for additional factor correlation (Fabrigar *et al.*, 1999; Pallant, 2016). The pattern matrix was used to examine the factor loadings of each item, and the highest loading items on each component were identified. Moreover, a factor correlation matrix was also generated to reveal whether or not the factors were related (Costello & Osborne, 2005; Hair *et al.*, 2019).

4.3.5.3.4 *Explaining the structure of factors*

There are several criteria to determine the inclusion or removal of item/s according to the statistical output (Hair *et al.*, 2019). First, communalities of each item are assessed. Pett, Lackey, and Sullivan (2003) emphasise that communality estimates can range between 0 and 1. Communalities with greater values (>0.40) show that the extracted factors explain more of the variance of each variable (Pett *et al.*, 2003). One of the guidelines in this study was to exclude items with low communalities (<0.40) because they were considered not to have sufficient explanation. Second, interpretation of the factor loadings relating to each variable is presented, and factor rotation assists in generating a meaningful interpretation. According to Hair *et al.* (2019) and Finch (2020), an item is said to load on a specified factor if the factor loading is 0.40 or greater. Factor loadings of 0.50 or higher are deemed practically significant, and loadings of 0.70 or higher are indicative of a well-defined structure (Hair *et al.*, 2019). Another guideline to remove items from the study was based on low loadings (<0.40).

Third, the term ‘cross loaded’ is used when an item has loadings higher than 0.40 on more than one factor. Cross-loadings may be due to ambiguity in the item. Lastly, the squared loading values of each item are considered in order to evaluate factor loadings further (Yong & Pearce, 2013). Loading values squared represent the proportion of variance contributed by each item to the factor on which it loads (Watson, 2017). The approach suggested by Pett *et al.* (2003) was used in this study; factors with less than three item loadings were removed and were not considered for further analysis, whereas factors with four or more item loadings were retained for further analysis.

4.3.5.3.5 *Naming/labelling the factors*

Following the internal structure of the factors, the next step of the EFA was to name or label the factors. According to Hair *et al.* (2019), the researcher should thoroughly review the items on each factor and choose a factor name or label that represents the factor. The results of the EFA can be viewed in section 5.3.5.

4.3.5.4 ***Internal consistency reliability***

Nunnally (1967:206) defines reliability as "the extent to which [measurements] are repeatable and that any random influence which tends to make measurements different from occasion to occasion is a source of measurement error". According to Souza *et al.* (2017), reliability means the stability, internal consistency, and equivalence of a measurement. The consistency of this study's scale was assessed using internal consistency (Sujati, Sajidan & Gunarhadi 2020). According to Tsang *et al.* (2017), internal consistency refers to the degree to which the measurement items are intercorrelated or whether they measure the same construct.

Internal consistency of the proposed scale for responsible tourist behaviour in cultural heritage tourism was assessed using the (i) Cronbach's alpha coefficient, (ii) IIC, and (iii) CITC. The cut-off value to infer adequate internal consistency and to interpret the inter-rater reliability coefficients is set at 0.70 for Cronbach's alpha (Nunnally, 1978; Matta, Azeredo & Luiza, 2016). Should the Cronbach's alpha be less than 0.70, the measuring instrument is either not reliable or it may comprise multi-constructs (Hair Jr *et al*., 2017; Saputra, 2022). In the same notion, Hair *et al.* (2019) assert that a Cronbach's alpha >0.90 is excellent, >0.80 is fine, >0.70 is adequate, >0.60 is doubtful, and <0.50 is substandard. Accordingly, the Cronbach's alpha above 0.70 fulfilled the internal consistency of this study.

In contrast, the IIC investigates the extent to which scores on one item are related to the scores across all other items on a scale (Piedmont, 2014). It assesses item redundancy, the degree to which items on a scale assess the same content (Swerdlik & Cohen, 2005; Nambiar, Alex & Pothiyil, 2022). When values are less than 0.15, the items may not be representative of the same content domain. If the values are greater than 0.50, the items may only capture a small portion of the construct's bandwidth (Larsson, Engström, Strömbäck & Gustafsson, 2021). Although the ideal IIC range is between 0.15 and 0.50, this study used the IIC with a range between 0.15 and 0.85 as suggested by Paulsen and BrckaLorenz (2017). Lastly, the CITC was used to define the item's relationship with the overall score of the other items (Zijlmans *et al*., 2019). In this study, each construct was subjected to CITC analysis, and a cut-off value of less than 0.50 was used (Lu, Lai & Cheng, 2007). As a result, the CITC values of >0.50 indicated acceptable reliability for this study. See section 5.3.5.3 for results.

Although the results are presented in Chapter 5, it is worth noting here that the EFA results delivered two possible scale structures (see sections 5.3.5.1 and 5.3.5.2 for the results). It is critical to validate the EFA results of both scale structures by using a CFA as an additional step to confirm these structures and to select the best structure in order to fulfil the aim of the study. Following the EFA and internal consistency reliability, Phase 3 focused on the process of cross-validating the scale for responsible tourist behaviour in cultural heritage tourism to determine the structure with the largest predictive validity.

4.4 PHASE 3: CROSS-VALIDATE THE MEASUREMENT SCALE

Cross-validation is the statistical procedure used to show that the accuracy of a model in two or more random samples taken from the same population is consistent (Acar, 2014). According to De Rooij and Weeda (2020), cross-validation is an alternative statistical technique to null-hypothesis testing. Cross-validation allows the researcher to choose the model with the largest predictive validity (Camstra & Boomsma, 1992; Tsamardinos, Charonyktakis, Papoutsoglou, Borboudakis, Lakiotaki, Zenklusen *et al.*, 2022).

The following sections describe how this study cross-validated the measurement scale. The population and sample (tourists for Phase 3; section 4.4.1), the research method (quantitative; section 4.4.2), the research instrument (closed-ended questionnaire; section 4.4.3), the ethics and fieldwork (section 4.4.4), and the data analysis process (sections 4.4.5.1 to 4.4.5.9) are presented below (see Figure 4.1).

4.4.1 Population and sample: Tourists

The population and sample for Phase 3 was discussed in section 4.3.1. As previously explained, to conduct data analyses for Phase 2 (EFA) and Phase 3 (CFA), independent samples were required. The study aimed to collect a minimum sample of 630 in order to deliver two independent samples of 315 each (see sections 5.3.1 and 5.4.1 for the completed usable questionnaires).

4.4.2 Research method: Quantitative

Phase 3 of the study employed the same quantitative research method as Phase 2 (refer to section 4.3.2).

4.4.3 Research instrument: Closed-ended questionnaire

As previously stated, there was only one survey for Phase 2 and Phase 3, meaning that only one research instrument was used for both phases (see section 4.3.3).

4.4.4 Ethics and fieldwork

The ethics and fieldwork considerations were discussed in section 4.3.4.

4.4.5 Data analysis

Data analysis for Phase 3 included item descriptive statistics (section 4.4.5.1); a multi-factor CFA (section 4.4.5.2); assessment of convergent and discriminant validity (section 4.4.5.3); assessment of CMV (section 4.4.5.4); measurement invariance analysis (section 4.4.5.5); and construct descriptive statistics (section 4.4.5.6). The second-order factor model (section 4.4.5.7); validity of the scale for responsible tourist behaviour in cultural heritage tourism: group differences on a construct level (section

4.4.5.8); and validity of the scale for responsible tourist behaviour in cultural heritage tourism: correlation with heritage interpretation (section 4.4.5.9) were also included.

4.4.5.1 *Item descriptive statistics*

As in Phase 2 (refer to 4.3.5.1), the frequency distribution and the percentage of responses were used to explain the demographic profile of the sample in Phase 3 (see section 5.4.1).

4.4.5.2 *Multi-factor confirmatory factor analysis*

Confirmatory factor analysis tests the extent to which a pre-specified measurement theory that consists of variables and factors represents the actual data (Hair *et al.*, 2019). Contrary to EFA, CFA is applied when there is a strong measurement theory and a structural theory (Orçan, 2018). By using AMOS software, the CFA was performed to explore the presence of a measurement theory on the formerly established structures in the EFA with a new data set (see sections 5.4.3.1 and 5.4.3.2 for results).

In scale development studies, the CFA procedure should be applied to validate the constructs (Baistaman, Awang, Afthanorhan & Rahim, 2020). A CFA specifically confirms the number of underlying latent constructs and the pattern of observed variable-factor correlations (Lewis, 2017; Civelek, 2018). The underlying latent construct represents what the scale is intended to reflect (DeVellis, 2003). In this study, the CFA was performed using a multi-factor model. A multi-factor model consists of multiple layers of latent constructs (Hair *et al.*, 2019). This means that the model must consider the relationships between constructs. The process that was followed to conduct the CFA for a multi-factor model was as follows:

- Hair *et al.* (2019) recommend that at least three to four observed variables must load on a latent construct. The factor loading of the observed variable indicates how important it is in measuring its latent construct. The threshold of the factor loading should be >0.60 (Elias, Ismail & Basri, 2022). The observed variables with factor loadings lower than the threshold were deleted to achieve unidimensionality (Elias *et al.*, 2022). The arrows in the CFA model point from the latent construct to the observed variables (Hair *et al.*, 2019). Hair *et al.*

(2019) state that all latent constructs should correlate with one another, which is illustrated in the CFA model by the two-headed arrow connection. Furthermore, each observed variable is associated with an error term, which is represented in the CFA model by a single-headed arrow from the error term to the observed variable (Hair *et al.*, 2019). Hair *et al.* (2019) refer to this model as a first-order factor model because it uses a single latent construct layer to explain covariances between observed variables. The figures displaying the CFA models of the current study are shown in Chapter 5 (see sections 5.4.3.1 and 5.4.3.2).

- Following model specification, it is crucial to estimate the model (Brown, 2015; Hair *et al.*, 2019). The method used was maximum likelihood (ML) estimation (Brown, 2015; Farooq, 2016; Hair *et al.*, 2019). Measurement model parameters are coefficients that express correlations between relevant observed variables (Lewis, 2017). Maximum likelihood estimation yields valid and stable results for sample models with minimum sample sizes of 50 (Hair *et al.*, 2019). However, when using an absolute minimum sample size, ML estimation is sensitive to non-normal distribution (Lüdtke, Ulitzsch & Robitzsch, 2021). Hair *et al.* (2019) state that it is impossible to ensure stable ML estimation solutions when the sample size is equal to or lower than the number of measured variables in the model. Hence, the minimum sample size aimed for in Phase 3 of this study was 315 (see sections 4.3.1 and 4.4.1).
- The proposed models were subsequently evaluated using GOF indices to see if they demonstrated a reasonably good fit (Orçan, 2018; Sujati *et al.*, 2020). In the context of this study, the model fit determines how well the factor structures fit the empirical CFA models (Sujati *et al*., 2020). The guidelines for the GOF indices (RMSEA, SRMR, CMIN/df, NFI, TLI, CFI, and p-value) explained in section 4.3.5.2 apply.
- The model results were examined further after the CFA results rendered a reasonably good fit (Lewis, 2017). According to Lewis (2017), the baseline model frequently does not fit the sample data well and requires adjustments. In this study, options for improving model fit included deleting observed variables with relatively low loadings (<0.50) and/or high standardised regression

coefficient residuals (>4.0) (Hair *et al.*, 2019). This adjusted model with an acceptable 'good fit' was retained for further analysis.

The section that follows presents the additional construct validity measures (convergent and discriminant validity) that were applied to the specified models.

4.4.5.3 *Assessing convergent and discriminant validity*

Although rigorous testing may support construct validity of a proposed measurement theory (see sections 4.3.5.2 to 4.3.5.4), Hair *et al.* (2019) mention that it is critical to re-assess the construct validity during the CFA. The main aim of conducting construct validity during the CFA is to ensure that the measurement model applied across a population produces equivalent representations of the same construct (Babin *et al.*, 2017). In this study, the CFA evaluated measured constructs using convergent and discriminant validity (see section 5.4.3.3 for results).

- **Convergent validity**

Sujati *et al.* (2020) explain convergent validity as the level to which comparable constructs are measured with diverse variables. To be more specific, convergent validity determines whether the observed variable indeed belongs to the latent construct by calculating the correlations (Wang, French & Clay, 2015; Grobler & Joubert, 2018). Hair *et al.* (2019) suggest that to determine convergent validity, all factor loadings should be statistically significant (>0.05). Since a statistically significant loading may still be very weak in strength, especially with large samples, a good guideline is that standardised loading estimates should be 0.50 (Cheung, Cooper-Thomas, Lau & Wang, 2023). In most instances, researchers should interpret standardised parameter estimates that are limited to a range of -1.0 to +1.0 (Hair *et al.*, 2019). In this regard, the use of an AVE assists in describing the degree to which measures are distributed among the construct in structural equation modelling. An AVE value of ≥0.50 is considered suitable (Ruel, 2018).

Furthermore, this study used the CR value as an indicator of convergent reliability. According to Sujati *et al.* (2020), a high CR (≥0.70) indicates the existence of internal consistency, which means that every variable consistently represents the same latent construct. In the context of this study, convergent validity was achieved when an AVE was ≥0.50 and the CR was ≥0.70 across several constructs, thus providing greater confidence in the measurement validity (Ruel, 2018).

- **Discriminant validity**

The sole purpose of assessing discriminant validity is to make sure that the latent constructs used for measuring the causal relationships under study are indeed different from each other (Ab Hamid, Sami & Mohmad Sidek, 2017). The discriminant validity specifically assesses the degree to which latent constructs of different characteristics are not related (Alarcón & Sánchez, 2015).

This study applied the Fornell-Larcker criterion as the first criterion to assess discriminant validity (Fornell & Larcker, 1981). The square root of the AVE is compared with the correlation of latent constructs (Hair, Hult, Ringle & Sarstedt, 2014). According to Ab Hamid *et al.* (2017), a latent construct should explain the variance of its own indicator better than the variance of other latent constructs in the model. As a result, the square root of the AVE of each latent construct should be greater than its correlations with other latent constructs in the assessment (Hair *et al.*, 2014).

This study used the HTMT as the second criterion to evaluate discriminant validity. The study of Henseler *et al.* (2015) determined that the HTMT has higher specificity and sensitivity rates than the Fornell-Larcker criterion. A lack of discriminant validity is indicated by HTMT values close to 1. In this study, correlations ≤0.85 fulfilled discriminant validity (Kline, 2011).

At this stage, the results of both CFA models were compared (see section 5.4.3.4 for the results), and the most suitable model was selected for further analysis (i.e. CMV and invariance).

4.4.5.4 *Assessing common method variance*

In Phase 3, CMV was measured using a common marker variable. A common marker variable enables the researcher to include measures that are thought to influence the source of the bias (Eichhorn, 2014). The survey instrument requests measures of these influences, which are then loaded onto the new method factor (also known as the common latent factor [CLF] in the context of this study) with all manifest variables being associated with a CLF (Eichhorn, 2014). The loadings of the observed variables for the common method must be equal. Lindell and Whitney (2001) concur that these loading parameters should be significant enough to change the research model's correlations, and they should be equal for self-reported dependent variable values. In this technique, the common variance is the square root of the CLF of each path prior to standardisation. For example, for a CLF of 0.345, the CMV is calculated as $0.345^2 = 0.119$. The common heuristic is to set the threshold at <50% (Eichhorn, 2014), giving relevance to the t-value (<0.05). In the above example, the common method is thus 11.9%, which is lower than 50%.

Thereafter, the researcher compared the standardised regression weight of each model variable with and without CLF (Saxena, Bagga, Gupta & Kaushik, 2022). If the difference between the variable with and without CLF was high, the researcher suspected that CMV was present in the model (Gaskin, 2021). In the context of this study, the difference of ≥1.250 was considered high, suggesting a potential threat of CMV in the model.

If the results did not indicate a potential CMV threat, they were subjected to further analysis. In the event that the results of the baseline model indicated a potential CMV threat, the baseline model was revised, and the adjusted model with the new CMV results was presented. The model fit (GOF) statistics (i.e. RMSEA <0.08, SRMR ≤0.05, CMIN/df <0.3, NFI >0.90, TLI >0.90, CFI >0.90, and p-value >0.05) were also assessed as explained in section 4.3.5.2. In addition, the convergent and discriminant validity of the adjusted model was reported (see section 5.4.4 for results). Following all these assessments, the adjusted model was used for measurement invariance across the groups (i.e. gender and education).

4.4.5.5 *Measurement invariance analysis*

A statistical technique known as 'multigroup confirmatory factory analysis' is applied to test measurement invariance between groups of the same sample (Milfont & Fischer, 2010). Multigroup CFA is an extension of the traditional CFA; however, instead of fitting a single model to a data set, it divides it into groups, determines model fit for each group separately, and then makes multigroup comparisons. Bialosiewicz *et al.* (2013) state that researchers can use this procedure to determine if respondents from different groups interpret the same measure in a conceptually similar way (see section 4.4.5.8). In this study, measurement invariance analysis was performed across gender and education groups. Gender groups consisted of two independent variables: female and male. Although the results are presented in Chapter 5, it is worth noting here that the category 'other' from the gender data was too little and was excluded in measurement invariance analysis (see sections 5.4.2.2 and 5.4.5). Education was grouped into two independent variables: lower educational level (consisting of no school, some schooling, matric/secondary school, undergraduate diploma/degree, and technical education) and higher educational level (consisting of postgraduate diploma/honours, master's degree, doctoral degree, and post-doctoral degree). Research proposes the following systematic process to examine measurement invariance across groups (Meredith, 1993; Lee, 2018; Yue, Zhang, Cheng, Liu & Bao, 2022):

- **Configural invariance**

The first step to test measurement invariance confirms configural invariance (see section 5.4.5.1 for results). Configural invariance means that the number of factors and loading patterns are the same for all groups (Meredith, 1993; Lee, 2018). In other words, the specific observed variables that load on each of the respective latent constructs for all groups are the same (Lee, 2018). Furthermore, each group model must meet appropriate levels of model fit (see section 4.3.5.2 for model fit criteria) and construct validity (see sections 4.4.5.2 and 4.4.5.3). This is done in measurement theory to ensure that the constructs are congeneric across groups (Hair *et al.*, 2019). This model becomes the baseline for comparison in further analyses (metric and scalar invariances).

- **Metric invariance**

The next step, metric invariance (also known as weak invariance), means that not only are the same observed variables loading on the same latent constructs for all groups, but also, the magnitude of the loadings for each observed variable is the same across groups (Lee, 2018). A good multigroup model fit implies metric invariance; if constraining the factor loadings results in a poorer fit, it implies that the factor loadings are not similar across groups (Lee, 2018). Putnick and Bornstein (2016) mention two approaches for testing metric invariance: absolute fit (chi-square difference) and alternative fit indices.

Absolute fit assesses metric invariance in terms of the chi-square difference. Traditionally, the chi-square difference between metric and configural invariance is computed, with degrees of freedom equal to the number of loading estimates constrained to be equal across groups (Yue *et al.*, 2022). In large samples, chi-square is overly sensitive to small, insignificant deviations from a 'perfect' model (Putnick & Bornstein, 2016) and, therefore, one should rather consider alternative fit indices. The *alternative fit* indices such as RMSEA, SRMR, and CFI are calculated for the entire model set. This allows for comparisons of model fit measures (e.g. chi-square difference) between constrained and unconstrained models. According to Putnick and Bornstein (2016), there is no agreement on the best fit indices or cut-off values for alternative fit indices under all conditions, leaving the researchers to choose the fit criteria. For sample sizes with adequate power, equal group sizes, and mixed invariance (some loadings are relatively high and some lesser in the first group), the change from constrained to unconstrained criteria should be CFI <0.01 (Cheung & Rensvold, 2002; Chen, 2007) paired with changes in RMSEA of <0.015 and changes in SRMR of <0.03 (metric invariance) or <0.015 (scalar invariance) (Chen, 2007).

- **Scalar invariance**

The third step, scalar invariance (also known as strong invariance), imposes the same constraints as configural and metric invariance, but the thresholds are equated across groups (Lee, 2018). In other words, scalar invariance allows the relative number of latent constructs to be compared between groups.

In general, the most important comparisons are made on the scalar invariance level (Lee, 2018; Hair *et al.*, 2019). Most researchers agree that evaluating configural, metric, and scalar invariance is sufficient for establishing measurement invariance (Milfont & Fischer, 2010; Bialosiewicz *et al.*, 2013; Lee, 2018). For these reasons, this study only considered the first three steps (see section 5.4.5 for the results).

After calculating the measurement invariances, the construct scores regarding the scale for responsible tourist behaviour in cultural heritage tourism were calculated. The following section explains construct descriptive statistics.

4.4.5.6 *Construct descriptive statistics*

According to Pallant (2016), scales may include several subscales (constructs in the context of this study), which may or may not be combined to form a total scale score. For this study, mean values for each construct were calculated. The total score for the scale for responsible tourist behaviour in cultural heritage tourism was then calculated based on the mean values of these constructs to determine an overall responsible tourist behaviour value (see section 5.4.6 for the results). As indicated in the literature review (see section 2.6), it is argued that tourists in cultural heritage settings consider the impact of their actions, follow cultural heritage norms, improve the well-being of any site, and appreciate and conserve both natural and cultural heritage resources. In other words, responsible tourist behaviour in cultural heritage tourism is a tourist behaviour that protects both natural and cultural heritage resources (NTHPUS, 2015, 2018; Said, 2018).

The total score provides a standard range (Labrague & De Los Santos, 2020) for whether or not a tourist behaves responsibly within cultural heritage tourism settings and allows for direct and fair comparisons of tourists' responsible behaviour within a cultural heritage site. The descriptive statistics relating to the construct and scale scores were presented by depicting the mean, SD, skewness, and kurtosis (see section 4.3.5.1). Calculating the total score for the scale for responsible tourist behaviour in cultural heritage tourism necessitated the development of the second-order factor model to accommodate the overall scale construct of responsible tourist behaviour in cultural heritage tourism.

4.4.5.7 *The second-order factor model*

The second-order factor model consisted of two layers of latent constructs. The one layer was a single higher-order construct that represented the overall concept (responsible tourist behaviour in cultural heritage tourism), and the other layer comprised two or more lower-order constructs that measured additional concrete aspects of the high-order construct (Hair *et al.*, 2019). In other words, the first-order factors/constructs served as indicators for the second-order factor/construct (see section 5.4.7 for results). The same CFA process described in section 4.4.5.2 was applied and was subject to construct validity requirements (AVE and CR), as explained in section 4.4.5.3.

Since scale validity is an ongoing process, this study used group difference statistics to validate the scale's predictive capability further while adhering to its dimensionality (Boateng *et al.*, 2018). The following section explains the process that was followed to test the differences between factors/constructs for the demographic groupings of gender and educational level.

4.4.5.8 *Validity of responsible tourist behaviour in cultural heritage tourism scale: Group differences on construct level*

This section describes the process that was used to determine whether there was a difference between groups (gender and education) (Sangthong & Klubnual, 2021) and whether there was a difference between the first-order constructs ('general responsible behaviour towards natural resources'; 'site-specific responsible behaviour towards natural resources'; 'general responsible behaviour towards cultural resources'; and 'site-specific responsible behaviour towards cultural resources') and the second-order construct ('responsible tourist behaviour in cultural heritage tourism'). This process aids in determining whether respondents from various groups (e.g. male and female) interpret the same measure in a conceptually similar manner (Bialosiewicz *et al.*, 2013; Lee, 2018). If the context produces similar results, it implies that the scale can be used in different contexts, validating the scale's predictive capability (Boateng *et al.*, 2018).

According to Kang (2021), an independent-sample t-test compares the difference in mean values between two groups[2]. Pallant (2016) points out that the variances for the

[2] The category 'other' from the gender data was too little and was excluded in the measurement invariance and group differences analyses; while the data from educational levels was transformed into two groups namely higher (i.e. postgraduate diploma/honours, master's degree, doctoral degree, and post-doctoral degree) and lower (i.e. no school, some schooling, matric/secondary school, undergraduate diploma/degree, and technical education) educational levels and used in the measurement invariance and group differences analyses.

two groups (e.g. males and females) are different if the significance level of the Levene's test (p-value) is 0.05 or less. Statistical significance is usually defined as a p-value of ≤0.05 (Saunders *et al.*, 2019). Furthermore, Cohen's d was used to measure the difference between groups in SD units (Pallant, 2016). A Cohen's d value of 0.2 indicates a small effect, with values of 0.5 indicating a medium effect and 0.8 indicating a large effect (Cohen, 1988) (see section 5.4.8 for results).

The predictive capability of the scale was further validated by means of a correlation analysis with heritage interpretation, a different construct. The following section (4.4.5.9) explains the correlation process with heritage interpretation.

4.4.5.9 *Validity of the scale for responsible tourist behaviour in cultural heritage tourism: Correlation with heritage interpretation*

The next step in Phase 3 was to validate the scale further by examining the correlation between heritage interpretation, a different construct, and the scale constructs. This was done to determine whether the concept being measured (responsible tourist behaviour in cultural heritage tourism) differed from another concept (heritage interpretation) (Boateng *et al.*, 2018). To validate the scale for responsible tourist behaviour in cultural heritage tourism, the assumption was there would not be a strong correlation between heritage interpretation and the constructs/scale for responsible tourist behaviour in cultural heritage tourism. Heritage interpretation formed part of Section A of the tourist survey (see Annexure E), with items derived from literature and revised in Phase 2 as explained in section 4.3.3. The purpose of using heritage interpretation in this study was not to identify factors for the construct (i.e. not to perform a factor analysis) but rather to have a construct that related to cultural heritage and to compare it with the scale for responsible tourist behaviour in cultural heritage tourism.

The following sections (4.4.5.9.1 and 4.4.5.9.2) explain the descriptive statistics and the internal consistency reliability process for the single factor, heritage interpretation, and the correlation process between heritage interpretation and the scale for responsible tourist behaviour in cultural heritage tourism.

4.4.5.9.1 *Heritage interpretation: Single factor*

The mean, SD, skewness, and kurtosis for heritage interpretation were calculated (see section 5.4.9.1 for results). As mentioned in section 4.3.5.1, descriptive statistics were conducted to give a sense of how the data were distributed, setting up the study for additional statistical analyses (in this case, correlation) (Kaur *et al.*, 2018; Sarka, 2021).

Moreover, the internal consistency of the single-factor structure (heritage interpretation) was assessed using (i) Cronbach's alpha, (ii) IIC, and (iii) CITC (see section 4.3.5.4) to help in determining whether the 23 heritage interpretation items consistently measured the same characteristic (Nunnally, 1978; Lu *et al.*, 2007; Nambiar *et al.*, 2022). See section 5.4.9.1 for results.

4.4.5.9.2 *Assess correlation between heritage interpretation and the scale for responsible tourist behaviour in cultural heritage tourism*

The Pearson product-moment correlation coefficient was used in this study to assess the strength of the correlation (Saunders *et al.*, 2019). A correlation coefficient "quantifies the strength of the linear relationship between two ranked or numerical variables" (Saunders *et al.*, 2019:615). According to Schober, Boer, and Schwarte (2018), this coefficient can have a value ranging from +1 to -1. A value of +1 denotes a complete positive correlation (Schober *et al.,* 2018; Baak, Koopman, Snoek & Klous, 2020). This means that the two variables are completely associated, and as the values of one increase, so will the values of the other (Piter, Loeneto & Jaya, 2018). Conversely, a value of -1 represents a complete negative correlation (Schober *et al.* 2018; Baak *et al.*, 2020). Once more, this means that the two variables are completely associated; however, as the values of one variable increases, the other decreases (Schober *et al.,* 2018). Correlation coefficients with a value of 0 show that the variables are completely independent (Piter *et al.*, 2018). Furthermore, the probability of the correlation coefficient must be known. If the probability is greater than 0.05, the correlation is considered statistically insignificant (Piter *et al.*, 2018). Refer to section 5.4.9.2 for results.

4.5 CONCLUSION

Chapter 4 discussed the three research phases of this study. Phase 1 comprised a literature review to generate an initial pool of items regarding responsible tourist behaviour in cultural heritage tourism. The second step focused on the face validity of these items; this was performed by a small panel of experts, and the researcher revised the items according to their views. The final step in Phase 1 dealt with content validity, which was completed by a larger sample of experts and their responses were analysed using the FDM. A revised list of items was used for Phase 2.

It was necessary for the retained items to be re-analysed using a new sample of subjects. Phase 2, therefore, assessed construct validity and reliability of the revised pool of items on tourists who had visited one of South Africa's World Heritage Sites designated for their cultural value (Fossil Hominid Sites [Maropeng and/or the Sterkfontein Caves], Robben Island, or Mapungubwe Cultural Landscape). Data analysis included item descriptive statistics, assessing CMV, EFA, and internal consistency reliability. These analyses contributed to the assessment of construct validity and reliability of the proposed measurement scale.

As an additional step to confirm the measurement structure, the EFA results of Phase 2 were further validated through a CFA using the same population (tourists) but a second sub-sample. Data analysis for Phase 3, therefore, comprised item descriptive statistics, multifactor CFA, the assessment of convergent and discriminant validity, the assessment of CMV, measurement invariance analysis, construct descriptive statistics, and a second-order factor model.

To determine the predictive capability of the scale while adhering to its dimensionality, the scale was tested in different contexts. This included determining group differences (gender and education) and its correlation with a different construct (heritage interpretation). Theoretically, the scale should be stable in group differences and should not correlate with a different construct. The results of these phases are presented in Chapter 5.

CHAPTER 5: PRESENTATION AND INTERPRETATION OF THE RESULTS

5.1 INTRODUCTION

The focus of Chapter 5 is to address the fourth secondary objective: To present and interpret the results of the empirical research. The research results outlined in this chapter were used to make recommendations and to draw conclusions in order to propose a validated scale for responsible tourist behaviour in cultural heritage tourism (see Chapter 6). The empirical results are presented and interpreted according to the three research phases followed in this study, starting with Phase 1.

5.2 RESULTS FOR PHASE 1

Phase 1 (generating an initial pool of items) involved two steps: (i) a literature review, and (ii) a review and revision of the initial pool of items using face and content validity. The results of these steps are presented in sections 5.2.1 to 5.2.3.

5.2.1 Literature review

The literature review for this study was presented in chapters 2 and 3. Chapter 2 focused on a literature review regarding cultural heritage tourism and theories of tourist behaviour. Chapter 3 laid a theoretical foundation for heritage interpretation (only used in Phase 3), and responsible tourist behaviour towards the natural and cultural resources at a cultural heritage site. Through the literature review, an initial pool of items was generated. Initially, 136 items (82 items for natural resources and 54 for cultural resources) were generated. After removing items that were similar in meaning, a total of 125 items remained, which comprised 73 items for responsible tourist behaviour towards natural resources (44 items under the general dimension and 29 items under the site-specific dimension) and 52 items for cultural resources (30 items for the general dimension and 22 items for the site-specific dimension). See Table 5.1 for the items that were generated.

Table 5.1: Initial pool of items of the proposed scale for responsible tourist behaviour in cultural heritage tourism

Responsible tourist behaviour towards natural resources
General dimensions
NR_GD.1: I learn about the recycling facilities within my community
NR_GD.2: I learn about protection of the environment from people whose opinion matter
NR_GD.3: I watch television programmes regarding environmental problems
NR_GD.4: I read books, publications, and other form of media regarding environmental problems
NR_GD.5: I read about solutions related to resolving environmental problems
NR_GD.6: I attend community meetings focusing on local environmental protection
NR_GD.7: I donate money to organisations protecting the environment
NR_GD.8: I give time to organisations protecting the environment
NR_GD.9: I invest in organisations that use green technologies
NR_GD.10: I support petitions that promote environmental protection
NR_GD.11: I subscribe to environmental publications
NR_GD.12: I discuss environmental problems with family and friends
NR_GD.13: I do not support companies with an un-ecological background
NR_GD.14: I contact government officials to support strong environmental protection
NR_GD.15: I have voted for political parties whose mandates include support for environmental protection
NR_GD.16: I participate in voluntary work for a group that assists with environmental problems
NR_GD.17: I participate in community clean-up efforts
NR_GD.18: I purchase conservation-related devices, such as low-flow faucet aerators for my sinks and low-flow shower heads
NR_GD.19: I purchase products packaged in containers that can either be reused or recycled or are made of recycled materials
NR_GD.20: I do not purchase a product that has potentially harmful environmental effects
NR_GD.21: I make a special effort to purchase organic fruits and vegetables

NR_GD.22: I often purchase clothes made of organic materials
NR_GD.23: I often purchase environmentally friendly products
NR_GD.24: I purchase locally produced products
NR_GD.25: I purchase products from pro-environmental organisations
NR_GD.26: I protect the environment although it costs money or time
NR_GD.27: I always report individuals infringing laws that protect the environment to the relevant authorities
NR_GD.28: I report individuals who tamper with anti-pollution devices on cars to the proper authorities
NR_GD.29: I comply with rules and regulations regarding environmental protection
NR_GD.30: I save electricity whenever possible (e.g. I turn off lights if I am leaving a room for over 10 minutes)
NR_GD.31: I save water whenever possible (e.g. I turn off the tap while washing dishes or brushing teeth)
NR_GD.32: I utilise biodegradable products (e.g. laundry detergent) in most instances
NR_GD.33: I compromise my standard of living to protect the environment
NR_GD.34: I reuse as much as possible to decrease the quantity of my household garbage
NR_GD.35: I put empty bottles to a recycling bin
NR_GD.36: I commute with public transport (or low-carbon transport) or I carpool whenever possible
NR_GD.37: I participate in the reduction of carbon dioxide (e.g. I walk or cycle whenever possible rather than taking motorised transportation)
NR_GD.38: I persuade people to not to support a store that sells products with potential harmful environmental effects
NR_GD.39: I persuade people to sign a petition regarding an environmental problems
NR_GD.40: I persuade with people to learn about the recycling facilities in their communities
NR_GD.41: I persuade people to have a home “energy audit” to find the cool air leaks in their house or apartment
NR_GD.42: I persuade people to purchase biodegradable products (e.g. household cleaning products or laundry detergent)
NR_GD.43: I persuade people to purchase fruit and vegetables loose rather than in plastic bags
NR_GD.44: I persuade people to purchase products packaged in containers that either can be reused or recycled or are made of recycled materials
Responsible tourist behaviour towards natural resources
Site-specific dimension
NR_SSD.1: Before I travel to a specific cultural heritage site, I make effort to acquire the information about its natural environment

NR_SSD.2: During my visit, I obey the nature conservation rules that apply at the cultural heritage site
NR_SSD.3: I pay attention to the heritage interpretation on nature conservation
NR_SSD.4: I tell other people not to feed the surrounding animals
NR_SSD.5: I observe the nature and animals detailed
NR_SSD.6: I wear the clothes that coincide with the forest ecosystem
NR_SSD.7: During my visit, I bring my own cleaning products
NR_SSD.8: I give high priority to products with eco-labels
NR_SSD.9: I respect natural resources at the cultural heritage site
NR_SSD.10: I visit a favourite spot less frequently if it needs to recover from environmental damage
NR_SSD.11: I avoid visiting a favourite spot if it needs to recover from environmental damage
NR_SSD.12: I sacrifice activities I like doing if they damage the natural environment
NR_SSD.13: I stay on labelled pathways established by the cultural heritage site
NR_SSD.14: I stay away from restricted areas at the cultural heritage site
NR_SSD.15: I do not litter
NR_SSD.16: I participate in the cultural heritage site's recycling, reusing or reducing initiatives
NR_SSD.17: I appropriately dispose of my own waste
NR_SSD.18: I pick up other people's litter
NR_SSD.19: I encourage other people not to litter
NR_SSD.20: I minimise garbage
NR_SSD.21: I lower my voice so as not to disturb other people or animals on site
NR_SSD.22: I do not remove or collect flora and animal specimens from the cultural heritage site
NR_SSD.23: I do not remove rock, fossil or dried wood at the cultural heritage site
NR_SSD.24: I intervene if I notice other people's bad or unethical behaviour that could harm the environment
NR_SSD.25: I minimise my interference with the surrounding environment
NR_SSD.26: I do not damage flora
NR_SSD.27: I tell other people not to damage flora

NR_SSD.28: I report any environmental pollution or destruction to the staff onsite
NR_SSD.29: After the visit I leave the cultural heritage site the same way I found it
Responsible tourist behaviour towards cultural resources
General dimension
CR_GD.1: I read publications regarding the protection of cultural resources
CR_GD.2: I watch television programmes regarding cultural resources problems
CR_GD.3: I read books, publications and other material regarding cultural resources problems
CR_GD.4: I learn about ways to solve problems related to cultural resources protection
CR_GD.5: I support petitions that promote cultural resources protection
CR_GD.6: I attend community meetings regarding the protection of cultural resources
CR_GD.7: I donate money to organisations whose goals include the protection and improvement of cultural resources
CR_GD.8: I give time to support organisations concerned with the protection and improvement of cultural resources
CR_GD.9: I write letters to government officials regarding the need for more cultural resources protection
CR_GD.10: I have voted for political parties whose mandates include support for cultural resources protection
CR_GD.11: I do not purchase products that have a negative effect on cultural resources
CR_GD.12: I purchase products from companies involved in the protection of cultural resources
CR_GD.13: I purchase products from companies that are careful to the history, culture, traditions and identity of communities
CR_GD.14: I make a special effort to purchase products related to the history, culture, traditions and identity of local communities
CR_GD.15: I discuss the protection of cultural resources with family or friends
CR_GD.16: I promote the protection of cultural resources
CR_GD.17: I promote the need for responsible behaviour when visiting cultural heritage sites
CR_GD.18: I persuade other people to act responsibly when visiting cultural heritage sites
CR_GD.19: I persuade other people to adopt pro-cultural heritage behaviours
CR_GD.20: I persuade people to visit less crowded cultural heritage sites in order to protect and enhance cultural heritage
CR_GD.21: I persuade people not to visit crowded cultural heritage sites in order to protect and enhance cultural heritage
CR_GD.22: I persuade people about the benefits of purchasing products from companies that are associated with the protection of cultural resources

CR_GD.23: I persuade people to donate time or money for the protection of cultural resources
CR_GD.24: I report individuals infringing laws that protect cultural resources to the relevant authorities
CR_GD.25: I support the establishment of laws and regulations that protect cultural resources
CR_GD.26: I pay attention to government guidance to participate in efforts to support cultural heritage tourism
CR_GD.27: I participate in efforts to support cultural heritage tourism
CR_GD.28: I share my cultural heritage with other people
CR_GD.29: I protect other people's cultural resources
CR_GD.30: I learn about different cultural resources around the world
Responsible tourist behaviour towards cultural resources
Site-specific dimension
CR_SSD.1: Before I travel to a specific cultural heritage site, I make an effort to acquire the information about its cultural resources and their significance
CR_SSD.2: I learn about the fragility of specific cultural resources
CR_SSD.3: I obey the social rules that apply at the cultural heritage site
CR_SSD.4: I pay attention to the heritage interpretation on cultural resources protection
CR_SSD.5: I learn about cultural resources' historic background
CR_SSD.6: I observe the cultural resources detailed
CR_SSD.7: I choose tourism products that protect local cultural resources
CR_SSD.8: I respect other people's privacy by asking for their prior permission to take a photograph
CR_SSD.9: I do not damage heritage structures or other cultural features
CR_SSD.10: I do not paint or draw graffiti at a cultural heritage site
CR_SSD.11: I do not remove artefacts from a cultural heritage site
CR_SSD.12: I do not touch or remove inscriptions or decorative elements at a cultural heritage site
CR_SSD.13: I do not loot or vandalise cultural resources
CR_SSD.14: I report vandalism of cultural resources to onsite staff
CR_SSD.15: I do not purchase illegal authentic objects

CR_SSD.16: I purchase souvenirs at this cultural heritage site’s gift shop
CR_SSD.17: I support local crafts that reflect cultural heritage
CR_SSD.18: I support replicas of cultural resources displayed at a specific cultural heritage site
CR_SSD.19: I participate in tourism activities designed to conserve a specific cultural heritage site
CR_SSD.20: I report the discovery of special cultural resources to relevant authorities
CR_SSD.21: I do not visit sensitive spots when they are overcrowded
CR_SSD.22: I visit cultural heritage site during off-season to avoid crowds

The succeeding two sections present the results for the review and the revision of the initial pool of items: face validity (section 5.2.2) and content validity (section 5.2.3) rounds.

5.2.2 Face validity results

All five experts who were sampled for the face validity step of Phase 1 responded to the survey invitation. The results obtained from these respondents are discussed according to the three sections of the questionnaire (see Annexure B for the questionnaire): demographic information (see section 5.2.2.1), responsible tourist behaviour towards natural resources (see section 5.2.2.2), and responsible tourist behaviour towards cultural resources (see section 5.2.3.3).

5.2.2.1 *Descriptive statistics for demographic information*

In terms of the *educational level*, two respondents hold doctoral degrees and one respondent has a master's degree, one has a postgraduate diploma/honours, and one has completed a technical level of education. Four of the five respondents have *expertise* in two or more of the provided fields (cultural heritage tourism, cultural tourism, sustainable tourism development, tourism development, ecotourism, heritage interpretation, and tourism and environmental management), and one respondent specified that he/she also has expertise in conservation and wilderness search and rescue. Only one respondent did not have expertise in the abovementioned fields but specified anthropology/archaeology as their field of expertise. Four of these experts have more than two *years of experience in their selected field(s) of expertise*, and one expert has one year's experience. Regarding *current field of employment*, two of these experts are in academia, two are in the industry, and one is employed in both academia and the industry.

5.2.2.2 *Responsible tourist behaviour towards natural resources*

Responsible tourist behaviour towards natural resources formed part of Section B of the questionnaire and comprised two dimensions, general behaviour and site-specific behaviour. As illustrated in Table 5.2, the items were revised according to the experts' recommendations in order to address difficulty, suitability, and vagueness.

