



Digital Technologies and Digital Skills in Organisations and Government in South Africa: An Environmental Scan

Editors

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Report by the Knowledge for Innovation Unit of the National Electronic Media Institute of South Africa, hosted at the University of South Africa

Editors

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**UNIVERSITY OF SOUTH AFRICA
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Foreword from the NEMISA Board Chair



South Africa is a developing country which has various challenges affecting communities, businesses and the government. Some of these challenges are unique to South Africa, whilst others are common to developing countries and first world countries.

The environmental scan was conducted to determine the current and future supply and demand of 4IR skills in South Africa across various sectors and geographical areas. The study was considered as imperative for NEMISA to better position itself in order to address current shortcomings and to plan for future demands. The outcomes of the environmental scan would further ensure that relevant skills programmes are offered to the appropriate sector at the correct location.

Albeit the environmental scan being the backbone of the focus areas for NEMISA, further considerations were made to global trends in technological advances and those skills included in the 2020/21 Annual Performance Plan. This would ensure that South Africans are equipped with the skills that would ultimately enable them to compete with global players in developing technological solutions to solve everyday challenges.

It is NEMISA's quest to create a South African citizenry which offer technological solutions and develop proudly South African digital solutions.

[#BuildingACapable4IRArmy](#)

Ms Molebogeng Leshabane
Chair of the Board | NEMISA

Foreword from the NEMISA Acting Chief Executive Officer



We are in the era of the 4IR and it is incumbent upon every individual, all institutions and organisations, and both the private and public sectors to equip themselves with digital skills in order to execute their mandates effectively. NEMISA plays a mandatory role in realising such digital skills. The NEMISA 2020–2024 Strategic Plan will drive the institution towards a world class innovative skills institute that will ensure an empowered South African citizenry with 4IR capabilities (4IRArmy). NEMISA’s mission is to catalyse national digital skills for meaningful use of technologies in order to improve the quality of life of all South Africans. This mission cannot become a reality without the involvement of the work force (labour), as it is the driving force towards production and industry effectiveness.

NEMISA embarked on the environmental scan to find the digital technologies and skills that are required by employees in organisations and government. The scope of the study entailed the ability to learn new software, digital literacy, the ability to use and understand digital media, and digital marketing. The study found that higher costs of digital technology; adjusting to and learning new digital technology; the threat of possible retrenchment; and the lack of required digital skills were some of the challenges employees faced in the workplace. Future digital technologies and skills required range from basic computer literacy to advanced digital skills in computer coding, artificial intelligence, machine learning and Blockchain technology.

Technological advancements directly influence the changing nature of digital skills. New technologies demand a capable work force that is equipped with skills that complement the change in technology and the market. NEMISA is positioning itself to become a national catalyst for digital skills development for the public and private sectors. It is crucial for all citizens and organisations to have the appropriate digital skills in an ever-changing technological environment. The environmental scan will definitely aid NEMISA to create an enabling digital skilling environment for 4IR technologies and innovation.

Mr Treveen Rabindhnath
Acting Chief Executive Officer | NEMISA

Executive Summary

The National Electronic Media Institute of South Africa (NEMISA)¹ has a mandate to ensure that South Africans have the necessary digital skills to participate in the 4th Industrial Revolution (4IR). A part of the mandate is to establish an innovative and collaborative network focusing on digital skills with links to industry, academia, government and not-for-profit sectors both locally and internationally. The aim of the network is to “provide the evidence-based basis, through research and other available means, for decisions on how to innovatively address the opportunities and systemic challenges in achieving digital skills capacity in South Africa”.

This environmental scan research report represents the beginning of a research journey that seeks to identify the changing nature of digital skills in South Africa as a result of technological advancements (Stromquist 2019), more popularly known as the 4th Industrial Revolution (4IR). The 4IR represents the current era of an inter connectedness of things biological, physical and non-physical as a result of the rapid advancements in technological innovations (Schwab 2016). The innovations have resulted in new types of specialised skills required for new types of work while at the same time causing some previously routine skills to become obsolete (Fossen and Sorgner 2019; Frey and Osborne 2017).

A dual method approach, starting with a qualitative method and followed by a quantitative method, was adopted to examine the status of digital skills, and the usage of digital technologies in the workplace in South Africa. The findings provide the baseline evidence to support informed and effective strategies for digitalisation and participation in the 4IR among Small and Medium Enterprises (SMEs), organisations and government in South Africa.

There were 597 respondents from the 21 Standard Industrial Classification (SIC) sectors defined by Statistics South Africa.² The study comprised 360 employees, 127 managers and 110 Human Resource (HR) managers. There was a special focus group of 14 SME owners, employees and managers from the different sectors. Of the 597 respondents, 38.9% (232) were men, with women representing 61.1% (365). The racial groups were represented as follows: Black (366 – 61.3%); White (153 – 25.6%); Coloured (30 – 5%); and Indian (47 – 7.9%). The highest level of education was mainly those with diplomas (210 – 35.2%); followed by high school matric (169 – 28.4%); degree holders (149 – 25%); postgraduate qualifications (67 – 11.2%); and primary school (1 – 0.2%).

1 www.nemisa.co.za

2 <https://apps.statssa.gov.za/siccoder/>

The following are some of the key findings that have been identified, and are followed by policies and practical recommendations.

Key Findings

1. Digital technology is well understood in the workplace

- Overall, employees, managers and HR managers have a good to excellent understanding of digital technology. Neither age, gender nor educational level has any influence on their understanding of digital technology. This finding puts to rest any doubts about the familiarity of digital technology in the workplace; it is well known and understood.
- The finding further shows that in terms of digital skills, there is a technical readiness to adopt 4IR technologies. The challenge is the behavioural and social strategies to encourage adopting the 4IR technologies as will be shown in the proceeding findings.

2. Digital skills deployment (usage)

- Digital skills deployment represents how digital technologies are used in the workplace. This understanding helps to identify opportunities for digital skills and digital transformation.
- The operational types of digital technologies are the most frequently used (email, scanning/printing, making bookings), while modelling and planning tools (intelligent systems) are mainly valued by management. This is consistent with the larger numbers of employees compared with management.
- The danger lies in the replaceability of the operational types of digital technologies through digitalisation. Since managers value intelligent systems combined with the rising wave of digitalisation, sooner or later management will replace the operational systems and employees with less costly intelligent systems. It is necessary to prepare employees through upskilling and/or reskilling into roles that are complementary to specialised 4IR technologies.
- Two particular 4IR technologies kept emerging in the research as under considered yet present some of the greatest threats to operational types of digital technologies, namely, Blockchain technology (i.e. a system of recording information that makes it difficult or impossible to change, hack or cheat the system) and artificial intelligence (AI).

3. Digital skills demands (needs)

- Digital skills demands represent the digital technologies and the digital skills needed within the organisation.
- Overall, half of the employees and half of the managers did not find any applicable need for Blockchain technology and AI in their organisations. The greatest future 4IR technology needs identified by employees were “Faster

internet”, “Upgraded equipment”, “Artificial intelligence (AI)” and “Internet of things (IoT)”. These demands for a faster internet connection and more connected digital technologies indicate an implicit awareness of the 4IR, and the challenge of participating in the 4IR using existing digital technologies.

- The digital skills that were found to be needed by employees were:
 - the ability to learn new software (67.5%);
 - digital literacy (63.6%);
 - the ability to use and understand digital media (53.8%);
 - digital marketing (53.5%).
- With the exception of government, it is management that champions digital innovation in organisations. In government, it is the IT department who are the primary digital champions. Overall, 36.3% of employees identified the primary digital champion as a fellow colleague. This suggests a top-down (management to employee) push for digital transformation.
- At the moment, managers encourage digital technology usage and digital skills through skills empowerment programmes (83.3%) and through endorsing digital innovations (61.1%). Managers, however, cited resistance to digital technology in the workplace as a result of a lack of digital skills (66.4%), a fear of the unknown (52.9%), and a preference for traditional tools (51.3%). Managers in government, however, are quite sceptical about the need for future digital technologies in government compared with other sectors.
- The majority of HR managers do not conduct digital skills audits (58.2%), and those who do conduct such audits mainly do so on an annual basis.
- These findings suggest that employees accept the reality of lifelong learning in the 4IR starting with the basics, and desire to know how to embark on that journey, but are not particularly certain how to do so.

4. Digital skills supply

- Digital skills supply relates to how digital skills are recruited and retained in the workplace. This reflects the brain drain that could affect organisational transformation.
- Overall, employees indicated that digital skills and the knowledge of digital technologies add significantly to the value of their formal qualifications.
- In terms of attracting talent with exceptional digital skills, both HR managers and managers mainly rely on creating a conducive work environment and by providing incentives to their employees. The main challenge faced by HR Managers is competition for exceptional talent, and costly job portals.

- 40.9% of HR managers do not find that government or organisational policy has any effect on their ability to recruit talent with exceptional digital skills; 33.6% did not perceive that such policy has any impact after all; 14.5% noted a negative impact; 10.9% noted a positive impact; and 19% found union interference a challenge.
- The finding shows that HR Managers, who are the recruiters of talent in organisations, will require awareness on the changing nature of work and suggestions on how to translate digital skills policies aimed at attracting talent that will stimulate the adoption of the 4IR in the workplace.

5. Digital skills development

- Digital skills development represents how digital skills, competencies and expertise are nurtured, supported and encouraged. This directly relates to digital skills training.
- HR managers identified that most organisations make intentional efforts to support the development of digital skills among their staff, especially through accredited training (80%); in-house training (73.6%); self-learning (72.8%); and online training (61%). Nonetheless, only half (50%) of all organisations have a budget for digital skills development.
- On the other hand, most employees identified that they acquired their digital skills through self-development (56.8%) and previous work experiences (47.6%).
- Employees with higher educational qualifications tended to have a better perception of the role of digital technology in the workplace. There is nonetheless, a higher perceived risk of cyber security among older employees.

The above represent a growing shift from employer-driven to employee-driven digital skills development. Employees are increasingly playing a stronger role in their own skills development, for which organisations should increasingly re-think the organisational development plans that are inclusive of 4IR skills.