Table 5.2: Revised items for responsible tourist behaviour towards natural resources

Initial item	Changes suggested by experts
General dimension	
NR_GD.1: I learn about the recycling facilities within my community	I learn about the recycling projects within my community
NR_GD.2: I learn about protection of the environment from people whose opinion matter	I learn about protection of the environment from people who have informed opinions on the topic either by expertise or lived experience
NR_GD.4: I read books, publications, and other form of media regarding environmental problems	I read books, publications, and other forms of reading material regarding environmental problems
NR_GD.7: I donate money to organisations protecting the environment	I donate money to organisations whose goals include protecting the environment
NR_GD.12: I discuss environmental problems with family and friends	I discuss environmental problems with family, friends and community leaders
NR_GD.15: I have voted for political parties that support environmental protection	I vote for political parties whose mandates include support for environmental protection
NR_GD.28: I report individuals that tampers with the anti-pollution devices on a car to the proper authorities	I report individuals who tamper with the anti-pollution devices on a car to the proper authorities
NR_GD.33: I compromise my standard of living to protect the environment	I try to protect the environment while maintaining my standard of living
NR_GD.35: I put empty bottles to a recycling bin	I put empty bottles into the appropriate recycling bin
NR_GD.38: I persuade people to not to support a store that sells products with potential harmful environmental effects	I educate people about stores that sell products with potentially harmful environmental effects
NR_GD.39: I persuade people to sign a petition regarding an environmental problems	I engage with people to show them the benefits of signing petitions regarding any environmental problems
NR_GD.40: I persuade with people to learn about the recycling facilities in their communities	I engage with people to learn about the recycling facilities in their communities
NR_GD.41: I persuade people to have a home “energy audit” to find the cool air leaks in their house or apartment	I encourage people to have a home “energy audit” to find the cool air leaks in their house or apartment

Initial item	Changes suggested by experts
NR_GD.42: I persuade people to purchase biodegradable products (e.g. household cleaning products or laundry detergent)	I encourage people to purchase biodegradable products (e.g. household cleaning products or laundry detergent)
NR_GD.43: I persuade people to purchase fruit and vegetables loose rather than in plastic bags	I encourage people to purchase fruit and vegetables loose rather than in plastic bags
NR_GD.44: I persuade people to purchase products packaged in containers that either can be reused or recycled or are made of recycled materials	I encourage people to purchase products packaged in containers that either can be reused or recycled or are made of recycled materials
Site-specific dimension	
NR_SSD.1: Before I travel to a specific cultural heritage site, I make effort to acquire the information about its natural environment	Before I travel to a specific cultural site, I make effort to acquire information about its natural environment from many sources including the local community
NR_SSD.2: During my visit, I obey the nature conservation rules that apply at the cultural heritage site	During my visit, I abide by the nature conservation rules that apply at the cultural heritage site
NR_SSD.7: During my visit, I bring my own cleaning products	During my visit, I ask the host for their cleaning products
NR_SSD.12: I sacrifice activities I like doing if they damage the natural environment	I find alternative activities I like doing if the current activities damage the natural environment
	Additional item suggested by experts
	NR_SSD.30: I do not take pets to wilderness areas

One expert mentioned that the word ‘persuade’ seems disingenuous. According to this expert, “persuading is like a sales technique and it can often have negative connotations.” Therefore, it was recommended that the word ‘persuade’ be substituted with ‘educate’, ‘engage’, or ‘encourage’, and this affected seven items in this section.

Furthermore, one expert suggested an additional item, namely ‘NR_SSD.30: I do not take pets to wilderness areas’ or ‘I keep pets on a leash at all times in areas that do allow them’. Studies reveal that pets (e.g. dogs) cause disturbance to fauna in protected areas, especially pets that are off-leash, off-trail, and unsupervised (Gerst, 2002; Cortés, Navedo & Silva-Rodríguez, 2021). Relatedly, Costanzi, Brambilla, Di

Blasio, Dondo, Goria, Masoero *et al.* (2021) mention that if domestic animals are not properly controlled in protected areas, they may foster the spread of disease in a natural population. Although the suggestion for this additional item was made under the cultural resource section of the questionnaire (see Annexure B, Section C), the researcher added the item to the site-specific dimension in Section B since it focused more on the natural environment of the site (see section 5.2.3.2, NR_SSD.30). This increased the site-specific dimension for natural resources from 29 to 30 items (see Annexure C).

5.2.2.3 *Responsible tourist behaviour towards cultural resources*

As mentioned, the words 'educate', 'engage', or 'encourage' were substituted for the word 'persuade', and this affected six items in this section along with three additional amendments as presented in Table 5.3. No site-specific modifications were required.

Table 5.3: Revised items for responsible tourist behaviour towards cultural resources

Initial item	Changes suggested by experts
General dimension	
CR_GD.1: I read publications regarding the protection of cultural resources	I consult relevant and reliable resources regarding the protection of cultural resources
CR_GD.12: I purchase products from companies involved in the protection of cultural resources	I prioritise purchasing products from companies involved in the protection of cultural resources
CR_GD.13: I purchase products from companies that are careful to the history, culture, traditions and identity of communities	I purchase products from companies that are considerate of the history, culture, traditions and identity of communities
CR_GD.18: I persuade other people to act responsibly when visiting cultural heritage sites	I encourage other people to act responsibly when visiting cultural heritage sites
CR_GD.19: I persuade other people to adopt pro-cultural heritage behaviours	I encourage other people to adopt pro-cultural heritage behaviours
CR_GD.20: I persuade people to visit less crowded cultural heritage sites in order to protect and enhance cultural heritage	I encourage people to visit less crowded cultural heritage sites in order to protect and enhance cultural heritage

Initial item	Changes suggested by experts
General dimension	
CR_GD.21: I persuade people not to visit crowded cultural heritage sites in order to protect and enhance cultural heritage	I encourage people to visit less crowded cultural heritage sites in order to protect and enhance cultural heritage
CR_GD.22: I persuade people about the benefits of purchasing products from companies that are associated with the protection of cultural resources	I educate people about the benefits of purchasing products from companies that are associated with the protection of cultural resources
CR_GD.23: I persuade people to donate time or money for the protection of cultural resources	I encourage people to donate time or money for the protection of cultural resources

The following section presents the results of the content validity step.

5.2.3 Content validity results

Of the 25 sampled experts, 22 responded to the survey invitation. The results obtained from these respondents are discussed according to the three sections of the questionnaire: demographic information (see section 5.2.3.1), responsible tourist behaviour towards natural resources (see section 5.2.3.2), and responsible tourist behaviour towards cultural resources (see section 5.2.3.3).

5.2.3.1 *Descriptive statistics for demographic information*

The demographic information for the second group of experts is presented in Table 5.4.

Table 5.4: Demographic information for the second cohort of experts

Highest educational level	
Level	**Frequency**
Matric/secondary school	1
Undergraduate diploma/degree	4
Postgraduate diploma/honours	6
Master's degree	2
Doctoral degree	9
Total	**22**
Field/s of expertise	
Field of expertise	**Frequency**
Cultural heritage tourism	11
Cultural tourism	8
Sustainable tourism development	12
Tourism development	9
Ecotourism	7
Heritage interpretation	6
Tourism and Environmental Management	7
Total	**22**
Work experience	
Years	**Frequency**
Less than 5 years	6
5 to 10 years	5
11 to 15 years	6
16 to 20 years	4
More than 20 years	1
Total	**22**
Main field of employment	
Field of employment	**Frequency**
Academia	6
Industry	10
Academia and industry	6
Total	**22**

The majority of experts are highly qualified (most hold a postgraduate diploma/honours degree or higher), have expertise in sustainable tourism development (n = 12) and cultural heritage tourism (n = 11), and have extensive work experience (most have more than five years' work experience). Six experts are in academia, ten experts are in the industry, and the remaining six experts are employed in both academia and the industry, which made them uniquely qualified to participate in this study.

5.2.3.2 *Results from experts: Responsible tourist behaviour towards natural resources*

This section presents the results for the items relating to responsible tourist behaviour towards natural resources measured in general and site-specific dimensions. The 'general' dimension had a threshold value (d) = 0.007 and the 'site-specific' had a threshold value (d) = 0.005 and were thus deemed acceptable. The results are presented in Table 5.5 below (refer to sections 5.2.1, 5.2.2.2 and 5.2.2.3 for the full names of items and Annexure D for detailed calculations).

Table 5.5: Results from experts: Responsible tourist behaviour towards natural resources

Dimension and item	[1]Threshold value (d)	[2]Percentage of experts' agreement	[3]Fuzzy score values (Amax)	Verdict
General dimension	**0.007**			
NR_GD.1		45.5%	0.518	Discarded
NR_GD.2		95.5%	0.682	Retained
NR_GD.3		77.3%	0.612	Discarded
NR_GD.4		50.0%	0.585	Discarded
NR_GD.5		71.8%	0.603	Discarded
NR_GD.6		45.5%	0.439	Discarded
NR_GD.7		59.1%	0.391	Discarded
NR_GD.8		77.3%	0.609	Discarded
NR_GD.9		36.4%	0.482	Discarded
NR_GD.10		77.8%	0.655	Discarded
NR_GD.11		63.6%	0.555	Discarded
NR_GD.12		100.0%	0.682	Retained
NR_GD.13		59.1%	0.573	Discarded
NR_GD.14		59.1%	0.482	Discarded
NR_GD.15		68.2%	0.458	Discarded
NR_GD.16		31.8%	0.567	Discarded
NR_GD.17		72.7%	0.627	Discarded

Dimension and item	[1]Threshold value (d)	[2]Percentage of experts' agreement	[3]Fuzzy score values (Amax)	Verdict
NR_GD.18		77.3%	0.609	Discarded
NR_GD.19		100.0%	0.709	Retained
NR_GD.20		45.5%	0.573	Discarded
NR_GD.21		77.3%	0.609	Discarded
NR_GD.22		63.6%	0.500	Discarded
NR_GD.23		86.4%	0.618	Retained
NR_GD.24		100.0%	0.682	Retained
NR_GD.25		72.7%	0.573	Discarded
NR_GD.26		72.7%	0.573	Discarded
NR_GD.27		63.6%	0.536	Discarded
NR_GD.28		59.1%	0.464	Discarded
NR_GD.29		100.0%	0.727	Retained
NR_GD.30		100.0%	0.764	Retained
NR_GD.31		100.0%	0.773	Retained
NR_GD.32		95.5%	0.664	Retained
NR_GD.33		95.5%	0.736	Retained
NR_GD.34		90.9%	0.685	Retained
NR_GD.35		86.4%	0.673	Retained
NR_GD.36		36.4%	0.567	Discarded
NR_GD.37		36.4%	0.533	Discarded
NR_GD.38		77.3%	0.464	Discarded
NR_GD.39		72.7%	0.473	Discarded
NR_GD.40		63.6%	0.545	Discarded
NR_GD.41		68.2%	0.482	Discarded
NR_GD.42		72.7%	0.518	Discarded
NR_GD.43		45.5%	0.545	Discarded
NR_GD.44		54.5%	0.591	Discarded
Site-specific dimension	**0.005**			
NR_SSD.1		78.8%	0.664	Discarded
NR_SSD.2		100.0%	0.764	Retained
NR_SSD.3		95.5%	0.712	Retained
NR_SSD.4		95.5%	0.718	Retained
NR_SSD.5		86.4%	0.700	Retained
NR_SSD.6		40.9%	0.555	Discarded
NR_SSD.7		45.5%	0.458	Discarded
NR_SSD.8		68.2%	0.573	Discarded

Dimension and item	[1]Threshold value (d)	[2]Percentage of experts' agreement	[3]Fuzzy score values (Amax)	Verdict
NR_SSD.9		100.0%	0.782	Retained
NR_SSD.10		77.3%	0.627	Discarded
NR_SSD.11		72.7%	0.627	Discarded
NR_SSD.12		77.3%	0.636	Discarded
NR_SSD.13		100.0%	0.773	Retained
NR_SSD.14		100.0%	0.782	Retained
NR_SSD.15		100.0%	0.782	Retained
NR_SSD.16		86.4%	0.691	Retained
NR_SSD.17		100.0%	0.745	Retained
NR_SSD.18		86.4%	0.621	Retained
NR_SSD.19		90.9%	0.700	Retained
NR_SSD.20		90.9%	0.691	Retained
NR_SSD.21		100.0%	0.745	Retained
NR_SSD.22		100.0%	0.773	Retained
NR_SSD.23		100.0%	0.773	Retained
NR_SSD.24		86.4%	0.682	Retained
NR_SSD.25		95.5%	0.745	Retained
NR_SSD.26		86.4%	0.664	Retained
NR_SSD.27		100.0%	0.709	Retained
NR_SSD.28		100.0%	0.773	Retained
NR_SSD.29		86.4%	0.685	Retained
NR_SSD.30		86.4%	0.618	Retained

Criteria: 1 - Threshold value (d) ≤0.2; 2 - Percentage of experts' agreement ≥80%; 3 - Fuzzy score value (Amax) ≥0.5

In terms of expert percentage agreement and Amax (see Table 5.5), 35 items for responsible tourist behaviour towards natural resources were retained (12 items under the 'general' dimension and 23 items under the 'site-specific' dimension). A total of 39 items were disregarded (32 under the 'general' dimension and 7 under the 'site-specific' dimension) because these items did not meet the percentage and/or Amax criteria. Refer to Annexure D for detailed calculations.

5.2.3.3 *Results from experts: Responsible tourist behaviour towards cultural resources*

This section presents the results on items relating to responsible tourist behaviour towards cultural resources measured in 'general' and 'site-specific' dimensions. As outlined in Table 5.6, the first criterion was realised whereby the 'general' dimension had a threshold value of (d) = 0.006 and the 'site-specific' dimension had a threshold value of (d) = 0.005 (refer to sections 5.2.1, 5.2.2.2 and 5.2.2.3 for the full names of items and Annexure D for detailed calculations). Table 5.6 presents the results of both dimensions.

Table 5.6: Results from experts: Responsible tourist behaviour towards cultural resources

Dimension and item	[1]Threshold value (d)	[2]Percentage of experts' agreement	[3]Fuzzy score values (Amax)	Verdict
General dimension	**0.006**			
CR_GD.1		78.8%	0.664	Discarded
CR_GD.2		59.1%	0.594	Discarded
CR_GD.3		72.7%	0.627	Discarded
CR_GD.4		77.3%	0.645	Discarded
CR_GD.5		50.0%	0.467	Discarded
CR_GD.6		50.0%	0.436	Discarded
CR_GD.7		59.1%	0.591	Discarded
CR_GD.8		50.0%	0.406	Discarded
CR_GD.9		40.9%	0.424	Discarded
CR_GD.10		68.2%	0.609	Discarded
CR_GD.11		72.7%	0.573	Discarded
CR_GD.12		72.7%	0.609	Discarded
CR_GD.13		90.9%	0.655	Retained
CR_GD.14		77.3%	0.618	Discarded
CR_GD.15		72.7%	0.627	Discarded
CR_GD.16		95.5%	0.700	Retained
CR_GD.17		90.9%	0.655	Retained
CR_GD.18		77.3%	0.618	Discarded
CR_GD.19		63.6%	0.591	Discarded
CR_GD.20		59.1%	0.573	Discarded

Dimension and item	[1]Threshold value (d)	[2]Percentage of experts' agreement	[3]Fuzzy score values (Amax)	Verdict
CR_GD.21		54.5%	0.564	Discarded
CR_GD.22		68.2%	0.536	Discarded
CR_GD.23		95.5%	0.600	Retained
CR_GD.24		95.5%	0.727	Retained
CR_GD.25		72.7%	0.627	Discarded
CR_GD.26		86.4%	0.655	Retained
CR_GD.27		90.9%	0.667	Retained
CR_GD.28		90.9%	0.691	Retained
CR_GD.29		95.5%	0.727	Retained
CR_GD.30		90.9%	0.700	Retained
Site-specific dimension	**0.005**			
CR_SSD.1		90.9%	0.718	Retained
CR_SSD.2		90.9%	0.700	Retained
CR_SSD.3		100.0%	0.745	Retained
CR_SSD.4		95.5%	0.700	Retained
CR_SSD.5		95.5%	0.718	Retained
CR_SSD.6		95.5%	0.700	Retained
CR_SSD.7		90.9%	0.673	Retained
CR_SSD.8		95.5%	0.718	Retained
CR_SSD.9		95.5%	0.736	Retained
CR_SSD.10		100.0%	0.782	Retained
CR_SSD.11		100.0%	0.773	Retained
CR_SSD.12		100.0%	0.791	Retained
CR_SSD.13		100.0%	0.791	Retained
CR_SSD.14		95.5%	0.736	Retained
CR_SSD.15		95.5%	0.755	Retained
CR_SSD.16		90.9%	0.691	Retained
CR_SSD.17		100.0%	0.755	Retained
CR_SSD.18		68.2%	0.609	Discarded
CR_SSD.19		90.9%	0.709	Retained
CR_SSD.20		68.2%	0.609	Discarded
CR_SSD.21		77.3%	0.645	Discarded
CR_SSD.22		68.2%	0.636	Discarded

Criteria: 1 - Threshold value (d) ≤0.2; 2 - Percentage of experts' agreement ≥80%; 3 - Fuzzy score value (Amax) ≥0.5

As illustrated in Table 5.6, 28 items for responsible tourist behaviour towards cultural resources were retained (10 items under the ‘general’ dimension and 18 items under the ‘site-specific’ dimension). A total of 24 items were discarded (20 items under the ‘general’ dimension and 4 items under the ‘site-specific’ dimension) because these items did not meet the percentage and/or Amax criteria. Refer to Annexure D for detailed calculations.

The retained items were used in the surveys for phases 2 and 3 of the study. Section 5.3 presents the results of Phase 2.

5.3 RESULTS FOR PHASE 2

The results for Phase 2 are organised into six sections. The first section (5.3.1) focuses on the sample profile. Thereafter, the descriptive statistics for the demographic information (see section 5.3.2), the descriptive statistics for the items of the research (see section 5.3.3), the preliminary results for the CMV (refer to section 5.3.4), the results of the EFA (refer to section 5.3.5), and the results for the preliminary internal consistency reliability of the items (see section 5.3.5.3) are presented.

5.3.1 Sample profile of respondents

The sample was drawn from tourists who had visited one of South Africa’s World Cultural Heritage Sites (Fossil Hominid Sites [Maropeng and/or the Sterkfontein Caves], Robben Island, or the Mapungubwe Cultural Landscape). The total for the raw data was 1 037 questionnaires. The LimeSurvey system flagged 116 questionnaires as incomplete because they were not submitted due to signal loss, time constraints, or fatigue that hindered the submission of the questionnaire. Therefore, 921 (1037 – 116 = 921) questionnaires were completed. The sample size was refined by removing the number of cases with no variations across all items (n = 75) and the duplicated cases (n = 7), yielding 839 feasible questionnaires that were 100% completed. This sample was randomly divided so that the EFA (Phase 2) was based on the minimum case-to-variable ratio (63 items x 5 respondents = 315). The sample size was rounded to 350 (n = 350), with the remainder (n = 489) used for Phase 3 of the study (see section 5.4).

Section 5.3.2 presents the first part of the descriptive statistics relating to the demographic information of the respondents.

5.3.2 Descriptive statistics for demographic information

Although the results of the screening questions are not presented, the screening question related to age (year born) is included in the results since it pertains to the demographic information about the sample. The following four sections (5.3.2.1 to 5.3.2.4) present the results of the demographic information.

5.3.2.1 *Year born*

Most of the respondents (34.0%, n = 119) were born between 1990 and 1999 (24 to 33 years of age). Respondents born between 1980 and 1989 (34 to 43 years of age) made up 24.0% (n = 84) of the total sample profile. Slightly more than 15% (15.1%, n = 53) indicated they were born between 1970 and 1979 (44 to 53 years of age). Over 12% (12.9%, n = 45) of the respondents were born between 1960 and 1969 (54 to 63 years of age). Respondents born after the millennium (between 2000 and 2004; 19 to 23 years of age) accounted for more than 9% (9.7%, n = 34). Only 1.4% (n = 5) of respondents were born between 1940 and 1949 (74 to 83 years of age), while less than 3% (2.9%, n = 10) were born between 1950 and 1959 (64 to 73 years of age). Figure 5.1 depicts the groups denoting the years in which the respondents were born.

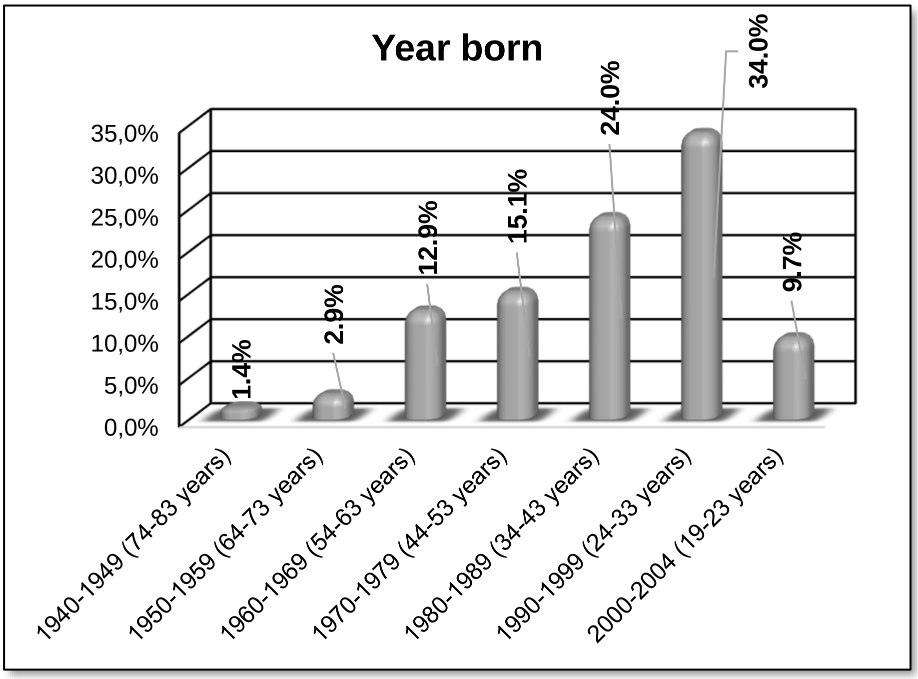

Figure 5.1: Year born (n = 350)

5.3.2.2 *Gender*

In terms of gender distribution, Figure 5.2 illustrates that the profile of the sample demonstrated more female respondents (57.0%, n = 200) than male respondents (42.0%, n = 145). Only 1.0% (n = 5) of the respondents indicated ‘other’.

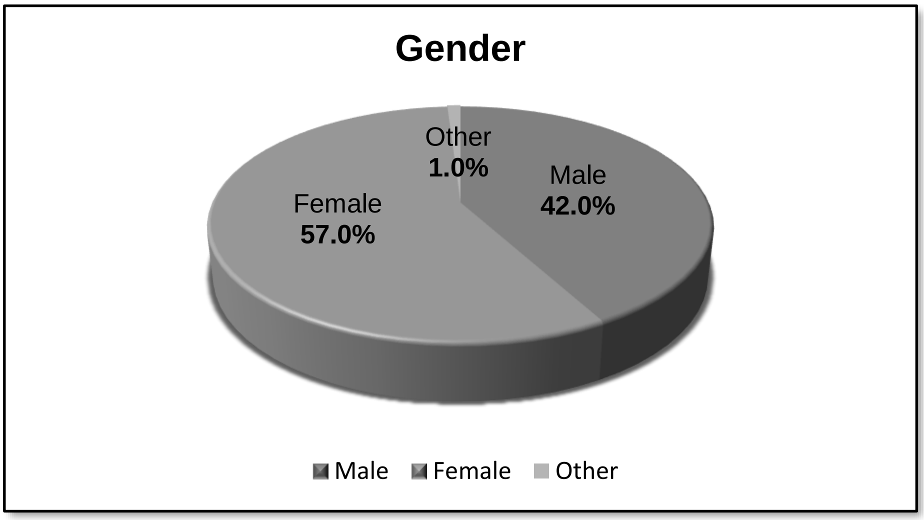

Figure 5.2: Gender (n = 350)

5.3.2.3 *Highest level of education*

The data revealed that 35.7% (n = 125) of respondents have an undergraduate diploma/degree. This group was followed by those who reported having a postgraduate diploma/honours degree (24.3%, n = 85). Respondents with a master's degree accounted for 18.9% (n = 66). Slightly over 11% (11.1%, n = 39) had completed matric/secondary school, and those with a doctoral degree accounted for 6.3% (n = 22). A small percentage (1.4%, n = 5) stated that they have a technical background. Respondents with a post-doctoral degree accounted for 1.1% (n = 4), as did the respondents with some schooling (1.1%, n = 4). See Figure 5.3 below.

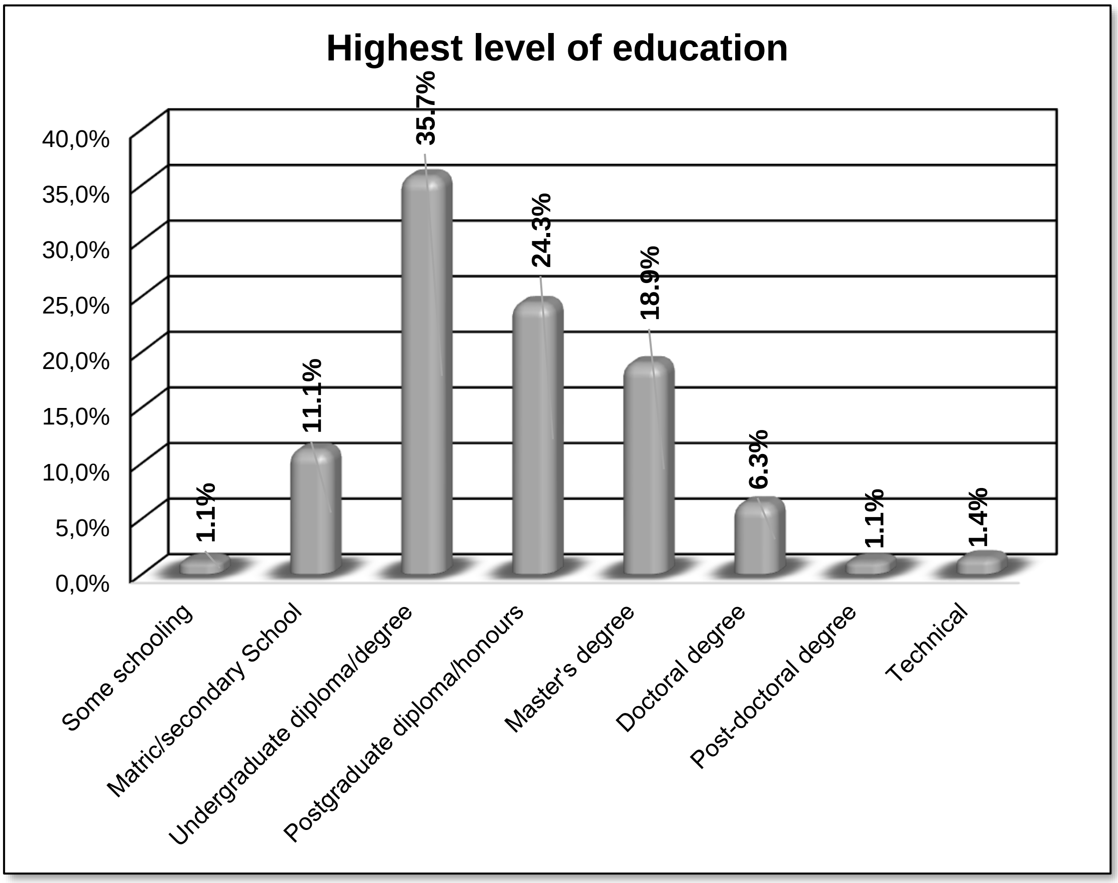

Figure 5.3: Highest level of education (n = 350)

5.3.2.4 *Place of permanent residence*

Most of the respondents indicated that their permanent place of residence is Gauteng (55.75%, n = 195). Only 17.1% (n = 60) specified that they lived permanently in one of the other eight provinces of South Africa. Moreover, 27.1% (n = 95) of the respondents indicated that they resided outside the country (see Figure 5.4) in Africa (Burkina Faso, Eswatini, and Ghana), in Asia (China, India, Japan, and Qatar), in Europe (Belgium, Estonia, France, Germany, Ireland, Spain, Sweden, Russia and the United Kingdom), in North America (Canada and the United States of America), and in Australia. The large number of Gauteng residents who participated in the survey could be because that the recently visited World Heritage Site, the Fossil Hominid Sites of South Africa (Maropeng and/or Sterkfontein Caves) are located within Gauteng and thus, Gauteng residents are in close proximity.

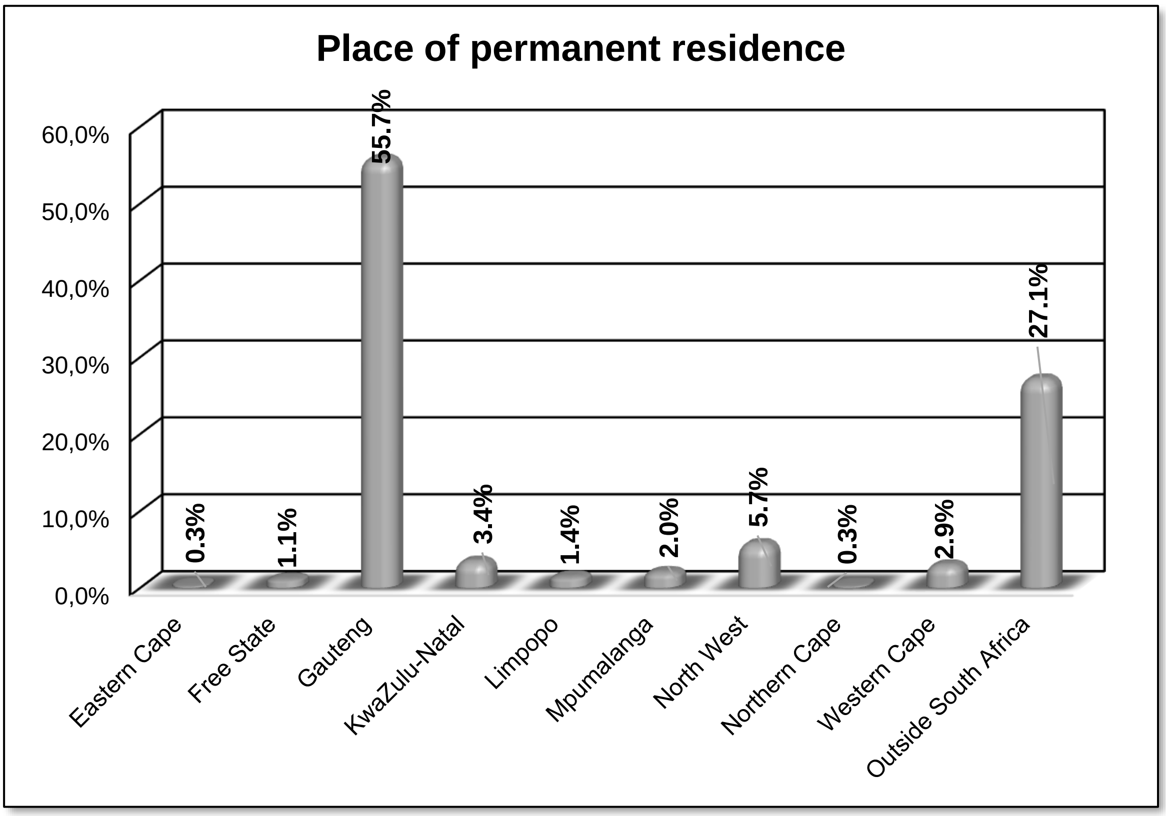

Figure 5.4: Place of permanent residence (n = 350)

The descriptive statistics on the respondents' responsible behaviour towards natural and cultural resources are presented next.

5.3.3 Descriptive statistics for the items of this study

The second section of descriptive statistics focuses on various aspects of responsible tourist behaviour in cultural heritage tourism. The following two sections (see sections

5.3.3.1 and 5.3.3.2) present the descriptive statistics on responsible tourist behaviour towards natural and cultural resources.

5.3.3.1 *Results from tourists: Responsible tourist behaviour towards natural resources*

The descriptive statistics shown in tables 5.7 and 5.8 represent respondents' responsible behaviour towards natural resources from the perspective of the tourist.

Table 5.7 indicates tourists' general responsible behaviour towards natural resources using 12 items. The mean scores (ranging from 3.80 to 4.34) show that tourists agreed with all the items. The SD of the scores ranged between 0.765 and 1.099. Thus, these results revealed that tourists' general responsible behaviour towards natural resources was strong. All the skewness values for respondents' general responsible behaviour towards natural resources indicated a distribution skewed to the left (skewness <0). The skewness values ranged from -0.487 to -1.348. As demonstrated in Table 5.7, the ratio of kurtosis to its standard error (Ratio/SE) ranged from 0.1 to 8.4, which indicated that some items were higher than the threshold value (between -2 and +2). A high positive value for kurtosis indicated that the distribution's tail was longer than the tail of a normal distribution, and this was considered in further investigations. Against this background, all 12 items were retained for the EFA.

Table 5.7: Descriptive statistics for tourists' general responsible behaviour towards natural resources

Item	Percentage of agreement					Mean (M)	Standard deviation (SD)	Skewness (SE = 0.130)	Kurtosis (SE = 0.260)	
	1 = Strongly disagree	2 = Disagree	3 = Neither agree nor disagree	4 = Agree	5 = Strongly agree			Statistics	Statistics	Ratio/SE
[Q2a.1] I learn about protection of the environment from people who have informed opinions on the topic either by expertise or lived experience	1.7%	3.1%	14.6%	45.7%	34.9%	4.09	0.877	-1.071	1.469	5.7
[Q2a.2] I discuss environmental problems with family, friends and/or community leaders	2.0%	7.1%	15.1%	44.0%	31.7%	3.96	0.967	-0.938	0.586	2.3
[Q2a.3] I purchase products packaged in containers that can either be reused or recycled or are made of recycled materials	2.6%	7.4%	20.0%	42.9%	27.1%	3.85	0.989	-0.793	0.309	1.2
[Q2a.4] I often purchase environmentally friendly products	2.0%	8.0%	18.9%	44.6%	26.6%	3.86	0.968	-0.779	0.277	1.1
[Q2a.5] I purchase locally produced products	2.3%	4.9%	22.0%	45.4%	25.4%	3.87	0.927	-0.799	0.678	2.6
[Q2a.6] I comply with rules and regulations regarding environmental protection	0.6%	1.4%	10.6%	40.3%	47.1%	4.32	0.765	-1.117	1.548	6.0
[Q2a.7] I save electricity whenever possible (e.g. I turn off lights if I am leaving a room for over 10 minutes)	0.6%	2.9%	11.1%	33.7%	51.7%	4.33	0.828	-1.231	1.317	5.1

Item	Percentage of agreement					Mean (M)	Standard deviation (SD)	Skewness (SE = 0.130)	Kurtosis (SE = 0.260)	
	1 = Strongly disagree	2 = Disagree	3 = Neither agree nor disagree	4 = Agree	5 = Strongly agree			Statistics	Statistics	Ratio/SE
[Q2a.8] I save water whenever possible (e.g. I turn off the tap while washing dishes or brushing teeth)	0.6%	3.1%	6.9%	40.9%	48.6%	4.34	0.787	-1.348	2.196	8.4
[Q2a.9] I utilise biodegradable products (e.g. laundry detergent) in most instances	1.4%	8.3%	26.6%	36.3%	27.4%	3.80	0.981	-0.487	-0.356	1.4
[Q2a.10] I try to protect the environment while maintaining my standard of living	1.7%	2.3%	12.3%	49.1%	34.6%	4.13	0.837	-1.184	2.177	8.4
[Q2a.11] I reuse as much as possible to decrease the quantity of my household garbage	1.7%	3.7%	18.6%	44.6%	31.4%	4.00	0.897	-0.891	0.893	3.4
[Q2a.12] I put empty bottles into the appropriate recycling bin	2.3%	10.9%	12.0%	30.3%	44.6%	4.04	1.099	-0.992	0.019	0.1

Criterion: * Extremely high kurtosis/SE >10.0

Table 5.8, which contains 23 items, presents the descriptive statistics for tourists' site-specific responsible behaviour towards natural resources. The mean scores of 11 items ranged from 3.64 to 4.41, indicating that tourists agreed with these items. The SDs around these mean scores fluctuated between 0.699 and 1.181. In terms of the other 12 items, tourists' mean scores ranged from 4.50 to 4.72, while the SD fluctuated between 0.567 and 0.699, indicating that tourists strongly agreed with these 12 items. Based on these results, it is reasonable to state that the tourists' site-specific responsible behaviour towards natural resources was strong. The skewness values for all 23 items ranged from -2.262 to -0.640, and some items had higher kurtosis Ratio/SE values than others (between 0.2 and 30.1). These statistics indicated more peakedness (kurtosis) than a normal distribution and demonstrated that the distribution was to the left (skewness). This could have been an indication of abnormality; however, no item was excluded at this stage of the study, and the distribution variation was considered in a further analysis (EFA).

Table 5.8: Descriptive statistics for tourists' site-specific responsible behaviour towards natural resources

Item	Percentage of agreement					Mean (M)	Standard deviation (SD)	Skewness (SE = 0.130)	Kurtosis (SE = 0.260)	
	1 = Strongly disagree	2 = Disagree	3 = Neither agree nor disagree	4 = Agree	5 = Strongly agree			Statistics	Statistics	Ratio/SE
[Q2b.1] During my visit, I abide by the nature conservation rules that apply at the cultural heritage site	0.0%	1.1%	3.1%	27.7%	68.0%	4.63	0.606	-1.700	3.186	12.3 *
[Q2b.2] I pay attention to the heritage interpretation on nature conservation	0.3%	1.4%	5.4%	33.7%	59.1%	4.50	0.693	-1.508	2.819	10.8 *
[Q2b.3] I tell other people not to feed the surrounding animals	3.4%	6.9%	24.9%	28.0%	36.9%	3.88	1.090	-0.720	-0.179	0.7
[Q2b.4] I observe the nature and animals detailed	0.6%	0.6%	8.9%	38.9%	51.1%	4.39	0.721	-1.215	2.097	8.1
[Q2b.5] I respect natural resources at the cultural heritage site	0.0%	0.3%	3.1%	35.7%	60.9%	4.57	0.571	-1.026	0.580	2.2
[Q2b.6] I stay on labelled pathways established by the cultural heritage site	0.0%	0.6%	5.4%	28.0%	66.0%	4.59	0.621	-1.412	1.532	5.9
[Q2b.7] I stay away from restricted areas at the cultural heritage site	0.6%	1.4%	2.9%	25.7%	69.4%	4.62	0.670	-2.260	6.638	25.5 *
[Q2b.8] I do not litter	0.0%	0.9%	3.4%	18.3%	77.4%	4.72	0.567	-2.221	5.157	19.8 *
[Q2b.9] I participate in the cultural heritage site's recycling, reusing or reducing initiatives	1.4%	2.9%	12.9%	32.0%	50.9%	4.28	0.897	-1.301	1.567	6.0

Item	Percentage of agreement					Mean (M)	Standard deviation (SD)	Skewness (SE = 0.130)	Kurtosis (SE = 0.260)	
	1 = Strongly disagree	2 = Disagree	3 = Neither agree nor disagree	4 = Agree	5 = Strongly agree			Statistics	Statistics	Ratio/SE
[Q2b.10] I appropriately dispose of my own waste	0.6%	0.6%	3.4%	27.4%	68.0%	4.62	0.639	-2.099	6.343	24.4 *
[Q2b.11] I pick up other people's litter	6.0%	11.7%	23.1%	30.9%	28.3%	3.64	1.181	-0.577	-0.530	2.0
[Q2b.12] I encourage other people not to litter	1.1%	5.7%	15.7%	37.1%	40.3%	4.10	0.940	-0.943	0.433	1.7
[Q2b.13] I minimise garbage	0.6%	0.9%	10.3%	44.9%	43.4%	4.30	0.732	-1.013	1.641	6.3
[Q2b.14] I lower my voice so as not to disturb other people or animals on-site	1.1%	1.1%	7.7%	36.0%	54.0%	4.41	0.776	-1.585	3.427	13.2 *
[Q2b.15] I do not remove or collect flora and animal specimens from the cultural heritage site	0.3%	1.7%	5.1%	28.0%	64.9%	4.55	0.699	-1.765	3.550	13.7 *
[Q2b.16] I do not remove rock, fossil or dried wood at the cultural heritage site	0.6%	1.4%	2.9%	27.1%	68.0%	4.61	0.672	-2.186	6.318	24.3 *
[Q2b.17] I do not take pets to the wilderness areas	0.9%	0.3%	4.9%	23.4%	70.6%	4.63	0.673	-2.283	6.964	26.8 *
[Q2b.18] I intervene if I notice other people's bad or unethical behaviour that could harm the environment	2.9%	6.6%	24.0%	41.4%	25.1%	3.79	0.986	-0.715	0.269	1.0
[Q2b.19] I minimise my interference with the surrounding environment	0.3%	0.9%	8.3%	41.7%	48.9%	4.38	0.699	-1.034	1.376	5.3

Item	Percentage of agreement					Mean (M)	Standard deviation (SD)	Skewness (SE = 0.130)	Kurtosis (SE = 0.260)	
	1 = Strongly disagree	2 = Disagree	3 = Neither agree nor disagree	4 = Agree	5 = Strongly agree			Statistics	Statistics	Ratio/SE
[Q2b.20] I do not damage flora	0.0%	0.6%	4.3%	28.0%	67.1%	4.62	0.598	-1.473	1.899	7.3
[Q2b.21] I tell other people not to damage flora	2.0%	7.4%	21.4%	35.4%	33.7%	3.91	1.012	-0.728	-0.051	0.2
[Q2b.22] I report any environmental pollution or destruction to the staff on-site	2.3%	8.3%	23.7%	33.7%	32.0%	3.85	1.037	-0.640	-0.235	0.9
[Q2b.23] After the visit I leave the cultural heritage site the same way I found it	0.6%	0.3%	2.6%	26.3%	70.3%	4.65	0.604	-2.262	7.821	30.1 *

Criterion: * Extremely high kurtosis/SE >10.0

5.3.3.2 *Results from tourists: Responsible tourist behaviour towards cultural resources*

Tables 5.9 and 5.10 provide descriptive information for responsible behaviour towards cultural resources from a tourist's point of view.

Table 5.9 depicts 10 items and presents the descriptive statistics for tourists' general responsible behaviour towards cultural resources. The mean scores of all the items ranged from 3.54 to 4.33, showing that the tourists agreed with all 10 items. Some items reported lower SDs than others; these ranged between 0.700 and 1.003. Accordingly, these results indicated that tourists' general responsible behaviour towards cultural resources was strong. The mean scores were all skewed to the left (skewness <0). The skewness values fluctuated between -0.969 and -0.328. The kurtosis Ratio/SE ranged from 0.1 to 3.7, indicating that some values were slightly above the threshold (-2 to +2) and signifying that the tail of the distribution was slightly longer than that of a normal distribution. This possibly suggested some non-normality. After assessing the distribution variation, all 10 items were retained for the EFA.

Table 5.9: Descriptive statistics for tourists' general responsible behaviour towards cultural resources

Item	Percentage of agreement					Mean (M)	Standard deviation (SD)	Skewness (SE = 0.130)	Kurtosis (SE = 0.260)	
	1 = Strongly disagree	2 = Disagree	3 = Neither agree nor disagree	4 = Agree	5 = Strongly agree			Statistics	Statistics	Ratio/SE
[Q3a.1] I purchase products from companies that are considerate of the history, culture, traditions and identity of communities	3.7%	8.0%	33.1%	36.3%	18.9%	3.59	1.003	-0.469	-0.029	0.1
[Q3a.2] I promote the protection of cultural resources	1.1%	5.4%	15.4%	43.4%	34.6%	4.05	0.906	-0.911	0.636	2.4
[Q3a.3] I promote the need for responsible behaviour when visiting cultural heritage sites	0.3%	2.9%	11.7%	42.9%	42.3%	4.24	0.790	-0.945	0.781	3.0
[Q3a.4] I encourage people to donate time or money for the protection of cultural resources	2.3%	9.4%	31.1%	38.0%	19.1%	3.62	0.973	-0.406	-0.201	0.8
[Q3a.5] I report individuals infringing laws that protect cultural resources to the relevant authorities	2.6%	9.7%	35.1%	36.3%	16.3%	3.54	0.962	-0.328	-0.163	0.6
[Q3a.6] I pay attention to government guidance to participate in efforts to support cultural heritage tourism	0.9%	6.0%	17.4%	46.0%	29.7%	3.98	0.889	-0.767	0.363	1.4
[Q3a.7] I participate in efforts to support cultural heritage tourism	0.3%	6.6%	18.6%	46.3%	28.3%	3.96	0.870	-0.625	-0.051	0.2
[Q3a.8] I share my cultural heritage with other people	2.3%	4.3%	17.7%	43.1%	32.6%	3.99	0.939	-0.969	0.933	3.6

Item	Percentage of agreement					Mean (M)	Standard deviation (SD)	Skewness (SE = 0.130)	Kurtosis (SE = 0.260)	
	1 = Strongly disagree	2 = Disagree	3 = Neither agree nor disagree	4 = Agree	5 = Strongly agree			Statistics	Statistics	Ratio/SE
[Q3a.9] I protect other people's cultural resources	0.6%	1.4%	14.6%	48.6%	34.9%	4.16	0.761	-0.782	0.963	3.7
[Q3a.10] I learn about different cultural resources around the world	0.0%	1.4%	9.1%	44.6%	44.9%	4.33	0.700	-0.807	0.371	1.4

Criterion: * Extremely high kurtosis/SE >10.0

Table 5.10 consists of the 18 items used in the descriptive statistics for tourists' site-specific responsible behaviour towards cultural resources. Of the 18 items, 12 items had mean scores between 3.86 and 4.42, implying that tourists agreed with these items. The SDs of these 12 items ranged from 0.632 to 1.140. The mean values of the remaining six items fluctuated between 4.65 and 4.79, with SDs between 0.457 and 0.592, indicating that tourists strongly agreed with these items. These results showed that tourists' site-specific responsible behaviour towards cultural resources was strong. The skewness values ranged from -3.252 to -0.691, and the kurtosis Ratio/SE ranged from 0.4 to 52.9. Although this indicated an abnormality in distribution, all items were kept for the EFA.

Table 5.10: Descriptive statistics for tourists' site-specific responsible behaviour towards cultural resources

Item	Percentage of agreement					Mean (M)	Standard deviation (SD)	Skewness (SE = 0.130)	Kurtosis (SE = 0.260)	
	1 = Strongly disagree	2 = Disagree	3 = Neither agree nor disagree	4 = Agree	5 = Strongly agree			Statistics	Statistics	Ratio/SE
[Q3b.1] Before I travel to a specific cultural heritage site, I make an effort to acquire the information about its cultural resources and their significance	1.7%	6.9%	15.4%	41.1%	34.9%	4.01	0.966	-0.931	0.491	1.9
[Q3b.2] I learn about the fragility of specific cultural resources	0.6%	6.3%	14.6%	48.0%	30.6%	4.02	0.870	-0.822	0.463	1.8
[Q3b.3] I obey the social rules that apply at the cultural heritage site	0.0%	0.6%	6.0%	44.0%	49.4%	4.42	0.632	-0.768	0.246	0.9
[Q3b.4] I pay attention to the heritage interpretation on cultural resources protection	0.0%	0.6%	6.9%	45.1%	47.4%	4.39	0.641	-0.713	0.118	0.5
[Q3b.5] I learn about cultural resources' historic background	0.3%	2.0%	9.7%	44.0%	44.0%	4.29	0.747	-0.995	1.156	4.4
[Q3b.6] I observe the cultural resources detailed	0.3%	0.6%	9.4%	44.9%	44.9%	4.33	0.694	-0.868	1.010	3.9
[Q3b.7] I choose tourism products that protect local cultural resources	0.6%	2.9%	19.4%	41.1%	36.0%	4.09	0.845	-0.691	0.158	0.6
[Q3b.8] I respect other people's privacy by asking for their prior permission to take a photograph	0.6%	2.3%	11.1%	41.4%	44.6%	4.27	0.793	-1.080	1.324	5.1

Item	Percentage of agreement					Mean (M)	Standard deviation (SD)	Skewness (SE = 0.130)	Kurtosis (SE = 0.260)	
	1 = Strongly disagree	2 = Disagree	3 = Neither agree nor disagree	4 = Agree	5 = Strongly agree			Statistics	Statistics	Ratio/SE
[Q3b.9] I do not damage heritage structures or other cultural features	0.6%	0.0%	2.3%	28.3%	68.9%	4.65	0.586	-2.143	7.733	29.7 *
[Q3b.10] I do not paint or draw graffiti at a cultural heritage site	0.3%	0.3%	2.3%	16.0%	81.1%	4.77	0.522	-2.885	11.177	43.0 *
[Q3b.11] I do not remove artefacts from a cultural heritage site	0.6%	0.9%	1.4%	16.6%	80.6%	4.76	0.577	-3.252	13.747	52.9 *
[Q3b.12] I do not touch or remove inscriptions or decorative elements at a cultural heritage site	0.0%	0.3%	1.7%	18.6%	79.4%	4.77	0.478	-2.143	4.900	18.8 *
[Q3b.13] I do not loot or vandalise cultural resources	0.0%	0.3%	1.1%	18.3%	80.3%	4.79	0.457	-2.192	5.377	20.7 *
[Q3b.14] I report vandalism of cultural resources to on-site staff	0.6%	4.3%	12.6%	28.3%	54.3%	4.31	0.892	-1.222	0.876	3.4
[Q3b.15] I do not purchase illegal authentic objects	0.3%	0.6%	3.1%	23.1%	72.9%	4.68	0.592	-2.169	6.256	24.1 *
[Q3b.16] I purchase souvenirs at the cultural heritage site's gift shop	4.9%	6.6%	23.7%	27.1%	37.7%	3.86	1.140	-0.791	-0.115	0.4
[Q3b.17] I support local crafts that reflect cultural heritage	2.0%	3.4%	14.6%	36.9%	43.1%	4.16	0.934	-1.167	1.278	4.9
[Q3b.18] I participate in tourism activities designed to conserve a specific cultural heritage site	0.6%	2.9%	13.1%	33.4%	50.0%	4.29	0.844	-1.119	0.912	3.5

Criterion: * Extremely high kurtosis/SE >10.0

Despite some items showing lower variation than others (see sections 5.3.3.1 and 5.3.3.2), at this stage of the analysis, it was decided not to exclude any item but to include them all in further EFA analyses. Before presenting the EFA results, a preliminary statistical analysis was carried out to determine the CMV in the data.

5.3.4 Preliminary results for common method variance

To test for CMV, Harman's one-factor test and CFA (one-factor solution) were performed. Table 5.11 summarises the results of these tests.

Table 5.11: Factor solutions for testing common method variance

Harman's one-factor test: Percentage variance explained by a single factor	Name of category	Name of index	Index value
27.153%	1. Absolute fit	RMSEA	0.101
		SRMR	0.111
	2. Incremental fit	NFI	0.40
		TLI	0.44
		CFI	0.45
	3. Parsimonious fit	CMIN/df	4.525

Criteria: RMSEA <0.08; SRMR ≤0.05; CMIN/df <3; NFI >0.90; TLI >0.90; CFI >0.90; p-value >0.05

According to the one-factor solution for responsible tourist behaviour in cultural heritage tourism (Table 5.11), loading all the items for responsible tourist behaviour in cultural heritage tourism onto a single factor accounted for only 27.153% of the covariance among the scale items. Moreover, Table 5.11 illustrates the GOF criteria. The fit indices indicate that the single factor did not fit the model well when the items for responsible tourist behaviour in cultural heritage tourism were loaded onto a single construct in the CFA model. The indices demonstrated an RMSEA above 0.08 (0.101), SRMR values above 0.05 (0.111), a CMIN/df above 3 (4.525), an NFI well below 0.90 (0.40), a TLI significantly lower than 0.90 (0.44), and a CFI value far less than 0.90 (0.45). The probability value (p-value) was less than 0.05 (<0.001) and, therefore, the null hypothesis was not supported.

The one-factor results for the scale to measure responsible tourist behaviour in cultural heritage tourism indicated that CMV was not a potential threat to the validity of the research findings. The following section presents the results for the EFA.

5.3.5 Results of the exploratory factor analysis

Exploratory factor analysis was carried out using the 63-item scale. Pearson product-moment correlation coefficient (>0.30) showed correlation for most items (62 items). Therefore, it was concluded that the correlation matrix was factorable. The KMO value exceeded the recommended minimum value of 0.60, and the Bartlett's test of sphericity revealed statistical significance (p <0.05). The Kaiser's criterion (eigenvalue) suggested 14 factors that were starkly different from the literature's hypothesised four-factor structure and was not feasible. Therefore, EFA was conducted using the forced (or hypothesised) four-factor structure. The results of the Kaiser's criterion (eigenvalue) and the cumulative percentage of the total variance of the four-factor structure are presented in section 5.3.5.1. The scree plot and the parallel analysis were also investigated to evaluate the cut-off point in order to assist with the number of factors to retain.

The scree plot employed the PAF eigenvalues, with a straight line drawn through the lowest eigenvalues. The threshold is the point at which this line separates from the eigenvalue line, which can be a subjective decision. The results of the scree plot (Figure 5.5) suggested a five-factor structure.

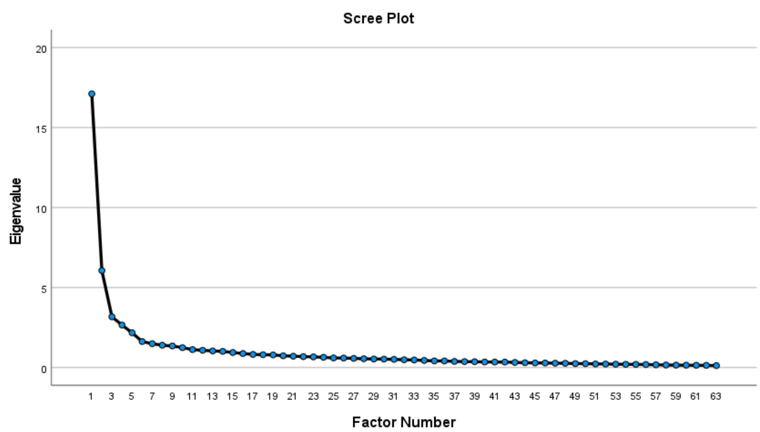

Figure 5.5: Scree plot

In the parallel analysis, the eigenvalues of the first five factors from the factor analysis were greater than the corresponding eigenvalues of the parallel analysis (refer to Table 5.12). It, therefore, was appropriate to keep five factors for interpretation and subsequent analysis.

Table 5.12: Comparison of eigenvalues in factor analysis and parallel analysis

Factor/component	Factor analysis eigenvalue	Parallel analysis eigenvalue
1	17.106	1.9517
2	6.061	1.8662
3	3.174	1.8034
4	2.656	1.7499
5	2.175	1.7028
6	1.627	1.6586

Based on the literature, the values for KMO and Bartlett's test of sphericity, the cumulative percentages of the total variance (refer to sections 5.3.5.1 and 5.3.5.2), the scree plot, and the parallel analysis, it was decided to test both the four- and the five-factor structures. The following sections (5.3.5.1 to 5.3.5.3) present the EFA results and preliminary internal consistency reliability results of both structures, while section 5.3.5.4 focuses on comparing these structures.

5.3.5.1 *Exploratory factor analysis results: Four-factor structure*

The KMO value was 0.905 and Bartlett's test of sphericity revealed statistical significance ($p < 0.001$). The factors were extracted using the PAF method, which was followed by an oblimin rotation. The PAF method revealed the presence of four factors with eigenvalues greater than 1, accounting for 47.73% variance. Although this percentage of variance was slightly less than 50%, it was acceptable at this stage of the study because of the large number of items (63 items).

Oblimin rotation was performed to assist with the interpretation of these four factors. The factor loadings are shown in the pattern matrix. Factor loadings ranged from 0.478 to 0.755 (see Table 5.13).

The forced four-factor structure excluded 29 items with low loadings, items with high cross-loadings, and items with low communalities on an iterative process (rotation converged in 7 iterations). Items with factor loadings less than 0.40 were considered low loadings; items with loadings greater than 0.40 on more than one factor were considered high cross-loadings; and items with low communalities had communalities less than 0.40. The excluded items were Q2a.1, Q2a.2, Q2a.6, Q2b.3, Q2b.11, Q2b.12, Q2b.13, Q2b.14, Q2b.18, Q2b.21, Q2b.22, Q3a.1, Q3a.2, Q3a.3, Q3a.10, Q3b.1, Q3b.2, Q3b.7, Q3b.8, Q3b.9, Q3b.10, Q3b.11, Q3b.12, Q3b.13, Q3b.14 Q3b.15, Q3b.16, Q3b.17, and Q3b.18.

Following the discovery of the internal structure of factors, the researcher carefully reviewed the items on each factor and decided on factor names that were meaningful and accurately represented each derived factor. Based on the results, the literature's hypothesised names were retained:

- Factor 1: Site-specific responsible behaviour towards natural resources
- Factor 2: General responsible behaviour towards cultural resources
- Factor 3: General responsible behaviour towards natural resources
- Factor 4: Site-specific responsible behaviour towards cultural resources

Table 5.13: Exploratory factor analysis results for four-factor structure

Item	Factors			
	1	2	3	4
[Q2a.3] I purchase products packaged in containers that can either be reused or recycled or are made of recycled materials	-0.017	0.167	-0.591	0.070
[Q2a.4] I often purchase environmentally friendly products	0.038	0.155	-0.694	0.117
[Q2a.5] I purchase locally produced products	0.061	0.141	-0.510	0.014
[Q2a.7] I save electricity whenever possible (e.g. I turn off lights if I am leaving a room for over 10 minutes)	0.114	-0.051	-0.566	0.002
[Q2a.8] I save water whenever possible (e.g. I turn off the tap while washing dishes or brushing teeth)	0.082	-0.038	-0.629	0.012
[Q2a.9] I utilise biodegradable products (e.g. laundry detergent) in most instances	-0.062	0.126	-0.652	0.082
[Q2a.10] I try to protect the environment while maintaining my standard of living	0.055	-0.097	-0.709	-0.162
[Q2a.11] I reuse as much as possible to decrease the quantity of my household garbage	-0.123	-0.064	-0.723	-0.167
[Q2a.12] I put empty bottles into the appropriate recycling bin	0.077	-0.066	-0.578	-0.092
[Q2b.1] During my visit. I abide by the nature conservation rules that apply at the cultural heritage site	0.694	0.073	-0.025	0.014
[Q2b.2] I pay attention to the heritage interpretation on nature conservation	0.573	0.111	-0.075	0.044
[Q2b.4] I observe the nature and animals detailed	0.546	0.053	-0.079	-0.056
[Q2b.5] I respect natural resources at the cultural heritage site	0.683	-0.072	-0.061	-0.122
[Q2b.6] I stay on labelled pathways established by the cultural heritage site	0.755	-0.031	-0.027	-0.019
[Q2b.7] I stay away from restricted areas at the cultural heritage site	0.690	-0.075	-0.064	-0.034
[Q2b.8] I do not litter	0.734	-0.071	-0.090	0.069
[Q2b.9] I participate in the cultural heritage site’s recycling, reusing or reducing initiatives	0.478	0.152	-0.149	0.038
[Q2b.10] I appropriately dispose of my own waste	0.682	-0.012	-0.083	0.039
[Q2b.15] I do not remove or collect flora and animal specimens from the cultural heritage site	0.706	-0.008	0.100	-0.023
[Q2b.16] I do not remove rock, fossil or dried wood at the cultural heritage site	0.662	0.007	0.127	-0.016
[Q2b.17] I do not take pets to the wilderness areas	0.649	-0.014	0.172	-0.030

Item	Factors			
	1	2	3	4
[Q2b.19] I minimise my interference with the surrounding environment	0.519	0.161	-0.017	-0.111
[Q2b.20] I do not damage flora	0.597	-0.012	-0.066	-0.104
[Q2b.23] After the visit I leave the cultural heritage site the same way I found it	0.640	-0.026	-0.085	-0.019
[Q3a.4] I encourage people to donate time or money for the protection of cultural resources	-0.003	0.679	-0.123	0.040
[Q3a.5] I report individuals infringing laws that protect cultural resources to the relevant authorities	0.040	0.620	0.017	0.022
[Q3a.6] I pay attention to government guidance to participate in efforts to support cultural heritage tourism	0.135	0.702	0.025	-0.052
[Q3a.7] I participate in efforts to support cultural heritage tourism	-0.007	0.739	-0.053	-0.046
[Q3a.8] I share my cultural heritage with other people	-0.134	0.522	-0.008	-0.178
[Q3a.9] I protect other people’s cultural resources	0.070	0.609	0.004	-0.189
[Q3b.3] I obey the social rules that apply at the cultural heritage site	0.181	-0.017	-0.036	-0.653
[Q3b.4] I pay attention to the heritage interpretation on cultural resources protection	0.106	0.083	0.003	-0.697
[Q3b.5] I learn about cultural resources’ historic background	-0.066	0.133	-0.045	-0.736
[Q3b.6] I observe the cultural resources detailed	0.052	0.107	-0.052	-0.670

5.3.5.2 *Exploratory factor analysis results: Five-factor structure*

Because of the initial EFA scree plot and the results of the parallel analysis (see section 5.3.5), this section presents the results of the five-factor structure.

The first three tests for determining the factorability of the interrelationship matrix were all met. First, the Pearson product-moment correlation coefficient for most of the items (62 items) was >0.30, which met the recommended correlation coefficient. As a result, it was determined that the correlation matrix was factorable. Second, the KMO value was 0.912. Finally, the Bartlett's test of sphericity revealed statistical significance (p <0.001), which met the acceptable value. Similar to the four-factor structure, the five-factor structure was extracted using the PAF method. This method disclosed the existence of five factors with significant eigenvalues (>1). The five factors explained 49.42% of the variance, which was slightly less than 50%. Because of the large number of items, this percentage of variance was acceptable at this stage of the study (63 items).

Oblimin rotation was used to help with the interpretation of the factors. Items with factor loadings below 0.40 were considered to have low loadings; items with loadings higher than 0.40 on multiple factors were considered to have high cross-loadings; and items with low communalities had communalities below 0.40. As a result, the EFA excluded 19 items. The excluded items were Q2a.1, Q2a.2, Q2a.6, Q2b.3, Q2b.11, Q2b.12, Q2b.13, Q2b.14, Q3a.1, Q3a.2, Q3a.3, Q3a.4, Q3a.6, Q3a.7, Q3b.8, Q3b.9, Q3b.16, Q3b.17, and Q3b.18. Table 5.14 displays the factor loadings from the pattern matrix. As seen in Table 5.14, factor loadings were in the range of 0.407 to 0.848.

After determining the internal structure of the factors, the researcher carefully reviewed the items of each factor and chose factor names that were meaningful and accurately represented the derived factors. The following names were allocated:

- Factor 1: Responsible participation in natural resources
- Factor 2: Informed behaviour about cultural resources
- Factor 3: General pro-environmental behaviour
- Factor 4: Activism against harmful behaviour
- Factor 5: No harmful actions towards cultural resources

Table 5.14: Exploratory factor analysis results for five-factor structure

Items	Factors				
	1	2	3	4	5
[Q2a.3] I purchase products packaged in containers that can either be reused or recycled or are made of recycled materials	-0.117	0.012	0.640	0.072	0.098
[Q2a.4] I often purchase environmentally friendly products	-0.051	-0.034	0.745	0.067	0.075
[Q2a.5] I purchase locally produced products	0.056	0.019	0.522	0.142	-0.022
[Q2a.7] I save electricity whenever possible (e.g. I turn off lights if I am leaving a room for over 10 minutes)	0.079	-0.047	0.572	-0.028	0.082
[Q2a.8] I save water whenever possible (e.g. I turn off the tap while washing dishes or brushing teeth)	0.108	-0.040	0.638	-0.051	-0.024
[Q2a.9] I utilise biodegradable products (e.g. laundry detergent) in most instances	-0.035	-0.040	0.669	0.098	-0.077
[Q2a.10] I try to protect the environment while maintaining my standard of living	0.124	0.094	0.671	-0.076	-0.016
[Q2a.11] I reuse as much as possible to decrease the quantity of my household garbage	-0.035	0.111	0.690	-0.096	-0.042
[Q2a.12] I put empty bottles into the appropriate recycling bin	0.075	0.077	0.555	-0.048	0.033
[Q2b.1] During my visit, I abide by the nature conservation rules that apply at the cultural heritage site	0.576	0.046	0.061	0.021	0.148
[Q2b.2] I pay attention to the heritage interpretation on nature conservation	0.519	0.041	0.088	0.123	0.019
[Q2b.4] I observe the nature and animals detailed	0.576	0.091	0.060	0.091	-0.054
[Q2b.5] I respect natural resources at the cultural heritage site	0.770	0.109	0.034	-0.035	-0.096
[Q2b.6] I stay on labelled pathways established by the cultural heritage site	0.771	0.027	0.045	-0.064	-0.018
[Q2b.7] I stay away from restricted areas at the cultural heritage site	0.720	-0.005	0.076	-0.076	-0.014
[Q2b.8] I do not litter	0.581	-0.090	0.131	-0.065	0.236
[Q2b.9] I participate in the cultural heritage site’s recycling, reusing or reducing initiatives	0.407	0.053	0.174	0.110	0.055
[Q2b.10] I appropriately dispose of my own waste	0.640	-0.052	0.120	-0.039	0.059
[Q2b.15] I do not remove or collect flora and animal specimens from the cultural heritage site	0.578	-0.008	-0.092	0.069	0.193
[Q2b.16] I do not remove rock, fossil or dried wood at the cultural heritage site	0.543	-0.011	-0.114	0.066	0.175

Items	Factors				
	1	2	3	4	5
[Q2b.17] I do not take pets to the wilderness areas	0.584	0.030	-0.154	-0.016	0.088
[Q2b.19] I minimise my interference with the surrounding environment	0.508	0.125	-0.004	0.252	0.012
[Q2b.20] I do not damage flora	0.624	-0.014	0.035	0.158	0.024
[Q2b.23] After the visit I leave the cultural heritage site the same way I found it	0.587	-0.030	0.094	0.031	0.104
[Q2b.18] I intervene if I notice other people's bad or unethical behaviour that could harm the environment	0.100	0.089	0.090	0.587	-0.065
[Q2b.21] I tell other people not to damage flora	0.136	0.002	0.076	0.652	0.016
[Q2b.22] I report any environmental pollution or destruction to the staff on-site	0.212	-0.007	-0.005	0.693	-0.108
[Q3a.5] I report individuals infringing laws that protect cultural resources to the relevant authorities	-0.085	0.227	0.040	0.465	0.051
[Q3b.14] I report vandalism of cultural resources to on-site staff	-0.022	0.011	0.020	0.533	0.252
[Q3a.8] I share my cultural heritage with other people	-0.106	0.473	0.053	0.184	-0.098
[Q3a.9] I protect other people's cultural resources	0.060	0.489	0.053	0.282	-0.057
[Q3a.10] I learn about different cultural resources around the world	0.060	0.492	0.211	0.057	0.031
[Q3b.1] Before I travel to a specific cultural heritage site, I make an effort to acquire the information about its cultural resources and their significance	-0.169	0.649	0.034	0.128	0.099
[Q3b.2] I learn about the fragility of specific cultural resources	-0.056	0.694	0.083	0.127	-0.033
[Q3b.3] I obey the social rules that apply at the cultural heritage site	0.227	0.646	-0.013	-0.200	0.134
[Q3b.4] I pay attention to the heritage interpretation on cultural resources protection	0.122	0.699	-0.039	-0.141	0.189
[Q3b.5] I learn about cultural resources' historic background	0.033	0.792	-0.024	-0.090	0.051
[Q3b.6] I observe the cultural resources detailed	0.216	0.693	-0.015	-0.071	-0.060
[Q3b.7] I choose tourism products that protect local cultural resources	-0.014	0.593	0.107	0.233	-0.073
[Q3b.10] I do not paint or draw graffiti at a cultural heritage site	0.093	0.026	0.022	0.037	0.802
[Q3b.11] I do not remove artefacts from a cultural heritage site	0.015	0.106	0.046	-0.038	0.741

Items	Factors				
	1	2	3	4	5
[Q3b.12] I do not touch or remove inscriptions or decorative elements at a cultural heritage site	0.112	0.013	0.094	-0.019	0.788
[Q3b.13] I do not loot or vandalise cultural resources	0.017	-0.009	0.051	-0.026	0.848
[Q3b.15] I do not purchase illegal authentic objects	0.099	0.013	-0.048	0.111	0.582

The preliminary internal consistency reliability statistics for both the four- and the five-factor structures are presented in section 5.3.5.3.

5.3.5.3 *Preliminary internal consistency reliability results*

The internal consistency reliability statistics for the four- and five-factor structures are shown in Table 5.15.

Table 5.15: Internal consistency reliability statistics of the four and five-factor structures

Factor structure	Factor name	Number of items	Cronbach's alpha	IIC	CTIC
Four-factor structure	Factor 1: Site-specific responsible behaviour towards natural resources	15	0.918	0.458	0.500
	Factor 2: General responsible behaviour towards cultural resources	6	0.840	0.636	0.622
	Factor 3: General responsible behaviour towards natural resources	9	0.867	0.448	0.603
	Factor 4: Site-specific responsible behaviour towards cultural resources	4	0.849	0.683	0.690
Five-factor structure	Factor 1: Responsible participation in natural resources	15	0.918	0.458	0.500
	Factor 2: Informed behaviour about cultural resources	10	0.887	0.491	0.630
	Factor 3: General pro-environmental behaviour	9	0.867	0.448	0.603
	Factor 4: Activism against harmful behaviour	5	0.789	0.245	0.566
	Factor 5: No harmful actions towards cultural resources	5	0.894	0.361	0.751

Criteria: Cronbach's alpha ≥0.70; IIC 0.15–0.85; CTIC >0.50

Table 5.15 shows that the Cronbach's alpha values for the factors of the four- and five-factor structures were acceptable (above 0.70). The IICs were all between the acceptable range of 0.15 to 0.85 (fluctuating between 0.245 and 0.683). All items for both the four- and the five-factor structures had acceptable CITCs (>0.50) (fluctuating between 0.500 and 0.751). These results demonstrated that these factors and items were reliable and consistent.

The following section (5.3.5.4) compares the factor structures that were explained in the three previous sections (5.3.5.1 to 5.3.5.3).

5.3.5.4 *Comparing the exploratory factor analysis structures*

Both the four- and the five-factor structures were factorable because of the correlation matrix, and the values of the KMO and the Bartlett's test. Both structures explained almost 50% of the total variance (the four-factor structure perhaps slightly less than the five-factor structure). The internal consistency reliability of these two structures was satisfactory. Because this was an exploratory exercise, there was no statistical reason to reject either structure at this point.

The four-factor structure fit with the general and site-specific categories for both natural and cultural resources, as was identified in the literature. However, only 34 items remained in this structure. Conversely, the five-factor structure had 10 additional items (retaining 44 items), and the factors did not align with the literature categories. Therefore, the five factors were named according to the items that were grouped together. Based on these results, the researcher decided to continue with both structures in the hope that Phase 3 would provide an answer regarding which structure was the best to use.

From Phase 2, two possible factor structures (four- and five-factor) were identified. Both the four- and the five-factor structures were analysed further (Phase 3) for the development of the scale to measure responsible tourist behaviour in cultural heritage tourism. The following section (section 5.4) explains the cross-validation results for the measurement scale.

5.4 RESULTS FOR PHASE 3

The results of Phase 3 are presented in nine sections (sections 5.4.1 to 5.4.9). Section 5.4.1 describes the respondents' sample profile, and section 5.4.2 explains the descriptive statistics that represented the demographic information regarding the sample profile. Section 5.4.3 presents and interprets the multifactor CFA results, and section 5.4.4 outlines the results of the CMV. Thereafter, section 5.4.5 presents the results of the measurement invariance analysis. The final four sections provide the results of the construct descriptive statistics (see section 5.4.6), the results of the second-order factor model (see section 5.4.7), group differences on the construct level (see section 5.4.8), and the correlation results of heritage interpretation and the scale for responsible tourist behaviour in cultural heritage tourism (see section 5.4.9).

5.4.1 Sample profile of respondents

As previously stated, there were 839 usable questionnaires (see section 5.3.1). The sample was randomly divided into two sections; 350 responses were used for Phase 2 (EFA) of the study and the remainder (n = 489) were used for Phase 3 (CFA). The following section (5.4.2) presents the demographic descriptive statistics for Phase 3.

5.4.2 Descriptive statistics for demographic information

Although the results of the screening questions are not included, the screening question regarding age (year born) is included in the results because it relates to the demographic information of the sample. The results of the demographic information are presented in the four sections that follow (5.4.2.1 to 5.4.2.4).

5.4.2.1 *Year born*

According to Figure 5.6, respondents born between 1990 and 1999 (24 to 33 years of age) have the highest representation at 35.6% (n = 174). Respondents born between 1980 and 1989 (34 to 43 years of age) accounted for 22.1% (n = 108) of the Phase 3 sample, and those born between 1970 and 1979 (44 to 53 years of age) accounted for 16.8% (n = 82). This was followed by respondents born during the millennium (2000 to 2004; 19 to 23 years of age) who accounted for 11.0% (n = 54) of the sample. Respondents born between 1960 and 1969 (54 to 63 years of age) accounted for slightly more than 10% (10.4%; n = 51). Respondents born between 1950 and 1959 (64 to 73 years of age) indicated a representation of 3.3% (n = 16), and those born between 1940 and 1949 (74 to 83 years of age) demonstrated the lowest representation (0.8%; n = 4).

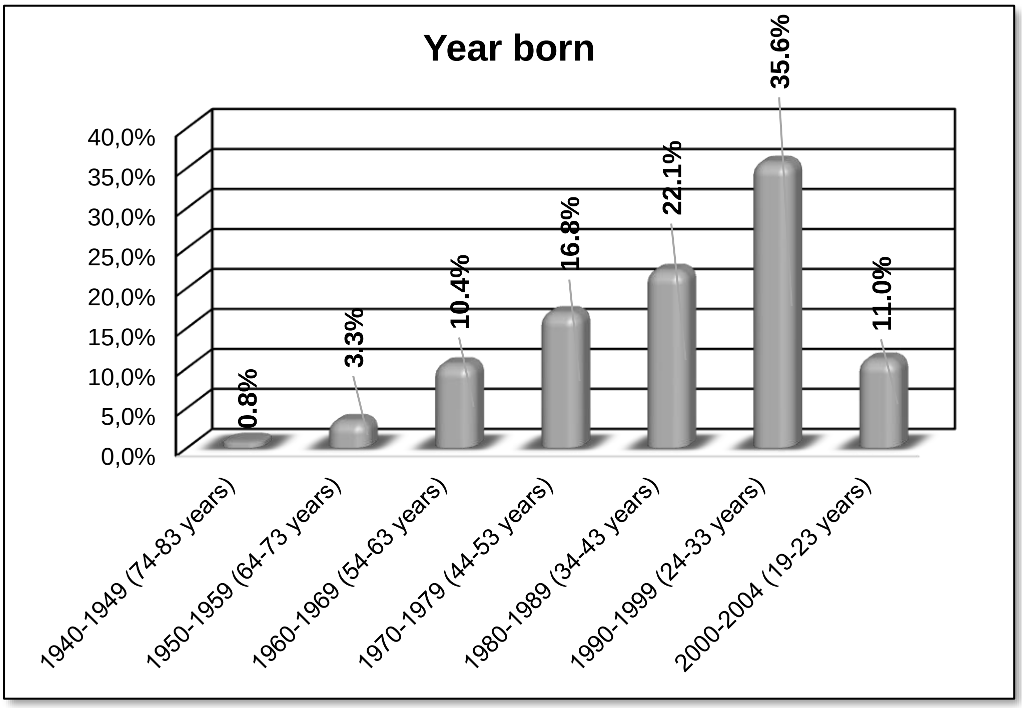

Figure 5.6: Year born (n = 489)

5.4.2.2 *Gender*

Females made up 56.2% (n = 275) of the respondents, while males made up 42.3% (n = 207). Only 1.4% (n = 7) of respondents selected 'other'. See Figure 5.7 for more detail.

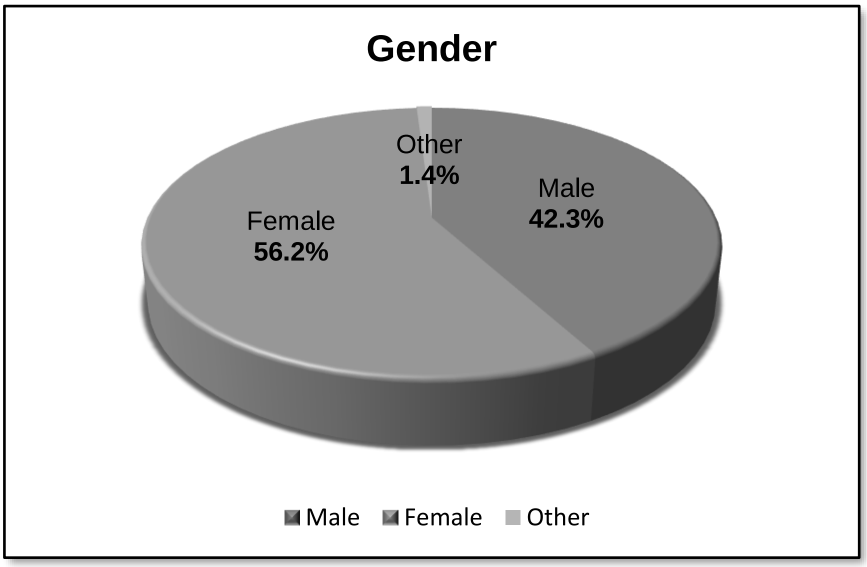

Figure 5.7: Gender (n = 489)

5.4.2.3 *Highest level of education*

Most of the respondents have an undergraduate diploma/degree (31.9%, n = 156), followed by those with a postgraduate diploma/degree (27.2%, n = 133) and a master's degree (14.7%, n = 72). Respondents with matric/secondary school constituted 12.5% (n = 62) of the Phase 3 sample. Doctoral degrees were held by 7.2% (n = 35) of the respondents. Respondents with a technical background represented 2.9% (n = 14), and those with a post-doctoral degree represented 2.5% (n = 12). The lowest represented levels of education were some schooling (1.0%; n = 5) and no schooling (0.2%; n = 1).

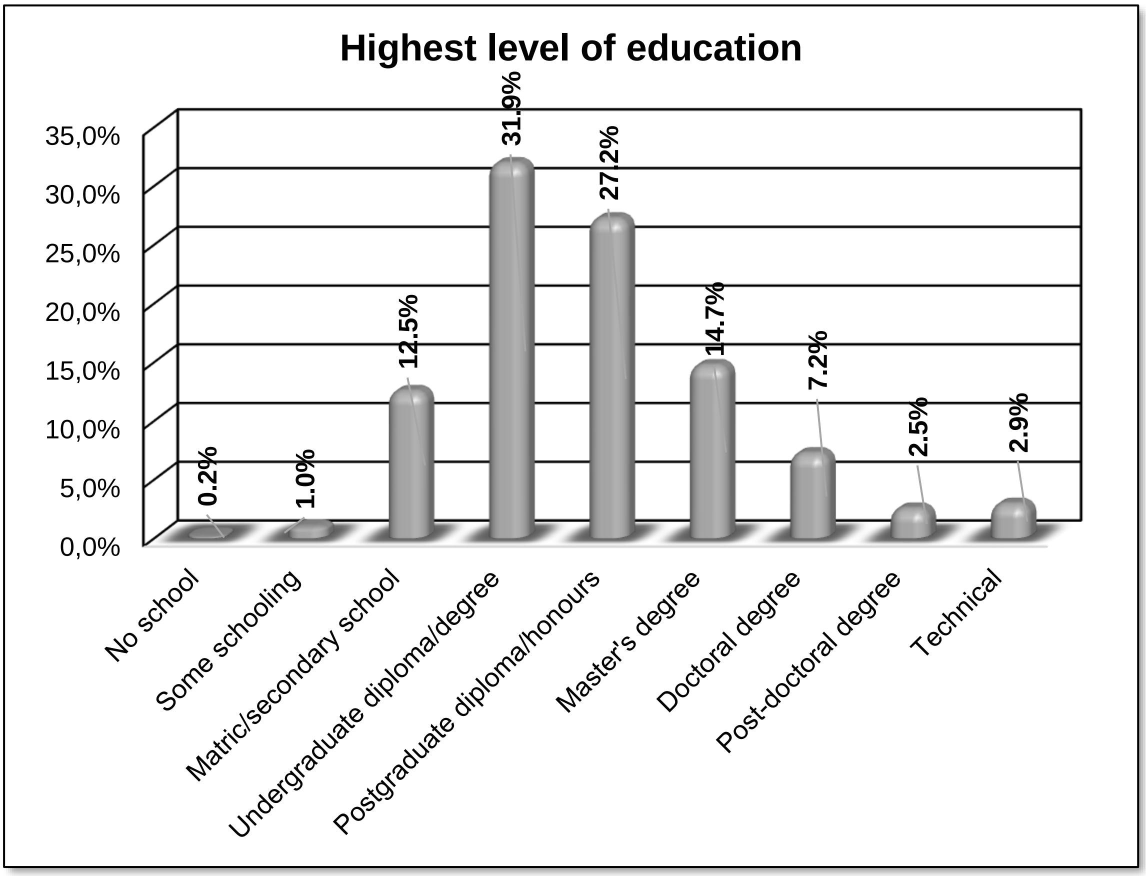

Figure 5.8: Highest level of education (n = 489)

5.4.2.4 *Place of permanent residence*

More than half of the respondents (54.8%, n = 268) reside in Gauteng. Only 24.5% (n = 120) indicated that they reside in one of South Africa's other eight provinces. Furthermore, 20.7% of the respondents (n = 101) indicated that they reside out of the country (see Figure 5.9). The places mentioned were Africa (Botswana), Asia (China and India), Europe (France, Germany, Ireland, the Netherlands, Norway, Romania, Spain, Sweden, Russia and the United Kingdom), North America (Canada and the United States of America), South America (Ecuador), and New Zealand and Australia.