Prof. H. Twinomurinzi

Professor | 4IR

Applied Information Systems Department | UJ

Policies and Practical Recommendations

The findings provide the baseline evidence and rationale to support informed and effective strategies for digitalisation, digital skills programmes and participation in the 4IR among SMES, organisations and government in South Africa. The following are the policies and practical recommendations from the environmental scan.

1. Policy: Adopt lifelong learning in readiness to adopt 4IR in the workplace

Practical recommendations

- Create a culture of lifelong learning around with digital technology. This includes behavioural and social strategies that encourage the continuous adoption of 4IR technologies.
- Management should engage with employees to create simple, short and new digital skills pathways which encourage lifelong learning with exit points to gainful re-employability along every segment of the pathways.

Rationale: Employees, managers and HR managers in the workplace, overall, have a good technical understanding of digital technologies (87%+). Neither age, gender nor educational level influences this understanding (statistically verified). While digital technologies are well understood, most expressed the need to continually learn but do not know how to (67.5%). The urgent need is therefore the skills to transition into a culture of lifelong learning and the social readiness to adopt 4IR technologies.

2. Policy: Encourage self-learning that leads to accreditation

Practical recommendation: Incentives should be put in place that reward self-learning among employees, especially self-learning that leads to accreditation.

Rationale: Organisations prefer accredited training (80%), in-house training (73.6%), self-learning (72.8%) and online training (61%) as the means for digital skills development. Only half (50%), however, have a budget for digital skills development. On the other hand, most employees acquire their digital skills through self-development (56.8%) and previous work experiences (47.6%). If new accreditation that leverages off self-learning efforts are not considered, investments in training will be wasted and could result in loss of digital talent.

3. Policy: Create digital skills audit templates and conduct regular digital skills audits

Practical recommendations

- Create digital skills audit templates for organisations to adapt.
- Include digital skills audits as part of regular organisational skills audits

Rationale: The majority of HR managers do not conduct digital skills audits (58.2%), and those that conduct such audits mainly do so on an annual basis. Digital skills audits are necessary in the 4IR as they enable organisations to develop the relevant digital skills. Without digital skills audits, organisations will not know how to digitally transform and cannot take advantage of the opportunities presented by the 4IR.

4. Policy: Address government scepticism about the 4IR

Practical recommendations

- Immerse management and employees in government into 4IR experiences so that they can experience the opportunities that the 4IR will bring to their work and in delivering public services.
- Create prototypes that help them create new ways of engaging with their different stakeholders so government management and employees can experience how the 4IR makes engaging with all stakeholders and delivering public services much more efficient. This is in preference to starting with entire ICT projects.
- Create new policies that allow government employees at all levels to participate in using 4IR technologies.

Rationale: Government employees and management showed a scepticism about the 4IR (80%) suggesting it is a phenomenon not for South Africa. It is important to create practical experiences so that the scepticism will be turned to adoption. Without this change of culture, government will remain the weak link in the chain of digital transformation. Without these immersive experiences, there will not be much transformation in government.

5. Policy: Identify opportunities in Blockchain technology and AI

Practical recommendation: Identify digital skill opportunities in Blockchain technology and AI.

Rationale: Such 4IR technologies despite being specialist require aspects which employees need to contribute to. Overall, half of both employees (50.3%) and managers (49.6%) did not find any applicable need for Blockchain technology and AI in the organisations; yet these two technologies are fast being integrated into organisations. If these opportunities are not identified, employees will be replaced sooner or later resulting in greater unemployment.

6. Policy: Address employee resistance to change

Practical recommendation: Immerse employees into 4IR experiences so that they can experience the opportunities that the 4IR will bring to their work.

Rationale: Managers identified a lack of digital skills (66.4%), a fear of the unknown (52.9%), and a preference for traditional tools (51.3%) as the main reasons for resistance to digital technology. The more employees resist change and fail to adopt new 4IR technologies, the greater the shock when 4IR technologies are able to carry out their tasks with greater efficiency.

7. Policy: Create digital skills assessment online platform

Practical recommendation: Create an online platform which will allow for longitudinal studies per sector to assess the status of digital skills by organisation, by sector and by national level for the 4IR.

Rationale: A digital platform that assesses digital skills longitudinally will feed training and development organisations with real time data to inform how to adapt their accredited curricula with the needed digital skills content. In some instances old content can be dropped while new ones are included. Without such an online platform, accredited curricula will remain outdated.

Introduction and Background

The National Electronic Media Institute of South Africa (NEMISA) and the University of South Africa (UNISA) signed a Memorandum of Agreement (MoA) for the period from 1 April 2019 to 31 March 2022 for the NEMISA Strategic Goal: Programme 4: Knowledge for Innovation (K4I). Programme 4 is an ongoing evidence-based research programme operating in a cross-disciplinary manner to concentrate on new ways to embed technology into people's lives.

The goal of NEMISA is to improve opportunities, access to government services, and to move towards social cohesion in South Africa. Specifically, Programme 4 is a research-focused entity that focuses on:

- **National environmental scans:** These are baseline studies of the level of digital skills in South Africa at three levels, namely, individual, organisational and government.
- **Digital skills events:** These events bring together stakeholders from government, academia, industry and the international community.
- **Support for research into digital skills:** This includes stakeholder engagement, workshops, and sponsoring master's and doctoral research.

The above tasks are not distinct activities as they are part of the larger NEMISA and National Department of Communications and Digital Technologies (DCDT) agenda towards preparing South Africa for the digital economy and the 4IR. The K4I is a collaboration between multiple stakeholders, including South African universities.

Environmental Scan and Research Objectives

There were two primary research objectives of the environmental scan:

- To go beyond practitioner Information Technology (IT) skills to describe the richer set of digital behaviours, competencies and identities in the different sectors of South Africa.
- To understand the digital skills of employees and the nature of digital skills in the workplace in the different sectors of South Africa.

Skills Ecosystems (Theoretical Underpinning)

The complexity in measuring the changing nature of work and the related digital skills as a result of the 4IR starts with identifying an existing skills framework to benchmark against. The challenge of traditional skills frameworks and digital innovation / maturity / transformation frameworks was primarily in their number – there are many; and there is no consistency between those frameworks (Barnes et al. 2018).

Therefore, the choice was to use the skills ecosystem approach that has emerged primarily from the works of Anderson and Warhurst (2012), Buchanan, Anderson and Power (2017) and Finegold (1999). The attraction of the ecosystem approach was mainly in its appreciation of flux (change) as it pertains to self-sustenance and the mutual interdependence of an organism within its environment. The skills ecosystem is

a dynamic network of interdependent institutions and actors which through their various interactions, roles, interests, needs and resources is in a constant process of change – evolving in ways that cannot always be predicted – but which shape the development, supply, demand and deployment of skills in any given industry or region. (Anderson and Warhurst 2012, 117)

The skills ecosystem has four primary aspects (see Figure 1). Skills deployment relates to how skills are utilised; skills demands identify what skills are needed; skills supply emphasises how to recruit and retain skills; and skills development represents how skills, competencies and expertise are nurtured, supported and encouraged. Skills development goes beyond formal training interventions to the informal ways in which people learn.

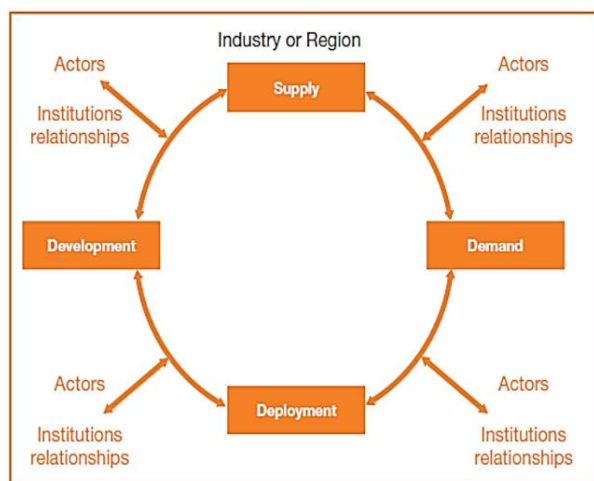


Figure 1: Skills Ecosystem Framework (Anderson and Warhurst 2012, 118)

The skills ecosystem approach has been used to understand the changing nature of traditional skills and digital skills at the organisational, sectorial, regional and national levels. For example, the approach has been adapted to understand digital skills at the national level in Australia (Gekara et al. 2019), in the United States to understand digital skills at the organisational level (Finegold 1999), in Scotland to understand digital skills in the health sector (Anderson 2010), and in the United Kingdom to understand digital skills in the museum sub-sector (Barnes et al. 2018).

Thus, the framework provided a substantive means to measure and holistically understand the changing nature of work and the related digital skills from a South Africa national and sub-sector perspective.

Methodology

The environmental scan was underpinned by a critical realist philosophical perspective in its emphasis on understanding the deeper social structural issues that influence the usage of digital technologies and digital skills in the workplace (Creswell 2013; Kilpinen 2008; Patton 2002). The philosophy is ideal when seeking for innovative ways to solve the fundamental challenges as they exist in South Africa, namely, the triple challenge of poverty, unemployment and socioeconomic inequality.

The K4I and CoLabs collaborated on the initial sets of questions for both phases of the study in a series of consultative sessions and workshops. This enabled the baseline questions to be made locally relevant to the South African context. The questions were adapted, a few were combined and any ambiguities were negotiated until consensus was arrived at. A pilot study was conducted, and the questions were further amended according to the feedback from the pilot studies. The final sets of questions are presented in Appendix A, B and C.

Ethical clearance was received from the School of Computing, College of Science, Engineering and Technology, UNISA (see Appendix D).

Independent data collection and analysis, and independent peer reviewers were used to review the completed versions of the environmental scan research report. The environmental scan was necessarily cross-sectional due to time and budget constraints. Over time, the environmental scan is expected to mature to become longitudinal and hence truly measure the changing nature of work in South Africa.

Due to time and budget constraints, the questions were all in English and hence targeted participants who were proficient in English. Further studies should consider other official languages of South Africa, and collect more responses for each sub-sector to enable statistical reliability at the sub-sector level. For more methodological details, such as validity and reliability, see Appendix F.

Chapter 1: Demographic Profiles

The survey consisted of 597 respondents from the 21 Standard Industrial Classification (SIC) sectors defined by Statistics South Africa as shown in tables 1 to 5.