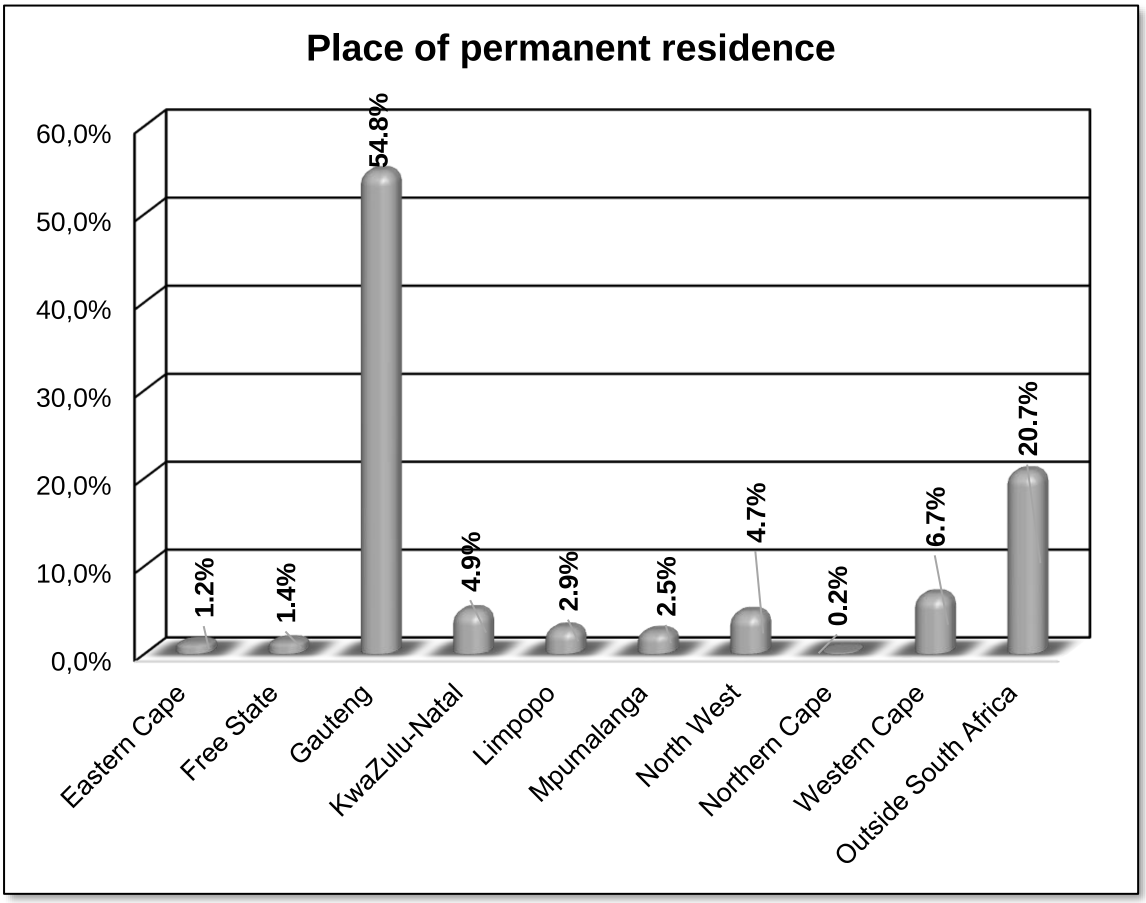

Figure 5.9: Place of permanent residence (n = 489)

The results of the multifactor CFA to explore the presence of a measurement theory are presented in the sections that follow.

5.4.3 Results of the multifactor confirmatory factor analysis

Sections 5.4.3.1 and 5.4.3.2 present the results of the proposed CFA four- and five-factor models. Section 5.4.3.3 presents the results of convergent and discriminant validity in both models, and section 5.4.3.4 compares the two models.

5.4.3.1 *Confirmatory factor analysis results: Four-factor model*

This section presents the results of the CFA four-factor baseline and adjusted models. The four-factor baseline model included four latent constructs with 34 observed variables (refer to section 5.3.5.1). The GOF indices for the measurement model are shown in Table 5.16.

Table 5.16: Goodness-of-fit indices for the CFA four-factor baseline model

Index name	Index value
RMSEA	0.080
SRMR	0.067
CMIN/df	4.145
NFI	0.78
TLI	0.81
CFI	0.82
p-value	0.001

Criteria: RMSEA <0.08; SRMR ≤0.05; CMIN/df <3; NFI >0.90; TLI >0.90; CFI >0.90; p-value >0.05

According to Table 5.16, the model fit statistics for the baseline model did not meet the minimum threshold values, with a RMSEA value equal to 0.08, a SRMR value above 0.05 (0.067), a CMIN/df value above 3 (4.145), the NFI below 0.90 (0.78), a TLI slightly lower than 0.90 (0.81), and a CFI value slightly lower than 0.90 (0.82). The four-factor baseline model reported a p-value of less than 0.05 (0.001), indicating that the null hypothesis could be supported. As a result, 14 observed variables with relatively low loadings (<0.60) and/or high standardised regression coefficient residuals (>4.0) were removed. The adjusted model is displayed in Figure 5.10.

Based on Figure 5.10, the adjusted model had four latent constructs with twenty observed variables:

- AAA represents ‘general responsible behaviour towards natural resources’ with six observed variables (Q2a.3: I purchase products packaged in containers that can either be reused or recycled or are made of recycled materials; Q2a.4: I often purchase environmentally friendly products; Q2a.5: I purchase locally produced products; Q2a.9: I utilise biodegradable products (e.g. laundry detergent) in most instances; Q2a.10: I try to protect the environment while maintaining my standard of living; and Q2a.11: I reuse as much as possible to decrease the quantity of my household garbage).

- BBB represents ‘site-specific responsible behaviour towards natural resources’ with eight observed variables (Q2b.1: During my visit, I abide by the nature conservation rules that apply at the cultural heritage site; Q2b.5: I respect natural resources at the cultural heritage site; Q2b.6: I stay on labelled pathways established by the cultural heritage site; Q2b.8: I do not litter; Q2b.10: I appropriately dispose of my own waste; Q2b.16: I do not remove rock, fossil or dried wood at the cultural heritage site; Q2b.20: I do not damage flora; and Q2b.23: After the visit I leave the cultural heritage site the same way I found it).
- CCC represents ‘general responsible behaviour towards cultural resources’ with three observed variables (Q3a.6: I pay attention to government guidance to participate in efforts to support cultural heritage tourism; Q3a.7: I participate in efforts to support cultural heritage tourism; and Q3a.9: I protect other people’s cultural resources).
- DDD represents ‘site-specific responsible behaviour towards cultural resources’ with three observed variables (Q3b.4: I pay attention to the heritage interpretation on cultural resources protection; Q3b.5: I learn about cultural resources’ historic background and Q3b.6: I observe the cultural resources detailed).

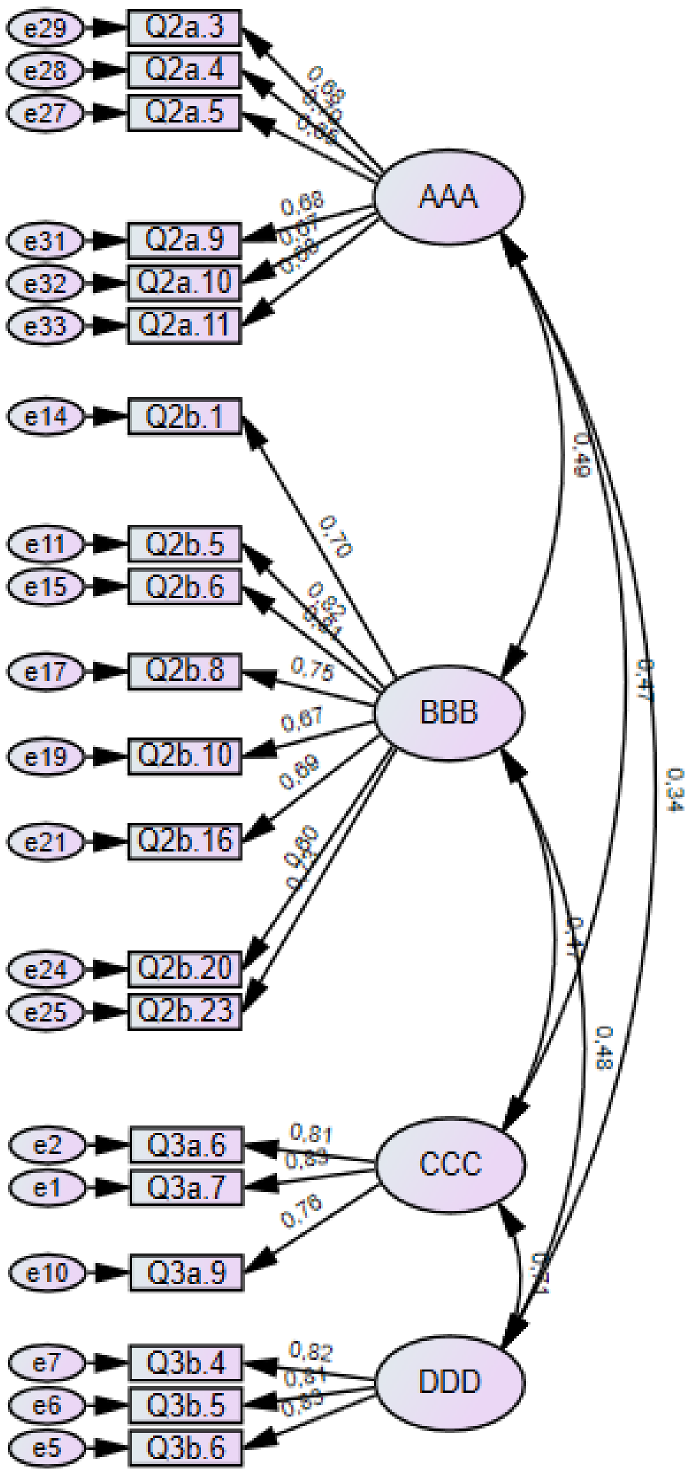

Figure 5.10: CFA four-factor adjusted model

Following model specification and parameter estimation, the four-factor adjusted model was tested for GOF (see Table 5.17).

Table 5.17: Goodness-of-fit indices for the CFA four-factor adjusted model

Index name	Index value
RMSEA	0.058
SRMR	0.043
CMIN/df	2.619
NFI	0.92
TLI	0.94
CFI	0.95
p-value	0.001

Criteria: RMSEA <0.08; SRMR ≤0.05; CMIN/df <3; NFI >0.90; TLI >0.90; CFI >0.90; p-value >0.05

Table 5.17 indicates that the model fit statistics for the CFA four-factor adjusted model were acceptable, with a RMSEA of less than 0.08 (0.058), SRMR value of less than 0.05 (0.043), a CMIN/df value of less than 3 (2.619), the NFI greater than 0.90 (0.92), a TLI greater than 0.90 (0.94), a CFI value greater than 0.90 (0.95), and a p-value of less than 0.05 (0.001). These results indicate that the four-factor adjusted model fits reasonably well. Given these results, it was appropriate to continue with further assessment of the model results (see section 5.4.3.3). The results of the five-factor model are presented first (see section 5.4.3.2) and thereafter, the additional assessment results (section 5.4.3.3) of the adjusted four-factor model are explained.

5.4.3.2 *Confirmatory factor analysis results: Five-factor model*

Similar to the four-factor model, the results of the five-factor model pertain to the baseline model and the adjusted model. The five-factor baseline model had 5 latent constructs with 44 observed variables (refer to section 5.3.5.2). Table 5.18 shows the GOF results for the five-factor baseline model.

Table 5.18: Goodness-of-fit indices for the CFA five-factor baseline model

Index name	Index value
RMSEA	0.074
SRMR	0.066
CMIN/df	3.652
NFI	0.76
TLI	0.80
CFI	0.82
p-value	0.001

Criteria: RMSEA <0.08; SRMR ≤0.05; CMIN/df <3; NFI >0.90; TLI >0.90; CFI >0.90; p-value >0.05

The model fit statistics for the five-factor baseline model did not meet the minimum threshold values, as displayed in Table 5.18. The GOF results revealed a RMSEA slightly below 0.08 (0.074), SRMR value above 0.05 (0.066), a CMIN/df value above 3 (3.652), the NFI far below 0.90 (0.76), a TLI slightly lower than 0.90 (0.80), and a CFI value slightly lower than 0.90 (0.82). The p-value below 0.05 (0.001) suggested that the null hypothesis could be supported. Therefore, 17 observed variables with low loadings (<0.60) and/or high standardised regression coefficient residuals (>4.0) were eliminated. Figure 5.11 depicts the five-factor adjusted model.

As demonstrated in Figure 5.11, the adjusted model comprised five latent constructs and twenty-seven observed variables.

- AAA represents 'general pro-environmental behaviour' with six observed variables that were similar to the latent construct in the four-factor model of 'general responsible behaviour towards natural resources' (Q2a.3: I purchase products packaged in containers that can either be reused or recycled or are made of recycled materials; Q2a.4: I often purchase environmentally friendly products; Q2a.5: I purchase locally produced products; Q2a.9: I utilise biodegradable products (e.g. laundry detergent) in most instances; Q2a.10: I try to protect the environment while maintaining my standard of living; and Q2a.11: I reuse as much as possible to decrease the quantity of my household garbage).
- BBB represents 'responsible participation in natural resources' with eight observed variables that were comparable with the latent construct of the

four-factor model, 'site-specific responsible behaviour towards natural resources': (Q2b.1: During my visit, I abide by the nature conservation rules that apply at the cultural heritage site; Q2b.5: I observe the nature and animals detailed; Q2b.6: I stay on labelled pathways established by the cultural heritage site; Q2b.8: I do not litter; Q2b.10: I appropriately dispose of my own waste; Q2b.16: I do not remove rock, fossil or dried wood at the cultural heritage site; Q2b.20: I do not damage flora; and Q2b.23: After the visit I leave the cultural heritage site the same way I found it).

- EEE represents 'activism against harmful behaviour' with four observed variables (Q2b.18: I intervene if I notice other people's bad or unethical behaviour that could harm the environment; Q2b.21: I tell other people not to damage flora; Q2b22: I report any environmental pollution or destruction to the staff on-site; and Q3a.5: I report individuals infringing laws that protect cultural resources to the relevant authorities).
- FFF represents 'informed behaviour about cultural resources' with five observed variables (Q3b.1: Before I travel to a specific cultural heritage site, I make an effort to acquire the information about its cultural resources and their significance; Q3b.2: I learn about the fragility of specific cultural resources; Q3b.5: I learn about cultural resources' historic background; Q3b.6: I observe the cultural resources detailed; and Q3b.7: I choose tourism products that protect local cultural resources).
- GGG refers to 'no harmful actions towards cultural resources' with four observed variables (Q3b.10: I do not paint or draw graffiti at a cultural heritage site; Q3b.11: I do not remove artefacts from a cultural heritage site; Q3b.12: I do not touch or remove inscriptions or decorative elements at a cultural heritage site; and Q3b.13: I do not loot or vandalise cultural resources).

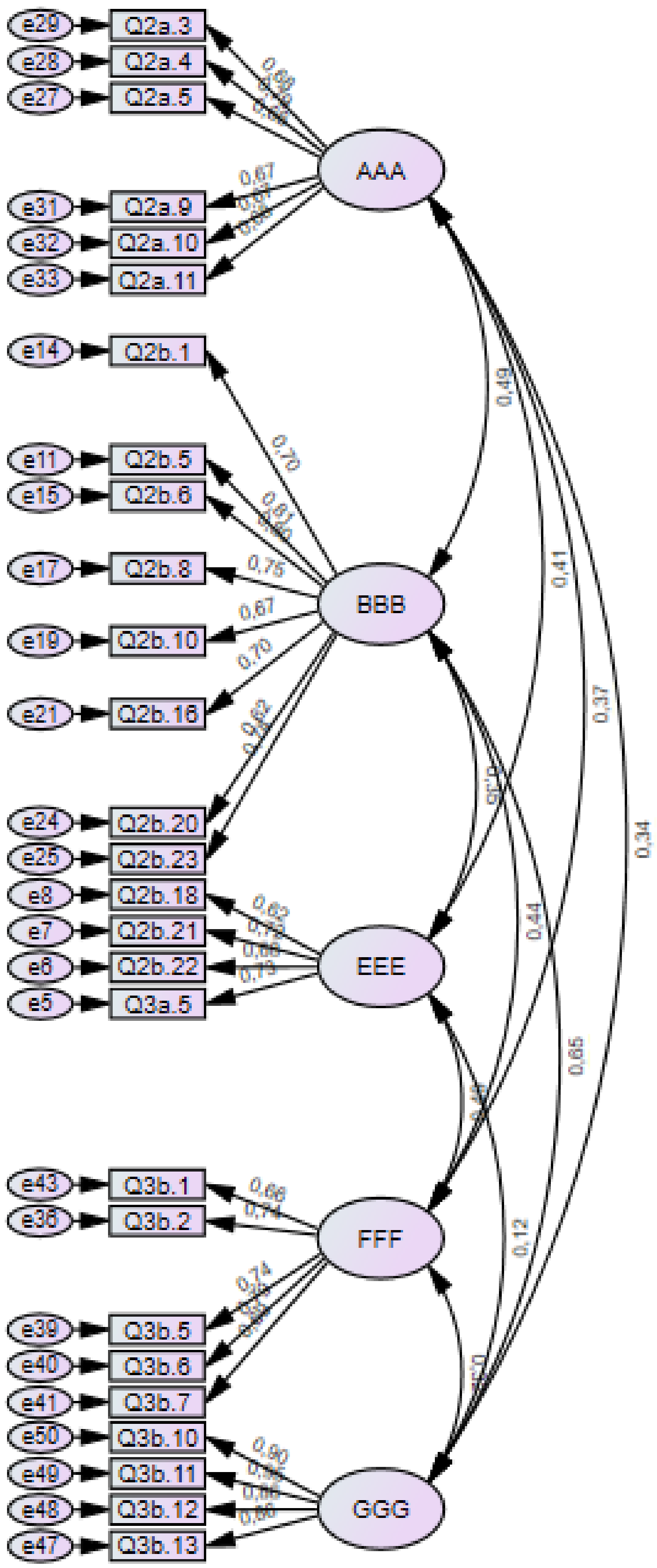

Figure 5.11: CFA five-factor adjusted model

Once the measurement model had been appropriately specified and parameter estimates had been attained, it was assessed for GOF. Table 5.19 shows the GOF indices for the CFA five-factor adjusted model.

Table 5.19: Goodness-of-fit indices for the CFA five-factor adjusted model

Index name	Index value
RMSEA	0.057
SRMR	0.046
CMIN/df	2.560
NFI	0.89
TLI	0.92
CFI	0.93
p-value	0.001

Criteria: RMSEA <0.08; SRMR ≤0.05; CMIN/df <3; NFI >0.90; TLI >0.90; CFI >0.90; p-value >0.05

According to Table 5.19, the model fit statistics for the CFA five-factor adjusted model were acceptable, with a RMSEA of less than 0.08 (0.057), SRMR value of less than 0.05 (0.046), a CMIN/df value of less than 3 (2.560), the NFI marginally less than 0.90 (0.89), a TLI greater than 0.90 (0.92), and a CFI value greater than 0.90 (0.93). The p-value for the CFA five-factor adjusted model was 0.001, which is less than 0.05. These results suggested that the CFA results of the five-factor adjusted model provided a reasonably good fit, and it was appropriate to proceed with further examination of the model's results.

5.4.3.3 *Convergent and discriminant validity results*

Although the EFA results of Phase 2 may support construct validity, it is critical to re-assess the construct validity using CFA. This is also necessary considering that the original four- and five-factor models were adjusted. This section presents the results indicated in sections 5.4.3.1 and 5.4.3.2 regarding the convergent and discriminant validity of the two proposed (adjusted) models. Table 5.20 presents the results of the CR, the AVE, and the Fornell-Larcker and HTMT criteria for the four- and five-factor models.

Table 5.20: Results regarding construct validity of the four- and five-factor CFA models

		Convergent validity		Discriminant validity									
CFA model	**Latent construct**	**CR**	**AVE**	**Fornell-Larcker**					**HTMT**				
				CCC	**DDD**	**BBB**	**AAA**		**CCC**	**DDD**	**BBB**	**AAA**	
Four-factor	**General responsible behaviour towards cultural resources (CCC)**	0.843	0.643	**0.802**									
	Site-specific responsible behaviour towards cultural resources (DDD)	0.861	0.674	0.707***	**0.821**				0.715				
	Site-specific responsible behaviour towards natural resources (BBB)	0.898	0.526	0.473***	0.476***	**0.725**			0.480	0.483			
	General responsible behaviour towards natural resources (AAA)	0.847	0.480	0.471***	0.341***	0.493***	**0.693**		0.477	0.344	0.497		
Five-factor	**Latent construct**			**FFF**	**BBB**	**AAA**	**EEE**	**GGG**	**FFF**	**BBB**	**AAA**	**EEE**	**GGG**
	Informed behaviour about cultural resources (FFF)	0.847	0.527	**0.726**									
	Responsible participation in natural resources (BBB)	0.899	0.528	0.443***	**0.726**				0.441				

	Latent construct	Convergent validity		Discriminant validity									
		CR	AVE	Fornell-Larcker					HTMT				
Five-factor				**FFF**	**BBB**	**AAA**	**EEE**	**GGG**	**FFF**	**BBB**	**AAA**	**EEE**	**GGG**
	General pro-environmental behaviour (AAA)	0.847	0.480	0.369***	0.492***	**0.693**			0.375	0.497			
	Activism against harmful behaviour (EEE)	0.784	0.476	0.487***	0.346***	0.408***	**0.690**		0.492	0.369	0.410		
	No harmful actions towards cultural resources (GGG)	0.942	0.803	0.322***	0.653***	0.341***	0.121***	**0.896**	0.318	0.669	0.349	0.126	

Criteria: CR ≥0.70, AVE ≥0.50, Fornell-Larcker < the correlation with other latent constructs, HTMT ≤0.85, *** p ≤0.05

Table 5.20 shows that all the latent constructs for the four-factor model obtained acceptable CR coefficients >0.70 (0.843 to 0.898). The AVEs ranged from 0.480 to 0.674. ‘General responsible behaviour towards natural resources’ latent construct (AAA) was marginally lower than the threshold of 0.50 (0.480). However, the AVEs for ‘site-specific responsible behaviour towards natural resources’ (BBB, 0.526), ‘general responsible behaviour towards cultural resources’ (CCC, 0.643), and ‘site-specific responsible behaviour towards cultural resources’ (DDD, 0.674) were acceptable (≥0.50).

According to the five-factor model (Table 5.20), all latent constructs had acceptable CR coefficients >0.70 (0.784 to 0.942). The AVEs ranged between 0.476 and 0.803. Two latent constructs, ‘general pro-environmental behaviour’ (AAA, 0.480) and ‘activism against harmful behaviour’ (EEE, 0.476), were marginally below the threshold of 0.50. The AVEs for ‘responsible participation in natural resources’ (BBB, 0.528), ‘informed behaviour about cultural resources’ (FFF, 0.527), and ‘no harmful actions towards cultural resources’ (GGG, 0.803) were acceptable. These results provided acceptable evidence of convergent validity (≥0.50).

The discriminant validity results obtained through the application of the Fornell-Larcker and HTMT criteria are also shown in Table 5.20. As illustrated in Table 5.20, the square root of the AVE of each latent construct is greater than its correlations with other latent constructs in the assessment. For example, an AVE square root of ‘general responsible behaviour towards cultural resources’ (CCC, 0.822) is greater than its correlations with ‘site-specific responsible behaviour towards cultural resources’ (DDD, 0.707), ‘site-specific responsible behaviour towards natural resources’ (BBB, 0.473), and ‘general responsible behaviour towards natural resources’ (AAA, 0.473). These results ascertain the individuality of the constructs and hence, discriminant validity for the four- and the five-factor model is addressed.

Because the Fornell-Larcker criterion is insufficiently sensitive to detect discriminant validity, the HTMT was used as the second criterion in the study to ensure that the interpretation of the causal effect in the modelling analysis was not misleading. The HTMT results in Table 5.20 indicated no discriminant validity problems according to the HTMT criterion (≤0.85). In other words, neither model contains overlapping items from the respondents' opinions in the affected constructs.

5.4.3.4 *Comparing the confirmatory factor analysis models*

The results from the CFA analyses did not sufficiently discriminate between the four-factor model and the five-factor model as marginal differences were displayed. The five-factor model had one construct ('activism against harmful behaviour') with a reliability of less than 0.80, and the construct reliabilities of the four-factor model were all greater than 0.80. The GOF indices of the four-factor model appeared marginally better than the five-factor model. In terms of the AVE results, one construct ('general responsible behaviour towards natural resources' [AAA]) of the four-factor model fell below the threshold of 0.50, while the five-factor model had two constructs ('general pro-environmental behaviour' [AAA]; and 'activism against harmful behaviour' [EEE]) falling below the 0.50 threshold. In general, both models provided evidence of convergent validity. Furthermore, the Fornell-Larcker criterion revealed that the square root of the AVE of each latent construct for both models was greater than its correlations with other latent constructs in the assessment, and the HTMT analysis yielded results less than 0.85. These criteria (Fornell-Larcker and HTMT) indicated that the constructs of both models showed discriminant validity.

Since the statistics did not discriminate between the models to select the most favourable model, both models were evaluated theoretically. The four-factor model was selected because it corresponded well with the literature (see sections 3.3.2, 3.4.2, and 5.2.1). Note that environmentally responsible behaviour (responsible behaviour towards natural resources in the context of this study) made use of general and site-specific dimensions since an argument was made for the spillover effect theory that behaviour in a specific place will encourage similar behaviour in other places. This argument and the dimensions were also applicable to responsible behaviour towards cultural resources, although they emanated from environmentally responsible behaviour studies. This resulted in a four-factor model, namely 'general responsible behaviour towards natural resources', 'site-specific responsible behaviour towards natural resources', 'general responsible behaviour towards cultural resources', and 'site-specific responsible behaviour towards cultural resources'. In conclusion, this study measured holistic behaviour (not only behaviour at the site) to determine responsible behaviour in its entirety. The four-factor model was thereafter assessed in terms of the CMV (see section 5.4.4) and invariance (see section 5.4.5).

5.4.4 Results for common method variance

Common method variance was assessed for the proposed four-factor model using CFA. The CLF value for the baseline model was 0.422 for all variables presented, and its t-value showed significance. The CMV was the square of that value (0.178). Therefore, the common marker variable technique suggests that there was no significant CMV in this data because the calculated variance (17.8%) was less than 50%. Although this was the case, estimates for the construct, 'site-specific responsible behaviour towards natural resources' (BBB) were problematic. To determine the source of the problem, the model's standardised regression weights with and without the CLF were compared (delta calculation). The argument was that these loadings should not differ significantly (≥1.250). One variable (Q2b.5: I respect natural resources at the cultural heritage site) showed a significant difference (1.388). The resolution was to exclude this variable to adjust for possible CMV and re-run the model. After the exclusion, the CLF value was 0.365 for all the variables shown, and its t-value indicated significance. The CMV was the square of that value (0.133). Since the calculated variance (13.3%) was below 50% (see Table 5.21), the common marker variable technique suggested that there was no significant CMV in this data. The estimates (standardised regression weights with and without the CLF) for the construct in question did not differ significantly (all were below 1.250).

Figure 5.12 depicts the CFA four-factor adjusted model with four latent constructs and nineteen observed variables:

- AAA represents 'general responsible behaviour towards natural resources' with six observed variables (Q2a.3: I purchase products packaged in containers that can either be reused or recycled or are made of recycled materials; Q2a.4: I often purchase environmentally friendly products; Q2a.5: I purchase locally produced products; Q2a.9: I utilise biodegradable products (e.g. laundry detergent) in most instances; Q2a.10: I try to protect the environment while maintaining my standard of living; and Q2a.11: I reuse as much as possible to decrease the quantity of my household garbage).

- BBB represents ‘site-specific responsible behaviour towards natural resources’ with seven observed variables (Q2b.1: During my visit, I abide by the nature conservation rules that apply at the cultural heritage site; Q2b.6: I stay on labelled pathways established by the cultural heritage site; Q2b.8: I do not litter; Q2b.10: I appropriately dispose of my own waste; Q2b.16: I do not remove rock, fossil or dried wood at the cultural heritage site; Q2b.20: I do not damage flora; and Q2b.23: After the visit I leave the cultural heritage site the same way I found it).
- CCC represents ‘general responsible behaviour towards cultural resources’ with three observed variables (Q3a.6: I pay attention to government guidance to participate in efforts to support cultural heritage tourism; Q3a.7: I participate in efforts to support cultural heritage tourism; and Q3a.9: I protect other people’s cultural resources).
- DDD represents ‘site-specific responsible behaviour towards cultural resources’ with three observed variables (Q3b.4: I pay attention to the heritage interpretation on cultural resources protection; Q3b.5: I learn about cultural resources’ historic background; and Q3b.6: I observe the cultural resources detailed).

As illustrated in Figure 5.12, each latent construct had at least three observed variables. Furthermore, the latent constructs correlated with one another, and each observed variable loaded on only one latent construct.

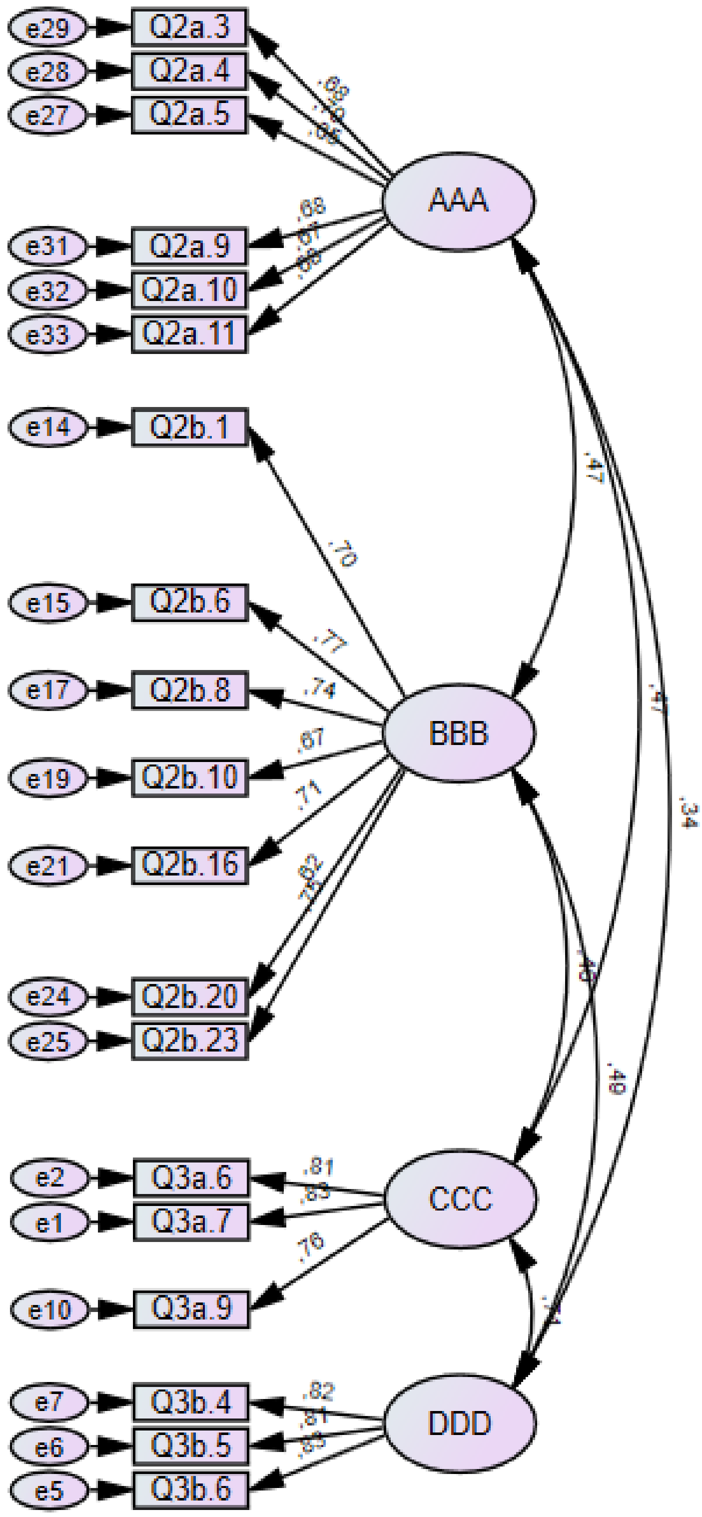

Figure 5.12: CFA four-factor adjusted model as suggested by results of common method variance

The GOF indices of the adjusted model are presented in Table 5.21.

Table 5.21: Common method variance goodness-of-fit indices for the CFA four-factor adjusted model

Common marker variable	Name of index	Index value
13.3%	RMSEA	0.053
	SRMR	0.041
	CMIN/df	2.392
	NFI	0.92
	TLI	0.95
	CFI	0.95
	p-value	0.001

Criteria: RMSEA < 0.08; SRMR ≤ 0.05; CMIN/df < 3; NFI > 0.90; TLI > 0.90; CFI > 0.90; p-value > 0.05

As shown in Table 5.21, the four-factor fitted the model well, with a RMSEA below 0.08 (0.053), a SRMR value less than 0.05 (0.041), a CMIN/df value of less than 3 (2.392), the NFI above 0.90 (0.92), a TLI above 0.90 (0.95), and a CFI value greater than 0.90 (0.95). The p-value was less than 0.05 (0.001), indicating that the null hypothesis could be supported. These results showed that CMV was not a potential threat to the validity of the research findings.

Following the CMV assessment, convergent and discriminant validity of the CFA adjusted four-factor model (illustrated in Figure 5.12) were conducted. Table 5.22 explicates the CR, AVE, Fornell-Larcker, and HTMT for the four-factor adjusted model.

Table 5.22: Results regarding construct validity of the CFA four-factor adjusted model

Latent construct	Convergent validity		Discriminant validity							
	CR	AVE	Fornell-Larcker				HTMT			
			CCC	DDD	BBB	AAA	CCC	DDD	BBB	AAA
General responsible behaviour towards cultural resources (CCC)	0.843	0.643	**0.802**							
Site-specific responsible behaviour towards cultural resources (DDD)	0.861	0.674	0.707***	**0.821**			0.715			
Site-specific responsible behaviour towards natural resources (BBB)	0.878	0.509	0.456***	0.486***	**0.713**		0.467	0.486		
General responsible behaviour towards natural resources (AAA)	0.847	0.480	0.471***	0.340***	0.469***	**0.693**	0.477	0.344	0.480	

Criteria: CR ≥0.70, AVE ≥0.50, Fornell-Larcker < the correlation with other latent constructs, HTMT ≤0.85, *** p ≤0.05

All the latent constructs presented in Table 5.22 for the four-factor adjusted model obtained acceptable CR coefficients >0.70 (0.843 to 0.878). The AVEs ranged between 0.480 and 0.674. ‘General responsible behaviour towards natural resources’ was marginally less than the 0.50 threshold (AAA, 0.480), while AVEs for ‘site-specific responsible behaviour towards natural resources’ (BBB, 0.509), ‘general responsible behaviour towards cultural resources’ (CCC, 0.643), and ‘site-specific responsible behaviour towards cultural resources’ (DDD, 0.674) were acceptable. These results were sufficient to demonstrate convergent validity.

As mentioned previously, the Fornell-Larcker and HTMT criteria were used to assess discriminant validity. The square root of the AVE of each latent construct (Fornell-Larcker criterion) was greater than its correlations with other latent constructs in the assessment. As illustrated in Table 5.22, the HTMT results show no discriminant validity problems (≤0.85). This implies that the construct items do not measure the same dimension. In conclusion, the results of the two criteria (Fornell-Larcker and HTMT) indicated that the discriminant validity of the four-factor final model was addressed. The following section provides the results of the invariance analysis on the adjusted model.

5.4.5 Results of measurement invariance analysis

This section presents the results of the measurement invariance analysis to determine whether the scale for responsible tourist behaviour in cultural heritage tourism can represent the four-factor model across gender and education groups. In terms of gender groups, it is important to note that the category ‘other’ from the data was too little and was excluded in the measurement invariance analysis.

5.4.5.1 *Configural invariance results*

Table 5.23 depicts the configural invariance results across gender and education groups in which the number of factors and loading patterns were the same.

Table 5.23: Configural invariance results (goodness-of-fit indices) across gender and education groups

Name of index	Index value for gender groups	Index value for education groups
RMSEA	0.053	0.053
SRMR	0.041	0.041
CMIN/df	2.392	2.392
NFI	0.923	0.923
TLI	0.945	0.945
CFI	0.953	0.953
p-value	0.001	0.001

Criteria: RMSEA <0.08; SRMR ≤0.05; CMIN/df <3; NFI >0.90; TLI >0.90; CFI >0.90; p-value < 0.05

As indicated by the acceptable model fit statistics when estimating groups freely (without constraints), configural invariance was supported (see Table 5.23). All factor loadings were significant (p-value <0.05). These results indicated that the patterns for the four-factor model were similar across gender and education groups.

5.4.5.2 *Metric invariance results*

Alternative fit indices (GOF indices) were used to test metric invariance (the magnitude of the item loadings was the same across groups). Table 5.24 presents the alternative fit results for metric invariance across gender and education groups.

Table 5.24: Alternative fit results for metric invariance across gender and education groups

Name of index	Gender groups			Education groups		
	Constrained	Unconstrained	Delta	Constrained	Unconstrained	Delta
RMSEA	0.042	0.043	0.001	0.043	0.042	0.001
SRMR	0.058	0.056	0.002	0.064	0.048	0.015
CMIN/df	1.841	1.871		1.895	1.851	
NFI	0.876	0.882		0.875	0.886	
TLI	0.933	0.930		0.930	0.934	
CFI	0.939	0.941	0.002	0.937	0.943	0.006
p-value	0.001	0.001		0.001	0.001	

Criteria: Delta - RMSEA <0.015, SRMR <0.03, CFI <0.01

Alternative fit results (Table 5.24) showed that metric invariance across gender groups was supported, as illustrated by the delta values in the fit indices for RMSEA (0.001), SRMR (0.002), and CFI (0.002). Similarly, the delta values in the fit indices for RMSEA (0.001), SRMR (0.015), and CFI (0.006) supported metric invariance across education groups.

5.4.5.3 *Scalar invariance results*

Table 5.25 depicts the results of the alternative fit indices for scalar invariance (comparing latent constructs between groups) across gender and education groups.

Table 5.25: Alternative fit results for scalar invariance across gender and education groups

Name of index	Gender groups			Education groups		
	Constrained	**Unconstrained**	**Delta**	**Constrained**	**Unconstrained**	**Delta**
RMSEA	0.041	0.043	0.002	0.043	0.042	0.001
SRMR	0.057	0.056	0.001	0.064	0.048	0.0153
CMIN/df	1.800	1.871		1.889	1.851	
NFI	0.872	0.882		0.868	0.886	
TLI	0.936	0.930		0.931	0.934	
CFI	0.938	0.941	0.003	0.933	0.943	0.010
p-value	0.001	0.001		0.001	0.001	

Criteria: Delta - RMSEA <0.015, Delta - SRMR <0.015, Delta - CFI <0.01

Alternative fit measures supported scalar invariance across the gender and education groups, as shown in Table 5.25. The delta values in the fit indices of RMSEA (0.002), SRMR (0.001), and CFI (0.003) for the gender groups met the recommended minimums for unconstrained and fully constrained models. Regarding the education groups, two fit indices (RMSEA = 0.001 and CFI = 0.010) met the recommended minimums for unconstrained and fully constrained models, with one fit index (SRMR = 0.0153) being marginally higher.

5.4.6 Construct descriptive statistics

The descriptive statistics for the constructs and the overall responsible tourist behaviour in cultural heritage tourism construct are shown in Table 5.26. A higher mean score indicates a stronger agreement with the construct. Tourists strongly agreed with ‘site-specific responsible behaviour towards natural resources’ (M = 4.59; SD = 0.485) while agreeing with the other four constructs (mean values ranging from 3.86 to 4.26; SD ranging from 0.475 to 0.693). These results thus indicate that the tourists’ responsible behaviour was strong. The skewness values of all five constructs (ranging from -1.678 to -0.585) were within the threshold parameters (between -2 and +2). The kurtosis values fluctuated between 0.746 and 5.370, indicating an approximately normal distribution with a slightly longer left tail.

Table 5.26: Descriptive statistics for the constructs and the responsible tourist behaviour in cultural heritage tourism construct

Construct/scale	Mean (M)	Standard deviation (SD)	Skewness	Kurtosis
General responsible behaviour towards natural resources (AAA)	3.86	0.685	-0.596	0.746
Site-specific responsible behaviour towards natural resources (BBB)	4.59	0.485	-1.678	5.370
General responsible behaviour towards cultural resources (CCC)	3.87	0.693	-0.585	0.813
Site-specific responsible behaviour towards cultural resources (DDD)	4.26	0.656	-1.081	2.846
Responsible tourist behaviour in cultural heritage tourism (RBCHT)	4.14	0.475	-0.832	2.438

n = 489

The mean values of the constructs and the scale for responsible tourist behaviour in cultural heritage tourism were used in the second-order factor model as presented in section 5.4.7 below.

5.4.7 Results of the second-order factor model

Figure 5.13 depicts a CFA model in which the second-order factor (RBCHT, representing ‘responsible tourist behaviour in cultural heritage tourism’) is introduced as the four first-order factors (AAA, BBB, CCC, and DDD). These first-order factors are measured by the following items.

- AAA represents ‘general responsible behaviour towards natural resources’ with six observed variables (Q2a.3: I purchase products packaged in containers that can either be reused or recycled or are made of recycled materials; Q2a.4: I often purchase environmentally friendly products; Q2a.5: I purchase locally produced products; Q2a.9: I utilise biodegradable products (e.g. laundry detergent) in most instances; Q2a.10: I try to protect the environment while maintaining my standard of living; and Q2a.11: I reuse as much as possible to decrease the quantity of my household garbage).
- BBB represents ‘site-specific responsible behaviour towards natural resources’ with seven observed variables (Q2b.1: During my visit, I abide by the nature conservation rules that apply at the cultural heritage site; Q2b.6: I stay on labelled pathways established by the cultural heritage site; Q2b.8: I do not litter; Q2b.10: I appropriately dispose of my own waste; Q2b.16: I do not remove rock, fossil or dried wood at the cultural heritage site; Q2b.20: I do not damage flora; and Q2b.23: After the visit I leave the cultural heritage site the same way I found it).
- CCC represents ‘general responsible behaviour towards cultural resources’ with three observed variables (Q3a.6: I pay attention to government guidance to participate in efforts to support cultural heritage tourism; Q3a.7: I participate in efforts to support cultural heritage tourism; and Q3a.9: I protect other people’s cultural resources).
- DDD represents ‘site-specific responsible behaviour towards cultural resources’ with three observed variables (Q3b.4: I pay attention to the heritage interpretation on cultural resources protection; Q3b.5: I learn about cultural resources’ historic background; and Q3b.6: I observe the cultural resources detailed).