Table 1: Organisational role

Organisational role	Frequency	Percentage
Employees	360	60.3%
Managers	127	21.3%
HR Managers	110	18.4%

Table 2: Gender

Gender	Frequency	Percentage
Male	232	38.9%
Female	365	61.1%

Table 3: Highest educational attainment

Highest educational attainment	Frequency	Percentage
Primary school	1	0.2%
High school	169	28.4%
Diploma	210	35.2%
Degree	149	25.0%
Postgraduate	67	11.2%

Table 4: Race

Race	Frequency	Percentage
Black	366	61.3%
White	153	25.6%
Coloured	30	5.0%
Indian	47	7.9%

Table 5: Respondents per SIC sector

Industry code	Functions	Frequency	Percentage
Agriculture, forestry and fishing	Employees	13	56.5%
	Managers	5	21.7%
	HR Managers	5	21.7%
	Total	23	100.0%
Mining and quarrying	Employees	13	56.5%
	Managers	5	21.7%
	HR Managers	5	21.7%
	Total	23	100.0%
Manufacturing	Employees	13	54.2%
	Managers	6	25.0%
	HR Managers	5	20.8%
	Total	24	100.0%
Electricity, gas, steam and air conditioning supply	Employees	14	58.3%
	Managers	5	20.8%
	HR Managers	5	20.8%
	Total	24	100.0%
Water supply, sewerage, waste management and remediation activities	Employees	14	58.3%
	Managers	5	20.8%
	HR Managers	5	20.8%
	Total	24	100.0%
Construction	Employees	14	58.3%
	Managers	5	20.8%
	HR Managers	5	20.8%
	Total	24	100.0%
Wholesale and retail trade; repair of motor vehicles and motor cycles	Employees	24	61.5%
	Managers	8	20.5%
	HR Managers	7	17.9%
	Total	39	100.0%
Transportation and storage	Employees	17	60.7%
	Managers	6	21.4%
	HR Managers	5	17.9%
	Total	28	100.0%
Accommodation and food service activities	Employees	19	57.6%
	Managers	7	21.2%
	HR Managers	7	21.2%
	Total	33	100.0%

Information and communication	Employees	24	66.7%
	Managers	7	19.4%
	HR Managers	5	13.9%
	Total	36	100.0%
Financial and insurance activities	Employees	25	69.4%
	Managers	5	13.9%
	HR Managers	6	16.7%
	Total	36	100.0%
Real estate activities	Employees	26	66.7%
	Managers	8	20.5%
	HR Managers	5	12.8%
	Total	39	100.0%
Professional, scientific and technical activities	Employees	13	56.5%
	Managers	5	21.7%
	HR Managers	5	21.7%
	Total	23	100.0%
Administrative and support service activities	Employees	14	58.3%
	Managers	5	20.8%
	HR Managers	5	20.8%
	Total	24	100.0%
Public administration and defence; compulsory social security	Employees	14	58.3%
	Managers	5	20.8%
	HR Managers	5	20.8%
	Total	24	100.0%
Education	Employees	23	62.2%
	Managers	9	24.3%
	HR Managers	5	13.5%
	Total	37	100.0%
Human health and social work activities	Employees	22	68.8%
	Managers	5	15.6%
	HR Managers	5	15.6%
	Total	32	100.0%
Arts, entertainment and recreation	Employees	19	54.3%
	Managers	11	31.4%
	HR Managers	5	14.3%
	Total	35	100.0%
Other service activities	Employees	12	54.5%
	Managers	5	22.7%

	HR Managers	5	22.7%
	Total	22	100.0%
Activities of households as employers; undifferentiated goods-and-service-producing activities of households for own use	Employees	14	58.3%
	Managers	5	20.8%
	HR Managers	5	20.8%
	Total	24	100.0%
Activities of extraterritorial organisations and bodies, not economically active people; unemployed people etc.	Employees	13	56.5%
	Managers	5	21.7%
	HR Managers	5	21.7%
	Total	23	100.0%

Chapter 2: Understanding Digital Technology

This category of questions arose from arguments that questioned whether people really understood the concept of digital technologies. Some arguments suggested that even clocks are digital technologies. All the respondents were therefore asked to indicate whether a set of five statements were true or false. Four of the five statements were true and only one (KN4) was false.

A score of 1 indicated “Very poor understanding” of digital technology (no clue); 2 reflected “Poor understanding”; 3 reflected “Average understanding”; 4 indicated “Good understanding”; and 5 referred to “Excellent understanding”.

Table 6 shows that overall, all categories have a good-to-excellent understanding of digital technologies. Statistical tests using an analysis of variance (ANOVA) and linear regression (see Appendix E) further showed that neither gender, age nor education influences an understanding of digital technologies.

The findings point to an embeddedness of digital technologies in the workplace.

Table 6: Overall understanding of digital technologies

Segment		Poor understanding	Average understanding	Good understanding	Excellent understanding
Employees	f	5	41	276	36
	%	1.4	11.5	77.1	10.1
Managers	f	4	8	104	9
	%	3.2	6.4	83.2	7.2
HR Managers	f	3	11	79	15
	%	2.8	10.2	73.1	13.9

Note: f = frequency

Chapter 3: Digital Skills Deployment (Usage)

Digital skills deployment considered how digital technologies are used, the challenges and benefits derived from them, and the individuals who promote digital transformation in the organisation.

1.1 Activities for Digital Technology

All three respondent groups (Employees, Managers and HR Managers) comfortably use digital technologies. The subtle differences are in the way employees use operational types of digital technologies more (calling and filing), compared with management who use more monitoring, modelling and planning types of technologies (accounting/financial management, monitoring and research).

Digital technologies that support design are not common in the work place shown by the varied responses across all the respondent groups. Such creative new media technologies are increasingly becoming an important part of communication and represent a gap and opportunity for digital skills.

Table 7: Types of digital technologies used

Digital technologies	Segment	Never	Rarely	Half the time	Often	Always	N/A
Accounting/ Financial management	Employees	60	54	28	66	131	21
		16.7 %	15.0%	7.8 %	18.3 %	36.4%	5.8%
	Managers	25	10	6	20	63	3
		19.7 %	7.9%	4.7 %	15.7 %	49.6%	2.4%
	HR Managers	11	7	4	20	54	14
		10.0 %	6.4%	3.6 %	18.2 %	49.1%	12.7 %
Making bookings	Employees	48	57	29	75	137	14
		13.3 %	15.8%	8.1 %	20.8 %	38.1%	3.9%
	Managers	25	16	13	21	49	3
		19.7 %	12.6%	10.2 %	16.5 %	38.6%	2.4%
	HR Managers	9	15	9	22	49	6
		8.2%	13.6%	8.2 %	20.0 %	44.5%	5.5%
Emailing	Employees	9	19	30	52	246	4
		2.5%	5.3%	8.3	14.4	68.3%	1.1%

				%	%		
	Managers	5	11	5	10	96	
		3.9%	8.7%	3.9%	7.9%	75.6%	
	HR Managers	2	6	7	7	88	
		1.8%	5.5%	6.4%	6.4%	80.0%	
Making audio or video calls	Employees	30	58	34	66	160	12
		8.3%	16.1%	9.4%	18.3%	44.4%	3.3%
	Managers	8	34	10	24	47	3
		6.3%	27.0%	7.9%	19.0%	37.3%	2.4%
	HR Managers	4	17	17	28	43	1
		3.6%	15.5%	15.5%	25.5%	39.1%	0.9%
Marketing	Employees	60	60	38	77	113	12
		16.7%	16.7%	10.6%	21.4%	31.4%	3.3%
	Managers	25	14	18	20	45	4
		19.8%	11.1%	14.3%	15.9%	35.7%	3.2%
	HR Managers	10	18	13	23	39	7
		9.1%	16.4%	11.8%	20.9%	35.5%	6.4%
Printing and scanning/ Googling	Employees	12	20	31	63	230	4
		3.3%	5.6%	8.6%	17.5%	63.9%	1.1%
	Managers	15	15	5	10	82	
		11.8%	11.8%	3.9%	7.9%	64.6%	
	HR Managers	5	7	9	17	72	
		4.5%	6.4%	8.2%	15.5%	65.5%	
Designing	Employees	79	61	37	56	105	22
		21.9%	16.9%	10.3%	15.6%	29.2%	6.1%
	Managers	26	28	13	16	31	13
		20.5%	22.0%	10.2%	12.6%	24.4%	10.2%
	HR Managers	17	16	17	18	32	10
		15.5%	14.5%	15.5%	16.4%	29.1%	9.1%
Monitoring (e.g.	Employees	43	49	41	79	125	23

employees, production, security, etc.)		11.9 %	13.6%	11.4 %	21.9 %	34.7%	6.4%
	Managers	6	10	17	32	62	
		4.7%	7.9%	13.4 %	25.2 %	48.8%	
	HR Managers	4	7	13	30	51	5
3.6%		6.4%	11.8 %	27.3 %	46.4%	4.5%	
Research and development/Information processing	Employees	52	40	40	59	152	17
		14.4 %	11.1%	11.1 %	16.4 %	42.2%	4.7%
	Managers	2	15	11	25	74	
		1.6%	11.8%	8.7 %	19.7 %	58.3%	
	HR Managers	7	9	18	29	41	6
		6.4%	8.2%	16.4 %	26.4 %	37.3%	5.5%
Training	Employees	57	48	51	80	108	16
		15.8 %	13.3%	14.2 %	22.2 %	30.0%	4.4%
	Managers	24	19	25	23	34	2
		18.9 %	15.0%	19.7 %	18.1 %	26.8%	1.6%
	HR Managers	11	10	20	32	32	5
		10.0 %	9.1%	18.2 %	29.1 %	29.1%	4.5%
Filing	Employees	34	54	56	67	139	10
		9.4%	15.0%	15.6 %	18.6 %	38.6%	2.8%
	Managers	22	11	22	30	41	1
		17.3 %	8.7%	17.3 %	23.6 %	32.3%	0.8%
	HR Managers	8	14	23	24	36	4
		7.3%	12.8%	21.1 %	22.0 %	33.0%	3.7%

3.2 Benefits of Using Digital Technology in the Workplace

The benefits were assessed based on a scale of 1 to 10, where 1 corresponds to “Not relevant” and 10 to “Very relevant”. The results indicate that all find value from using digital technology in the workplace. The differences in value are limited.

Table 8: Benefits of using digital technology

Benefits	Segment	Mean	Standard Deviation
Ability to manage and monitor my team, activities, projects, etc. whilst not being physically present	Employees	7.17	2.99
	Managers	8.33	2.36
	HR Managers	7.97	2.31
Improved communication tools	Employees	8.15	2.31
	Managers	8.00	2.50
	HR Managers	8.19	2.21
Ability to enhance the capacity to perform my job	Employees	8.35	2.15
	Managers	8.59	1.60
	HR Managers	8.35	1.85
Ability to do different tasks at once (Multi-tasking)	Employees	8.16	2.30
	Managers	8.38	1.79
	HR Managers	8.35	1.66
Limited usage of paper (Paperless processes)	Employees	7.90	2.57
	Managers	7.88	2.42
	HR Managers	7.78	2.37
Less time needed to perform my duties (Time-efficiency)	Employees	7.88	2.42
	Managers	8.18	1.78
	HR Managers	8.06	2.17
Reduced workload	Employees	7.58	2.59
	Managers	7.43	2.35
	HR Managers	7.37	2.27

3.3 Challenges of Using Digital Technology in the Workplace

Most employees identified adjusting to and learning new digital technology, and digital fraud and scamming as the biggest challenge when using digital technology. HR managers mostly found a challenge with the instability of digital technologies. Nonetheless, the challenges were scored lower than the benefits.

Table 9: Challenges of using digital technology

Challenges	Segment	Mean	Standard Deviation
Digital technology involves higher costs	Employees	6.59	2.54
	Managers	6.21	2.07
	HR Managers	6.53	2.15
Instability of digital systems (systems going down, load shedding, etc.)	Employees	6.59	2.81
	Managers	5.95	2.44
	HR Managers	6.71	2.41
Lack of human interactions	Employees	6.14	2.78
	Managers	5.72	2.42
	HR Managers	5.66	2.62
Threat of possible retrenchment	Employees	6.19	3.11
	Managers	5.32	2.98
	HR Managers	5.34	2.88
Adjusting to and learning new digital technology	Employees	6.64	2.65
	Managers	5.98	2.38
	HR Managers	6.08	2.69
Lack of required digital skills	Employees	5.84	2.75
	Managers	5.57	2.26
	HR Managers	5.56	2.70
Digital fraud and scamming	Employees	6.63	3.15
	Managers	5.86	3.00
	HR Managers	5.88	2.90

Comparing the benefits versus the challenges, the benefits of digital technologies are greater than the challenges. The finding suggests a growing maturity of digital technology usage in the workplace.

3.4 Digital Champions in the Workplace

Digital champions are those individuals who encourage digital transformation in the organisation. Management were identified by all respondents as being the main digital champions in all the organisations, followed in a distant second by the IT department.

The finding indicates that the drivers for digital transformation in the 4IR are mainly pull factors from the top (management) rather than from the bottom (employees). Digital transformation efforts are therefore better targeted at management.

Table 10: Digital champions in the organisation

Digital champions		Frequency	Percentage
Employees	Management (CEOs, Directors, Managers, Supervisors, etc.)	290	81.0%
	IT Department	210	58.7%
	Communication Department/Marketing Department	144	40.2%
	Project coordinators	102	28.5%
	External stakeholders	83	23.2%
	Fellow colleagues	130	36.3%
	No one	19	5.3%
	No idea	10	2.8%
Managers	Management (CEOs, Directors, Managers, Supervisors, etc.)	116	91.3%
	IT Department	65	51.2%
	Communication Department/Marketing Department	50	39.4%
	Project coordinators	48	37.8%
	External stakeholders	26	20.5%
	Fellow colleagues	49	38.6%
	No one	4	3.1%
	No idea	1	0.8%
HR Managers	Management (CEOs, Directors, Managers, Supervisors, etc.)	96	87.3%
	IT Department	67	60.9%
	Communication Department/Marketing Department	40	36.4%
	Project coordinators	29	26.4%
	External stakeholders	20	18.2%
	Fellow colleagues	38	34.5%
	No one	3	2.7%

Chapter 4: Digital Skills Demands (Needs)

Digital skills demands reflect the digital skills and technologies needed in an organisation. This section also reflects: the current and future 4IR technologies used and needed; the resistance to using them; and the actions to adopt their usage in the workplace.

4.1 4IR Technologies Used and Needed (Employees and Managers)

Only employees and managers were asked about 4IR technologies that were either being used or were regarded as future needs. Most employees (50.3%) and managers (49.6%) found no application for Blockchain technology and AI in their organisations.

Only 32.8% of employees and 31.5% of managers identified AI as a needed digital technology. Blockchain technology and AI are currently not well adopted.

Table 11: Digital technologies used and needed

Digital technologies	Segment	N/A	Used	Needed
State-of-the-art printers and scanners	Employees	37	274	49
		10.3%	76.1%	13.6%
	Managers	5	107	15
		3.9%	84.3%	11.8%
Business WhatsApp	Employees	85	180	95
		23.6%	50.0%	26.4%
	Managers	37	63	27
		29.1%	49.6%	21.3%
Hi-tech telephone	Employees	46	231	83
		12.8%	64.2%	23.1%
	Managers	25	87	14
		19.8%	69.0%	11.1%
Faster computers and tablets	Employees	21	240	99
		5.8%	66.7%	27.5%
	Managers	11	94	22
		8.7%	74.0%	17.3%
Digital filing	Employees	52	208	100
		14.4%	57.8%	27.8%
	Managers	19	94	14
		15.0%	74.0%	11.0%
Mobile applications	Employees	66	204	90

		18.3%	56.7%	25.0%
	Managers	24	82	21
		18.9%	64.6%	16.5%
Blockchain technology	Employees	181	71	108
		50.3%	19.7%	30.0%
	Managers	63	34	30
		49.6%	26.8%	23.6%
Reliable internet	Employees	23	280	57
		6.4%	77.8%	15.8%
	Managers	4	106	17
		3.1%	83.5%	13.4%
Smart boards	Employees	135	129	96
		37.5%	35.8%	26.7%
	Managers	58	44	25
		45.7%	34.6%	19.7%
Software and web applications	Employees	62	225	73
		17.2%	62.5%	20.3%
	Managers	12	98	17
		9.4%	77.2%	13.4%
Automated equipment	Employees	100	153	107
		27.8%	42.5%	29.7%
	Managers	30	68	29
		23.6%	53.5%	22.8%
Voice over internet protocol (VOIP)	Employees	131	133	96
		36.4%	36.9%	26.7%
	Managers	39	65	23
		30.7%	51.2%	18.1%
Video conferencing applications	Employees	118	163	79
		32.8%	45.3%	21.9%
	Managers	30	75	22
		23.6%	59.1%	17.3%
Artificial intelligence (AI)	Employees	182	60	118
		50.6%	16.7%	32.8%
	Managers	58	29	40
			22.8%	31.5%

4.2 Future Digital Technologies and Skills Needed (Employees)

Only employees were asked about digital technologies and skills which they would need in the future. A “Faster internet connection” is the most needed future digital technology (81.2%), followed by “Upgraded equipment” (61.8%), and “Scanners/Tracking technology”.

Table 12: Future digital technologies needed

Digital technologies	Frequency	Percentage
Faster internet connection	289	81.2%
Ultra-modern equipment (Upgrade current digital equipment/s)	220	61.8%
Artificial intelligence (AI)	114	32.0%
Internet of things (IoT)	118	33.1%
Robots	48	13.5%
Scanners	162	45.5%
Tracking systems	159	44.7%
Voice over internet protocol (VOIP)	106	29.8%
No idea	16	4.5%

4.3 Future Digital Skills Needed (Employees)

The ability to learn new software (67.5%) and computer literacy (63.6%) are the most needed future digital skills.

Table 13: Future digital skills needed

Digital skills	Frequency	Percentage
Ability to quickly learn new software	241	67.5%
Computer literacy	227	63.6%
Machine learning	161	45.1%
Digital marketing	191	53.5%
Artificial intelligence (AI)	123	34.5%
Developing a website	167	46.8%
Ability to use and understand digital media	192	53.8%

4.4 Resistance to Digital Technology (Managers)

Managers identified a lack of digital skills (66.4%), a fear of the unknown (52.9%), and a preference for traditional tools (51.3%) as the main reasons for resistance to digital technology.

Table 14: Resistance to digital technology

Reasons for resistance	Frequency	Percentage
Fear of the unknown	63	52.9%
Lack of digital skills	79	66.4%
Scepticism (Doubt) of digital technologies	44	37.0%
Preference for traditional tools	61	51.3%
Fear of digital technology (Technophobia)	36	30.3%
No resistance	6	5.0%

4.5 Means of Digital Transformation (Managers)

Managers mainly encourage digital transformation through skills empowerment programmes. This is followed at a distant second by endorsing digital practices, and third by acquiring better digital technology.

Nonetheless, eight managers in the following sectors did not find any need to encourage digital transformation: Manufacturing; Construction; Wholesale and retail; repair of motor vehicles and motorcycles; Transportation and storage; Information and communication; and Activities of extraterritorial organisations and bodies, not economically active people, unemployed people sectors.

Table 15: Means of digital transformation

Actions undertaken	Frequency	Percentage
Skills empowerment	105	83.3%
Endorsement of digital practices	77	61.1%
Acquisition of modern technology	74	58.7%
No action is undertaken	8	6.3%

4.6 Digital Skills Audit (HR Managers)

Of the HR managers, 58.2% do not conduct a digital skills audit in their organisation. Those who do, usually carry out one once a year (10.9% of them) as part of the regular skills audit. The varied responses shown in Table 16 suggest that the concept of a digital skills audit might not have been well understood by many of the HR managers.

Table 16: Frequency of digital skills audit

How often do you conduct a digital skills audit?	Frequency	Percentage
Always	1	0.9%
Annually	12	10.9%
Every two months	2	1.8%
Every two years	2	1.8%
Monthly	4	3.6%
On employment	1	0.9%
Per term	1	0.9%
Quarterly	3	2.7%
Three times a year	3	2.7%
Twice a month	1	0.9%
Twice a year	10	9.1%
Very often	1	0.9%
With new equipment	3	2.7%

Chapter 5: Digital Skills Supply (Recruit and Retain)

The section that targeted only managers and HR managers sought to understand how they recruit and retain people with digital skills, the challenges they face when recruiting staff with digital skills, and how different policies affect their abilities to attract the best talent.