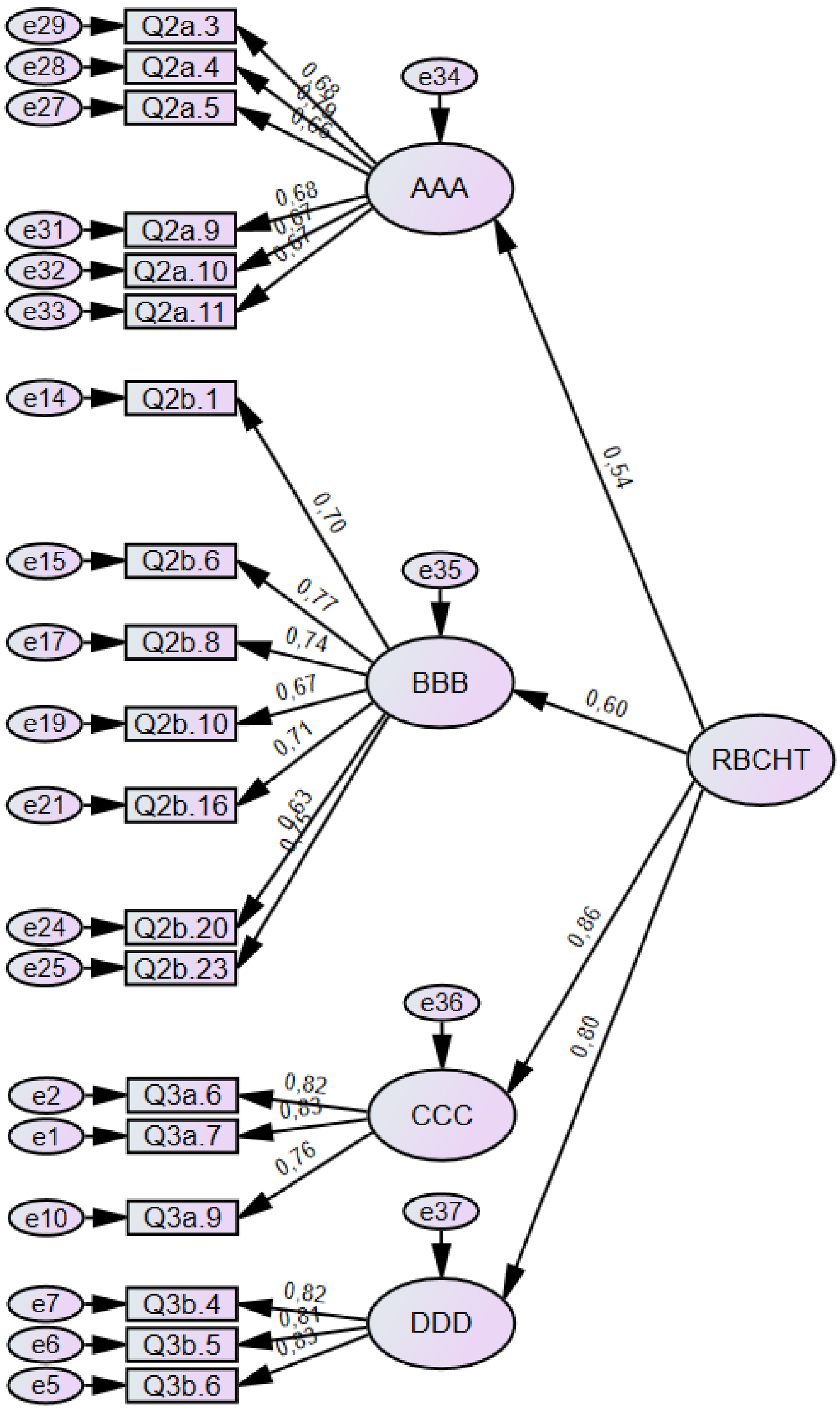

Figure 5.13: CFA second-order factor model for responsible tourist behaviour in cultural heritage tourism

The GOF indices of the second-order factor model are presented in Table 5.27.

Table 5.27: Goodness-of-fit indices for the CFA second-order factor model

Index name	Index value
RMSEA	0.061
SRMR	0.043
CMIN/df	2.794
NFI	0.91
TLI	0.93
CFI	0.94
p-value	0.001

Criteria: RMSEA <0.08; SRMR ≤0.05; CMIN/df <3; NFI >0.90; TLI >0.90; CFI >0.90; p-value >0.05

Table 5.27 shows that the GOF statistics for the CFA second-order factor model were acceptable, with a RMSEA of less than 0.08 (0.061), SRMR value of less than 0.05 (0.043), a CMIN/df of less than 3 (2.794), the NFI higher than 0.90 (0.91), a TLI higher than 0.90 (0.93), a CFI value higher than 0.90 (0.94), but a p-value of less than 0.05 (0.001). These results suggest that the second-order factor model fits reasonably well. Lastly, in terms of validity and reliability analysis, the second-order factor model achieved an acceptable AVE value of greater than 0.70 (0.799) and a CR coefficient that was marginally greater than 0.50 (0.507).

The following sections (see sections 5.4.8.1 and 5.4.8.2) present group differences on a construct level. This process assists in determining whether respondents from various groups interpret the same measure in a conceptually similar manner. If demographic groups (e.g. male and female) have no influence on the constructs, the validity of the scale for responsible tourist behaviour in cultural heritage tourism is supported.

5.4.8 Validity of scale for responsible tourist behaviour in cultural heritage tourism: Results of group differences on construct level

The independent-sample t-test was used to examine the difference between gender groups (male and female) and education groups (lower level and higher level)[3] regarding the scale constructs of responsible tourist behaviour in cultural heritage tourism. Section 5.4.8.1 interprets the results of the independent-sample t-test across gender groups, while section 5.4.8.2 focuses on education groups.

5.4.8.1 *Results of independent-sample t-test across gender groups*

Table 5.28 provides an outline of the results of the independent-sample t-test across gender groups. The only two constructs that delivered significant differences between males and females are ‘site-specific responsible behaviour towards natural resources’ ($p = 0.003$) and ‘responsible tourist behaviour in cultural heritage tourism’ ($p = 0.021$). Although significant differences are evident, the effect size of these differences (Cohen’s d) are small (-0.272 and -0.213, respectively). Given that there were no or only small significant differences between gender groups prove that gender groups have no bearing on the constructs, which supports the validity of the scale.

[3] The category ‘other’ from the gender data was too little and was excluded in the measurement invariance and group differences analyses; while the data from educational levels was transformed into two groups namely higher (i.e. postgraduate diploma/honours, master’s degree, doctoral degree, and post-doctoral degree) and lower (i.e. no school, some schooling, matric/secondary school, undergraduate diploma/degree, and technical education) educational levels and used in the measurement invariance and group differences analyses.

Table 5.28: Results of independent-sample t-test across gender groups

Construct/scale	Gender group	N	Mean	SD	p-value		Cohen's d
					Sig. 2-tailed	t-value	
General responsible behaviour towards natural resources (AAA)	Male	207	3.82	0.707	0.269	-1.107	-0.102
	Female	275	3.89	0.670			
Site-specific responsible behaviour towards natural resources (BBB)	Male	207	4.52	0.502	0.003***	-2.951	-0.272
	Female	275	4.65	0.464			
General responsible behaviour towards cultural resources (CCC)	Male	207	3.80	0.671	0.064	-1.860	-0.171
	Female	275	3.92	0.691			
Site-specific responsible behaviour towards cultural resources (DDD)	Male	207	4.22	0.616	0.169	-1.378	-0.127
	Female	275	4.30	0.685			
Responsible tourist behaviour in cultural heritage tourism (RBCHT)	Male	207	4.08	0.460	0.021***	-2.310	-0.213
	Female	275	4.18	0.478			

Criteria: *** p ≤0.05, Cohen's d - small effect = 0.2, medium effect = 0.5, large effect = 0.8; n = 489

5.4.8.2 *Independent-sample t-test results across education groups*

From the independent-sample t-test (Table 5.29), only the construct, 'site-specific responsible behaviour towards natural resources' revealed a significant difference (p = 0.018) between lower and higher educational levels. Despite the significant difference, the effect size of this difference (Cohen's d) was small (-0.215). Considering there were no differences or a few small, significant differences between education groups demonstrated that education groups have no bearing on the constructs, thus supporting the scale's validity.

Table 5.29: Results for independent-sample t-test across education groups

Construct/scale	Education group	N	Mean	SD	p-value		Cohen's d
					Sig. 2-tailed	t-value	
General responsible behaviour towards natural resources (AAA)	Lower educational level	237	3.87	0.690	0.634	0.476	0.043
	Higher educational level	252	3.84	0.682			
Site-specific responsible behaviour towards natural resources (BBB)	Lower educational level	237	4.54	0.543	0.018***	-2.374	-0.215
	Higher educational level	252	4.64	0.417			
General responsible behaviour towards cultural resources (CCC)	Lower educational level	237	3.89	0.708	0.555	0.590	0.053
	Higher educational level	252	3.85	0.680			
Site-specific responsible behaviour towards cultural resources (DDD)	Lower educational level	237	4.21	0.697	0.088	-1.709	-0.155
	Higher educational level	252	4.31	0.612			
Responsible tourist behaviour in cultural heritage tourism (RBCHT)	Lower educational level	237	4.12	0.507	0.422	-0.804	-0.073
	Higher educational level	252	4.16	0.442			

Criteria: *** p ≤0.05, Cohen's d - small effect = 0.2, medium effect = 0.5, large effect = 0.8; n = 489

Since scale validity is a continuous process, the following section focuses on the correlation results of heritage interpretation and the scale constructs.

5.4.9 Validity of the scale for responsible tourist behaviour in cultural heritage tourism: Correlation with heritage interpretation on a construct level

Further scale validation was carried out using a different construct, namely heritage interpretation. The correlation results include descriptive statistics and internal consistency reliability for heritage interpretation (refer to section 5.4.9.1). In addition, the correlation between heritage interpretation and the scale constructs of responsible tourist behaviour in cultural heritage tourism is demonstrated (see section 5.4.9.2).

5.4.9.1 *Results of the heritage interpretation single factor*

The respondents agreed (M = 3.90; SD = 0.649) with heritage interpretation. The skewness value was -0.734, showing that the distribution was approximately normal with a wider peak. In this study, negative skewness indicated that responses were weighted more towards the ‘agreement’ side. A kurtosis value of 1.235 showed a little longer left tail than a normal distribution.

Assessing the internal consistency reliability between the 23 items, results showed that a single-factor structure and its items were consistent and reliable. The Cronbach’s alpha was excellent (above 0.70) for a single-factor structure (0.94). The IIC was 0.455 (should be between 0.15 and 0.85), while the CITC at 0.656 was acceptable (above 0.50), indicating that the 23 items were well correlated and measured a single-factor structure (heritage interpretation).

5.4.9.2 *Correlation results between heritage interpretation and the scale constructs for responsible tourist behaviour in cultural heritage tourism*

Table 5.30 illustrates the correlations between heritage interpretation and the scale constructs for responsible tourist behaviour in cultural heritage tourism. There is a strong positive correlation between the responsible tourist behaviour in cultural heritage tourism constructs (AAA, BBB, CCC, and DDD) and the overall construct (RBCHT). This corresponds with the literature, which indicates that tourist behaviour should protect both natural and cultural heritage resources (Said, 2018; Alazaizeh, Jamaliah *et al*., 2019; Alam *et al.*, 2021). Furthermore, Table 5.30 shows a weak positive correlation between heritage interpretation and the responsible tourist behaviour in cultural heritage tourism constructs (p-values <0.05, correlation between +1 and -1). The fact that the correlation was weak shows that although heritage interpretation may measure some aspects of cultural heritage tourism (Ballantyne *et al.*, 2014; Weng *et al*., 2020; Nowacki, 2021), it is not part of the scale for responsible tourist behaviour in cultural heritage tourism. These results thus support the validity of the scale for responsible tourist behaviour in cultural heritage tourism.

Table 5.30: Correlation results between heritage interpretation and the scale constructs for responsible tourist behaviour in cultural heritage tourism

Construct/scale		AAA	BBB	CCC	DDD	RBCHT	Heritage interpretation
General responsible behaviour towards natural resources (AAA)	Pearson Correlation	--					
Site-specific responsible behaviour towards natural resources (BBB)	Pearson Correlation	.410***	--				
	Sig. (2-tailed)	0.000					
General responsible behaviour towards cultural resources (CCC)	Pearson Correlation	.468***	.381***	--			
	Sig. (2-tailed)	0.000	0.000				
Site-specific responsible behaviour towards cultural resources (DDD)	Pearson Correlation	.291***	.421***	.544***	--		
	Sig. (2-tailed)	0.000	0.000	0.000			
Responsible tourist behaviour in cultural heritage tourism (RBCHT)	Pearson Correlation	.736***	.687***	.819***	.756***	--	
	Sig. (2-tailed)	0.000	0.000	0.000	0.000		
Heritage interpretation	Pearson Correlation	.309***	.248***	.277***	.197***		--
	Sig. (2-tailed)	0.000	0.000	0.000	0.000		

Criteria: Correlation coefficients - weaker positive and negative correlations between +1 and -1, completely independent correlation = 0; *** p ≤0.05 n = 489

5.5 DISCUSSION OF RESULTS

Scale development and validation are important in tourism studies because they enable researchers and practitioners to provide accurate answers to a research problem. It is crucial for studies focusing on the development of new scales to address item development, scale development, and scale evaluation (Boateng *et al.*, 2018). This process can be categorised differently and completed in various sequences (Irwing & Hughes, 2018) using different techniques. Accordingly, this study applied a mixed-method approach to address validity and reliability measures appropriately in order to develop a validated scale for responsible tourist behaviour in cultural heritage tourism.

To generate an initial pool of items (Phase 1), this study followed most studies in the literature. Morgado *et al.* (2017) conducted a systematic review on scale development studies and found that more than half of the studies used both a deductive and an inductive approach to generate initial items while the other studies made use of only one approach (either deductive or inductive). This study used a deductive approach to generate items from the literature, while the inductive approach was used to review and revise these items. Similar to the findings of Morgado *et al.* (2017), this study used expert panels to refine the items. However, because of the large number of items generated from the literature, to reduce the number of items significantly while ensuring that the items represented the concept under investigation, the researcher opted rather to review these items with an expert panel through the FDM than through interviews. Although there are diverse statistical techniques to obtain expert consensus (e.g. content validity ratio and nominal group techniques), this study concurred with the studies of Nashir *et al*. (2015) and Huang and Wen (2021) that proved that the FDM is effective when conducted with a large number of items.

To assess construct validity and reliability of the proposed developed scale (Phase 2), this study used quantitative data from the target population as in the case of Lee *et al.*'s (2013) study that developed a validated environmentally responsible behaviour scale, Dias *et al.'s* (2021) study that developed a measure of tourist civic and philanthropic responsibility, and Huang and Wen's (2021) study that developed a validated Chinese cultural values scale in tourism. As in the study of Morgado *et al.*

(2017), this study used EFA (and later CFA) and internal consistency reliability. Through these analyses, the current study showed how procedural controls (e.g. explaining the purpose of the research, providing instructions to the respondents prior to participation, and avoiding ambiguous scale questions) and statistical controls (e.g. Harman's single-factor test) can minimise CMV during this stage of scale development and thereby demonstrate the construct's validity.

To evaluate the scale, the measurement scale was cross-validated (Phase 3) using independent quantitative data from the same population as in the studies of Lee *et al.* (2013) and Huang and Wen (2021). The use of data from the target population to validate a scale is evident in many studies (Morgado *et al.*, 2017), including tourist behavioural studies (Lee *et al.*, 2013; Dias *et al.*, 2021; Huang & Wen, 2021). Similar to the study of Morgado *et al.* (2017), CFA, convergent validity, discriminant validity, and a re-test of internal consistency reliability, as performed in most studies, were applied in this study. Together with these analyses, this study demonstrated that re-testing the CMV on a scale (e.g. using the common marker variable technique), conducting a measurement invariance analysis (e.g. configural, metric, and scalar invariances), calculating subscale and overall scale scores, and determining group difference statistics (e.g. the independent-sample t-test to compare two groups) and the correlation between a different construct and the scale (e.g. Pearson product-moment correlation coefficient) can cross-validate the measurement scale.

The process followed in this study can be used in social science studies to develop new and valid scales for the concept under investigation. Several studies, including the studies of Lee *et al.* (2019) and Huang and Wen (2021), used a similar validation method for scale development in order to reduce the large number of initial items to a significantly smaller number of items to be included in the final scale. For this study, only 19 items (15%) remained from the initial 126 pool of items. These remaining items confidently measure the responsible behaviour of tourists in a cultural heritage tourism setting that constitutes both natural and cultural resources, thus addressing the gap in previous studies. This confirms that both natural and cultural resources are part of cultural heritage tourism as suggested by Bourdeau *et al.* (2016), the NTHPUS (2018), and Weng *et al.* (2019). In addition, the items represent both general and site-specific behaviour, which provides a holistic view of responsible behaviour rather than only one view. Although the spillover effect theory originated in studies of environmentally responsible behaviour (Bem, 1972; Lee *et al.*, 2003; Hergesell *et al.*, 2018; Pearce *et al.*, 2022), this study supports an argument made for the spillover effect theory that behaviour in one place encourages similar behaviour in other places.

5.6 CONCLUSION

This chapter presented and interpreted the empirical research results. The results were organised into three phases. The results of Phase 1 included a literature review and a review and revision of an initial pool of items that assessed face validity and content validity. During the literature review, a pool of 136 responsible tourist behaviour in cultural heritage tourism items was generated, and after removing items with similar meanings, 125 items were retained. Following the revision of expert comments during face validity, minor changes to the item wording were made, and an additional item was added to the list, bringing the total to 126 items. Using the FDM, the content validity results revealed that 63 items should be retained. Existing studies have proved the effectiveness of the FDM in reaching expert consensus.

Data from tourists who had visited one of South Africa's World Cultural Heritage Sites were collected in phases 2 and 3 using the 63 items obtained in Phase 1. The one-factor results for the scale for responsible tourist behaviour in cultural heritage tourism in Phase 2 indicated that CMV was not a potential threat to the validity of the study. This was followed by the EFA results that identified two potential factor structures (a four- and a five-factor structure) and the internal consistency results that supported the reliability of the structure. These analyses are commonly applied to assess construct validity and reliability. Both the four- and the five-factor structures were investigated further in Phase 3.

Using independent data from the same population as Phase 2, Phase 3 evaluated the multifactor CFA for both the four- and the five-factor models. The CFA statistics made no distinction between the models regarding the selection of the most favourable model. As a result, both models were theoretically evaluated, with the four-factor model being selected because of its similarities to the literature. When assessing the CMV in the CFA four-factor model, one item showed a significant difference. This item was removed to avoid possible CMV. There was no potential CMV threat after running the model again. Moreover, measurement invariances were supported across gender and education groups. Hence, the CFA second-order factor model demonstrated a good fit and acceptable validity and reliability.

To validate the second-order factor model, group differences (among gender and education groups) and correlations (with heritage interpretation) were determined. Independent-sample t-tests were used, and the results revealed that there were no significant differences between most constructs for females and males or between the constructs for lower and higher educational levels. Where statistically significant differences did occur, Cohen's d revealed very small differences, thus supporting the validity of the scale for responsible tourist behaviour in cultural heritage tourism.

Moreover, the scale for responsible tourist behaviour in cultural heritage tourism was validated further by examining the strength of the correlation between heritage interpretation and the scale constructs. The results further supported the scale's validity because the correlation between the constructs of the scale (constructs for responsible tourist behaviour in cultural heritage tourism) and the different construct (heritage interpretation) was weak. In other words, the items and constructs, as depicted in Figure 5.13, can confidently be used to measure responsible tourist behaviour in cultural heritage tourism settings. The conclusions and recommendations in this regard are presented in Chapter 6.

CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS

6.1 INTRODUCTION

The primary research objective of this study was to develop a validated scale for responsible tourist behaviour in cultural heritage tourism. To achieve the study's primary objective, secondary objectives were set (see Chapter 1).

The first secondary objective was to conduct a literature review of cultural heritage tourism and theories of tourist behaviour, and this was accomplished (see Chapter 2). The distinction between mass tourism and alternative tourism was discussed to contextualise cultural heritage tourism. Following this, common tourist behavioural theories and models were explained, and the theory of planned behaviour was presented and applied to cultural heritage tourism. Chapter 2 concluded with a theoretical framework on the development of a proposed scale for responsible tourist behaviour in cultural heritage tourism and a discussion on scale development.

The second secondary objective was to discuss the theoretical foundation of heritage interpretation and responsible tourist behaviour relating to the natural and cultural resources at a cultural heritage site. Chapter 3 explored the literature on heritage interpretation and identified measurement items relating to natural and cultural resources at a cultural heritage site.

The third secondary objective was to explore the relevant research methods for developing a scale for responsible tourist behaviour in cultural heritage tourism. To accomplish this, three sub-objectives were established.

- To generate an initial pool of items
- To assess the construct validity and reliability of the proposed measurement scale
- To conduct cross-validation of the measurement scale

These sub-objectives were accomplished and discussed in Chapter 4.

The fourth secondary objective was to present and interpret the results of the empirical research. This was achieved in Chapter 5.

The fifth objective was to make recommendations and draw conclusions for the study. This is achieved in the current chapter (Chapter 6). This chapter focuses on the following major components: the conclusions drawn from the literature review; the methods and the empirical research; the study's contribution; the limitations encountered during this study; and finally, the recommendations for the managers of cultural heritage sites and for future research.

6.2 CONCLUSIONS

The conclusions of this study are presented in three sections (sections 6.2.1 to 6.2.3). First, conclusions from the literature review are offered, followed by conclusions from the research methods, and conclusions relating to the empirical results.

6.2.1 Conclusions from the literature review

The main findings and conclusions from the literature review are presented in sections 6.2.1.1 to 6.2.1.2.

6.2.1.1 *Conclusions from Chapter 2*

The literature related to Chapter 2 revealed the following:

- Tourism is divided into two types: mass tourism and alternative tourism. Mass tourism focuses on the high influx of tourists into a destination, whereas alternative tourism promotes the conservation of resources within a destination (cf. 2.2).
- Cultural heritage tourism is one of the many approaches of alternative tourism (cf. 2.2).
- The definitions of cultural heritage tourism are ambiguous, but most definitions state that cultural heritage tourism is a type of alternative tourism that focuses on an area's unique cultural and natural resources (cf. 2.3).
- In this study, cultural heritage tourism was defined as "travelling to or visiting of cultural heritage sites, which are rich in unique cultural and natural resources that represent the ways of life of the people and other species who live or have lived there" (cf. 2.3).

- To protect the areas of outstanding universal value, international organisations (e.g. UNESCO, ICCROM, ICOMOS, and IUCN) have launched initiatives such as the designation of World Heritage Sites (cf. 2.3.1).
- World Heritage Sites are properties that have been recognised internationally for their cultural and/or natural outstanding universal value. A property can be of cultural, natural, or mixed heritage (cf. 2.3.1).
- Despite international initiatives to protect World Heritage Sites, each site is unique in terms of its resources, visitors, and their needs, and thus, requires tourism business managers to understand the fundamentals of tourist behaviour and how to observe and measure tourist behaviour in order to plan tourism offerings and sustainably manage tourists (cf. 2.2 and 2.3.1).
- The most widely used and accepted theories and models for understanding tourist behaviour include the norm activation theory, the value-belief-norm theory, the theory of reasoned action, and the theory of planned behaviour (cf. 2.4):
    - The norm activation theory focuses primarily on personal responsibility for actual behaviour (cf. 2.4.1).
    - The value-belief-norm theory is commonly used in environmental studies; however, the assessment of actual behaviour is restricted to behavioural intentions only (cf. 2.4.2).
    - Although the theory of reasoned action claims that personal and social factors influence behavioural intention, it does not consider how people's behaviours are influenced by external factors (cf. 2.4.3).
    - The theory of planned behaviour is an improved version of the theory of reasoned action and considers perceived behavioural control that may improve the theory's predictive power. The theory of planned behaviour consists of three constructs, namely attitudes, subjective norms, and perceived behavioural control, and these can predict behavioural intention and in turn, behaviour (cf. 2.4.4).
- Although the theory of planned behaviour is an excellent foundation for explaining people's behaviour, there has been little research using the theory to study tourist behaviour in the context of cultural heritage tourism (cf. 2.5).

Conclusions regarding the theory of planned behaviour as employed in a cultural heritage tourism setting are as follows:

- An individual's attitude is their level of positivity or negativity towards a particular concept, object, or behaviour. The attitude construct should be evaluated using three factors: cognitive, affective, and conative attitudes. Cognitive attitude reflects a tourist's perceptions or beliefs; affective attitude reflects a tourist's evaluations and feelings; and conative attitude reflects how a tourist intends to perform the actual behaviour (cf. 2.5.1).
    - Cultural heritage tourism studies confirm the influence of attitude on behavioural intention. However, the theory of planned behaviour recognises that positive attitudes or intentions do not always result in behavioural action. Moreover, given that tourism managers have limited influence over tourists' attitudes, this study did not focus on attitudes in a cultural heritage tourism setting (cf. 2.5.1).
- Subjective norms, also known as social influences, reflect the significance of the reactions of people (e.g. family, friends, or travel professionals) to behavioural intention (cf. 2.5.2).
    - Studies in cultural heritage tourism confirm the effectiveness of subjective norms in influencing behavioural intentions. Despite this correlation, measuring subjective norms in a cultural heritage tourism setting may not provide tourism business managers with the necessary guidance to manage specific tourism behaviours. As a result, this study did not concentrate on subjective norms in a cultural heritage tourism setting (cf. 2.5.2).
- Perceived behavioural control can be influenced by experiences, the availability of the necessary resources, and opportunities to behave in a specific way (cf. 2.5.3).
    - Research studies in cultural heritage tourism revealed that perceived behavioural control is the only construct in the theory of planned behaviour that has a direct effect on both intentions to behave and actual behaviour. Cultural heritage tourism destinations require tourists to behave responsibly in order to

conserve both natural and cultural resources. Since perceived behavioural control appeared to be the only aspect in which tourism business managers had some control in influencing responsible tourist behaviour, this study focused on perceived behavioural control in a cultural heritage tourism setting. The study included interpretation as the ‘experience’, ‘resource’, or ‘opportunity’ of perceived behavioural control to influence responsible tourist behaviour positively in a cultural heritage tourism setting (cf. 2.5.3).

- The link from interpretation to perceived behavioural control was on the basis that external factors (e.g. interpretation) have a significant influence on perceived behavioural control. Interpretation is an educational activity that aims to disclose meanings and relationships using original objects, first-hand experience, and illustrative media rather than simply communicating information. When effective interpretation becomes available to tourists, it should have a positive effect on perceived behavioural control, which will likely result in behavioural intention or will have a direct effect on tourist’s responsible behaviour in a cultural heritage tourism setting (cf. 2.5.4).
- Despite attitudes towards the behaviour, subjective norms, and perceived behavioural control contributing to intentions to behave, there may not be a positive significant relationship between behavioural intention and actual behaviour. As a result, it was necessary to measure the construct of behaviour accurately and to explain the desired behaviour (cf. 2.5.5).
- Tourist visitation to a cultural heritage tourism setting may have negative impacts, and responsible tourist behaviour can contribute towards minimising these impacts. Different concepts such as culturally intelligent behaviour, culturally significant behaviour, and culturally responsible behaviour have been employed in an effort to explain tourist behaviour intended to preserve cultural heritage. Research on the concept environmentally responsible behaviour has advanced. However, contrary to what the definition of cultural heritage tourism suggests, these concepts do not include both natural and cultural

resources. Therefore, the concept of ‘responsible tourist behaviour in cultural heritage tourism’ used in this study incorporated natural and cultural resources, thus setting this study apart from previous concepts that do not consider both resources (cf. 2.5.6).

- Based on the literature review, a theoretical framework for predicting responsible tourist behaviour in cultural heritage tourism was developed (cf. 2.6).
- The theory of planned behaviour was adapted in the theoretical framework for predicting responsible tourist behaviour in cultural heritage tourism. This framework purposefully excluded attitudes and subjective norms from the theory of planned behaviour in order to focus on perceived behavioural control as an immediate precursor of both intentions to behave and actual behaviour. Perceived behavioural control can be influenced by relevant resources and opportunities to engage in a behaviour, which is interpretation in this study. When tourists have access to effective interpretation, their perception of behaviour is improved, which is predicted to influence behavioural intention or directly influence behaviour in cultural heritage tourism. Tourist behaviour, in this study, includes behaviour towards both natural and cultural resources, as the definition of cultural heritage tourism indicates. Thus, this study contextualised actual behaviour as responsible tourist behaviour in cultural heritage tourism. Following a review of the definition of responsible tourist behaviour, this study defined responsible tourist behaviour in cultural heritage tourism as tourist behaviour that protects both the natural (environmental) and cultural resources at a cultural heritage site, and this necessitated the development of a validated scale for responsible tourist behaviour in cultural heritage tourism (cf. 2.6).
- The purpose of scale development is to derive a set of variables that defines a concept that cannot be precisely assessed by a single variable. The process entails intricate and sequential processes that require theoretical analysis and a thorough methodology. The three main stages to develop a scale are item development, scale development, and scale evaluation; however, the steps within the various stages may be categorised differently and accomplished in different sequences. The suitability and the accuracy of the scale are evaluated

using both reliability and validity standards. A scale is made up of a number of items that are scored and that represent an unobservable construct (in this study, responsible tourist behaviour in cultural heritage tourism) (cf. 2.7).

6.2.1.2 *Conclusions from Chapter 3*

From the theoretical framework presented in Chapter 2, the three constructs, namely heritage interpretation, responsible tourist behaviour towards natural resources, and responsible tourist behaviour towards cultural resources, were discussed in more detail in Chapter 3. The following conclusions were drawn:

- In the context of cultural heritage, interpretation is referred to as heritage interpretation. Although there is no universal definition of heritage interpretation, its primary purpose is to communicate formally the information and educational services that are available at natural and cultural heritage sites (cf. 3.2).
- Heritage interpretation can be divided into several categories: primary interpretation (first-hand interpretation, personal and/or non-personal), secondary interpretation (pre-entry to post-visit information), tertiary interpretation (concealed, unclear, and indirect interpretive activity such as site advertisement on television or radio), hard interpretation (cultural heritage tourism regulations), and soft interpretation (tourist-based education) (cf. 3.2.1).
- Heritage interpretation must be considered a means of communication that needs to focus on five interpretative approach qualities: theme, phenomenon, participant, interpreter, and media (cf. 3.2.2).
    - A theme is the main message that heritage interpretation seeks to reveal about the topic (cf. 3.2.2.1).
    - In heritage interpretation, the term ‘phenomenon’ refers to both tangible heritage or objects and intangible sensations that can all be experienced first-hand (cf. 3.2.2.2).
    - The participant is a tourist who receives a message through heritage interpretation (cf. 3.2.2.3).
    - The interpreter is the sender of the message (e.g. tourist exhibition centre, museum, tourist guide, information panel, brochure), which uses heritage interpretation as a communication tool to establish a connection

between tourists and the sites they visit in order to develop appreciation and care for these sites (cf. 3.2.2.4).
    - The primary purpose of media in heritage interpretation is to initiate and facilitate the communication process to disseminate the message to the participants (cf. 3.2.2.5).
- Heritage interpretation information should raise conservation awareness about the resources of the heritage site and its values in order to enhance tourist experience and stimulate tourist appreciation for the site, which will ultimately have a positive influence in responsible behaviour (cf. 3.2.3).
- The effectiveness of heritage interpretation information at heritage sites has been the subject of extensive research, and it is from these studies that the 23 measurement items regarding heritage interpretation for this study were generated (cf. 3.2.4).
- Heritage sites have a range of natural resources that are used for cultural heritage tourism; however, these resources are threatened by the ever-increasing inappropriate behaviours of tourists (cf. 3.3).
- Models such as pro-environmental behaviour (any positive or negative act either from or not from pro-environmental intent), environmentally sustainable tourism behaviour (behavioural intent to minimise negative environmental impact), and environmentally responsible behaviour (responsible behavioural actions towards the environment) are used to describe tourist behaviour aimed at protecting the environment. Environmentally responsible behaviour is an applicable concept in this study because it focuses on responsible behavioural action, which is the ultimate aim of the theoretical framework of the current study (cf. 3.3.1).
- Environmentally responsible behaviour is typically measured using general and site-specific dimensions since there is a positive relationship (spillover effect) between these dimensions:
    - The general dimension addresses the actions that people take in their daily lives to reduce negative environmental impacts (cf. 3.3.2).
    - The site-specific dimension refers to the responsible actions that tourists take while visiting destination sites (cf. 3.3.2).

- Since the natural significance of a heritage site is prompted by its surrounding environment (i.e. flora and fauna), existing literature on the measurement of environmentally responsible behaviour were used to generate an initial pool of items regarding responsible tourist behaviour towards natural resources (cf. 3.3.2).
- To carry out conservation at a heritage site effectively, the management must maintain the dynamic relationship between natural resources and cultural resources (cf. 3.4).
- The cultural significance of a heritage site is evoked by its tangible and intangible cultural values (cf. 3.4).
- Cultural heritage values include sociocultural and economic values:
    - Sociocultural values have traditionally been at the heart of conservation. These values have meaning for individuals or social groups and contribute to processes of cultural affiliation (cf. 3.4.1). There are five types of sociocultural values:
        - *Historical values* help people define their identities by connecting them to the past and revealing the origins of the present (cf. 3.4.1).
        - *Cultural* or *symbolic values* are shared abstract ideas about what is acceptable and what is unacceptable in a society. These values are either implicit or explicit (cf. 3.4.1).
        - *Social values* of heritage typically include the use of a physical place or location for social gatherings to facilitate social relations and communication in a community (cf. 3.4.1).
        - *Spiritual* or *religious values* can originate from the structured beliefs and teachings of a religion but can also include non-religious experiences of wonder, astonishment, and a variety of other feelings triggered by visiting a heritage site (cf. 3.4.1).
        - The *aesthetic value* of a heritage site is defined as its beauty and illustrates whether that beauty is intrinsic or simply occurs for the enjoyment of the audience (cf. 3.4.1).
    - Economic values correspond with sociocultural values. People consider economic values valuable and believe they may improve their

well-being, although this varies from person to person (cf. 3.4.1). Two types of economic values are evident:

  - The direct *use values* of a heritage site refer to the goods and services that can be traded and priced in existing markets. Furthermore, use values may generate indirect values such as social benefits resulting from having a well-known heritage site that promotes community unity (cf. 3.4.1).
  - *Non-use values* are the inverse of use values. These values are classified as economic values because people are willing to contribute a certain amount of money to experience and/or protect heritage sites for future reference (cf. 3.4.1).

- Assessing cultural values from a conservation standpoint aids in their preservation (cf. 3.4.1).
- Limited studies have attempted to investigate responsible tourist behaviour in terms of cultural resource protection. However, these studies tend to focus on the antecedents of behaviour (i.e. beliefs and attitudes) and innovative products and services that may support cultural heritage tourism rather than behavioural actions. Moreover, these studies do not investigate general and site-specific tourist behaviour towards cultural resources to understand thoroughly how tourists behave (cf. 3.4.2).
- Similar to the environmentally responsible behaviour literature, responsible behaviour towards cultural resources was also conceptualised as general and site-specific behaviour to align with the spillover theory (cf. 3.4.2).

6.2.2 Conclusions from the research methods

Since the primary research objective of this research was to develop a validated scale for measuring responsible tourist behaviour in cultural heritage tourism, literature pertaining to scale development was consulted. The following conclusions can be made from the research process to develop a validated scale:

- Before creating a validated scale, the researcher should conduct an extensive literature review to identify the concept of interest and determine whether a validated scale already exists. If no validated scale exists, the next step is to develop and validate the proposed scale (cf. 4.1).

- For this study, a mixed method with an embedded design was followed. The embedded design collects and analyses both quantitative and qualitative data within the context of a traditional quantitative or qualitative design to improve the overall design (cf. 4.1).
- The research method consisted of three phases.
  - **Phase 1** focused on 'item generation'. Approaches to generate the initial items can be classified as deductive, inductive, or a combination of the two (cf. 4.2):
    - The *deductive approach* requires a thorough review of the literature, existing scales, and/or indicators of the domain (or concept) of interest to help in the development of a theoretical basis for the initial pool of items (cf. 4.2.1).
      - (i) Keywords that were used to conduct literature search for responsible behaviour towards natural resources included environmentally responsible behaviour, pro-environmental behaviour, environmentally friendly behaviour, environmentally sustainable tourism behaviour, eco-friendly behaviour, and sustainable behaviour (cf. 4.2.1).
      - (ii) Keywords that were used to conduct the literature search for responsible behaviour towards cultural resources included cultural heritage conservation, cultural heritage management, cultural heritage protection, cultural heritage value, responsible tourist behaviour, cultural responsible behaviour, culturally significant behaviour, and culturally intelligent behaviour (cf. 4.2.1).
    - The *inductive approach* supports item development (or the refinement of items) by gathering qualitative (face validity) and/or quantitative information (content validity) about a domain (or concept) from expert panels. Experts are selected because of their extensive knowledge of the domain (or concept) and/or scale development, allowing them to review face and content validity. For this study, two independent expert reviews were carried out

to ensure (i) face validity, and (ii) content validity of the items of the proposed scale (cf. 4.2.2):

(i) The first round of experts (comprised a minimum of five experts) reviewed face validity, and this evaluated the difficulty, suitability, and ambiguity of the items (cf. 4.2.2.1 and 4.2.2.1.1). Qualitative information from these experts can be obtained through cognitive interviews or an open-ended questionnaire that provides written feedback on the items, allowing items to be altered, clarified, or improved to fit the study's objectives. Items should be modified based on the experts' feedback (cf. 4.2.2.1.2 to 4.2.2.1.5).

(ii) The second round of experts (comprised a minimum of 10 experts) reviewed content validity to ensure that the initial pool of items accurately reflects the desired construct (cf. 4.2.2.2 and 4.2.2.2.1). Their quantitative information can be gathered through a closed-ended questionnaire using a Likert-type response scale with five points. A five-point Likert scale can meaningfully discriminate between options. Experts' quantitative information can be analysed using statistical techniques such as the content validity ratio, the FDM, or nominal group technique for reaching consensus, the content validity index for measuring proportional agreement, or Cohen's coefficient kappa for measuring inter-rater or expert agreement. The current study applied the FDM to reach expert consensus on items to be retained and discarded. The retained items were then re-assessed in the subsequent phase (4.2.2.2.2 to 4.2.2.2.5).

- **Phase 2** assessed construct validity and reliability, which is commonly referred to as 'scale development'. A quantitative approach (closed-ended questionnaire using numerical data) was adopted. The retained items in Phase 1 should be tested for construct validity and reliability with a new sample of subjects, preferably the true target population of the proposed scale. Using the correct target population ensures that the items are meaningful when implemented. The most common analyses used to assess construct validity are EFA (Phase 2) and CFA (Phase 3). A large sample size is required for factor analysis (item ratio tends to be more desirable) because it indicates lower measurement errors and more stable factor loadings, replicable factors, and results that are generalisable to the true population structure. (Note: To deliver a credible scale, two independent samples are required (i) to assess construct validity and reliability on the first sample [Phase 2], and (ii) to cross-validate using the second sample [Phase 3]) (cf. 4.3, 4.3.1 and 4.3.2). Statistical processes for this phase included the following:

  - Item descriptive statistics, namely measures of frequency, the mean, SD, skewness and kurtosis: These assist in understanding the data distribution, detecting outliers and errors, and preparing the items for further statistical analysis (cf. 4.3.5.1).
  - Common method variance analysis: Harman's one-factor test is usually used. This entails running all items through an EFA to see if a single factor accounts for most of the covariance between measures; if not, the assumption is that CMV is not pervasive (cf. 4.3.5.2).
  - Exploratory factor analysis: This statistical method reduces a large number of variables to a small number of factors and provides an empirical estimate of the factoral structure (cf. 4.3.5.3).
  - Cronbach's alpha coefficient, IIC, and CITC: These assess the internal consistency reliability of the measurement scale (cf. 4.3.5.4).

  The factor structure/s identified in Phase 2 should be confirmed in Phase 3.

- **Phase 3** cross-validated the measurement scale using a quantitative approach. The cross-validation procedure helps to demonstrate that a model's accuracy in two or more random samples drawn from the same population is consistent (cf. 4.4, 4.4.1 and 4.4.2). In this phase, the second independent sample was used. Statistical analyses for Phase 3 were applied in the following order:

- Item descriptive statistics, namely measures of frequency, the mean, SD, skewness and kurtosis, assists in understanding the data distribution, detecting outliers and errors, and preparing the items for further statistical analysis (cf. 4.4.5.1).
- A multifactor CFA examines the existence of a measurement theory on the previously established EFA structure(s) (cf. 4.4.5.2).
- The measurement model is thereafter evaluated for (i) convergent validity and (ii) discriminant validity to ensure that it produces corresponding representations of the exact construct across a population:
  - (i) Convergent validity employs the CR and the AVE criteria to determine whether the measured variable belongs to the latent construct (cf. 4.4.5.3).
  - (ii) Discriminant validity employs the Fornell-Larcker and the HTMT criteria to assess the extent to which measures of distinct characteristics are unrelated (cf. 4.4.5.3).
- Confirmatory factor analysis using the common marker variable technique assesses potential CMV and allows the researcher to include measures that are considered to affect the source of the bias (cf. 4.4.5.4).
- Measurement invariance is established using configural, metric, and scalar invariance to determine whether research respondents from different groups interpret the same measure in conceptually similar ways (cf. 4.4.5.5).
- Construct and scale descriptive statistics are performed to gather a perspective into the data distribution and to calculate construct scores, thereby providing a standard range that allows direct and fair comparisons of a scale in different contexts (cf. 4.4.5.6).
- To accommodate the overall scale construct, the development of a second-order factor model is necessary. This demonstrates the two layers of latent constructs: a single higher-order construct representing the overall concept, and two or more lower-order

constructs measuring more concrete aspects of the higher-order construct (cf. 4.4.5.7).