The section related to employees investigated the perceived impact and the importance of digital skills and technologies on their qualifications.

5.1 Perceived Impact of Digital Skills on Individuals (Employees)

Overall, the majority of the employees perceived that their knowledge and usage of digital technologies improved their confidence, opened up job opportunities, and made them more knowledgeable and innovative at work.

Table 17: Perceived impact of digital skills on formal qualifications

My knowledge of digital technologies boosts my confidence		Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Total
	f	9	12	37	130	172	360
	%	2.5	3.3	10.3	36.1	47.8	100
	Mean = 4.23; SD = 0.94						
The digital skills that I have acquired open doors to more job opportunities		Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Total
	f	9	10	44	126	171	360
	%	2.5	2.8	12.2	35.0	47.5	100
	Mean = 4.22; SD = 0.94						
The usage of digital technologies makes me more knowledgeable		Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Total
	f	9	6	30	139	176	360
	%	2.5	1.7	8.3	38.6	48.9	100
	Mean = 4.30; SD = 0.88						
With the usage of digital technology, I am now able to innovate at work		Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Total
	f	9	10	46	136	159	360
	%	2.5	2.8	12.8	37.8	44.2	100
	Mean = 4.18; SD = 0.94						

Note: f = frequency; SD = standard deviation

5.2 Importance of Digital Technologies (Employees)

The majority of employees (89.3%) identified that their digital skills add value to their formal qualifications.

Table 18: Value of digital skills to formal qualification

	Frequency	Percentage
No idea	16	4.5%
Not valuable at all	17	4.7%
Not valuable	5	1.4%
Valuable	108	30.1%
Very valuable	213	59.3%

5.3 Recruiting Digital Talent (Managers and HR Managers)

Of the managers, 69.8% use online advertising to recruit staff with exceptional digital skills; 52.4% use internal advertising; and 51.6% use word-of-mouth. These are the three main means that managers use to recruit talent with exceptional digital skills.

Similarly, 74% of HR managers prefer online advertising to recruit staff with exceptional digital skills; 57.7% use internal advertising; and 50% advertise through word of mouth. A further 42.3% use recruitment agencies; and 40.4% use internships.

Table 19: Recruiting staff (Managers and HR Managers)

Strategy	Managers		HR Managers	
	N	Percentage	N	Percentage
Online advertising	88	69.8%	77	74%
Classified advertisement	23	18.3%	29	27.9%
Recruitment agencies	45	35.7%	44	42.3%
Word-of-mouth	65	51.6%	52	50.0%
Internal advertising	66	52.4%	60	57.7%
Internships	49	38.9%	42	40.4%
Outsourcing	27	21.4%	26	25%
Headhunting (Pool of experts)	25	19.8%	27	26%
Tech summits	8	6.3%	2	1.9%

5.4 Retaining Digital Talent (Managers and HR Managers)

As the primary means to retain digital talent, 65.5% of managers create a conducive environment; followed by 64.7% who use incentive schemes. Counteroffers do not seem to be favoured highly. Similarly, 67.3% of HR managers use a conducive environment to provide incentives (66.3%).

Table 20: Retaining digital talent (Managers and HR Managers)

Strategy	Managers		HR Managers	
	N	Percentage	N	Percentage
Capacity building	51	44%	49	48.5%
Creating a conducive environment	76	65.5%	68	67.3%
Providing incentives	75	64.7%	67	66.3%
Counteroffers	28	24.1%	20	19.8%

5.5 Impact of Existing Policy (Managers and HR Managers)

Regarding their ability to attract digital talent, 32.5% of managers and 33.6% of HR managers do not think that policy (either government or organisational) affects it. Only 26.2% found a negative impact, 24.6% had no idea whether policy had any influence, while 16.7% found that policy had a positive impact. Further analysis on the differences between sectors might reveal the variances.

On the other hand, 40.9% of HR managers have no idea about the impact of policy. Further analysis per sector to understand this result is also required.

Table 21: Impact of existing policy (Managers and HR Managers)

Impact	Managers		HR Managers	
	Frequency	Percentage	Frequency	Percentage
Negative impact	33	26.2%	16	14.5%
No impact	41	32.5%	37	33.6%
Positive impact	21	16.7%	12	10.9%
No idea	31	24.6%	45	40.9%

5.6 Perceived Challenges in Recruiting Digital Talent (HR Managers)

Of HR managers, 75% found that high competition was the greatest challenge in recruiting digital talent, followed by costly job portals (50%).

Table 22: Perceived challenges (HR Managers)

Challenges	N	Percentage
Costly job portals	42	50
Interference of trade unions	16	19
Stringent regulations	19	22.6
High competition in acquiring people with digital skills	63	75

Chapter 6: Digital Skills Development (Training)

Digital skills development represents how digital skills, competencies and expertise are nurtured, supported and encouraged. Development goes beyond formal training interventions to the informal ways in which people learn.

6.1 Digital Skills Acquisition (Employees)

Of employees, 56.8% acquire their digital skills through self-development; previous work experiences (47.6%); in-house training (45.4%); and as part of their tertiary education (41.5%). Peer learning also stood out for 40.1% of employees.

Employees acquire their digital skills the least from external training and workshops (23.4%).

Table 23: Digital skills acquisition (Employees)

Acquired through ...	N	%
High school	140	39.0
In-house training	163	45.4
Peer-learning	144	40.1
Self-taught	204	56.8
Short courses	114	31.8
Tertiary education	149	41.5
Previous work experience	171	47.6
External training/Workshops	84	23.4
I have no digital skills	5	1.4

6.2 Organisational Support

Overall, most organisations have supportive structures in place to promote digital skills acquisition through various means.

Table 24: Organisational support

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
My organisation supports digital technology usage through accredited training (officially recognised or	Employees	27	28	59	149	97
		7.5%	7.8%	16.4%	41.4%	26.9%
	Managers	2	11	23	64	27
		1.6%	8.7%	18.1%	50.4%	21.3%
	HR Managers	6	6	10	53	35
		5.5%	5.5%	9.1%	48.2%	31.8%

authorised)						
Digital technology is promoted through in-house training in my organisation	Employees	24	40	63	157	76
		6.7%	11.1%	17.5%	43.6%	21.1%
	Managers	0	4	20	73	30
		0%	3.1%	15.7%	57.5%	23.6%
HR Managers	5	7	17	66	15	
	4.5%	6.4%	15.5%	60.0%	13.6%	
My organisation does not have a support system to enhance digital skills	Employees	83	112	76	68	21
		23.1%	31.1%	21.1%	18.9%	5.8%
	Managers	28	41	25	27	6
		22.0%	32.3%	19.7%	21.3%	4.7%
HR Managers	28	35	22	18	7	
	25.5%	31.8%	20.0%	16.4%	6.4%	
My organisation encourages self-development of staff when it comes to digital technology	Employees	27	41	60	164	68
		7.5%	11.4%	16.7%	45.6%	18.9%
	Managers	2	13	19	68	25
		1.6%	10.2%	15.0%	53.5%	19.7%
HR Managers	5	5	20	62	18	
	4.5%	4.5%	18.2%	56.4%	16.4%	
Digital skills in my organisation are promoted through external training (training conducted outside the organisation)	Employees	36	72	89	114	49
		10.0%	20.0%	24.7%	31.7%	13.6%
	Managers	9	24	32	47	15
		7.1%	18.9%	25.2%	37.0%	11.8%
HR Managers	5	18	28	49	10	
	4.5%	16.4%	25.5%	44.5%	9.1%	
My organisation encourages the staff to acquire digital skills through online training	Employees	31	57	76	143	53
		8.6%	15.8%	21.1%	39.7%	14.7%
	Managers	3	18	30	60	16
		2.4%	14.2%	23.6%	47.2%	12.6%
HR Managers	4	12	27	49	18	
	3.6%	10.9%	24.5%	44.5%	16.4%	

6.3 Budget for Digital Skills Training (HR Managers and Managers)

Most managers (44.9%) and HR managers (50.9%) indicated the availability of budget for digital skill development. However, 34.6% of managers and 37% of HR managers indicated that there is no availability. Some managers (20.5%) and a few HR managers (12%) did not know whether there was a budget for digital skills training.

Table 25: Budget availability (Managers and HR Managers)

Segments	Managers		HR Managers	
	N	%	N	%
Yes	57	44.9	55	50.9
No	44	34.6	40	37
Do not know	26	20.5	13	12

Chapter 7: Risks and Attitudes

The perceived risks associated with the usage of digital technologies were investigated. Moreover, the overall attitudes of respondents towards digital technologies were assessed across segments and sectors.

Scale items were used to measure the perceived risks and attitudes. The reliability of the scale was, therefore, tested prior to the assessment. The internal consistency of each of these two scales was tested through the Cronbach’s alpha coefficient. A coefficient above 0.7 suggests that the scales are reliable. The analysis shows that the Cronbach’s alpha of perceived risk was $\alpha = 0.812$ and of attitude it was $\alpha = 0.906$. This indicates that the two constructs are reliable.

7.1 Perceived Risks Associated with Digital Technology Usage

A 5-point Likert scale ranging from “strongly disagree” (rated 1) to “strongly agree” (rated 5) was used to assess the perceived risk of the following items:

- **Risk 1:** The usage of digital technology exposes to potential financial loss.
- **Risk 2:** The probability of data loss is higher when using digital technology
- **Risk 3:** The possibility of getting scammed and robbed is higher when using digital technology
- **Risk 4:** Compared with traditional tools, such as pen and paper, using digital technology creates more doubts
- **Risk 5:** It takes too much time to learn how to use new digital technology than using traditional tools
- **Risk 6:** Digital technology is likely to cause me to lose control over the privacy of my personal data

Table 26: Perceived risks across segments (Employees, Managers and HR Managers)

	Risk 1	Risk 2	Risk 3	Risk 4	Risk 5	Risk 6	Overall Risk
Employees	2.84	3.12	3.37	2.58	2.38	2.73	2.8356
Managers	2.55	2.73	3.17	2.22	2.23	2.52	2.5696
HR Managers	2.69	2.85	3.15	2.55	2.46	2.80	2.7515

The highest perceived risk overall is “The possibility of getting scammed and robbed is higher when using digital technology”. Only employees found a perceived risk from “The probability of data loss is higher when using digital technology”. A post hoc

analysis (see Appendix G) identified that employees have an overall higher perception of risk compared with managers.

7.2 Attitudes towards Digital Technology Usage

The respondents' attitudes towards the usage of digital technologies in the workplace was measured using a 5-point Likert scale for the following items:

- **Att 1:** The usage of digital technologies in the workplace is a waste of time
- **Att 2:** I am NOT interested in using digital skills in my workplace
- **Att 3:** I do not see any additional value in using digital technology
- **Att 4:** The usage of digital technology is too complicated for me
- **Att 5:** I can still use my traditional tools, there is no real need for digital technologies
- **Att 6:** Digital technologies limit my capacity as a human because everything is provided by machines

Table 27: Attitudes towards digital technology usage in the organisation

	Att 1	Att 2	Att 3	Att 4	Att 5	Att 6	Overall Att
Employees	1.66	1.60	1.61	1.68	1.92	2.23	1.78
Managers	1.83	1.85	1.80	1.94	2.18	2.29	1.98
HR Managers	1.56	1.66	1.63	1.90	2.06	2.04	1.81

Most disagreed with the statement relating to the negative attitudes towards the usage of digital technology (the overall means are all below the value 2).

A correlation analysis for risks and attitudes (see Appendix F) showed that only older respondents are more likely to perceive risk with using digital technologies in the workplace.

A post hoc analysis (see Appendix F) identified that respondents with a high school certificate and diplomas have a more negative attitude towards digital technology compared to those with postgraduate degrees.

Chapter 8: Sector Analysis

This chapter examines the within sector analysis across the 21 sectors along the three segments of employees, managers and HR managers. The key unique findings, that is, those that differ from the overall findings, are presented, separated into their key themes or by their sector. The expanded tables can be found in Appendix F.

8.1 Headhunting in the Financial and Insurance Activities Sector

The Financial and Insurance Activities sector primarily uses headhunting (i.e. a pool of experts) to recruit digital talent (81.8%), compared with the general average of 19.8%.

8.2 Sectors that Use More Incentives to Retain Digital Talent

The Transportation and Storage, and Financial and Insurance Activities sectors mainly provide incentives to retain their digital talent (90%), compared with 64.7% overall.

8.3 Sectors that Create a Conducive Environment to Retain Digital Talent

In the Public Administration and Defence; Compulsory Social Security sector, 90% create a conducive environment in order to retain digital talent, compared with 65.5% overall.

8.4 Sectors with the Least Digital Skills

The Construction, Human Health and Social Work Activities, and Activities of Households as Employers sectors acknowledge a general lack of digital skills.

8.5 Manufacturing [Unique]

Tracking devices: In the Manufacturing sector, tracking devices are recognised as one of the future digital technologies needed (53.8%), compared with 30.8% who identify “Internet of things” (IoT). This is unique as it was expected that with Smart Manufacturing being synonymous with the 4IR, IoT would feature as the most needed future digital technology.

In-house training most prevalent: Employees in the sector primarily acquire their digital skills through in-house training (61.5%) and only 38.5% identify as self-taught, compared with other sectors where employees are self-taught (56.8%).

8.6 Electricity, Gas, Steam and Air Conditioning Supply [Unique]

In-house training most prevalent: The Electricity, Gas, Steam and Air Conditioning Supply sector identifies a “Faster internet connection” (100%) and “Upgraded ultra-modern equipment” (92.3%) as the most pressing future digital technologies needed.

This was to be expected seeing the challenges that Eskom is currently experiencing. Other sectors have a “Faster internet connection” at 81.2% overall and “Upgraded ultra-modern equipment” at 61.8%.

8.7 Water Supply, Sewerage, Waste Management and Remediation Activities [Unique]

In-house training and previous work experience most prevalent: Similar to the Manufacturing sector, employees in the Water Supply, Sewerage, Waste Management and Remediation Activities sector primarily acquire their digital skills through in-house training (57.1%) and previous work experience (57.1%), while 50% identify as self-taught, compared with other sectors where employees are mainly self-taught (56.8%).

8.8 Construction [Unique]

Possible retrenchment as greatest challenge of digital technology: The greatest challenge identified in the Construction sector as a result of digital technology is the threat of possible retrenchment (6.67 of 10), compared with the sector overall of 6.19.

A 100% lack of digital skills and a fear of the unknown: The managers in the Construction sector identify a lack of digital skills and a fear of the unknown at 100% in terms of why digital technology is resisted in the sector.

Limited digital skills audits: Only 20% of the HR managers conduct digital skills audits.

8.9 Wholesale and Retail; Repair of Motor Vehicles and Motorcycles [Unique]

Scepticism about digital technology: In the Wholesale and Retail; Repair of Motor Vehicles and Motorcycles sector, there is a scepticism about digital technologies (62.5%) as one of the main reasons for the resistance to digital technologies. The average across all sectors is 37%.

8.10 Transportation and Storage [Unique]

A preference for traditional tools: In the Transportation and Storage sector, there is a high preference for traditional tools (100%) as the main reason for resistance to digital technology. The average across all sectors is 51.3%.

8.11 Accommodation and Food Service Activities [Unique]

Future digital skills in using digital media: In the Accommodation and Food Service Activities sector, the ability to use and understand digital media is identified as an important future skill needed (66.7%), compared with the average across other sectors (53.8%).

A preference for traditional tools: There is also a high preference for traditional tools (85.7%) as the main reason for resistance to digital technology, compared with the average across other sectors (51.3%).

8.12 Information and Communication [Unique]

Future digital skills in using digital marketing and digital media: In the Information and Communication sector, digital marketing is identified as an important future skill needed (73.9%), compared with the average across other sectors (53.5%). Also the ability to use and understand digital media is identified as an important future skill needed (69.6%), compared with the average across other sectors (53.8%).

8.13 Financial and Insurance Activities [Unique]

A threat of possible retrenchment: In the Financial and Insurance Activities sector, the threat of possible retrenchment as a result of digital technology (7.89%) is higher than the average across other sectors (6.19%). This phenomenon is well covered in the news media.

Future digital skills in digital media: The ability to use and understand digital media is also identified as an important future skill needed (72%), compared with the average across other sectors (53.8%).

Technophobia: A fear of digital technologies was also highest in the sector (60%) as one of the main reasons for resistance to digital technology, compared with the average across other sectors (30.3%).

A preference for headhunting: The sector prefers to headhunt for digital talent (81.8%), compared with the average across other sectors (19.8%).

High competition in acquiring people with digital skills: The sector has the highest competition for digital talent (100%), compared with the average across other sectors (75%).

8.14 Real Estate Activities [Unique]

Future digital skills in using digital marketing: In the Real Estate Activities sector, digital marketing is identified as an important future skill needed (73.1%), compared with the average across other sectors (53.5%).

Scepticism about digital technology and a preference for traditional tools: The sector has the second highest scepticism about digital technologies (75%), after the Public Administration and Defence sector as its main reason for the resistance to digital technologies, compared with the average across other sectors (37%). The sector also resists digital technology because of a high preference for traditional tools (62.5%), compared with the average across other sectors (51.3%).

8.15 Professional, Scientific and Technical Activities [Unique]

Digital champions are the IT Department: The impetus for digital transformation in the Professional, Scientific and Technical Activities sector is primarily from the IT department (91.3%), compared with the average across other sectors (51.2%). The other important digital champions are mainly management (87%), compared with the average across other sectors (91.3%).

Future digital technology in internet of things (IoT): IoT is identified as an important future digital technology needed (66.7%), compared with the average across other sectors (33.1%).

8.16 Administrative and Support Service Activities [Unique]

Future digital technology in artificial intelligence (AI): In the Administrative and Support Service Activities sector, AI is identified as an important future digital technology needed (71.4%), compared with the average across other sectors (32%). The same is reflected as a future digital skill needed in the sector (71.4%), compared with the average across other sectors (34.5%).

8.17 Public Administration and Defence; Compulsory Social Security [Unique]

Digital champions are the IT Department: The impetus for digital transformation in the Public Administration and Defence; Compulsory Social Security sector comes primarily from the IT department (75%), compared with the average across other sectors (51.2%). There are fewer digital champions from management (70.8%), compared with the average across other sectors (91.3%).

Scepticism about digital technology and a fear of the unknown: The sector has the highest scepticism about digital technologies (80%) as its main reason for the resistance to digital technologies. The average across all sectors is 37%. There is also a high fear of the unknown (80%), compared with the average across other sectors of (52.9%).

8.18 Education [Unique]

Future digital skills in developing websites and digital media: The Education sector identifies the highest future digital skill needed as developing a website (69.6%), compared with the average across other sectors (46.8%). The ability to use and understand digital media is also identified as an important future digital skill needed (65.2%), compared with the average across other sectors (53.8%).

A fear of the unknown and technophobia: The education sector has the highest fear of the unknown (85.7%), compared with the average across all other sectors (52.9%). There is also a higher fear of digital technology (57.1%), compared with the average across other sectors (30.3%).

Skills acquired through tertiary education: The education sector as expected acquires their digital skills mainly through their training in tertiary (69.6%), compared with the average across other sectors (41.5%).

8.19 Human Health and Social Work Activities [Unique]

A preference for traditional tools: There is also a high preference for traditional tools (80%) as the main reason for resistance to digital technology, compared with the average across other sectors (51.3%).

8.20 Arts, Entertainment and Recreation [Unique]

Future digital skills in using digital marketing and digital media: As might be expected the Arts, Entertainment and Recreation sector identifies digital marketing as an important future skill needed (78.9%), compared with the average across other sectors (53.5%). Also the ability to use and understand digital media is identified as an important future skill needed (89.5%), compared with the average across other sectors (53.8%).

A fear of the unknown: However, there is a slightly higher fear of the unknown (63.6%), compared with the average across other sectors (52.9%).

Among the least technophobic: The sector has one of the lowest fear of digital technology (18.2%), compared with the average across other sectors (30.3%).