- To validate the scale's predictive capability while maintaining its dimensionality, group difference analysis should be employed. Depending on the number of groups, the independent-sample t-test (compares two groups), and/or analysis of variance (compares more than two groups) can be used to examine group differences regarding, for example, demographic variables (cf. 4.4.5.8).
- Lastly, to validate the scale's predictive capability even further, the Pearson product-moment correlation coefficient assesses the strength of the correlation coefficient between a different construct and the proposed scale. The assumption is that there should not be a strong correlation between the different construct and the proposed scale (cf. 4.4.5.9).

6.2.3 Conclusions drawn from empirical results

The conclusions drawn from the empirical research are presented according to the three research phases followed in this study.

6.2.3.1 *Conclusions regarding empirical results of Phase 1*

Conclusions of Phase 1 include the results from the literature review and the face and content validity:

- *Conclusion regarding literature review results:* The literature review results delivered an initial pool of 136 scale items; upon removing the items with similar meanings, only 125 items remained (cf. 5.2.1).
- *Conclusions regarding face validity results:* The 125 items generated from the literature review were used in the face validity analysis. The empirical results pertaining to face validity revealed the following:
    - The sample profile consisted of five experts in the fields of cultural heritage tourism, cultural tourism, sustainable tourism development, tourism development, ecotourism, heritage interpretation and tourism, environmental management, conservation, wilderness search and rescue, and/or anthropology/archaeology. Four of these professionals are well educated,

having obtained postgraduate qualifications (postgraduate diploma/honours, master's degree, and doctoral degree). The experts work in academia and/or in the industry and have at least one-year working experience in their current field/s (cf. 5.2.2.1).
    - The results from the face validity process revealed minor wording changes and an additional item, resulting in 126 items (cf. 5.2.2.2 and 5.2.2.3).
- *Conclusions regarding content validity results:* The 126 items from the face validity analysis were used in the content validity analysis. The empirical results on content validity indicated the following:
    - The sample profile for the content validity step consisted of 22 experts in the following fields: cultural heritage tourism, cultural tourism, sustainable tourism development, tourism development, ecotourism, heritage interpretation, and/or tourism and environmental management. These experts predominantly have postgraduate qualifications (17 experts) with more than five years of experience in academia and/or the industry (16 experts) (cf. 5.2.3.1).
    - The FDM determined that 35 natural resource items and 28 cultural resource items should be retained, suggesting a 63-item scale (cf. 5.2.3.2 and 5.2.3.3).

6.2.3.2 *Conclusions regarding empirical results of Phase 2*

The 63 items from the content validity analysis were further analysed in Phase 2. The following empirical results were attained:

- The sample profile for Phase 2 (and Phase 3) of this study were tourists who had visited one of South Africa's World Cultural Heritage Sites (Fossil Hominid Sites [Maropeng and/or the Sterkfontein Caves], Robben Island, or the Mapungubwe Cultural Landscape) (cf. 5.3.1).
- There were 839 usable questionnaires. The sample size for Phase 2 was n = 350, with the remainder (n = 489) being used for Phase 3 (cf. 5.3.1).
- The demographic information of Phase 2 indicated the following:
    - Most of the tourists were born between 1990 and 1999 (24 to 33 years of age, 34.0%) (cf. 5.3.2.1).

- The gender split was relatively even between female and male, with a slightly higher proportion of female tourists (57.0%), and only 1.0% represented the category ‘other’ (cf. 5.3.2.2).
- Tourists to these sites are mostly educated, possessing an undergraduate diploma/degree (35.7%) or postgraduate diploma/honours (24.3%) qualification (cf. 5.3.2.3).
- Most of the tourists who visited the study sites reside in Gauteng (55.75%) (cf. 5.3.2.4).

- Descriptive statistics revealed that tourists agreed with ‘general responsible behaviour towards natural resources’, ‘site-specific responsible behaviour towards natural resources’, ‘general responsible behaviour towards cultural resources’ and ‘site-specific responsible behaviour towards cultural resources’ (mean scores ranged from 3.54 to 4.72). It is, therefore, accurate to conclude that tourists’ responsible behaviour at cultural heritage settings was strong. After analysing the distribution variation, all 63 items were retained for the EFA (cf. 5.3.3.1 and 5.3.3.2).
- The Harman’s one-factor (EFA and CFA) results indicated that CMV was not a potential threat to the validity of the research findings (cf. 5.3.4).
- The EFA suggested that the 63-item scale was factorable. The Kaiser’s criterion (eigenvalue) proposed 14 factors, which differed significantly from the four-factor structure that was proposed in the literature, and was not practical to use. As a result, an EFA was carried out using the forced four-factor structure. The scree plot employing the PAF eigenvalues and parallel analysis suggested a five-factor structure. Based on these results, both the four- and the five-factor structures were retained for further analysis (cf. 5.3.5).
  - The EFA of the four-factor structure indicated that the four factors corresponded to the literature. The four factors were labelled (1) ‘site-specific responsible behaviour towards natural resources’, (2) ‘general responsible behaviour towards cultural resources’, (3) ‘general responsible behaviour towards natural resources’, and (4) ‘site-specific responsible behaviour towards cultural resources’ (cf. 5.3.5.1).
  - Given that the five-factor structure did not correspond to the categories in the literature, the five factors were named based on the items that

were grouped together. Accordingly, the factors were named as follows: Factor 1: 'responsible participation in natural resources', Factor 2: 'informed behaviour about cultural resources', Factor 3: 'general pro-environmental behaviour', Factor 4: 'activism against harmful behaviour', and Factor 5: 'no harmful actions towards cultural resources' (cf. 5.3.5.2).

    - Both the four-factor structure and the five-factor structure were internally consistent and reliable (cf. 5.3.5.3).
    - After comparing the EFA results of the two possible factor structures (four- and five-factor), an appropriate structure could not be selected because both structures were viable. It was decided to proceed with both structures in Phase 3 in the hope that these analyses would discriminate between the two (cf. 5.3.5.4).

6.2.3.3 *Conclusions regarding empirical results of Phase 3*

Both the four-factor structure and the five-factor structure were used in Phase 3. The following empirical results were determined:

- The sample profile for Phase 3 was the second sub-sample of tourists (n = 489) (cf. 5.4.1).
- The demographic information of the sample for Phase 3 (n = 489) showed the following:
    - Most of the tourists were born between 1990 and 1999 (24 to 33 years of age) (35.6%) (cf. 5.4.2.1).
    - A relatively equal gender ratio was observed between male and female tourists, with a slightly higher percentage of female (56.2%) tourists, and only 1.4% represented the category 'other' (cf. 5.4.2.2).
    - Most of the tourists had an undergraduate diploma/degree (31.9%), followed by those who held a postgraduate diploma/degree (27.2%) (cf. 5.4.2.3).
    - Most of the tourists lived in Gauteng (54.8%) (cf. 5.4.2.4).
- The results of the multifactor CFA revealed that the GOF indices of the four-factor and the five-factor baseline models failed to meet the minimum threshold values. To adjust for acceptable GOF indices, the resolution was to

exclude observed variables with low loadings and/or high standardised regression coefficient residuals and to re-run both models (cf. 5.4.3.1 and 5.4.3.2):

   - Results of the multifactor showed acceptable GOF indices for the four-factor adjusted model with 20 observed variables (cf. 5.4.3.1).
   - The GOF indices for the five-factor adjusted model with 27 observed variables were acceptable (cf. 5.4.3.2).

- The construct validity results in the CFA supported both the convergent and discriminant validity of the four-factor and the five-factor models (cf. 5.4.3.3):
   - Convergent validity of the four-factor adjusted model obtained acceptable results for three latent constructs ('site-specific behaviour towards natural resources', 'general behaviour towards cultural resources', and 'site-specific behaviour towards cultural resources'). However, the AVE of one latent construct ('general responsible behaviour towards natural resources construct') was marginally lower than the threshold and was, therefore, retained (cf. 5.4.3.3).
   - The five-factor adjusted model also had acceptable results for three latent constructs ('responsible participation in natural resources', 'informed behaviour about cultural resources', and 'no harmful actions towards cultural resources'). However, two of the latent constructs of the five-factor adjusted model ('general pro-environmental behaviour' and 'activism against harmful behaviour') fell marginally below the threshold and, therefore, were retained (cf. 5.4.3.3).
   - Discriminant validity was addressed by the Fornell-Larcker criterion, which demonstrated that each latent construct for both the four- and the five-factor models was greater than its correlations with other latent constructs in the assessment. The HTMT results indicated no discriminant validity problems with the latent constructs of both the four- and the five-factor models (cf. 5.4.3.3).
- When the two models were compared, the four-factor adjusted model performed slightly better than the five-factor adjusted model. However, no significant statistical differences between the models were found to reveal the best-suited model. Thus, both models were evaluated theoretically, and the

four-factor adjusted model was selected since it conformed to the literature (cf. 5.4.3.4).

- Using CFA, the results for the four-factor adjusted model revealed that CMV did not pose a threat to the study's findings. Nonetheless, estimates of the construct 'site-specific responsible behaviour towards natural resources' was problematic. The source of the problem was the significant difference between the standardised regression weights with and without the CLF of one variable ('I respect natural resources at the cultural heritage site'), implying potential CMV in the study's findings. As a result, the variable was excluded, and the 19-item model was re-run. After this adjustment, the CLF values of all the constructs were equal and the common heuristic was acceptable, demonstrating that CMV was not a potential threat to the study's findings. Furthermore, the four-factor adjusted model with 19 observed variables indicated acceptable GOF indices. Convergent validity results showed acceptable values. However, the AVE of one latent construct ('general responsible behaviour towards natural resources') was marginally lower than the threshold and was thus retained. The discriminant validity results showed no problems (cf. 5.4.4).
- The measurement invariance analysis determined that the scale for responsible tourist behaviour in cultural heritage tourism represented the four-factor model across gender (the category 'other' from the gender data was too little and was excluded in the invariance analysis) and education groups (cf. 5.4.5):
    - Configural invariance was supported by acceptable model fit statistics when estimating gender and education groups (cf. 5.4.5.1).
    - Subsequently, alternative fit results supported metric invariance across gender and education groups (cf. 5.4.5.2).
    - Lastly, alternative fit measures supported scalar invariance across gender groups. However, one fit index (SRMR) for education groups was marginally higher but was acceptable in this study (cf. 5.4.5.3).
- Construct descriptive statistics across all constructs within the four-factor model and the scale for overall responsible tourist behaviour in cultural heritage tourism were high and thus revealed that tourists' responsible behaviour at cultural heritage settings was strong (cf. 5.4.6).

- The second-order factor model was created to cater for the overall scale construct of responsible tourist behaviour in cultural heritage tourism. The results for the GOF indices, validity, and reliability of the second-order factor model were acceptable (cf. 5.4.7).
- Group difference was compared using an independent sample t-test to determine whether respondents from different demographic groups interpret the scale constructs in a conceptual similar manner (cf. 5.4.8):
  - The group difference results between gender groups (male and female) supported the validity of the scale for responsible tourist behaviour in cultural heritage tourism. The category ‘other’ from the gender data was too little and was excluded in the group differences analysis. The results of the independent-sample t-tests revealed that there was no significant difference between most constructs of males and females. Where statistically significant differences existed (‘site-specific responsible behaviour towards natural resources’ and ‘responsible tourist behaviour in cultural heritage tourism’), Cohen’s d revealed that these were very small differences. The results showed that gender groups have no bearing on the constructs for responsible tourist behaviour in cultural heritage tourism, thereby supporting the validity of the scale (cf. 5.4.8.1).
  - The group difference between education groups (lower and higher level) also supported the validity of the scale for responsible tourist behaviour in cultural heritage tourism. The results of the independent-sample t-tests indicated that there was no significant difference between the constructs of lower and higher educational levels. However, Cohen’s d revealed a very small difference on one construct (‘site-specific responsible behaviour towards natural resources’). These results demonstrated that education groups have no effect on the constructs for responsible tourist behaviour in cultural heritage tourism, and thus supported the validity of the scale (cf. 5.4.8.2).
- Lastly, further scale validation was performed using a different construct, heritage interpretation (cf. 5.4.9):
  - The mean score for the heritage interpretation single factor (23 items) suggested that from the perspective of the tourists, heritage

interpretation in cultural heritage settings was strong. The results of the internal consistency reliability revealed that the single-factor structure and its 23 items were consistent and reliable (cf. 5.4.9.1).

    - The correlation results supported the validity of the scale even more because the relationship between the scale/constructs for responsible tourist behaviour in cultural heritage tourism and heritage interpretation was weak (cf. 5.4.9.2).

6.2.3.4 *Conclusions regarding discussion of results*

Scale development is essential for analysing tourist behaviour, and the three fundamental phases, item generation, scale development, and scale evaluation, must be followed to validate a new scale (cf. 5.5).

- Similar to Phase 1, most studies use a literature review as the deductive method to generate an initial pool of items and to ensure face and content validity. Thereafter, these items are refined using qualitative and quantitative data from two independent expert panels as the inductive method (cf. 5.5).
- Most studies assess construct validity and reliability using quantitative data from the target population and analyse the data using EFA and internal consistency reliability like Phase 2 of this study. Additionally, assessing CMV on a scale supports construct validity (cf. 5.5).
- Like Phase 3, a substantial number of studies use the independent quantitative data from the same population, analysing the data using CFA and convergent and discriminant validity and re-testing the internal consistency reliability. In addition to these analyses, the re-testing of CMV, invariance analysis, calculation of the subscale and overall scale scores, group difference statistics, and the correlation between a different construct and the scale can further evaluate the validity of the measurement scale (cf. 5.5).
- Other social science studies could be compared with the scale for responsible tourist behaviour in cultural heritage tourism in order to improve its predictive capability. Since this scale includes both general and site-specific responsible behaviour categories, the intricacies of tourist behaviour can now be thoroughly understood (cf. 5.5).

6.3 CONTRIBUTIONS

The contributions made by this study are of a theoretical, methodological, and practical nature.

6.3.1 Theoretical contribution

This study made three theoretical contributions. After a review of the numerous definitions of cultural heritage tourism, this study defined cultural heritage tourism as "the travelling to or visiting of cultural heritage sites, which are rich in unique cultural and natural resources that are representative of the ways of life of the people and other species who live or lived there".

Since the definition of cultural heritage tourism includes both natural and cultural resources, there is limited evidence that a validated scale for measuring both general and site-specific natural and cultural resources in cultural heritage tourism settings exists. Hence, this study addressed the gap by developing a validated scale to measure responsible tourist behaviour in cultural heritage tourism (see Table 6.1) through reviewing the literature and empirically testing the scale items.

Table 6.1: Validated scale for responsible tourist behaviour in cultural heritage tourism

Instruction: Indicate your agreement (where 1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree and 5 = Strongly agree) with the following statements.					
General responsible behaviour towards natural resources					
I purchase products packaged in containers that can either be reused or recycled or are made of recycled materials	1	2	3	4	5
I often purchase environmentally friendly products	1	2	3	4	5
I purchase locally produced products	1	2	3	4	5
I utilise biodegradable products (e.g. laundry detergent) in most instances	1	2	3	4	5
I try to protect the environment while maintaining my standard of living	1	2	3	4	5
I reuse as much as possible to decrease the quantity of my household garbage	1	2	3	4	5

Instruction: Indicate your agreement (where 1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree and 5 = Strongly agree) with the following statements.					
Site-specific responsible behaviour towards natural resources					
During my visit, I abide by the nature conservation rules that apply at the cultural heritage site	1	2	3	4	5
I stay on labelled pathways established by the cultural heritage site	1	2	3	4	5
I do not litter	1	2	3	4	5
I appropriately dispose of my own waste	1	2	3	4	5
I do not remove rock, fossil or dried wood at the cultural heritage site	1	2	3	4	5
I do not damage flora	1	2	3	4	5
After the visit I leave the cultural heritage site the same way I found it	1	2	3	4	5
General responsible behaviour towards cultural resources					
I pay attention to government guidance to participate in efforts to support cultural heritage tourism	1	2	3	4	5
I participate in efforts to support cultural heritage tourism	1	2	3	4	5
I protect other people's cultural resources	1	2	3	4	5
Site-specific responsible behaviour towards cultural resources					
I pay attention to the heritage interpretation on cultural resources protection	1	2	3	4	5
I learn about cultural resources' historic background	1	2	3	4	5
I observe the cultural resources detailed	1	2	3	4	5

Source: Author's own compilation

Table 6.1 depicts a scale consisting of 19 items to measure responsible tourist behaviour in cultural heritage tourism. Responsible behaviour is measured on four constructs namely 'general responsible behaviour towards natural resources' (six items); 'site-specific responsible behaviour towards natural resources' (seven items); 'general responsible behaviour towards cultural resources' (three items); and 'site-specific responsible behaviour towards cultural resources' (three items). These construct scores are calculated by adding their respective item scores together and dividing them by the number of items. Thereafter, the construct scores are used to calculate the total score for the scale of responsible tourist behaviour. A total score of 3.5 or higher indicates responsible tourist behaviour in cultural heritage tourism, while a score of less than 3.5 indicates the inverse.

Lastly, since there is a paucity of research on responsible tourist behaviour at cultural heritage tourism settings, this study contributes to the body of knowledge in the tourism management field.

6.3.2 Methodological contribution

This study used a rigorous, embedded mixed-method process to develop a validated scale. The design may assist future researchers in following this effective process. The embedded mixed-method design allows the researcher to take advantage of the strengths of both quantitative and qualitative methods to improve the overall study (see Figure 6.1).

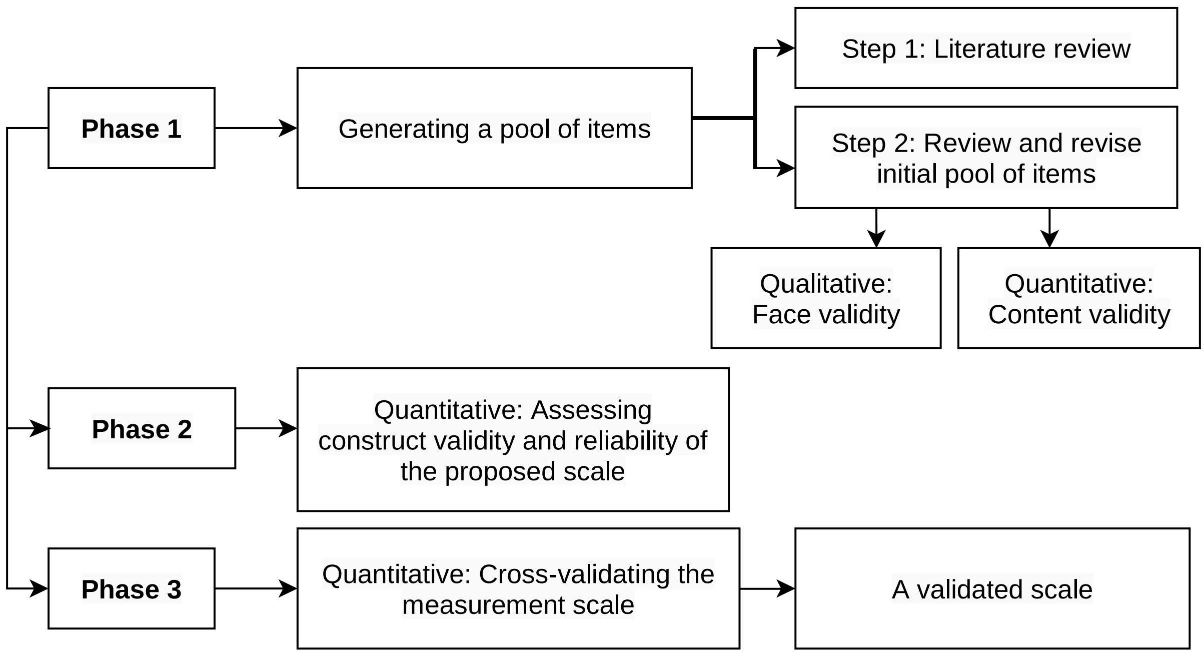

Figure 6.1: Three-phased approach to develop a validated scale

Source: Adapted from Barry et al. *(2011); Lee* et al. *(2013); Morgado* et al. *(2017); Tsang* et al. *(2017)*

The importance of the phases depicted in Figure 6.1 will vary depending on the study. While it is critical for studies focusing on developing new scales to use a similar process, others such as those aiming to validate existing scales may use only the last two phases or only the final phase.

To develop scales, studies mostly apply common procedures (item generation, EFA, internal consistency reliability, CFA, convergent validity, and discriminant validity). However, the complexity and the distinctiveness of the efforts made in a specific study field are frequently overlooked. In the social sciences, the need to supplement common scale development procedures has been identified. To fill this gap, this study revealed that it is essential to combine the common scale development procedures with CMV analysis (Phase 2), CMV re-analysis (Phase 3), invariance analysis (Phase 3), calculation of subscale scores and total scale score (Phase 3), group difference statistics (Phase 3), and the correlation between a different construct and the scale (Phase 3). This rigorous procedure will enable researchers to develop new validated scales and compare their existing scales with those that applied the processes indicated in this study.

6.3.3 Practical contribution

On a practical level, this study assists cultural heritage sites in measuring the responsible tourist behaviour in cultural heritage tourism of their visitors (tourists). The results of this scale could inform the management of possible issues that need to be addressed to protect the cultural heritage sites effectively.

6.4 LIMITATIONS OF THE STUDY

The following limitations were experienced during the study:

- In phases 2 and 3, the demographic variables were limited to age, gender (male and female, and the category ‘other’ was too little and was excluded in measurement invariance and group differences analyses), educational level, and permanent place of residence. Other demographic variables may have had a different influence on the research results.
- The sample profile for phases 2 and 3 indicated mostly South Africans, which limited the results’ generalisability to the larger global population.
- Positively worded items only could have led to response bias.

6.5 RECOMMENDATIONS

Recommendations were drawn from the literature review and the empirical results of this study. These recommendations are divided into two sections: recommendations for cultural heritage site management (6.5.1) and recommendations for future research (6.5.2).

6.5.1 Recommendations for cultural heritage site management

The following are recommendations for cultural heritage sites regarding the scale to measure responsible tourist behaviour in cultural heritage tourism:

- The scale can be used to measure responsible tourist behaviour in cultural heritage tourism settings. Scores of 3.5 or higher indicate responsible tourist behaviour in cultural heritage tourism, while scores of less than 3.5 indicate the inverse.
    - The proposed scale should be made accessible online in the six universal languages recognised by the United Nations (Arabic, Chinese, English, French, Russian, and Spanish) because cultural heritage tourism settings are commonly visited by tourists from all over the world.
- Longitudinal studies should be conducted to determine responsible tourist behaviour over time in order to investigate how responsible tourist behaviour for a specific cultural heritage tourism setting changes over time and/or to determine how effective visitor management strategies are.
- Since this study reported on all three World Cultural Heritage Sites, it is recommended that each site measure responsible tourist behaviour separately.
- Because this study targeted respondents who had participated in heritage interpretation, it is recommended to test responsible tourist behaviour in cultural heritage tourism using a larger population that also includes those who have not participated in heritage interpretation. If irresponsible behaviour is observed, strategies should be devised to raise awareness (e.g. heritage interpretation) since these encourage tourist appreciation of cultural heritage sites, which eventually will have a positive impact on responsible behaviour and thus contribute towards the conservation of cultural heritage tourism resources.

- Rather than simply implementing universal notions, managers in cultural heritage tourism should enhance site-specific phenomena and facts by incorporating the cultural and natural resource conservation specificities into meaningful contexts.

6.5.2 Recommendations for future research

Future research is suggested in the following areas:

- Given the scarcity of research on responsible tourist behaviour at cultural heritage sites, future research could use the developed scale to address this in more detail.
- The scale to measure responsible tourist behaviour in cultural heritage tourism that was proposed in this study may eventually help to improve the conservation of cultural heritage tourism resources. It is suggested that further studies could investigate how responsible tourist behaviour in cultural heritage tourism contributes towards the conservation of cultural heritage tourism resources.
- Future research could use the scale for responsible tourist behaviour in cultural heritage tourism to conduct a longitudinal study with repeat tourists to a specific cultural heritage site in order to investigate how responsible tourist behaviour in cultural heritage tourism has changed over time and/or to determine how effective visitor management strategies are.
- Different behavioural theories could be applied to responsible tourist behaviour in cultural heritage tourism (e.g. protection motivation theory, self-efficacy theory, broken window theory) to determine whether these theories comprise other constructs that could aid in the prediction of responsible tourist behaviour in cultural heritage tourism.
- Responsible behaviour in cultural heritage tourism of tourists who have not participated in heritage interpretation could be tested, and the results could be compared with those who have participated.
- Cross-validation of the current scale for responsible tourist behaviour in cultural heritage tourism with other cultural heritage tourism settings (e.g. national, provincial, and local cultural heritage tourism sites) could be entertained. Using different demographics and thereafter comparing with alternative constructs, negatively worded items, and other statistical techniques (e.g. nominal group

technique) could be considered in order to validate the predictive capability of the proposed scale further.

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ANNEXURES

Annexure A: Ethical clearance certificate

UNISA | college of economic and management sciences

COLLEGE OF ECONOMIC AND MANAGEMENT SCIENCE RESEARCH ETHICS REVIEW COMMITTEE

29 November 2021

NHREC Registration # : (if applicable)
ERC Reference # : 2021_CRERC_048 (FA)
Name #: Miss Beverly Maki Makopo
Staff No#: 66474310

Dear Miss Beverly Maki Makopo

Decision: Ethics Approval from 2021 to 2026

Researcher(s): Miss Beverly Maki Makopo; 66474310@mylife.unisa.ac.za ; 063 789 9855
College of Economic and Management Sciences
Department of Applied Management
University of South Africa

"Development of a validated cultural heritage tourism responsible behaviour scale"

Qualification: PhD

Thank you for the application for research ethics clearance by the Unisa College of Economic and management Sciences Research Ethics Review Committee for the above-mentioned research. Ethics approval is granted for 5 years (**29 November 2021 until 28 November 2026**).

*The **low risk application** was **reviewed** by the College of Economic and management Sciences Research Ethics Review Committee on **24 November 2021** in compliance with the Unisa Policy on Research Ethics and the Standard Operating Procedure on Research Ethics Risk Assessment.*

The proposed research may now commence with the provisions 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 should be communicated in writing to the

College of Economic and management Sciences Research Ethics Review Committee.

3. The researcher(s) will conduct the study according to the methods and procedures set out in the approved application.
4. Any changes that can affect the study-related risks for the research participants, particularly in terms of assurances made with regards to the protection of participants' privacy and the confidentiality of the data, should be reported to the Committee in writing, accompanied by a progress report.
5. 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. Adherence to the following South African legislation is important, if applicable: Protection of Personal Information Act, no 4 of 2013; Children's act no 38 of 2005 and the National Health Act, no 61 of 2003.
6. Only de-identified research data may be used for secondary research purposes in future on condition that the research objectives are similar to those of the original research. Secondary use of identifiable human research data requires additional ethics clearance.
7. No field work activities may continue after the expiry date **(28 November 2026)** Submission of a completed research ethics progress report will constitute an application for renewal of Ethics Research Committee approval.
8. Permission is to be obtained from the university from which the participants are to be drawn (the Unisa Senate Research, Innovation and Higher Degrees Committee) to ensure that the relevant authorities are aware of the scope of the research, and all conditions and procedures regarding access to staff/students for research purposes that may be required by the institution must be met.
9. If further counselling is required in some cases, the participants will be referred to appropriate support services.

Note:

*The reference number **2021_CRERC_048 (FA)** should be clearly indicated on all forms of communication with the intended research participants, as well as with the Committee.*

Yours sincerely,

NSewdass

Prof Nisha Sewdass
Chairperson, CRERC
E-mail: sewdan@unisa.ac.za
Tel: 012 429 2795

Prof RT Mpofu
Deputy Executive Dean: CEMS
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Annexure B: Questionnaire for Group 1 of experts

PARTICIPANT INFORMATION SHEET

Ethics clearance reference number: 2021_CRERC_048 (FA)

DEVELOPMENT OF A VALIDATED CULTURAL HERITAGE TOURISM RESPONSIBLE BEHAVIOUR SCALE

Dear Prospective Participant

My name is Beverly Maki Makopo and I am doing research with Dr Elricke Botha and Dr Nicolene Conradie, senior lecturers in the Department of Applied Management towards a PhD at the University of South Africa (UNISA). The National Research Funding (NRF) funds this research project. We are inviting you to participate in a study entitled 'Development of a validated cultural heritage tourism responsible behaviour scale'.

This study is expected to collect important information that could assist in content validity for cultural heritage tourism responsible behaviour scale.

You were one of the five experts in one or more of these fields; Cultural heritage tourism/Cultural tourism, Sustainable tourism development/Tourism development, Ecotourism, Nature conservation, Heritage interpretation and Tourism Environmental Management, who have been selected to assist with content validity of cultural heritage tourism responsible behaviour measurement items. Your contact details have been obtained from referrals of eligible experts, and as the researcher, I am committed to ensuring security of your personal details (i.e. email address) according to the Protection of Personal Information Act (POPI), nr 4 of 2013.

The study involves questionnaire survey. You are required to review measurement items to ensure that they are accurate, clear and grammatically correct. Where necessary you are required to modify wording of individual items. If you choose to participate in this survey, it will not take more than 30 minutes of your time.

Participating in this study is voluntary and you are under no obligation to consent to participation. If you do decide to take part, you will be asked to agree to a written **consent**. You are free to withdraw at any time and without giving a reason and there is no penalty or loss of benefit for non-participation. You may withdraw by exiting the survey before you have clicked the send button. However, it will not be possible to withdraw once you have submitted the questionnaire.

If you decide to participate and finish this survey, the results will make a **positive contribution** towards the better understanding of cultural heritage tourism responsible behaviour and this will assist cultural heritage sites to deliver their products and services in a sustainable manner, and other researchers can consult this study when investigating cultural heritage tourism responsible behaviour or related topics. We do not foresee that you will experience any negative consequences by completing the survey.

The survey is developed to be **anonymous**, meaning that we will have no way of connecting the information that you provide to you personally. The results of this research project will be processed in research reports, journal articles, books, chapters in books, as online web-based presentations, oral presentations, and/or conference proceedings, but that my participation will be kept **confidential** unless otherwise specified.

Electronic information of your answers will be stored on a password-protected computer by the researcher for a minimum period of five years. Hard copy notes will also be stored by the researcher for a minimum period of five years in a locked cupboard/filing cabinet at the researcher's residence for future research or academic purposes. Future use of the stored data will be subject to further Research Ethics Review and approval. Hard copy notes will be shredded and electronic copies will be permanently deleted from the hard drive of the computer through the use of a relevant software programme.

There is **no financial compensation or incentives** for participating in this survey.

This study has received written approval from the Research Ethics Review Committee of the College of Economic and Management Sciences Research Ethics Review Committee (CEMS

RERC), UNISA. A copy of the approval letter can be obtained from the researcher if you so wish.

If you would like to be informed of the final research findings, please contact Ms Beverly Maki Makopo on 012 382 5025/ 063 789 9855 or email MakopoBM@tut.ac.za. The findings are accessible for a minimum period of five years from the completion date.

Should you require any further information or want to contact the researcher about any aspect of this study, please contact 012 382 5025/ 063 789 9855 or email MakopoBM@tut.ac.za.

Should you have concerns about the way in which the research has been conducted, you may contact research supervisors on 012 429 6271/ 012 433 4618 or email vlogge@unisa.ac.za / conran@unisa.ac.za. Contact the research ethics chairperson of the College of Economic and Management Sciences Research Ethics Review Committee (CEMS RERC), Prof Nisha Sewdass on sewdan@unisa.ac.za or 0124292795 if you have any ethical concerns.

Thank you for taking time to read this information sheet and for participating in this study.

Thank you.

Ms. Beverly Maki Makopo (Primary researcher)

Informed consent:

I confirm that I was informed about the nature, procedure, potential benefits and anticipated inconvenience of participation in the study.
I have read and understood the study as explained in the information sheet.
I have had sufficient opportunity to ask questions and am prepared to participate in the study.
I understand that my participation is voluntary and that I am free to withdraw at any time before submitting the questionnaire without penalty.
I am aware that the findings of this study will be processed in research reports, journal articles, books, chapters in books, as online web-based presentations, oral presentations, and/or conference proceedings, but that my participation will be kept confidential unless otherwise specified.

By selecting **Yes**, you give consent to the above. By selecting **No**, you withdraw from the study.

Questionnaire

Section A: Demographic information

The following questions pertains to your educational level, experience and expertise. Select the appropriate option from the list provided or where applicable supply an answer. Your cooperation is appreciated.

Please indicate your educational level completed

No school	1
Some schooling	2
Matric/Secondary School	3
Undergraduate Diploma/Degree	4
Postgraduate Diploma/Honours	5
Master's degree	6
Doctoral degree	7
Post-doctoral degree	8
Technical	9
Other [please specify]___________________________	10

Please select the field of expertise that is applicable to you (more than one option can be selected).

Cultural heritage tourism	1
Cultural tourism	2
Sustainable tourism development	3
Tourism Development	4
Ecotourism	5
Heritage interpretation	6
Tourism and Environmental Management	7
Other [please specify]___________________________	8

Indicate the number of years' experience in the selected field (s) of expertise.

Less than five (5) year	1
5 to 10 years	2
11 to 15 years	3
15 to 20 years	4
More than 20 years	5

Indicate your current field of employment.

Academia	1
Industry	2
Both (Academia & industry)	3

This research project defines cultural heritage tourism (CHT) as the travelling to or visiting of cultural heritage sites, which are rich in unique cultural and natural resources that are representative of the ways of life of the people and other species who live or lived there (National Trust for Historic Preservation in the United States [NTHP US], 2018). It is against this background that both natural and cultural resources (sections B and C respectively) are important at cultural heritage sites and that responsible behaviour be measured from both perspectives. For this survey, we would like to obtain your opinion on the wording of the following possible items (Section B & C) for a cultural heritage tourism responsible behaviour measurement scale. A follow up survey will ask experts' agreement on each of these items to be included in the measurement scale.

Section B pertains to natural resources and section C pertains to cultural resources. Please make amendments to items where you deem necessary.

Section B: Tourist responsible behaviour towards NATURAL RESOURCES

ITEMS	Suggested modification
General dimension	
I learn about the recycling facilities within my community	
I learn about protection of the environment from people whose opinion matter	
I watch television programmes regarding environmental problems	
I read books, publications, and other form of media regarding environmental problems	
I read about solutions related to resolving environmental problems	
I attend community meetings focusing on local environmental protection	
I donate money to organisations protecting the environment	
I give time to organisations protecting the environment	
I invest in organisations that use green technologies	
I sign a petition supporting environmental protection	
I subscribe to environmental publications	

ITEMS	Suggested modification
I discuss environmental problems with family and friends	
I do not support companies with an un-ecological background	
I contact government official to support strong environmental protection	
I vote for political parties that support environmental protection	
I participate in voluntary work for a group that assist with environmental problems	
I participate in community clean-up efforts	
I purchase conservation-related devices, such as low-flow faucet aerators for my sinks and low-flow shower heads	
I purchase products packaged in containers that either can be reused or recycled or are made of recycled materials	
I do not purchase a product that has potential harmful environmental effects	
I make a special effort to purchase organic fruits and vegetables	
I purchase clothes made of organic materials	
I purchase environmentally friendly products	
I purchase locally produced products	
I purchase products from pro-environmental organisations	
I protect the environment albeit costing more money or time	
I report individuals infringing laws that protect the environment to the relevant authorities	
I report individuals who tampers with the anti-pollution devices on a car to the proper authorities	
I comply with the rules and regulations regarding environmental protection.	
I save electricity whenever possible, e.g. I turn off lights if I am leaving a room for over 10 minutes	
I save water whenever possible, e.g. I turn off the tap while washing dishes or brushing teeth	
I utilise biodegradable products (e.g. laundry detergent)	
I compromise my standard of living to protect the environment	
I reuse as much as possible to decrease the quantity of my household garbage	
I put empty bottles to a recycling bin	

ITEMS	Suggested modification
I commute with public transport (or low-carbon transport) or I carpool whenever possible	
I participate in reduction of carbon dioxide, e.g. I walk or cycle rather than taking motorised transportation whenever possible	
I persuade people to not to support a store that sells products with potential harmful environmental effects	
I persuade people to sign a petition regarding an environmental problems	
I persuade people to learn about the recycling facilities with their community	
I persuade people to have a home “energy audit” to find the cool air leaks in their house or apartment	
I persuade people to purchase biodegradable products (e.g. household cleaning products or laundry detergent).	
I persuade people to purchase fruits and vegetables loose rather than in plastic bags	
I persuade people to purchase products packaged in containers that either can be reused or recycled or are made of recycled materials	
Site-specific dimension	
Before I travel to a specific cultural heritage site, I make effort to acquire the information about its natural environment	
During my visit, I obey the nature conservation rules that apply at the cultural heritage site	
During my visit, I pay attention to the heritage interpretation on nature conservation	
During my visit, I tell other people not to feed the fauna	
During my visit, I observe the nature and fauna detailed	
I wear the clothes that coincide with forest ecosystem	
During my visit, I bring my own cleaning products	
During my visit, I utilise products with eco-labels first	
I respect natural resources at the cultural heritage site.	
I voluntarily visit a favourite spot less if it needed to recover from environmental damage	
I voluntarily stop visiting a favourite spot if it needed to recover from environmental damage	

ITEMS	Suggested modification
I sacrifice activities I like doing if they damage the natural environment	
I stay on labelled pathways established by the cultural heritage site	
I stay away from restricted areas at the cultural heritage site	
During my visit, I do not litter	
During my visit, I participate in the cultural heritage site's recycling, reusing or reducing initiatives	
During my visit, I appropriately dispose waste incurred	
During my visit, I pick up other people's litter	
During my visit, I encourage other people not to litter	
During my visit, I minimise garbage.	
During my visit, I lower my voice not to disturb other people or fauna onsite.	
I do not remove or collect flora and fauna specimens from the cultural heritage site.	
I do not remove rock, fossil or dried wood at the cultural heritage site.	
I intervene if I notice other people's bad or unethical behaviour, which could harm the environment	
I minimise my interference with the surrounding environment	
During my visit, I do not damage flora	
During my visit, I tell other people not to damage flora	
I report any environmental pollution or destruction to the staff onsite	
After the visit, I leave the cultural heritage site the same way I found it	

Please recommend any additional items, or provide additional comments:

____

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Section C: Tourist responsible behaviour towards CULTURAL RESOURCES

ITEMS	Suggested modification
General dimension	
I read publications regarding the protection of cultural resources	
I watch television programmes regarding cultural resources problems	
I read books, publications and other material regarding cultural resources problems	
I learn about ways to solve problems related to cultural resources protection	
I sign a petition to support cultural resources protection	
I attend community meetings regarding the protection of cultural resources	
I donate money to organisations concerned with the protection and improvement of cultural resources	
I give time to support organisations concerned with the protection and improvement of cultural resources	
I write letters to government officials regarding the need of more cultural resources protection	
I vote for political parties that support cultural resources protection	
I do not purchase products that have negative effect on cultural resources	
I purchase products from companies involved in the protection of cultural resources	
I purchase products from companies that are careful to the history, culture, traditions and identity of communities	
I make a special effort to purchase products related to the history, culture, traditions and identity of local communities	
I discuss the protection of cultural resources with family or friends	
I promote the protection of cultural resources.	
I promote the need to have a more responsible behaviour when visiting cultural heritage sites	
I persuade other people to act responsibly when visiting cultural heritage sites	
I persuade other people to adopt pro-cultural heritage behaviours	

ITEMS	Suggested modification
I persuade people to visit less crowded cultural heritage sites in order to protect and enhance cultural heritage	
I persuade people not to visit crowded cultural heritage sites in order to protect and enhance cultural heritage	
I persuade people to purchase products from companies that are careful or involved in the protection of cultural resources	
I persuade people to donate time or money for the protection of cultural resources	
I report individuals infringing laws that protect cultural resources to the relevant authorities	
I support establishment of laws and regulations that protect cultural resources	
I pay attention to government guidance to participate in efforts to support cultural heritage tourism.	
I participate in efforts to support cultural heritage tourism	
I share my cultural heritage with other people	
I protect other people's cultural resources	
I learn about different cultural resources around the world	
Site-specific dimension	
Before I travel to a specific cultural heritage site, I make effort to acquire the information about its cultural resources	
During my visit, I learn about the fragility of specific cultural resources	
During my visit, I obey the social rules that apply at the cultural heritage site	
During my visit, I pay attention to the heritage interpretation on cultural resources protection	
During my visit, I learn about cultural resources' historic background	
During my visit, I observe the cultural resources detailed	
During my visit, I choose tourism products that protect local cultural resources	
During my visit, I respect other people's privacy by asking for their prior permission to taking a photograph	
I do not damage heritage structures or other cultural features	

ITEMS	Suggested modification
I do not paint or draw graffiti at a cultural heritage site.	
I do not remove artefacts from a cultural heritage site	
I do not touch or remove inscriptions or decorative elements at a cultural heritage site	
I do not loot or vandalise cultural resources.	
I report vandalism of cultural resources to onsite staff	
I do not purchase illegal authentic objects	
I purchase souvenirs at this cultural heritage site's gift shop	
I support local crafts that reflect cultural heritage.	
I support replicas of cultural resources displayed at a specific cultural heritage site	
I participate in tourism activities designed to conserve a specific cultural heritage site	
I report the discovery of special cultural resources to relevant authorities	
I do not visit sensitive spots when they are overcrowded	
I visit cultural heritage site during off-season to avoid crowd	

Please recommend any additional items, or provide additional comments:

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A follow up survey will ask experts' agreement on each of the natural and cultural items to be included in the measurement scale. Could you recommend an eligible expert(s) in the fields of Cultural heritage tourism/Cultural tourism, Sustainable tourism development/Tourism development, Ecotourism, Nature conservation, Heritage interpretation, or Tourism Environmental Management to be included in the follow-up survey. Please provide their title, name, surname and email address.

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Thank you for your participation

UNISA university of south africa

Annexure C: Questionnaire for Group 2 of experts

Ms Beverly Maki Makopo
Department of Applied Management
University of South Africa (Unisa)
063 789 9855/ 66474310@mylife.unisa.ac.za
Dr Elricke Botha 012 429 6271/ vlogge@unisa.ac.za
Dr Nicolene Conradie 012 433 4618/ conran@unisa.ac.za

Ethics clearance number: # 2021_CRERC_048 (FA)
College Research Ethics Review Committee:
Dr Marianne Engelbrecht (Engelm1@unisa.ac.za)
University's Toll-Free Hotline number: +27 800 86 96 93

The development of a validated scale of responsible behaviour in cultural heritage tourism

Participant information sheet

My name is Beverly Maki Makopo and I am doing research with Dr Elricke Botha and Dr Nicolene Conradie, senior lecturers in the Department of Applied Management towards a PhD at UNISA. The National Research Funding (NRF) funds this research project. **The purpose of this study is to develop a validated scale of responsible behaviour in cultural heritage tourism.** You are selected to participate in this study because of your expertise and knowledge in sustainable tourism and related fields. This survey is expected to collect important data that could assist in the content validity of the responsible behaviour in cultural heritage tourism scale. The overall findings of this study will assist **cultural heritage sites to measure how responsible tourist behaviour is at their sites** and contribute towards the body of knowledge for the scientific community.

You are under no obligation to complete the questionnaire and may withdraw from the survey at any time before submitting the questionnaire. If you choose to participate in this study, you should note that this questionnaire consists of three sections and will take approximately 20 minutes to complete. Other than your time, no negative consequences for participation in the study are foreseen. Your anonymity is guaranteed as encryption is used for each participant's responses and they can therefore not be linked to you directly. Note that you will not be reimbursed or receive any other incentives for your participation in this study.

The electronic responses will be stored on a password-protected computer. I undertake to keep any data provided in this questionnaire confidential, not to let it out of my possession, and to report on the findings from the perspective of the participating group. The findings may be published in research reports, journal articles, books, chapters in books or as online web-based presentations, oral presentations, and/or conference proceedings.

If you have any queries, please do not hesitate to contact me on 063 789 9855 or at 66474310@mylife.unisa.ac.za, or study supervisors at vlogge@unisa.ac.za or conran@unisa.ac.za.

Informed consent:

I confirm that I was informed about the nature, procedure, potential benefits and anticipated inconvenience of participation in the study.

I have read and understood the study as explained in the information sheet.

I have had sufficient opportunity to ask questions and am prepared to participate in the study.

I understand that my participation is voluntary and that I am free to withdraw at any time without penalty before submitting the questionnaire.

I am aware that the findings of this study will be processed in research reports, journal articles, books, chapters in books, as online web-based presentations, oral presentations, and/or conference proceedings, but that my participation will be kept confidential unless otherwise specified.

By selecting **Yes**, you give consent to the above. By selecting **No**, you withdraw from the study.

YES	
NO	

>>>LimeSurvey set up: If NO, the questionnaire ends with the following message: Thank you for your time. Enjoy your day.

Questionnaire

Section A: Demographic information

>>>LimeSurvey set up: All questions are mandatory

For the following questions, choose the relevant answer from the list provided or where applicable provide the relevant answer in the space provided.

Please indicate your highest educational level completed
>>>LimeSurvey set up: Choose only one option

No school	1
Some schooling	2
Matric/Secondary School	3
Undergraduate Diploma/Degree	4
Postgraduate Diploma/Honours	5
Master's degree	6
Doctoral degree	7
Post-doctoral degree	8
Technical	9
Other [please specify]:___________________________	10

Please select the field of expertise that is applicable to you (more than one option can be selected).

Cultural heritage tourism	1
Cultural tourism	2
Sustainable tourism development	3
Tourism development	4
Ecotourism	5
Heritage interpretation	6
Tourism and Environmental Management	7
Other [please specify]:___________________________	8

Indicate the total number of years' experience in the selected field of expertise (Only for the field you have worked the longest).

Less than 5 years	1
5 to 10 years	2
11 to 15 years	3
16 to 20 years	4
More than 20 years	5

Indicate your main field of employment.

Academia	1
Industry	2
Both (academia and industry)	3

>>>LimeSurvey set up: Provide back/previous

>>>LimeSurvey set up: After completing Section A, include the following message:

This research project defines cultural heritage tourism (CHT) as the travelling to or visiting of cultural heritage sites that are rich in unique **cultural** and **natural** resources that are representative of the ways of life of the people and other species who live or lived there (National Trust for Historic Preservation in the United States [NTHPUS], 2018). It is against this background that both natural and cultural resources are important at cultural heritage sites and that responsible behaviour be measured from both perspectives.

We have already obtained feedback on the wording of the responsible behaviour in cultural heritage tourism items from the first cohort of experts (Phase 1). We would like you to make a judgement, as an expert, about the relevance (validity) of each item/variable to be included or excluded in the scale that is intended to measure tourists' levels of responsible behaviour in cultural heritage tourism. The higher levels on the scale will be interpreted as tourist having the trait of behaving more responsibly.

Section B pertains to natural resource items/variables and Section C to cultural resource items/variables. You are required to evaluate each item/variable's inclusion (or exclusion) in the scale by using a 5-point Likert scale (where 1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree and 5 = Strongly agree).

For example: I [strongly disagree] that the item "I learn about the recycling projects within my community" should be included in a measurement scale to determine tourists' responsible behaviour towards natural resources."

>>>LimeSurvey set up: Go to the next section

Section B: Tourist responsible behaviour towards NATURAL RESOURCES

>>>LimeSurvey set up: All questions are mandatory

You are required to evaluate each item's inclusion (or exclusion) in the proposed responsible behaviour in cultural heritage tourism scale by using a 5-point Likert scale (where 1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree and 5 = Strongly agree).

For example: I [strongly disagree] that the item "I learn about the recycling projects within my community" should be included in a measurement scale to determine tourists' responsible behaviour towards **natural resources**."

ITEMS	**Relevance to be included in the scale?**				
	Strongly disagree	**Disagree**	**Neither agree nor disagree**	**Agree**	**Strongly agree**
General dimension					
I learn about the recycling projects in my community	1	2	3	4	5
I learn about protection of the environment from people who have informed opinions on the topic either by expertise or lived experience	1	2	3	4	5
I watch television programmes regarding environmental problems	1	2	3	4	5
I read books, publications and other forms of reading material regarding environmental problems	1	2	3	4	5
I read about solutions related to resolving environmental problems	1	2	3	4	5
I attend community meetings focusing on local environmental protection	1	2	3	4	5
I donate money to organisations whose goals include protecting the environment	1	2	3	4	5
I give time to organisations protecting the environment	1	2	3	4	5
I invest in organisations that use green technologies	1	2	3	4	5

ITEMS	Relevance to be included in the scale?				
	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I support petitions that promote environmental protection	1	2	3	4	5
I subscribe to environmental publications	1	2	3	4	5
I discuss environmental problems with family, friends and community leaders.	1	2	3	4	5
I do not support companies with an un-ecological background	1	2	3	4	5
I contact government officials to support strong environmental protection	1	2	3	4	5
I have voted for political parties whose mandates include support for environmental protection	1	2	3	4	5
I participate in voluntary work for a group that assists with environmental problems	1	2	3	4	5
I participate in community clean-up efforts	1	2	3	4	5
I purchase conservation-related devices, such as low-flow faucet aerators for my sinks and low-flow shower heads	1	2	3	4	5
I purchase products packaged in containers that can either be reused or recycled or are made of recycled materials	1	2	3	4	5
I do not purchase a product that has potentially harmful environmental effects	1	2	3	4	5
I make a special effort to purchase organic fruits and vegetables	1	2	3	4	5
I often purchase clothes made of organic materials	1	2	3	4	5
I often purchase environmentally friendly products	1	2	3	4	5
I purchase locally produced products	1	2	3	4	5
I purchase products from pro-environmental organisations	1	2	3	4	5
I protect the environment although it costs money or time	1	2	3	4	5

ITEMS	Relevance to be included in the scale?				
	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I always report individuals infringing laws that protect the environment to the relevant authorities	1	2	3	4	5
I report individuals who tamper with anti-pollution devices on cars to the proper authorities	1	2	3	4	5
I comply with rules and regulations regarding environmental protection.	1	2	3	4	5
I save electricity whenever possible (e.g. I turn off lights if I am leaving a room for over 10 minutes)	1	2	3	4	5
I save water whenever possible (e.g. I turn off the tap while washing dishes or brushing teeth)	1	2	3	4	5
I utilise biodegradable products (e.g. laundry detergent) in most instances	1	2	3	4	5
I try to protect the environment while maintaining my standard of living	1	2	3	4	5
I reuse as much as possible to decrease the quantity of my household garbage	1	2	3	4	5
I put empty bottles into the appropriate recycling bin	1	2	3	4	5
I commute with public transport (or low-carbon transport) or I carpool whenever possible	1	2	3	4	5
I participate in the reduction of carbon dioxide (e.g. I walk or cycle whenever possible rather than taking motorised transportation)	1	2	3	4	5
I educate people about stores that sell products with potentially harmful environmental effects	1	2	3	4	5
I engage with people to show them the benefits of signing petitions regarding environmental problems	1	2	3	4	5

ITEMS	Relevance to be included in the scale?				
	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I engage with people to learn about the recycling facilities in their communities	1	2	3	4	5
I encourage people to have a home "energy audit" to find the cool air leaks in their house or apartment	1	2	3	4	5
I encourage people to purchase biodegradable products (e.g. household cleaning products or laundry detergent).	1	2	3	4	5
I encourage people to purchase fruit and vegetables loose rather than in plastic bags	1	2	3	4	5
I encourage people to purchase products packaged in containers that either can be reused or recycled or are made of recycled materials	1	2	3	4	5
Site-specific dimension					
Before I travel to a specific cultural site, I make an effort to acquire information about its natural environment from many sources including the local community	1	2	3	4	5
During my visit, I abide by the nature conservation rules that apply at the cultural heritage site	1	2	3	4	5
I pay attention to the heritage interpretation on nature conservation	1	2	3	4	5
I tell other people not to feed the surrounding animals	1	2	3	4	5
I observe the nature and animals detailed	1	2	3	4	5
I wear the clothes that coincide with the forest ecosystem	1	2	3	4	5
I enquire about the host's cleaning products	1	2	3	4	5
I give high priority to products with eco-labels	1	2	3	4	5
I respect natural resources at the cultural heritage site	1	2	3	4	5

ITEMS	Relevance to be included in the scale?				
	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I visit a favourite spot less frequently if it needs to recover from environmental damage	1	2	3	4	5
I avoid visiting a favourite spot if it needs to recover from environmental damage	1	2	3	4	5
I find alternative activities if the current activities damage the natural environment	1	2	3	4	5
I stay on labelled pathways established by the cultural heritage site	1	2	3	4	5
I stay away from restricted areas at the cultural heritage site	1	2	3	4	5
I do not litter	1	2	3	4	5
I participate in the cultural heritage site’s recycling, reusing or reducing initiatives	1	2	3	4	5
I appropriately dispose of my own waste	1	2	3	4	5
I pick up other people’s litter	1	2	3	4	5
I encourage other people not to litter	1	2	3	4	5
I minimise garbage	1	2	3	4	5
I lower my voice so as not to disturb other people or animals on site	1	2	3	4	5
I do not remove or collect flora and animal specimens from the cultural heritage site	1	2	3	4	5
I do not remove rock, fossil or dried wood at the cultural heritage site	1	2	3	4	5
I do not take pets to the wilderness areas					
I intervene if I notice other people’s bad or unethical behaviour that could harm the environment	1	2	3	4	5
I minimise my interference with the surrounding environment	1	2	3	4	5
I do not damage flora	1	2	3	4	5

ITEMS	Relevance to be included in the scale?				
	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I tell other people not to damage flora	1	2	3	4	5
I report any environmental pollution or destruction to the staff onsite	1	2	3	4	5
After the visit I leave the cultural heritage site the same way I found it	1	2	3	4	5

>>>LimeSurvey set up: Provide back/previous page button

Section C: Tourist responsible behaviour towards CULTURAL RESOURCES

>>>LimeSurvey set up: All questions are mandatory

You are required to evaluate each item's inclusion (or exclusion) in the proposed responsible behaviour in cultural heritage tourism scale by using a 5-point Likert scale (Strongly Disagree, Disagree, Neither Agree or Disagree, Agree and Strongly Agree).

For example: I [strongly disagree] that the item "I consult relevant and reliable resources regarding the protection of cultural resources" should be included in a measurement scale to determine tourists' responsible behaviour towards **cultural resources**."

ITEMS	Relevance to be included in the scale?				
	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
General dimension					
I consult relevant and reliable resources regarding the protection of cultural resources	1	2	3	4	5
I watch television programmes regarding cultural resources problems	1	2	3	4	5
I read books, publications and other material regarding cultural resources problems	1	2	3	4	5
I learn about ways to solve problems related to cultural resources protection	1	2	3	4	5
I support petitions that promote cultural resources protection	1	2	3	4	5
I attend community meetings regarding the protection of cultural resources	1	2	3	4	5
I donate money to organisations whose goals include the protection and improvement of cultural resources	1	2	3	4	5
I give time to support organisations concerned with the protection and improvement of cultural resources	1	2	3	4	5
I write letters to government officials regarding the need for more cultural resources protection	1	2	3	4	5
I have voted for political parties whose mandates include support for cultural resources protection	1	2	3	4	5
I do not purchase products that have a negative effect on cultural resources	1	2	3	4	5
I prioritise purchasing products from companies involved in the protection of cultural resources	1	2	3	4	5
I purchase products from companies that are considerate of the history, culture, traditions and identity of communities	1	2	3	4	5
I make a special effort to purchase products related to the history, culture, traditions and identity of local communities	1	2	3	4	5

ITEMS	Relevance to be included in the scale?				
	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
I discuss the protection of cultural resources with family or friends	1	2	3	4	5
I promote the protection of cultural resources	1	2	3	4	5
I promote the need for responsible behaviour when visiting cultural heritage sites	1	2	3	4	5
I encourage other people to act responsibly when visiting cultural heritage sites	1	2	3	4	5
I encourage other people to adopt pro-cultural heritage behaviours	1	2	3	4	5
I encourage people to visit less crowded cultural heritage sites in order to protect and enhance cultural heritage	1	2	3	4	5
I encourage people not to visit crowded cultural heritage sites in order to protect and enhance cultural heritage	1	2	3	4	5
I educate people about the benefits of purchasing products from companies that are associated with the protection of cultural resources	1	2	3	4	5
I encourage people to donate time or money for the protection of cultural resources	1	2	3	4	5
I report individuals infringing laws that protect cultural resources to the relevant authorities	1	2	3	4	5
I support the establishment of laws and regulations that protect cultural resources	1	2	3	4	5
I pay attention to government guidance to participate in efforts to support cultural heritage tourism	1	2	3	4	5
I participate in efforts to support cultural heritage tourism	1	2	3	4	5
I share my cultural heritage with other people	1	2	3	4	5
I protect other people’s cultural resources	1	2	3	4	5
I learn about different cultural resources around the world	1	2	3	4	5

ITEMS	Relevance to be included in the scale?				
	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
Site-specific dimension					
Before I travel to a specific cultural heritage site, I make an effort to acquire the information about its cultural resources and their significance	1	2	3	4	5
I learn about the fragility of specific cultural resources	1	2	3	4	5
I obey the social rules that apply at the cultural heritage site	1	2	3	4	5
I pay attention to the heritage interpretation on cultural resources protection	1	2	3	4	5
I learn about cultural resources' historic background	1	2	3	4	5
I observe the cultural resources detailed	1	2	3	4	5
I choose tourism products that protect local cultural resources	1	2	3	4	5
I respect other people's privacy by asking for their prior permission to take a photograph	1	2	3	4	5
I do not damage heritage structures or other cultural features	1	2	3	4	5
I do not paint or draw graffiti at a cultural heritage site	1	2	3	4	5
I do not remove artefacts from a cultural heritage site	1	2	3	4	5
I do not touch or remove inscriptions or decorative elements at a cultural heritage site	1	2	3	4	5
I do not loot or vandalise cultural resources	1	2	3	4	5
I report vandalism of cultural resources to onsite staff	1	2	3	4	5
I do not purchase illegal authentic objects	1	2	3	4	5
I purchase souvenirs at this cultural heritage site's gift shop	1	2	3	4	5
I support local crafts that reflect cultural heritage	1	2	3	4	5

ITEMS	Relevance to be included in the scale?				
	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
I support replicas of cultural resources displayed at a specific cultural heritage site	1	2	3	4	5
I participate in tourism activities designed to conserve a specific cultural heritage site	1	2	3	4	5
I report the discovery of special cultural resources to relevant authorities	1	2	3	4	5
I do not visit sensitive spots when they are overcrowded	1	2	3	4	5
I visit cultural heritage site during off-season to avoid crowds	1	2	3	4	5

>>>LimeSurvey set up: Provide back/previous page button

The target audience for the final scale will be tourists who have visited cultural heritage site/s. Provide your suggestions regarding their Likert scale response options (i.e. should questions be measured on level of agreement, importance, frequency, acceptability, etc.?). The higher levels on the scale will be interpreted as tourists having the trait of behaving more responsibly.

____

____.

Do you have any suggestions that you would like to make for the responsible behaviour in cultural heritage tourism scale?

>>>LimeSurvey set up: After the respondent has submitted, end with the following message: Your responses have been submitted. Thank you for your valuable time.

Annexure D: The Likert scoring converted into fuzzy numbers

The fuzzy scores were averaged as specified by m1, m2, and m3 values for the defuzzification process

Experts	Average minimum value (n1) ITEMS Natural resources: General dimension (NR_GD)														
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
1	0,6	0,6	0,2	0,6	0,6	0,6	0,2	0,6	0,2	0,6	0,6	0,6	0,6	0,4	0,2
2	0,0	0,6	0,6	0,4	0,2	0,2	0,2	0,4	0,0	0,6	0,4	0,4	0,6	0,0	0,0
3	0,0	0,4	0,4	0,2	0,4	0,4	0,6	0,6	0,2	0,6	0,4	0,6	0,2	0,0	0,2
4	0,6	0,6	0,2	0,4	0,4	0,2	0,2	0,2	0,6	0,6	0,2	0,4	0,2	0,6	0,2
5	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,6	0,6	0,6	0,4	0,4	0,6	0,6	0,4
6	0,6	0,6	0,0	0,0	0,0	0,0	0,0	0,0	0,4	0,6	0,6	0,6	0,2	0,4	0,4
7	0,2	0,6	0,6	0,4	0,4	0,2	0,0	0,4	0,6	0,6	0,4	0,4	0,2	0,2	0,0
8	0,2	0,0	0,6	0,6	0,6	0,0	0,2	0,4	0,0	0,2	0,4	0,6	0,0	0,4	0,2
9	0,4	0,4	0,4	0,2	0,2	0,4	0,2	0,2	0,4	0,4	0,2	0,4	0,4	0,4	0,2
10	0,6	0,6	0,6	0,6	0,6	0,4	0,4	0,6	0,6	0,6	0,4	0,6	0,4	0,2	0,6
11	0,2	0,4	0,4	0,6	0,4	0,0	0,0	0,4	0,2	0,6	0,4	0,6	0,6	0,2	0,6
12	0,4	0,4	0,2	0,2	0,4	0,4	0,6	0,6	0,0	0,4	0,2	0,4	0,6	0,0	0,4
13	0,2	0,4	0,4	0,4	0,4	0,0	0,0	0,4	0,0	0,4	0,4	0,4	0,4	0,4	0,2
14	0,2	0,6	0,4	0,0	0,4	0,2	0,0	0,4	0,0	0,4	0,0	0,4	0,2	0,0	0,0
15	0,2	0,6	0,4	0,4	0,4	0,0	0,0	0,4	0,2	0,4	0,2	0,4	0,0	0,2	0,2
16	0,0	0,4	0,6	0,4	0,6	0,0	0,0	0,0	0,0	0,0	0,4	0,4	0,4	0,0	0,4
17	0,6	0,6	0,0	0,0	0,0	0,6	0,2	0,6	0,6	0,6	0,6	0,6	0,6	0,2	0,0
18	0,0	0,4	0,6	0,6	0,4	0,2	0,2	0,6	0,2	0,2	0,6	0,4	0,4	0,2	0,2
19	0,4	0,4	0,4	0,4	0,4	0,6	0,6	0,6	0,6	0,6	0,4	0,4	0,4	0,6	0,4
20	0,6	0,6	0,6	0,6	0,6	0,0	0,0	0,0	0,0	0,0	0,0	0,4	0,4	0,2	0,2
21	0,0	0,4	0,6	0,6	0,6	0,0	0,0	0,4	0,2	0,4	0,0	0,6	0,2	0,4	0,2
22	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6
AVE (m1)	**0,318**	**0,482**	**0,418**	**0,391**	**0,409**	**0,245**	**0,209**	**0,409**	**0,282**	**0,455**	**0,355**	**0,482**	**0,373**	**0,282**	**0,264**

Experts	Average minimum value (n1)														
	ITEMS														
	Natural resources: General dimension (NR_GD)														
	16	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
1	0,6	0,6	0,6	0,6	0,6	0,6	0,2	0,6	0,6	0,6	0,4	0,4	0,4	0,6	0,6
2	0,0	0,2	0,0	0,6	0,6	0,4	0,6	0,4	0,4	0,2	0,4	0,0	0,0	0,6	0,6
3	0,6	0,6	0,2	0,4	0,2	0,2	0,2	0,2	0,4	0,2	0,0	0,2	0,2	0,4	0,6
4	0,6	0,6	0,4	0,6	0,2	0,4	0,4	0,4	0,4	0,4	0,4	0,2	0,2	0,6	0,6
5	0,6	0,6	0,4	0,6	0,6	0,0	0,0	0,4	0,6	0,6	0,4	0,6	0,4	0,6	0,6
6	0,6	0,0	0,6	0,6	0,4	0,4	0,0	0,0	0,4	0,0	0,2	0,4	0,0	0,4	0,6
7	0,4	0,2	0,6	0,6	0,2	0,6	0,2	0,6	0,6	0,6	0,2	0,2	0,2	0,6	0,6
8	0,0	0,0	0,6	0,4	0,0	0,2	0,4	0,4	0,6	0,2	0,4	0,4	0,2	0,6	0,4
9	0,2	0,4	0,4	0,4	0,4	0,4	0,0	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,6
10	0,6	0,6	0,4	0,6	0,6	0,4	0,2	0,6	0,6	0,4	0,4	0,2	0,2	0,6	0,6
11	0,0	0,6	0,4	0,4	0,6	0,6	0,6	0,4	0,4	0,4	0,6	0,2	0,2	0,6	0,6
12	0,6	0,6	0,4	0,4	0,4	0,6	0,4	0,4	0,4	0,2	0,4	0,4	0,2	0,6	0,4
13	0,2	0,2	0,2	0,4	0,4	0,2	0,2	0,4	0,4	0,4	0,4	0,4	0,2	0,4	0,4
14	0,0	0,4	0,2	0,6	0,0	0,4	0,4	0,4	0,6	0,6	0,4	0,2	0,4	0,4	0,6
15	0,4	0,4	0,4	0,4	0,0	0,4	0,2	0,4	0,4	0,2	0,2	0,6	0,6	0,6	0,6
16	0,0	0,4	0,4	0,4	0,4	0,0	0,0	0,6	0,6	0,4	0,4	0,0	0,0	0,4	0,6
17	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6
18	0,2	0,2	0,4	0,4	0,4	0,4	0,4	0,2	0,4	0,4	0,4	0,4	0,2	0,4	0,4
19	0,6	0,6	0,6	0,6	0,6	0,6	0,4	0,6	0,6	0,4	0,6	0,6	0,6	0,6	0,6
20	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,0	0,6	0,6
21	0,4	0,6	0,2	0,6	0,0	0,6	0,2	0,4	0,4	0,2	0,2	0,0	0,0	0,6	0,6
22	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,4	0,4	0,4	0,4	0,6	0,6	0,4	0,6
AVE (m1)	**0,373**	**0,427**	**0,409**	**0,509**	**0,373**	**0,409**	**0,300**	**0,418**	**0,482**	**0,373**	**0,373**	**0,336**	**0,264**	**0,527**	**0,564**

Experts	Average minimum value (n1)													
	ITEMS													
	Natural resources: General dimension (NR_GD)													
	31	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**
1	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,4	0,4	0,6	0,6	0,6	0,6	0,6
2	0,6	0,4	0,4	0,0	0,0	0,6	0,6	0,2	0,2	0,2	0,2	0,4	0,4	0,4
3	0,6	0,4	0,6	0,6	0,6	0,6	0,6	0,4	0,4	0,4	0,4	0,2	0,2	0,6
4	0,6	0,6	0,6	0,0	0,2	0,2	0,2	0,4	0,4	0,4	0,2	0,2	0,6	0,2
5	0,6	0,4	0,6	0,6	0,6	0,4	0,4	0,4	0,4	0,4	0,0	0,4	0,4	0,6
6	0,6	0,4	0,0	0,6	0,6	0,6	0,0	0,4	0,4	0,0	0,4	0,4	0,0	0,2
7	0,6	0,4	0,6	0,4	0,6	0,6	0,6	0,2	0,2	0,4	0,4	0,4	0,4	0,6
8	0,4	0,0	0,6	0,4	0,2	0,0	0,0	0,0	0,0	0,0	0,0	0,2	0,4	0,4
9	0,6	0,4	0,4	0,4	0,4	0,2	0,2	0,2	0,2	0,4	0,2	0,2	0,4	0,4
10	0,6	0,6	0,6	0,6	0,4	0,0	0,0	0,0	0,6	0,6	0,0	0,2	0,6	0,6
11	0,6	0,4	0,6	0,6	0,4	0,6	0,4	0,4	0,4	0,4	0,2	0,4	0,0	0,4
12	0,4	0,4	0,6	0,4	0,4	0,0	0,0	0,2	0,2	0,4	0,2	0,2	0,6	0,4
13	0,4	0,4	0,4	0,4	0,4	0,2	0,2	0,2	0,2	0,2	0,2	0,4	0,2	0,4
14	0,6	0,6	0,6	0,6	0,6	0,0	0,6	0,0	0,2	0,4	0,4	0,4	0,6	0,4
15	0,6	0,4	0,6	0,6	0,6	0,2	0,2	0,4	0,0	0,4	0,4	0,0	0,0	0,0
16	0,6	0,4	0,4	0,4	0,4	0,4	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
17	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,2	0,2	0,6	0,6	0,6	0,6	0,6
18	0,6	0,4	0,6	0,6	0,4	0,2	0,2	0,2	0,0	0,0	0,2	0,0	0,0	0,0
19	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,4	0,4	0,4	0,4	0,4	0,4	0,4
20	0,6	0,6	0,6	0,6	0,6	0,6	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4
21	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,2	0,2	0,4	0,2	0,4	0,2	0,4
22	0,6	0,6	0,6	0,6	0,6	0,4	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6
AVE (m1)	**0,573**	**0,464**	**0,536**	**0,491**	**0,473**	**0,373**	**0,345**	**0,264**	**0,273**	**0,345**	**0,282**	**0,318**	**0,345**	**0,391**

Experts	Average minimum value (n1)														
	ITEMS														
	Natural resources: Site-specific dimension (NR_SSD)														
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
1	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6
2	0,6	0,6	0,6	0,4	0,6	0,2	0,0	0,2	0,6	0,4	0,2	0,2	0,4	0,6	0,6
3	0,4	0,6	0,6	0,4	0,4	0,0	0,0	0,2	0,6	0,4	0,2	0,0	0,6	0,6	0,6
4	0,6	0,6	0,6	0,6	0,6	0,6	0,4	0,4	0,6	0,4	0,4	0,4	0,6	0,6	0,6
5	0,6	0,6	0,0	0,6	0,0	0,0	0,0	0,4	0,6	0,6	0,6	0,6	0,6	0,6	0,6
6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6
7	0,6	0,6	0,6	0,6	0,6	0,0	0,2	0,2	0,6	0,2	0,2	0,0	0,6	0,6	0,6
8	0,0	0,6	0,6	0,6	0,6	0,4	0,0	0,0	0,6	0,2	0,6	0,6	0,6	0,6	0,6
9	0,2	0,4	0,4	0,4	0,4	0,2	0,2	0,4	0,4	0,2	0,2	0,2	0,4	0,4	0,4
10	0,6	0,6	0,6	0,6	0,6	0,6	0,0	0,4	0,6	0,6	0,6	0,6	0,6	0,6	0,6
11	0,6	0,6	0,6	0,4	0,6	0,6	0,2	0,4	0,6	0,6	0,4	0,6	0,6	0,6	0,6
12	0,0	0,4	0,4	0,6	0,2	0,0	0,2	0,4	0,6	0,0	0,0	0,0	0,6	0,6	0,6
13	0,2	0,4	0,4	0,4	0,4	0,2	0,2	0,2	0,4	0,4	0,4	0,4	0,4	0,4	0,4
14	0,4	0,6	0,6	0,6	0,6	0,2	0,2	0,4	0,6	0,2	0,2	0,4	0,6	0,6	0,6
15	0,6	0,6	0,6	0,6	0,6	0,6	0,4	0,4	0,6	0,4	0,4	0,6	0,6	0,6	0,6
16	0,6	0,6	0,6	0,6	0,6	0,4	0,4	0,4	0,6	0,4	0,6	0,4	0,6	0,6	0,6
17	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6
18	0,4	0,4	0,4	0,2	0,6	0,2	0,0	0,4	0,6	0,4	0,4	0,4	0,6	0,6	0,6
19	0,4	0,6	0,4	0,4	0,2	0,2	0,4	0,4	0,6	0,6	0,4	0,6	0,6	0,6	0,6
20	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6
21	0,4	0,6	0,4	0,4	0,4	0,4	0,0	0,0	0,6	0,4	0,6	0,6	0,6	0,6	0,6
22	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6
AVE (m1)	**0,464**	**0,564**	**0,518**	**0,518**	**0,500**	**0,355**	**0,264**	**0,373**	**0,582**	**0,427**	**0,427**	**0,436**	**0,573**	**0,582**	**0,582**

Experts	Average minimum value (n1)														
	ITEMS														
	Natural resources: Site-specific dimension (NR_SSD)														
	16	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
1	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6
2	0,6	0,4	0,0	0,6	0,6	0,4	0,6	0,6	0,6	0,4	0,2	0,6	0,6	0,4	0,6
3	0,4	0,4	0,4	0,4	0,4	0,6	0,6	0,6	0,2	0,4	0,0	0,6	0,6	0,4	0,6
4	0,6	0,6	0,4	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6
5	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,0	0,4	0,6	0,6	0,4	0,4	0,6
6	0,6	0,6	0,0	0,6	0,0	0,6	0,6	0,6	0,6	0,0	0,0	0,0	0,0	0,6	0,6
7	0,2	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,6
8	0,6	0,6	0,4	0,4	0,4	0,6	0,6	0,6	0,6	0,4	0,6	0,6	0,4	0,4	0,6
9	0,0	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4
10	0,0	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6
11	0,4	0,6	0,0	0,6	0,4	0,6	0,6	0,6	0,6	0,4	0,6	0,6	0,4	0,4	0,4
12	0,6	0,6	0,4	0,4	0,4	0,4	0,6	0,6	0,0	0,4	0,4	0,6	0,4	0,6	0,6
13	0,4	0,4	0,4	0,4	0,2	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4
14	0,6	0,6	0,4	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6
15	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,0	0,6	0,6	0,6	0,6	0,6
16	0,4	0,4	0,4	0,4	0,4	0,6	0,6	0,6	0,4	0,4	0,6	0,6	0,6	0,4	0,6
17	0,6	0,6	0,6	0,2	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,2	0,6	0,6
18	0,6	0,6	0,6	0,2	0,6	0,6	0,6	0,6	0,6	0,2	0,6	0,6	0,2	0,4	0,6
19	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6
20	0,6	0,6	0,6	0,6	0,6	0,4	0,6	0,6	0,6	0,4	0,4	0,6	0,6	0,6	0,6
21	0,6	0,6	0,4	0,6	0,6	0,6	0,6	0,6	0,6	0,4	0,6	0,6	0,4	0,6	0,6
22	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6
AVE (m1)	**0,491**	**0,545**	**0,427**	**0,500**	**0,491**	**0,545**	**0,573**	**0,573**	**0,491**	**0,418**	**0,482**	**0,545**	**0,464**	**0,509**	**0,573**

Experts	Average minimum value (n1)														
	ITEMS														
	Cultural resources: General dimension (CR_GD)														
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
1	0,6	0,2	0,6	0,6	0,6	0,6	0,6	0,4	0,2	0,6	0,6	0,6	0,6	0,6	0,6
2	0,2	0,4	0,4	0,4	0,2	0,2	0,2	0,2	0,0	0,6	0,2	0,6	0,4	0,2	0,2
3	0,6	0,4	0,4	0,4	0,4	0,2	0,6	0,2	0,0	0,2	0,2	0,2	0,4	0,4	0,4
4	0,6	0,6	0,4	0,6	0,0	0,2	0,2	0,0	0,0	0,2	0,2	0,2	0,2	0,4	0,4
5	0,6	0,4	0,4	0,6	0,4	0,4	0,6	0,4	0,4	0,4	0,6	0,6	0,6	0,6	0,6
6	0,6	0,0	0,6	0,0	0,0	0,0	0,4	0,4	0,4	0,4	0,0	0,0	0,4	0,4	0,0
7	0,4	0,4	0,4	0,4	0,2	0,2	0,2	0,2	0,0	0,4	0,4	0,4	0,6	0,6	0,6
8	0,6	0,6	0,6	0,6	0,0	0,0	0,4	0,0	0,0	0,2	0,4	0,2	0,2	0,4	0,2
9	0,2	0,4	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,4	0,4	0,4	0,4	0,4
10	0,6	0,6	0,4	0,4	0,0	0,0	0,0	0,0	0,6	0,2	0,2	0,2	0,4	0,4	0,4
11	0,4	0,4	0,2	0,2	0,2	0,2	0,2	0,0	0,6	0,6	0,2	0,4	0,4	0,2	0,4
12	0,0	0,2	0,2	0,2	0,0	0,6	0,6	0,0	0,4	0,2	0,4	0,6	0,6	0,0	0,2
13	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,4	0,4	0,4	0,4	0,4	0,4
14	0,4	0,4	0,4	0,4	0,2	0,0	0,4	0,0	0,0	0,4	0,4	0,4	0,6	0,6	0,4
15	0,4	0,4	0,4	0,4	0,0	0,0	0,4	0,0	0,0	0,4	0,4	0,4	0,4	0,4	0,4
16	0,6	0,6	0,6	0,6	0,4	0,4	0,4	0,4	0,4	0,6	0,4	0,6	0,4	0,6	0,6
17	0,6	0,0	0,6	0,6	0,6	0,0	0,2	0,0	0,0	0,6	0,6	0,6	0,6	0,6	0,6
18	0,6	0,6	0,4	0,6	0,2	0,2	0,6	0,2	0,2	0,4	0,4	0,4	0,4	0,2	0,6
19	0,4	0,4	0,4	0,6	0,6	0,6	0,6	0,6	0,4	0,6	0,4	0,6	0,6	0,4	0,6
20	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,4	0,4	0,4	0,4
21	0,4	0,4	0,4	0,6	0,4	0,2	0,4	0,2	0,0	0,2	0,2	0,2	0,4	0,4	0,4
22	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6
AVE (m1)	**0,464**	**0,400**	**0,427**	**0,445**	**0,273**	**0,255**	**0,391**	**0,218**	**0,236**	**0,409**	**0,373**	**0,409**	**0,455**	**0,418**	**0,427**

Experts	**Average minimum value (n1)**														
	ITEMS														
	Cultural resources: General dimension (CR_GD)														
	16	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
1	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,4	0,6	0,6	0,6	0,6	0,6	0,6	0,6
2	0,4	0,6	0,6	0,0	0,0	0,2	0,6	0,6	0,6	0,4	0,4	0,6	0,4	0,6	0,2
3	0,6	0,6	0,4	0,0	0,0	0,2	0,4	0,4	0,6	0,4	0,6	0,4	0,2	0,6	0,4
4	0,4	0,4	0,4	0,4	0,2	0,0	0,2	0,4	0,6	0,4	0,2	0,6	0,4	0,6	0,6
5	0,6	0,4	0,6	0,6	0,6	0,6	0,6	0,4	0,6	0,4	0,6	0,6	0,6	0,6	0,6
6	0,4	0,0	0,0	0,4	0,4	0,6	0,4	0,4	0,4	0,0	0,0	0,4	0,4	0,4	0,4
7	0,6	0,4	0,2	0,2	0,2	0,6	0,2	0,4	0,6	0,4	0,6	0,6	0,6	0,6	0,6
8	0,6	0,6	0,2	0,4	0,6	0,2	0,2	0,6	0,6	0,6	0,4	0,0	0,6	0,6	0,6
9	0,4	0,4	0,4	0,4	0,2	0,2	0,2	0,2	0,4	0,2	0,4	0,4	0,4	0,4	0,2
10	0,6	0,6	0,6	0,2	0,2	0,2	0,0	0,0	0,4	0,4	0,4	0,0	0,4	0,6	0,6
11	0,4	0,4	0,4	0,4	0,4	0,2	0,4	0,2	0,6	0,0	0,2	0,6	0,6	0,4	0,6
12	0,2	0,4	0,4	0,4	0,2	0,4	0,4	0,2	0,2	0,4	0,4	0,6	0,2	0,4	0,6
13	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,2	0,4	0,4	0,4	0,4	0,4
14	0,4	0,4	0,4	0,4	0,4	0,4	0,2	0,4	0,6	0,4	0,6	0,6	0,6	0,6	0,6
15	0,4	0,4	0,4	0,4	0,4	0,0	0,0	0,4	0,4	0,4	0,4	0,4	0,6	0,6	0,4
16	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6
17	0,6	0,6	0,6	0,6	0,6	0,6	0,2	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6
18	0,6	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,6	0,6	0,4	0,4	0,6	0,6	0,4
19	0,6	0,6	0,6	0,4	0,4	0,6	0,4	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6
20	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,6	0,4	0,4	0,4	0,4	0,4
21	0,6	0,4	0,2	0,6	0,6	0,2	0,2	0,4	0,6	0,6	0,6	0,4	0,4	0,2	0,4
22	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6
AVE (m1)	0,500	0,455	0,418	0,391	0,373	0,364	0,336	0,400	0,527	0,427	0,455	0,473	0,491	0,527	0,500

Experts	Average minimum value (n1)														
	ITEMS														
	Cultural resources: General dimension (CR_SSD)														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6
2	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,6	0,6	0,4	0,6	0,6	0,4	0,4
3	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,4	0,6	0,6	0,6	0,6	0,6	0,6	0,6
4	0,6	0,6	0,6	0,4	0,6	0,6	0,4	0,6	0,4	0,6	0,6	0,6	0,6	0,6	0,6
5	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6
6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,0	0,6	0,6	0,6	0,6	0,6	0,6
7	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,6	0,6	0,6	0,6
8	0,4	0,2	0,6	0,2	0,4	0,4	0,2	0,4	0,6	0,6	0,6	0,6	0,6	0,6	0,6
9	0,2	0,2	0,4	0,4	0,2	0,2	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4
10	0,6	0,6	0,6	0,6	0,6	0,6	0,2	0,4	0,6	0,6	0,6	0,6	0,6	0,6	0,6
11	0,6	0,4	0,6	0,4	0,6	0,4	0,4	0,6	0,6	0,6	0,6	0,6	0,6	0,2	0,6
12	0,2	0,4	0,4	0,4	0,4	0,4	0,4	0,6	0,6	0,6	0,6	0,6	0,6	0,4	0,2
13	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,6	0,6	0,6	0,6	0,6	0,6
14	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6
15	0,6	0,6	0,4	0,4	0,4	0,4	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6
16	0,6	0,6	0,6	0,6	0,6	0,6	0,4	0,6	0,6	0,6	0,6	0,6	0,6	0,4	0,4
17	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6
18	0,6	0,6	0,6	0,6	0,4	0,4	0,4	0,2	0,6	0,6	0,6	0,6	0,6	0,4	0,6
19	0,6	0,4	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6
20	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6
21	0,4	0,6	0,6	0,6	0,6	0,6	0,4	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6
22	0,6	0,4	0,6	0,4	0,6	0,4	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6
AVE (m1)	**0,518**	**0,500**	**0,545**	**0,500**	**0,518**	**0,500**	**0,473**	**0,518**	**0,536**	**0,582**	**0,573**	**0,591**	**0,591**	**0,536**	**0,555**

Experts	Average minimum value (n1)						
	ITEMS						
	Cultural resources: General dimension (CR_SSD)						
	16	**17**	**18**	**19**	**20**	**21**	**22**
1	0,6	0,6	0,6	0,6	0,6	0,6	0,6
2	0,4	0,4	0,0	0,2	0,4	0,2	0,4
3	0,6	0,6	0,2	0,6	0,2	0,2	0,2
4	0,6	0,6	0,2	0,6	0,4	0,4	0,2
5	0,4	0,6	0,6	0,6	0,6	0,6	0,6
6	0,0	0,6	0,6	0,6	0,0	0,6	0,6
7	0,6	0,6	0,6	0,6	0,6	0,0	0,0
8	0,4	0,4	0,4	0,0	0,2	0,6	0,6
9	0,4	0,4	0,2	0,4	0,2	0,2	0,2
10	0,6	0,6	0,0	0,6	0,6	0,6	0,6
11	0,4	0,4	0,4	0,4	0,2	0,4	0,2
12	0,2	0,6	0,2	0,4	0,0	0,0	0,0
13	0,4	0,6	0,4	0,4	0,4	0,4	0,2
14	0,6	0,6	0,6	0,6	0,6	0,6	0,6
15	0,6	0,6	0,6	0,6	0,2	0,4	0,4
16	0,6	0,6	0,4	0,6	0,4	0,6	0,6
17	0,6	0,6	0,6	0,6	0,6	0,6	0,6
18	0,4	0,4	0,4	0,4	0,4	0,4	0,6
19	0,6	0,6	0,2	0,6	0,6	0,6	0,6
20	0,6	0,6	0,6	0,6	0,6	0,6	0,6
21	0,6	0,6	0,6	0,6	0,6	0,6	0,6
22	0,6	0,6	0,6	0,6	0,6	0,6	0,6
AVE (m1)	**0,491**	**0,555**	**0,409**	**0,509**	**0,409**	**0,445**	**0,436**