8.21 Activities of Extraterritorial Organisations and Bodies, Not Economically Active People, Unemployed People, etc. [Unique]

Future digital skills in developing websites and digital marketing: The sector identifies the highest future digital skill needed as developing a website (84.6%), compared with the average across other sectors (46.8%). Digital marketing is also identified as an important future digital skill needed (69.2%), compared with the average across other sectors (53.5%).

Chapter 9: Small and Medium Enterprises (Focus Group)

Two focus group discussions were conducted specifically for the SME sector. The focus group consisted of 14 business owners, employees and managers from the different SIC sectors. The SME sector is unique because they tend to operate in more than one sector, there are not fixed organisation positions which can range from managing director to cleaner. The results here were mainly through qualitative analysis compared with the statistical analysis used for the other traditional SIC sectors.

9.1 Understanding of Digital Technology

Table 28: Understanding of digital technology

Understanding	Quotations
Can't explain	2
Confident explanation	5
Limited explanation	5

Overall, SMEs sufficiently understand digital technologies although some do struggle. For example, the comments included:

For me, digital technology is so vague, like vague enough.

I believe, digital technologies are the software or systems which enables people to communicate, transact, and do a lot of things using online technologies, using the internet, or using other hardware and software that makes people communicate and easy their work in away.

9.2 Digital Skills Deployment (Usage)

Table 29: Digital technology usage

Codes	Quotations
Advertising	2
Designing	2
Digital marketing	2
Emailing	3
Googling	8
Monitoring	1
Online training	1

Printing	1
Storage of information	4
Teaching	7
Using software and applications	8

Table 30: Digital technology usage

For SMEs, the primary benefit are the boundless opportunities that digital technology offers them.

Codes	Quotations
Boundless accessibility	8
Constant learning	3
Convenience	6
Digital marketing	3
Improved quality work	8
Multi-tasking	2
Paperless	2
Time efficiency	5

Table 31: Negative impact of using digital technology

Codes	Quotations
Bad publicity	1
Costly	1
Difficulties adapting with DT	11
Fear of scamming	6
Lack of privacy	2
Loafing	4
Retrenchment	10
Stay traditional	2
Unreliable content	1

SMEs also struggle with to adapting to the rapid change of digital technology. For example, one comment was:

The only problem is that we are a developing country and I do not think we are really ready for this 4IR because most of the people we grew up in the locations and most of the schools we went to there were no computers ad nothing. And now talking about this digitalisation, for me, it is very difficult at the moment.

There is also the issue of retrenchment that was evident when analysing responses of the participants. There is a fear of being replaced by robots that would do duties better than people when introducing new technologies. One participant indicated that:

If they bring us robots, they would work better. But these are the realities because if people are scared, our question is how do you overcome that fear of technology or fear of something is going to take my job? It’s a reality, like you’re saying it’s 20 years away, but that technology is actually easy to implement.

One SME indicated that digital technology is not prioritised in some sectors in which they operate which results in a degree of frustration for the SME. The participant contended that:

So as much as sometimes you’d actually notice when it comes to actual teaching and learning, because we are doing the Cambridge Syllabus and Cambridge is not keen on really going digital, the other reasoning is that they want students to know, they want students to be able to be capable of learning on their own before they can learn digital later on their own, so but then what you then notice is you are teaching students who are tired of textbooks, students who are tired of writing notes, so you actually have to use digital as aids even though you actually try to then limit them in terms of ...

9.3 Digital Skills Demand (Needs)

As with the other sectors, SMEs have a number of challenges with using digital technology.

Table 32: Challenges when using digital technology

Codes	Quotations
Competition amongst non-digital technology users and users	1
Competition in the job market	4
Intellectual property	2
Expensive software	2
Fear of digital technology	4
Financial constraints	4
Unreliable online information	3
Inconsistent digital technology	4

Lack of human interaction	1
Not having the necessary digital technology	1
Unreliable internet	2

Competing with other organisations to attract candidates with exceptional digital skills is a significant challenge for SMEs. Thus, using digital technology without having a skilled person to operate the technology was an even more pressing challenging. For example, one SME noted:

The other thing, for now, we're looking for those who've got their digital skills up there, this youngster, I think their dream is not to stay put in small organisation so if we're considering ourselves as a stepping stone for them to bigger organisations, so it's actually difficult to retain someone coming from university, you just offer them an opportunity just to find something to do, that's my policy. It's difficult.

The issue of intellectual property was revealed by one SME as a challenge encountered when using digital technology where a design created by the participant being taken without acknowledgement:

I have found that if you design something, it becomes very difficult to keep it as your own because once you put it there into the digital sphere, anyone can take it, anyone can copy, so even if before you paint it, it becomes so difficult but your biggest design can be hijacked and improve someone's life or even change their lives way.

SMEs experience challenges associated with financial constraints:

For a small business like us, maybe you won't have enough finance to adopt that type of platform of technology to communicate with those people in some areas.

Table 33: Future digital technologies needed

Codes	Quotations
Artificial intelligence (AI)	2
Applications	1
Face-to-face interaction	2
Learning platforms	1
Online classes	1
Software	1
Robot	1

SMEs noted various future digital technology needs:

I actually think that in future not necessarily a robot but you see like what I was before, I teach Accounting and that's how I earn my living, so if I teach Accounting this year the syllabus changes after five years maybe, so if I was recorded it actually means I am a robot for the next four years because it's just replaying, so what I would think will be needed in the future.

Table 34: Future digital technologies needed to improve SMEs

Codes	Quotations
5 G Network	2
Drones	4
Application and software	6
Virtual reality	3
No idea	1

The majority of the SMEs identified the need for application and software to improve their enterprises. However, the education SME noted this as most pressing:

... and maybe create leagues for Maths and that type of a thing online, the same ways that there are leagues for FIFA for example, if we can create maybe a league for Maths on an application that they can play but learning at the same time, I think that would really improve the organisation.

Table 35: Future digital skills needed

Codes	Quotations
Adapt to new technology	4
Digital communication skill	2
Programming	1

As with the other sectors, SMEs identify the need for lifelong learning as the most important future digital skill needed:

Yes, but for us to be able to do that, we need the skills so that we'll be able to adapt when that technology comes so that we won't fall behind. We need to be skilled in how to tackle these technologies.

Table 36: Resistance to using digital technology

Codes	Quotations
Non-resistant	6
Resistant	6

SMEs also experience both resistance to and acceptance of digital technology. One of the reasons cited by the SMEs was the desire to simplify work:

I keep a principal, my staff are keen for anything that's going to make our life easier and I'm going to do it, I've never had resistance.

Other SMEs nonetheless experience some resistance:

I also mentioned that in part of the question that keeping things classic or antique, like I have a resistance that it comes to a certain extent.

9.4 Digital Skills Supply (Recruit and Retain)

Table 37: Recruitment strategies

Codes	Quotations
Advertising	4
Pool of experts	2
Outsourcing	1
Practical test (Assessment)	1
Relevant qualifications	4

Table 38: Impact of digital skills on qualification

Codes	Quotations
No value added	6
Value added	4

An SME in the Arts and Entertainment, a participant from the SMEs emphasised that digital skills add value to a professional qualification and the importance of knowing how to use social media as a journalist:

For me, as a journalist and even being in the media and you're trying to be a media catalyst, you always have to be modern and recent, so everything on your social media

should be recent. If you're not and you're not showcasing what's happening, you have to talk about events. So, it depends on what you want to talk about but if you don't have that digital marketing skill, other journalists are going to post a story before you do.

Table 39: Scarce digital skills

Codes	Quotations
Apps creator	2
Content creator	1
Digital marketing	1
No digital skill gap identified	2

To be honest, we're not really looking for a specific digital experience to fill that space. Maybe when we grow bigger, we might see a need but because there are free platforms that are actually there for us now. We've not really thought about that.

Table 40: Strategies for staff retention

Codes	Quotations
Incentives	3
Training	3
No strategy	1

SMEs similarly use financial incentives and training to retain digital talent:

As for me, I do a slide. You have to get something if the organisation is making more money, you also increase. If you're not making enough, you also get your normal basic. Something like a commission so you know when you make this much, you'll also get some percentage. That's how you throw incentives in there.

Other SMEs mentioned providing training to be their way of retaining staff with exceptional digital skills:

What everybody else is saying, that's basically it. We train them further, maybe we provide them with opportunities to get training to enhance their skills and just create a family. People will do anything to belong.

However, not all SMEs had retention strategies in place. There was one participant with no retention strategy who felt that even if a monetary incentive was provided, it could not keep the employee from leaving the organisation:

The money is not there, it's really difficult. That's another problem with employees, the more they end up knowing how to do these things digitally next time they are gone.

9.5 Digital Skills Development (Training)

Table 41: Budget allocated to improve digital technology skills

Codes	Quotations
Available of funds	2
No funds available	2

Some SMEs allocate a budget to fund digital skills training and others do not for fear losing that person:

I would say for me there is, but I don't think I have a figure as to how much.

You're talking about the budget of up-scaling (upskilling) people so obviously when you up-skill somebody, obviously for a small organisation, you train someone for another organisation.

Table 42: Means of acquiring digital skills

Codes	Quotations
Peer-learning	5
Previous work	2
Primary school	1
Self-taught	17
Short course	6
Tertiary education	1

As with the other sectors, SMEs are also self-taught:

I ask someone for help then I learn, that is doing like that mostly, there hasn't been like a time where I went for a course to learn how to do a certain specific or how to handle a specific application, it was just learning as you go and when you get to stuck then ask another person.

I think for me as well, it's just playing around seeing what it is because it's not actually going for a course, it's basically finding out how that specific thing works and I think what encourages me especially with online banking and paying accounts, is not necessarily to drive and go to the shop, pay and go back home, so now it's just done.

I'm aware of most of the sites, but I've never really thought of taking up a specific course in IT or digital technology. However, there are other courses I have taken on courses that are not IT related. It's free and you do learn a lot and you learn at your convenience.

Most SMEs do not invest in training programmes to help employees improve their digital skills.

Conclusion

This environmental scan research report sought to identify the changing nature of digital skills in South Africa as a result of the 4IR. The 4IR inter connectedness of things biological, physical and non-physical as a result of the rapid advancements in technological innovations has results in tremendous new opportunities on one hand and a loss of a number of traditional jobs. It is through such evidence based efforts that the new 4IR opportunities can be clearly identified and digital skills pathways created so that all of South Africa can gainfully benefit from them.