Experts	Average minimum value (n2)														
	ITEMS														
	Natural resources: General dimension (NR_GD)														
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
1	0,8	0,8	0,4	0,8	0,8	0,8	0,4	0,8	0,4	0,8	0,8	0,8	0,8	0,6	0,4
2	0,2	0,8	0,8	0,6	0,4	0,4	0,4	0,6	0,2	0,8	0,6	0,6	0,8	0,2	0,2
3	0,2	0,6	0,6	0,4	0,6	0,6	0,8	0,8	0,4	0,8	0,6	0,8	0,4	0,2	0,4
4	0,8	0,8	0,4	0,6	0,6	0,4	0,4	0,4	0,8	0,8	0,4	0,6	0,4	0,8	0,4
5	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,8	0,8	0,8	0,6	0,6	0,8	0,8	0,6
6	0,8	0,8	0,2	0,2	0,2	0,2	0,2	0,2	0,6	0,8	0,8	0,8	0,4	0,6	0,6
7	0,4	0,8	0,8	0,6	0,6	0,4	0,2	0,6	0,8	0,8	0,6	0,6	0,4	0,4	0,2
8	0,4	0,2	0,8	0,8	0,8	0,2	0,4	0,6	0,2	0,4	0,6	0,8	0,2	0,6	0,4
9	0,6	0,6	0,6	0,4	0,4	0,6	0,4	0,4	0,6	0,6	0,4	0,6	0,6	0,6	0,4
10	0,8	0,8	0,8	0,8	0,8	0,6	0,6	0,8	0,8	0,8	0,6	0,8	0,6	0,4	0,8
11	0,4	0,6	0,6	0,8	0,6	0,2	0,0	0,6	0,4	0,8	0,6	0,8	0,8	0,4	0,8
12	0,6	0,6	0,4	0,4	0,6	0,6	0,8	0,8	0,2	0,6	0,4	0,6	0,8	0,2	0,6
13	0,4	0,6	0,6	0,6	0,6	0,0	0,0	0,6	0,2	0,6	0,6	0,6	0,6	0,6	0,4
14	0,4	0,8	0,6	0,2	0,6	0,4	0,2	0,6	0,2	0,6	0,2	0,6	0,4	0,2	0,2
15	0,4	0,8	0,6	0,6	0,6	0,2	0,0	0,6	0,4	0,6	0,4	0,6	0,2	0,4	0,4
16	0,2	0,6	0,8	0,6	0,8	0,2	0,2	0,2	0,2	0,2	0,6	0,6	0,6	0,2	0,6
17	0,8	0,8	0,0	0,0	0,0	0,8	0,4	0,8	0,8	0,8	0,8	0,8	0,8	0,4	0,0
18	0,2	0,6	0,8	0,8	0,6	0,4	0,4	0,8	0,4	0,4	0,8	0,6	0,6	0,4	0,4
19	0,6	0,6	0,6	0,6	0,6	0,8	0,8	0,8	0,8	0,8	0,6	0,6	0,6	0,8	0,6
20	0,8	0,8	0,8	0,8	0,8	0,2	0,2	0,2	0,2	0,2	0,2	0,6	0,6	0,4	0,4
21	0,2	0,6	0,8	0,8	0,8	0,2	0,2	0,6	0,4	0,6	0,2	0,8	0,4	0,6	0,4
22	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8
AVE (m2)	**0,518**	**0,682**	**0,609**	**0,582**	**0,600**	**0,436**	**0,382**	**0,609**	**0,482**	**0,655**	**0,555**	**0,682**	**0,573**	**0,482**	**0,455**

Experts	Average minimum value (n2)														
	ITEMS														
	Natural resources: General dimension (NR_GD)														
	16	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
1	0,8	0,8	0,8	0,8	0,8	0,8	0,4	0,8	0,8	0,8	0,6	0,6	0,6	0,8	0,8
2	0,2	0,4	0,2	0,8	0,8	0,6	0,8	0,6	0,6	0,4	0,6	0,2	0,2	0,8	0,8
3	0,8	0,8	0,4	0,6	0,4	0,4	0,4	0,4	0,6	0,4	0,2	0,4	0,4	0,6	0,8
4	0,8	0,8	0,6	0,8	0,4	0,6	0,6	0,6	0,6	0,6	0,6	0,4	0,4	0,8	0,8
5	0,8	0,8	0,6	0,8	0,8	0,2	0,2	0,6	0,8	0,8	0,6	0,8	0,6	0,8	0,8
6	0,8	0,2	0,8	0,8	0,6	0,6	0,2	0,2	0,6	0,2	0,4	0,6	0,2	0,6	0,8
7	0,6	0,4	0,8	0,8	0,4	0,8	0,4	0,8	0,8	0,8	0,4	0,4	0,4	0,8	0,8
8	0,0	0,2	0,8	0,6	0,2	0,4	0,6	0,6	0,8	0,4	0,6	0,6	0,4	0,8	0,6
9	0,4	0,6	0,6	0,6	0,6	0,6	0,2	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,8
10	0,8	0,8	0,6	0,8	0,8	0,6	0,4	0,8	0,8	0,6	0,6	0,4	0,4	0,8	0,8
11	0,2	0,8	0,6	0,6	0,8	0,8	0,8	0,6	0,6	0,6	0,8	0,4	0,4	0,8	0,8
12	0,8	0,8	0,6	0,6	0,6	0,8	0,6	0,6	0,6	0,4	0,6	0,6	0,4	0,8	0,6
13	0,4	0,4	0,4	0,6	0,6	0,4	0,4	0,6	0,6	0,6	0,6	0,6	0,4	0,6	0,6
14	0,2	0,6	0,4	0,8	0,2	0,6	0,6	0,6	0,8	0,8	0,6	0,4	0,6	0,6	0,8
15	0,6	0,6	0,6	0,6	0,2	0,6	0,4	0,6	0,6	0,4	0,4	0,8	0,8	0,8	0,8
16	0,2	0,6	0,6	0,6	0,6	0,2	0,2	0,8	0,8	0,6	0,6	0,2	0,2	0,6	0,8
17	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8
18	0,4	0,4	0,6	0,6	0,6	0,6	0,6	0,4	0,6	0,6	0,6	0,6	0,4	0,6	0,6
19	0,8	0,8	0,8	0,8	0,8	0,8	0,6	0,8	0,8	0,6	0,8	0,8	0,8	0,8	0,8
20	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,2	0,8	0,8
21	0,6	0,8	0,4	0,8	0,2	0,8	0,4	0,6	0,6	0,4	0,4	0,2	0,2	0,8	0,8
22	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,6	0,6	0,6	0,6	0,8	0,8	0,6	0,8
AVE (m2)	**0,564**	**0,627**	**0,609**	**0,709**	**0,573**	**0,609**	**0,500**	**0,618**	**0,682**	**0,573**	**0,573**	**0,536**	**0,464**	**0,727**	**0,764**

Experts	Average minimum value (n2)													
	ITEMS													
	Natural resources: General dimension (NR_GD)													
	31	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**
1	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,6	0,6	0,8	0,8	0,8	0,8	0,8
2	0,8	0,6	0,6	0,2	0,2	0,8	0,8	0,4	0,4	0,4	0,4	0,6	0,6	0,6
3	0,8	0,6	0,8	0,8	0,8	0,8	0,8	0,6	0,6	0,6	0,6	0,4	0,4	0,8
4	0,8	0,8	0,8	0,0	0,4	0,4	0,4	0,6	0,6	0,6	0,4	0,4	0,8	0,4
5	0,8	0,6	0,8	0,8	0,8	0,6	0,6	0,6	0,6	0,6	0,2	0,6	0,6	0,8
6	0,8	0,6	0,2	0,8	0,8	0,8	0,0	0,6	0,6	0,2	0,6	0,6	0,2	0,4
7	0,8	0,6	0,8	0,6	0,8	0,8	0,8	0,4	0,4	0,6	0,6	0,6	0,6	0,8
8	0,6	0,2	0,8	0,6	0,4	0,0	0,0	0,2	0,2	0,2	0,2	0,4	0,6	0,6
9	0,8	0,6	0,6	0,6	0,6	0,4	0,4	0,4	0,4	0,6	0,4	0,4	0,6	0,6
10	0,8	0,8	0,8	0,8	0,6	0,2	0,2	0,2	0,8	0,8	0,2	0,4	0,8	0,8
11	0,8	0,6	0,8	0,8	0,6	0,8	0,6	0,6	0,6	0,6	0,4	0,6	0,2	0,6
12	0,6	0,6	0,8	0,6	0,6	0,2	0,2	0,4	0,4	0,6	0,4	0,4	0,8	0,6
13	0,6	0,6	0,6	0,6	0,6	0,4	0,4	0,4	0,4	0,4	0,4	0,6	0,4	0,6
14	0,8	0,8	0,8	0,8	0,8	0,2	0,8	0,2	0,4	0,6	0,6	0,6	0,8	0,6
15	0,8	0,6	0,8	0,8	0,8	0,4	0,4	0,6	0,2	0,6	0,6	0,2	0,2	0,2
16	0,8	0,6	0,6	0,6	0,6	0,6	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2
17	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,4	0,4	0,8	0,8	0,8	0,8	0,8
18	0,8	0,6	0,8	0,8	0,6	0,4	0,4	0,4	0,2	0,2	0,4	0,2	0,2	0,2
19	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,6	0,6	0,6	0,6	0,6	0,6	0,6
20	0,8	0,8	0,8	0,8	0,8	0,8	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6
21	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,4	0,4	0,6	0,4	0,6	0,4	0,6
22	0,8	0,8	0,8	0,8	0,8	0,6	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8
AVE (m2)	**0,773**	**0,664**	**0,736**	**0,682**	**0,673**	**0,564**	**0,527**	**0,464**	**0,473**	**0,545**	**0,482**	**0,518**	**0,545**	**0,591**

Experts	Average minimum value (n2)														
	ITEMS														
	Natural resources: Site-specific dimension (NR_SSD)														
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
1	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8
2	0,8	0,8	0,8	0,6	0,8	0,4	0,2	0,4	0,8	0,6	0,4	0,4	0,6	0,8	0,8
3	0,6	0,8	0,8	0,6	0,6	0,2	0,2	0,4	0,8	0,6	0,4	0,2	0,8	0,8	0,8
4	0,8	0,8	0,8	0,8	0,8	0,8	0,6	0,6	0,8	0,6	0,6	0,6	0,8	0,8	0,8
5	0,8	0,8	0,0	0,8	0,2	0,2	0,2	0,6	0,8	0,8	0,8	0,8	0,8	0,8	0,8
6	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8
7	0,8	0,8	0,8	0,8	0,8	0,2	0,4	0,4	0,8	0,4	0,4	0,2	0,8	0,8	0,8
8	0,2	0,8	0,8	0,8	0,8	0,6	0,0	0,2	0,8	0,4	0,8	0,8	0,8	0,8	0,8
9	0,4	0,6	0,6	0,6	0,6	0,4	0,4	0,6	0,6	0,4	0,4	0,4	0,6	0,6	0,6
10	0,8	0,8	0,8	0,8	0,8	0,8	0,2	0,6	0,8	0,8	0,8	0,8	0,8	0,8	0,8
11	0,8	0,8	0,8	0,6	0,8	0,8	0,4	0,6	0,8	0,8	0,6	0,8	0,8	0,8	0,8
12	0,2	0,6	0,6	0,8	0,4	0,2	0,4	0,6	0,8	0,2	0,2	0,2	0,8	0,8	0,8
13	0,4	0,6	0,6	0,6	0,6	0,4	0,4	0,4	0,6	0,6	0,6	0,6	0,6	0,6	0,6
14	0,6	0,8	0,8	0,8	0,8	0,4	0,4	0,6	0,8	0,4	0,4	0,6	0,8	0,8	0,8
15	0,8	0,8	0,8	0,8	0,8	0,8	0,6	0,6	0,8	0,6	0,6	0,8	0,8	0,8	0,8
16	0,8	0,8	0,8	0,8	0,8	0,6	0,6	0,6	0,8	0,6	0,8	0,6	0,8	0,8	0,8
17	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8
18	0,6	0,6	0,6	0,4	0,8	0,4	0,2	0,6	0,8	0,6	0,6	0,6	0,8	0,8	0,8
19	0,6	0,8	0,6	0,6	0,4	0,4	0,6	0,6	0,8	0,8	0,6	0,8	0,8	0,8	0,8
20	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8
21	0,6	0,8	0,6	0,6	0,6	0,6	0,2	0,2	0,8	0,6	0,8	0,8	0,8	0,8	0,8
22	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8
AVE (m2)	**0,664**	**0,764**	**0,709**	**0,718**	**0,700**	**0,555**	**0,455**	**0,573**	**0,782**	**0,627**	**0,627**	**0,636**	**0,773**	**0,782**	**0,782**

Experts	Average minimum value (n2)														
	ITEMS														
	Natural resources: Site-specific dimension (NR_SSD)														
	16	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
1	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8
2	0,8	0,6	0,2	0,8	0,8	0,6	0,8	0,8	0,8	0,6	0,4	0,8	0,8	0,6	0,8
3	0,6	0,6	0,6	0,6	0,6	0,8	0,8	0,8	0,4	0,6	0,2	0,8	0,8	0,6	0,8
4	0,8	0,8	0,6	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8
5	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,0	0,6	0,8	0,8	0,6	0,6	0,8
6	0,8	0,8	0,2	0,8	0,2	0,8	0,8	0,8	0,8	0,2	0,2	0,2	0,2	0,8	0,8
7	0,4	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,8
8	0,8	0,8	0,6	0,6	0,6	0,8	0,8	0,8	0,8	0,6	0,8	0,8	0,6	0,6	0,8
9	0,2	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6
10	0,2	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8
11	0,6	0,8	0,0	0,8	0,6	0,8	0,8	0,8	0,8	0,6	0,8	0,8	0,6	0,6	0,6
12	0,8	0,8	0,6	0,6	0,6	0,6	0,8	0,8	0,2	0,6	0,6	0,8	0,6	0,8	0,8
13	0,6	0,6	0,6	0,6	0,4	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6
14	0,8	0,8	0,6	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8
15	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,2	0,8	0,8	0,8	0,8	0,8
16	0,6	0,6	0,6	0,6	0,6	0,8	0,8	0,8	0,6	0,6	0,8	0,8	0,8	0,6	0,8
17	0,8	0,8	0,8	0,4	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,4	0,8	0,8
18	0,8	0,8	0,8	0,4	0,8	0,8	0,8	0,8	0,8	0,4	0,8	0,8	0,4	0,6	0,8
19	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8
20	0,8	0,8	0,8	0,8	0,8	0,6	0,8	0,8	0,8	0,6	0,6	0,8	0,8	0,8	0,8
21	0,8	0,8	0,6	0,8	0,8	0,8	0,8	0,8	0,8	0,6	0,8	0,8	0,6	0,8	0,8
22	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8
AVE (m2)	**0,691**	**0,745**	**0,618**	**0,700**	**0,691**	**0,745**	**0,773**	**0,773**	**0,682**	**0,618**	**0,682**	**0,745**	**0,664**	**0,709**	**0,773**

Experts	Average minimum value (n2)														
	ITEMS														
	Cultural resources: General dimension (CR_GD)														
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
1	0,8	0,4	0,8	0,8	0,8	0,8	0,8	0,6	0,4	0,8	0,8	0,8	0,8	0,8	0,8
2	0,4	0,6	0,6	0,6	0,4	0,4	0,4	0,4	0,2	0,8	0,4	0,8	0,6	0,4	0,4
3	0,8	0,6	0,6	0,6	0,6	0,4	0,8	0,4	0,2	0,4	0,4	0,4	0,6	0,6	0,6
4	0,8	0,8	0,6	0,8	0,2	0,4	0,4	0,2	0,2	0,4	0,4	0,4	0,4	0,6	0,6
5	0,8	0,6	0,6	0,8	0,6	0,6	0,8	0,6	0,6	0,6	0,8	0,8	0,8	0,8	0,8
6	0,8	0,2	0,8	0,2	0,2	0,2	0,6	0,6	0,6	0,6	0,2	0,2	0,6	0,6	0,2
7	0,6	0,6	0,6	0,6	0,4	0,4	0,4	0,4	0,2	0,6	0,6	0,6	0,8	0,8	0,8
8	0,8	0,8	0,8	0,8	0,2	0,0	0,6	0,2	0,0	0,4	0,6	0,4	0,4	0,6	0,4
9	0,4	0,6	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,6	0,6	0,6	0,6	0,6
10	0,8	0,8	0,6	0,6	0,2	0,2	0,2	0,2	0,8	0,4	0,4	0,4	0,6	0,6	0,6
11	0,6	0,6	0,4	0,4	0,4	0,4	0,4	0,0	0,8	0,8	0,4	0,6	0,6	0,4	0,6
12	0,2	0,4	0,4	0,4	0,2	0,8	0,8	0,2	0,6	0,4	0,6	0,8	0,8	0,2	0,4
13	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,6	0,6	0,6	0,6	0,6	0,6
14	0,6	0,6	0,6	0,6	0,4	0,2	0,6	0,2	0,2	0,6	0,6	0,6	0,8	0,8	0,6
15	0,6	0,6	0,6	0,6	0,0	0,0	0,6	0,2	0,2	0,6	0,6	0,6	0,6	0,6	0,6
16	0,8	0,8	0,8	0,8	0,6	0,6	0,6	0,6	0,6	0,8	0,6	0,8	0,6	0,8	0,8
17	0,8	0,0	0,8	0,8	0,8	0,0	0,4	0,0	0,0	0,8	0,8	0,8	0,8	0,8	0,8
18	0,8	0,8	0,6	0,8	0,4	0,4	0,8	0,4	0,4	0,6	0,6	0,6	0,6	0,4	0,8
19	0,6	0,6	0,6	0,8	0,8	0,8	0,8	0,8	0,6	0,8	0,6	0,8	0,8	0,6	0,8
20	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,6	0,6	0,6	0,6
21	0,6	0,6	0,6	0,8	0,6	0,4	0,6	0,4	0,2	0,4	0,4	0,4	0,6	0,6	0,6
22	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8
AVE (m2)	**0,664**	**0,591**	**0,627**	**0,645**	**0,464**	**0,427**	**0,591**	**0,400**	**0,418**	**0,609**	**0,573**	**0,609**	**0,655**	**0,618**	**0,627**

Experts	Average minimum value (n2)														
	ITEMS														
	Cultural resources: General dimension (CR_GD)														
	16	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
1	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,6	0,8	0,8	0,8	0,8	0,8	0,8	0,8
2	0,6	0,8	0,8	0,2	0,2	0,4	0,8	0,8	0,8	0,6	0,6	0,8	0,6	0,8	0,4
3	0,8	0,8	0,6	0,2	0,2	0,4	0,6	0,6	0,8	0,6	0,8	0,6	0,4	0,8	0,6
4	0,6	0,6	0,6	0,6	0,4	0,2	0,4	0,6	0,8	0,6	0,4	0,8	0,6	0,8	0,8
5	0,8	0,6	0,8	0,8	0,8	0,8	0,8	0,6	0,8	0,6	0,8	0,8	0,8	0,8	0,8
6	0,6	0,2	0,2	0,6	0,6	0,8	0,6	0,6	0,6	0,2	0,2	0,6	0,6	0,6	0,6
7	0,8	0,6	0,4	0,4	0,4	0,8	0,4	0,6	0,8	0,6	0,8	0,8	0,8	0,8	0,8
8	0,8	0,8	0,4	0,6	0,8	0,4	0,4	0,8	0,8	0,8	0,6	0,0	0,8	0,8	0,8
9	0,6	0,6	0,6	0,6	0,4	0,4	0,4	0,4	0,6	0,4	0,6	0,6	0,6	0,6	0,4
10	0,8	0,8	0,8	0,4	0,4	0,4	0,2	0,2	0,6	0,6	0,6	0,2	0,6	0,8	0,8
11	0,6	0,6	0,6	0,6	0,6	0,4	0,6	0,4	0,8	0,2	0,4	0,8	0,8	0,6	0,8
12	0,4	0,6	0,6	0,6	0,4	0,6	0,6	0,4	0,4	0,6	0,6	0,8	0,4	0,6	0,8
13	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,4	0,6	0,6	0,6	0,6	0,6
14	0,6	0,6	0,6	0,6	0,6	0,6	0,4	0,6	0,8	0,6	0,8	0,8	0,8	0,8	0,8
15	0,6	0,6	0,6	0,6	0,6	0,2	0,2	0,6	0,6	0,6	0,6	0,6	0,8	0,8	0,6
16	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8
17	0,8	0,8	0,8	0,8	0,8	0,8	0,4	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8
18	0,8	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,8	0,8	0,6	0,6	0,8	0,8	0,6
19	0,8	0,8	0,8	0,6	0,6	0,8	0,6	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8
20	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,8	0,6	0,6	0,6	0,6	0,6
21	0,8	0,6	0,4	0,8	0,8	0,4	0,4	0,6	0,8	0,8	0,8	0,6	0,6	0,4	0,6
22	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8
AVE (m2)	**0,700**	**0,655**	**0,618**	**0,591**	**0,573**	**0,564**	**0,536**	**0,600**	**0,727**	**0,627**	**0,655**	**0,664**	**0,691**	**0,727**	**0,700**

Experts	Average minimum value (n2)														
	ITEMS														
	Cultural resources: General dimension (CR_SSD)														
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
1	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8
2	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,8	0,8	0,6	0,8	0,8	0,6	0,6
3	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,6	0,8	0,8	0,8	0,8	0,8	0,8	0,8
4	0,8	0,8	0,8	0,6	0,8	0,8	0,6	0,8	0,6	0,8	0,8	0,8	0,8	0,8	0,8
5	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8
6	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,2	0,8	0,8	0,8	0,8	0,8	0,8
7	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,8	0,8	0,8	0,8
8	0,6	0,4	0,8	0,4	0,6	0,6	0,4	0,6	0,8	0,8	0,8	0,8	0,8	0,8	0,8
9	0,4	0,4	0,6	0,6	0,4	0,4	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6
10	0,8	0,8	0,8	0,8	0,8	0,8	0,4	0,6	0,8	0,8	0,8	0,8	0,8	0,8	0,8
11	0,8	0,6	0,8	0,6	0,8	0,6	0,6	0,8	0,8	0,8	0,8	0,8	0,8	0,4	0,8
12	0,4	0,6	0,6	0,6	0,6	0,6	0,6	0,8	0,8	0,8	0,8	0,8	0,8	0,6	0,4
13	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,8	0,8	0,8	0,8	0,8	0,8
14	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8
15	0,8	0,8	0,6	0,6	0,6	0,6	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8
16	0,8	0,8	0,8	0,8	0,8	0,8	0,6	0,8	0,8	0,8	0,8	0,8	0,8	0,6	0,6
17	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8
18	0,8	0,8	0,8	0,8	0,6	0,6	0,6	0,4	0,8	0,8	0,8	0,8	0,8	0,6	0,8
19	0,8	0,6	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8
20	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8
21	0,6	0,8	0,8	0,8	0,8	0,8	0,6	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8
22	0,8	0,6	0,8	0,6	0,8	0,6	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8
AVE (m2)	**0,718**	**0,700**	**0,745**	**0,700**	**0,718**	**0,700**	**0,673**	**0,718**	**0,736**	**0,782**	**0,773**	**0,791**	**0,791**	**0,736**	**0,755**

Experts	Average minimum value (n2)						
	ITEMS						
	Cultural resources: General dimension (CR_SSD)						
	16	**17**	**18**	**19**	**20**	**21**	**22**
1	0,8	0,8	0,8	0,8	0,8	0,8	0,8
2	0,6	0,6	0,2	0,4	0,6	0,4	0,6
3	0,8	0,8	0,4	0,8	0,4	0,4	0,4
4	0,8	0,8	0,4	0,8	0,6	0,6	0,4
5	0,6	0,8	0,8	0,8	0,8	0,8	0,8
6	0,2	0,8	0,8	0,8	0,2	0,8	0,8
7	0,8	0,8	0,8	0,8	0,8	0,2	0,2
8	0,6	0,6	0,6	0,2	0,4	0,8	0,8
9	0,6	0,6	0,4	0,6	0,4	0,4	0,4
10	0,8	0,8	0,2	0,8	0,8	0,8	0,8
11	0,6	0,6	0,6	0,6	0,4	0,6	0,4
12	0,4	0,8	0,4	0,6	0,2	0,2	0,2
13	0,6	0,8	0,6	0,6	0,6	0,6	0,4
14	0,8	0,8	0,8	0,8	0,8	0,8	0,8
15	0,8	0,8	0,8	0,8	0,4	0,6	0,6
16	0,8	0,8	0,6	0,8	0,6	0,8	0,8
17	0,8	0,8	0,8	0,8	0,8	0,8	0,8
18	0,6	0,6	0,6	0,6	0,6	0,6	0,8
19	0,8	0,8	0,4	0,8	0,8	0,8	0,8
20	0,8	0,8	0,8	0,8	0,8	0,8	0,8
21	0,8	0,8	0,8	0,8	0,8	0,8	0,8
22	0,8	0,8	0,8	0,8	0,8	0,8	0,8
AVE (m2)	**0,691**	**0,755**	**0,609**	**0,709**	**0,609**	**0,645**	**0,636**

Annexure E: Questionnaire for tourists

Ms Beverly Maki Makopo
Department of Applied Management
University of South Africa (Unisa)
063 789 9855/ 66474310@mylife.unisa.ac.za
Dr Elricke Botha 012 429 6271/ vlogge@unisa.ac.za
Dr Nicolene Conradie 012 433 4618/ conran@unisa.ac.za

Ethics clearance number: #2021_CRERC_048 (FA)
College Research Ethics Review Committee:
Dr Marianne Engelbrecht (Engelm1@unisa.ac.za)
University's Toll-Free Hotline number: +27 800 86 96 93

Dear Tourist

The Department of Applied Management at UNISA in conjunction with Maropeng á Afrika, South African National Parks, and Robben Island Museum is conducting a study on tourists' **responsible behaviour towards cultural heritage tourism**. This survey is expected to collect data that could assist in the development of responsible behaviour in cultural heritage tourism scale.

The findings of this study will assist **cultural heritage sites to measure responsible behaviour,** and will contribute towards the body of knowledge for the scientific community.

You are under no obligation to complete the questionnaire and may withdraw at any point before submitting the questionnaire. If you choose to participate, you should note that this questionnaire consists of four sections and will take approximately 20 minutes to complete. Other than your time, no negative consequences are foreseen. Your anonymity is guaranteed as responses cannot be linked to you directly. You will not be reimbursed or receive incentives for your participation in this study.

The electronic responses will be stored on a password-protected computer. I undertake to keep any data provided confidential, not to let it out of my possession, and to report on the findings from the perspective of the participating group. The findings may be published in research reports, journal articles, books, chapters in books, as online web-based presentations, oral presentations, and/or conference proceedings. We aim to comply with the legal requirement of the POPI Act (4 of 2013).

If you have any queries, please contact the researcher, Beverly Maki Makopo, on 063 789 9855 or at 66474310@mylife.unisa.ac.za, or supervisors at vlogge@unisa.ac.za or conran@unisa.ac.za.

Informed consent:

- I confirm that I was informed about the nature, procedure, potential benefits and anticipated inconvenience of participation in the study.
- I have read and understood the study as explained in the information sheet.
- I have had sufficient opportunity to ask questions and am prepared to participate in the study.
- I understand that my participation is voluntary and that I am free to withdraw at any time without penalty before submitting the questionnaire.
- I am aware that the findings of this study will be processed in research reports, journal articles, books, chapters in books, as online web-based presentations, oral presentations, and/or conference proceedings, but that my participation will be kept confidential unless otherwise specified.

By selecting **Yes**, you give consent to the above. By selecting **No**, you withdraw from the study.

YES	
NO	

>>>LimeSurvey set up: If NO, the questionnaire ends with the following message: Thank you for your time. Enjoy your day.

Screening questions

1. What year were you born?

>>>LimeSurvey set up: Participants must be able to type their response

>>>LimeSurvey set up: If ‘the year is 2005 or any year after that’, the questionnaire ends with the following message: Thank you for your time. Enjoy your day.

2. Which of the following World Heritage Sites have you visited the most recently?

>>>LimeSurvey set up: Participants must be able to choose one option

Cradle of Humankind/ Fossil Hominid Sites of South Africa (Maropeng and/or Sterkfontein Caves)	1
Mapungubwe Cultural Landscape	2
Robben Island	3
None of the above	4

>>>LimeSurvey set up: If ‘None of the above’, the questionnaire ends with the following message: Thank you for your time. Enjoy your day.

3. Have you already participated in this ongoing survey at, or via social media (s) of, one of these sites; Cradle of Humankind/ Fossil Hominid Sites of South Africa (Maropeng and/or Sterkfontein Caves), Mapungubwe Cultural Landscape, or Robben Island?

>>>LimeSurvey set up: Participants must be able to choose more than one option

Yes	1
No	2

>>>LimeSurvey set up: If ‘Yes’, the questionnaire ends with the following message: Thank you for your time. Enjoy your day.

4. Have you participated in any cultural heritage interpretation (e.g. guided tour, self-guided tour, visitor centrum, or cultural information session)?

>>>LimeSurvey set up: Participants must be able to choose more than one option

Yes	1
No	2

>>>LimeSurvey set up: If ‘No’, the questionnaire ends with the following message: Thank you for your time. Enjoy your day.

Questionnaire

>>>LimeSurvey set up: After completing Screening questions, include the following message:

Section A pertains to cultural heritage interpretation statements for the site you most recently visited. Cultural heritage interpretation is defined as a wide variety of communication activities that intend to raise awareness and reinforce understanding of the audience regarding the heritage (Almuhrzi, Hughes & Ballantyne, 2020; International Council on Monuments and Sites [ICOMOS], 2008)

Section A: Cultural heritage interpretation at the World Heritage Site

>>>LimeSurvey set up: All questions are mandatory

Use a 5-point Likert scale to indicate your level of agreement with regard to the cultural heritage interpretation information at the site you most recently visited (where 1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree and 5 = Strongly agree).

For example: I [strongly disagree] that the cultural heritage interpretation present "information on the importance of the heritage site."

ITEMS The cultural heritage interpretation present …	Indicate your level of agreement regarding cultural heritage interpretation				
	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
1. information on the importance of the heritage site.	1	2	3	4	5
2. information on practical conservation methods	1	2	3	4	5

ITEMS **The cultural heritage interpretation present …**	**Indicate your level of agreement regarding cultural heritage interpretation**				
	Strongly disagree	**Disagree**	**Neither agree nor disagree**	**Agree**	**Strongly Agree**
3. information on solutions to minimise environmental impacts	1	2	3	4	5
4. information allows for immediate participation in conservation practices	1	2	3	4	5
5. information on a code of conduct to ensure no or minimum disturbance to the local environment	1	2	3	4	5
6. a better understanding of the historical value of the heritage site	1	2	3	4	5
7. possible impacts of visitors' behaviour at the heritage site	1	2	3	4	5
8. information on the most sensitive and fragile areas	1	2	3	4	5
9. information on actions that encourages responsible behaviour at the heritage site	1	2	3	4	5
10. information on ways to respect heritage	1	2	3	4	5
11. information that ensures no or minimum disturbance at the heritage site	1	2	3	4	5
12. information on preventative measures regarding the emergence of tension between visitors and local people or site staff	1	2	3	4	5
13. information on scientific knowledge of flora and fauna in the area	1	2	3	4	5
14. information on the process of natural changes in the area	1	2	3	4	5
15. information on the influence of the heritage site on religious beliefs of locals	1	2	3	4	5
16. information on the historical culture of the heritage site	1	2	3	4	5
17. information on the popularity of the heritage site	1	2	3	4	5
18. information on factual knowledge regarding heritage resources	1	2	3	4	5

ITEMS **The cultural heritage interpretation present …**	**Indicate your level of agreement regarding cultural heritage interpretation**				
	Strongly disagree	**Disagree**	**Neither agree nor disagree**	**Agree**	**Strongly Agree**
19. information on the condition of the heritage site	1	2	3	4	5
20. information on the impacts of my visit at the heritage site	1	2	3	4	5
21. information that offers experiences of wonder, astonishments, and many other feelings	1	2	3	4	5
22. information on the importance of the heritage site for my future use	1	2	3	4	5
23. information on the importance of the heritage site for future generations	1	2	3	4	5

>>>LimeSurvey set up: Provide back/previous page button

Section B: Tourist responsible behaviour towards NATURAL RESOURCES

>>>LimeSurvey set up: All questions are mandatory

Use a 5-point Likert scale and indicate your **responsible behaviour towards natural resources** (where 1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree and 5 = Strongly agree).

For example: I [strongly disagree] that "1. I learn about protection of the environment from people who have informed opinions on the topic either by expertise or lived experience".

ITEMS	Indicate your level of agreement				
	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
General dimension					
1. I learn about protection of the environment from people who have informed opinions on the topic either by expertise or lived experience	1	2	3	4	5
2. I discuss environmental problems with family, friends and/or community leaders.	1	2	3	4	5
3. I purchase products packaged in containers that can either be reused or recycled or are made of recycled materials	1	2	3	4	5
4. I often purchase environmentally friendly products	1	2	3	4	5
5. I purchase locally produced products	1	2	3	4	5
6. I comply with rules and regulations regarding environmental protection.	1	2	3	4	5
7. I save electricity whenever possible (e.g. I turn off lights if I am leaving a room for over 10 minutes)	1	2	3	4	5
8. I save water whenever possible (e.g. I turn off the tap while washing dishes or brushing teeth)	1	2	3	4	5
9. I utilise biodegradable products (e.g. laundry detergent) in most instances	1	2	3	4	5
10. I try to protect the environment while maintaining my standard of living	1	2	3	4	5
11. I reuse as much as possible to decrease the quantity of my household garbage	1	2	3	4	5
12. I put empty bottles into the appropriate recycling bin	1	2	3	4	5
Site-specific dimension					
1. During my visit, I abide by the nature conservation rules that apply at the cultural heritage site	1	2	3	4	5
2. I pay attention to the heritage interpretation on nature conservation	1	2	3	4	5

ITEMS	Indicate your level of agreement				
	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
3. I tell other people not to feed the surrounding animals	1	2	3	4	5
4. I observe the nature and animals detailed	1	2	3	4	5
5. I respect natural resources at the cultural heritage site	1	2	3	4	5
6. I stay on labelled pathways established by the cultural heritage site	1	2	3	4	5
7. I stay away from restricted areas at the cultural heritage site	1	2	3	4	5
8. I do not litter	1	2	3	4	5
9. I participate in the cultural heritage site's recycling, reusing or reducing initiatives	1	2	3	4	5
10. I appropriately dispose of my own waste	1	2	3	4	5
11. I pick up other people's litter	1	2	3	4	5
12. I encourage other people not to litter	1	2	3	4	5
13. I minimise garbage	1	2	3	4	5
14. I lower my voice so as not to disturb other people or animals on-site	1	2	3	4	5
15. I do not remove or collect flora and animal specimens from the cultural heritage site	1	2	3	4	5
16. I do not remove rock, fossil or dried wood at the cultural heritage site	1	2	3	4	5
17. I do not take pets to the wilderness areas					
18. I intervene if I notice other people's bad or unethical behaviour that could harm the environment	1	2	3	4	5
19. I minimise my interference with the surrounding environment	1	2	3	4	5
20. I do not damage flora	1	2	3	4	5

ITEMS	Indicate your level of agreement				
	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
21. I tell other people not to damage flora	1	2	3	4	5
22. I report any environmental pollution or destruction to the staff on-site	1	2	3	4	5
23. After the visit I leave the cultural heritage site the same way I found it	1	2	3	4	5

>>>LimeSurvey set up: Provide back/previous page button

Section C: Tourist responsible behaviour towards CULTURAL RESOURCES

>>>LimeSurvey set up: All questions are mandatory

Use a 5-point Likert scale and indicate your responsible behaviour towards cultural resources (where 1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree and 5 = Strongly agree).

For example: I [strongly disagree] that "I consult relevant and reliable resources regarding the protection of cultural resources".

ITEMS	Indicate your level of agreement: Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
General dimension					
1. I purchase products from companies that are considerate of the history, culture, traditions and identity of communities	1	2	3	4	5
2. I promote the protection of cultural resources	1	2	3	4	5
3. I promote the need for responsible behaviour when visiting cultural heritage sites	1	2	3	4	5
4. I encourage people to donate time or money for the protection of cultural resources	1	2	3	4	5
5. I report individuals infringing laws that protect cultural resources to the relevant authorities	1	2	3	4	5
6. I pay attention to government guidance to participate in efforts to support cultural heritage tourism	1	2	3	4	5
7. I participate in efforts to support cultural heritage tourism	1	2	3	4	5
8. I share my cultural heritage with other people	1	2	3	4	5
9. I protect other people's cultural resources	1	2	3	4	5
10. I learn about different cultural resources around the world	1	2	3	4	5
Site-specific dimension					
1. Before I travel to a specific cultural heritage site, I make an effort to acquire the information about its cultural resources and their significance	1	2	3	4	5
2. I learn about the fragility of specific cultural resources	1	2	3	4	5
3. I obey the social rules that apply at the cultural heritage site	1	2	3	4	5

ITEMS	Indicate your level of agreement				
	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
4. I pay attention to the heritage interpretation on cultural resources protection	1	2	3	4	5
5. I learn about cultural resources' historic background	1	2	3	4	5
6. I observe the cultural resources detailed	1	2	3	4	5
7. I choose tourism products that protect local cultural resources	1	2	3	4	5
8. I respect other people's privacy by asking for their prior permission to take a photograph	1	2	3	4	5
9. I do not damage heritage structures or other cultural features	1	2	3	4	5
10. I do not paint or draw graffiti at a cultural heritage site	1	2	3	4	5
11. I do not remove artefacts from a cultural heritage site	1	2	3	4	5
12. I do not touch or remove inscriptions or decorative elements at a cultural heritage site	1	2	3	4	5
13. I do not loot or vandalise cultural resources	1	2	3	4	5
14. I report vandalism of cultural resources to on-site staff	1	2	3	4	5
15. I do not purchase illegal authentic objects	1	2	3	4	5
16. I purchase souvenirs at the cultural heritage site's gift shop	1	2	3	4	5
17. I support local crafts that reflect cultural heritage	1	2	3	4	5
18. I participate in tourism activities designed to conserve a specific cultural heritage site	1	2	3	4	5

>>>LimeSurvey set up: Provide back/previous page button

Section D: Demographic information

>>>LimeSurvey set up: All questions are mandatory

For the following questions, choose the relevant answer from the list provided or where applicable provide the relevant answer in the space provided.

1. Please indicate your gender

>>>LimeSurvey set up: Choose only one option

Male	1
Female	2
Other	3

2. Please indicate your highest level of education:

>>>LimeSurvey set up: Choose only one option

No school	1
Some schooling	2
Matric/Secondary School	3
Undergraduate Diploma/Degree	4
Postgraduate Diploma/Honours	5
Master’s degree	6
Doctoral degree	7
Post-doctoral degree	8
Technical	9
Other [please specify]:___________________________	10

3. Indicate place of your permanent residence.

>>>LimeSurvey set up: Choose only one option

Eastern Cape Province	1
Free State Province	2
Gauteng Province	3
Kwa Zulu Natal Province	4
Limpopo Province	5
Mpumalanga Province	6
North West Province	7
Northern Cape Province	8
Western Cape Province	9
Other [please specify]:___________________________	10

>>>LimeSurvey set up: After the respondent has submitted, end with the following message: Your responses have been submitted.

Thank you for your valuable time

Annexure F: Language editing certificate for the questionnaire

Lynne Southey

Language Practitioner

259 Muckleneuk Street

New Muckleneuk Street Pretoria

0180

Email: lynne.southey35@gmail.com

Mobile: 082 2022 090

To whom it may concern

This is to confirm that I, Lynne Southey, edited the language of the questionnaire

The development of a validated scale of responsible behaviour in cultural heritage tourism

By

Beverly Maki Makopo

The onus is on the author to attend to the suggested changes. Furthermore, I do not take responsibility for any changes in the document after the fact.

8 February 2022

Lynne Southey | **Date**

Annexure G: Language editing certificate for the thesis

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12 August 2023

To whom it may concern:

This certifies that I, Lydia Searle, performed the copy edit for the thesis titled, “The Development of a Validated Scale of Responsible Behaviour in Cultural Heritage Tourism” by Beverly Maki Ntshabeleng.

Language, grammar, punctuation, and layout issues were addressed using MSWord Review (Track Changes) function.

The bibliography and the citations were formatted according to Harvard referencing style.

I am not accountable for any changes made to this document by the author or any other party subsequent to my edit.

Yours faithfully,

Lydia Searle

Member: Professional Editors’ Guild RSA (PEG)

Member: Academic and Non-Fiction Authors’ Association of South Africa (ANFASA)

Annexure H: Turnitin report

turnitin

Digital Receipt

This receipt acknowledges that Turnitin received your paper. Below you will find the receipt information regarding your submission.

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File size:	3.01M
Page count:	370
Word count:	98,027
Character count:	548,880
Submission date:	04-Sep-2023 01:33PM (UTC+0200)
Submission ID:	2157550303

THE DEVELOPMENT OF A VALIDATED SCALE OF RESPONSIBLE BEHAVIOUR IN CULTURAL HERITAGE TOURISM

by

BEVERLY MAKI NTSHABELENG

Submitted in accordance with the requirements for the degree of

Doctor of Philosophy

in the subject

Management Studies

at the

UNIVERSITY OF SOUTH AFRICA

SUPERVISOR: DR E BOTHA
CO-SUPERVISOR: DR N CONRADIE

2023