The study was conducted using a dual method approach, starting with a qualitative method and followed by a quantitative method. The respondents for the quantitative section were 597 from the 21 sectors defined by Statistics South Africa.³ These included 360 employees, 127 managers and 110 HR managers. There was a special focus group with 14 SME owners, employees and managers from the different sectors.

It is encouraging, though not surprising, to establish that there is overall a good to excellent understanding of digital technology which is not influenced by age, gender nor educational level. With such an understanding, we can look elsewhere for ways to engage with the 4IR. The one common area is “resistance to change” and the “digital scepticism in government” to adopt the 4IR. These are both mind-set issues which cannot be overcome through more technology programmes but through digital immersive environments. Without these immersive experiences, especially in Blockchain technology and AI, the digital skills efforts are wasted. It is therefore helpful to find that employees are keenly aware that the future lies in lifelong learning and believe in self-learning.

Further work is required to enhance the report using data from other sources, both national and international. For example, there are digital skills testing instruments developed internationally and the work done by each of the Sector Education and Training Authorities (SETAs). While these tests have some differences, especially in their focus on specialist digital skills, some of the work can be compared.

The practical and policy recommendations presented early in the report recommend leveraging this awareness through incentives and making the needed self-learning programmes accredited within South Africa.

³ <https://apps.statssa.gov.za/siccoder/>

References

- Anderson, P. 2010. "The Utility of Operationalising the Concept of Skill Ecosystems: The Case of Intermediate Occupations in Scotland." *Employee Relations* 32 (4): 435–452.
- Anderson, P., and C. Warhurst. 2012. "Lost in Translation? Skills Policy and the Shift to Skill Ecosystems." In *Complex New World. Translating New Economic Thinking into Public Policy*, edited by T. Dolphin and D. Nash, 109–120. London: Institute for Public Policy Research.
- Barnes, S. A., D. Eikhof, E. Kispeter, and R. Parry. 2018. *Mapping the Museum Digital Skills Ecosystem – Phase One Report*. Leicester: University of Leicester.
- Buchanan, J., P. Anderson, and G. Power. 2017. "Skill Ecosystems." In *The Oxford Handbook of Skills and Training*, edited by C. Warhurst, K. Mayhew, D. Finegold and J. Buchanan, 444–465. Oxford: Oxford University Press.
- Creswell, J. W. 2013. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. 4th ed. London: Sage.
- Field, A. 2013. *Discovering Statistics Using IBM SPSS Statistics*. Vol. 4. Thousand Oaks: Sage.
- Finegold, D. 1999. "Creating Self-Sustaining, High-Skill Ecosystems." *Oxford Review of Economic Policy* 15 (1): 60–81.
- Fossen, F., and A. Sorgner. 2019. "Mapping the Future of Occupations: Transformative and Destructive Effects of New Digital Technologies on Jobs." *Foresight and STI Governance* 13 (2): 10–18.
- Frey, C. B., and M. A. Osborne. 2017. "The Future of Employment: How Susceptible Are Jobs to Computerisation?" *Technological Forecasting and Social Change* 114 (C): 254–280.
- Gekara, V., D. Snell, A. Molla, S. Karanasios, and A. Thomas. 2019. "Skilling the Australian Workforce for the Digital Economy." Accessed July 25, 2019. https://www.ncver.edu.au/__data/assets/pdf_file/0026/5744123/Skilling-the-Australian-workforce-for-the-digital-economy.pdf
- Kilpinen, E. 2008. "Pragmatism as a Philosophy of Action." In *Pragmatist Perspectives*, edited by S. Pihlström and H. Rydenfelt, 163–179. Helsinki: Societas Philosophica Fennica.
- Patton, M. Q. 2002. *Qualitative Research and Evaluation Methods*. 3rd ed. Thousand Oaks: Sage.
- Stromquist, N. P. 2019. "World Development Report 2019: The Changing Nature of Work." *International Review of Education* 65: 321–329.

Schwab, K. 2016. "The Fourth Industrial Revolution: What It Means, How to Respond." World Economic Forum. Accessed July 25, 2019. <https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/>

Appendix A: Questionnaire on Digital Skills in South Africa (Employees)

Demographic section

1. Sector SIC code of organisation
2. Gender / Sex
3. Year of birth
4. Population group
5. First language
6. Province
7. Municipality
8. Highest educational level
9. What is your job role, for example, accountant?
10. How long have you been in the current role?
11. In what department of the organisation do you work? For example, Accounting, IT, Finance, Factory ... etc.?

Digital technology

1. What is your understanding of digital technology in the workplace?

Skills deployment

1. How do you use digital technology in the workplace (please be as exhaustive as possible)?
2. How has your job changed as a result of digital technology?
3. Who in your organisation encourages new ways of using digital technology? Use the job title, for example, fellow colleague in accounting, manager of strategy ...

Skills demand

1. What challenges do you encounter when using the digital technology in the workplace?
2. What digital skills do you require to perform your job optimally?
3. What digital technologies do you require to perform your job optimally?

4. What digital skills do you think are required for your current job role in the future?
5. What digital technologies do you think are required for your current job role in the future?

Skills supply

1. How does the integration of digital technology into your job make your professional qualification less or more important?
2. If you are using digital technology as part of your work, how do your digital skills make your professional qualification more valuable?

Skills development

1. How do you learn to use the digital technology that you use in your organisation? If learned through formal training, where is the institution accredited?
2. How are digital skills development supported in your organisation?

Appendix B: Questionnaire on Digital Skills in South Africa (HR Managers)

Demographic section

1. Sector SIC Code of Organisation
2. Gender / Sex
3. Year of birth
4. Population group
5. First language
6. Province
7. Municipality
8. Highest educational level
9. What is your job role, for example, accountant?
10. In what department of the organisation do you work? For example, Accounting, IT, Finance, Factory ... etc.

Digital technology

1. What is your understanding of digital technology in the workplace?

Skills deployment

1. What are the changes in the organisational structures as a result of DT?

Skills demand

1. How often do you conduct a digital skills audit of some of the tasks i.e. how often do you check to see whether some job description need to be updated with digital competencies?

Skills supply

1. How does regulatory policy affect the ability to attract the best talent with the best digital skills?
2. How are staff with exceptional digital skills recruited and retained?

Skills development

1. How much budget exists for training in emerging and new digital technologies?

Appendix C: Questionnaire on Digital Skills in South Africa (Managers)

Demographic section

1. Sector SIC Code of organisation
2. Gender / Sex
3. Year of Birth
4. Population group
5. First language
6. Province
7. Municipality
8. Highest educational level
9. What is your job role, for example, accountant?
10. How long have you been in the current role?
11. In what department of the organisation do you work? For example, Accounting, IT, Finance, Factory ... etc.?

Digital technology

1. What is your understanding of digital technology in the workplace?

Skills deployment

1. How do you use digital technology in the workplace (please be as exhaustive as possible)?
2. How has your job changed as a result of digital technology?
3. Who in your organisation encourages new ways of using digital technology? Use the job title, for example, fellow colleague in accounting, manager of strategy ...

Skills demand

1. What kind of digital technologies are required to improve your department?
2. Do you have the digital skills within your department to operate the above mentioned digital technologies?
3. What have you done to promote the usage of digital technologies in your team?

4. Is there any resistance to using digital technologies in your department by employees? If so, how?

Skills supply

1. Which digital skill are you struggling to fill in your department?
2. How are staff with exceptional digital skills recruited and retained?
3. How does regulatory policy affect the ability to attract the best talent with the best digital skills?

Skills development

1. How are digital skills supported in your department?
2. How much budget exists for training in emerging and new digital technologies?

Appendix D: Ethical Clearance Certificate



UNISA COLLEGE OF SCIENCE, ENGINEERING AND TECHNOLOGY'S (CSET) RESEARCH AND ETHICS COMMITTEE

11 September 2019

Ref #: 042/NTM/2019/CSET_SOC
Name: Ms Nkosikhona Theoren Msweli
Staff #: 90420896

Dear Ms Nkosikhona Theoren Msweli

**Decision: Ethics Approval for 3 years
(Humans involved)**

Researchers: Ms Nkosikhona Theoren Msweli, Unisa, Florida, mswelnt@unisa.ac.za, +27 11 670 9085, +27 60 687 9950

Project Leader(s): Prof Hossana Twinomurinzi, twinoh@unisa.ac.za, +27 11 670 9361

Working Title of Research:

NEMISA-Knowledge for Innovation Environmental Scan of Digital Skills in Organisations and Government (South Africa)

Qualification: Research

Thank you for the application for research ethics clearance by the Unisa College of Science, Engineering and Technology's (CSET) Research and Ethics Committee for the above-mentioned research. Ethics approval is granted for a period of three years, from 11 September 2019 to 11 September 2022.

1. The researcher will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.
2. Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study, as well as changes in the methodology, should be communicated in writing to the Unisa College of Science, Engineering and Technology's (CSET) Research and Ethics Committee. An amended application could be requested if there are substantial changes from the existing proposal, especially if those changes affect any of the study-related risks for the research participants.



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The researcher(s) will conduct the study according to the methods and procedures set out in the approved application.

3. 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.
4. The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study. 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.
5. 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.
6. Permission to conduct this research should be obtained from the 21 companies/ organisations that have been identified by the researchers using the Statistics South Africa Sector Industrial Classification (SIC), prior to commencing field work.
7. No field work activities may continue after the expiry date (11 September 2022). Submission of a completed research ethics progress report will constitute an application for renewal of Ethics Research Committee approval.

Note:

The reference number 042/NTM/2019/CSET_SOC should be clearly indicated on all forms of communication with the intended research participants, as well as with the Unisa College of Science, Engineering and Technology's (CSET) Research and Ethics Committee.

Yours sincerely



Dr. B Chimbo

Chair: Ethics Sub-Committee SoC, College of Science, Engineering and Technology (CSET)



2019/09/12

Dr MG Katumba

Director: School of Computing, CSET



Prof B. Mamba

Executive Dean: CSET



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Appendix E: Comparing Mean Scores with the ANOVA

Tests for Comparing Mean Scores with the ANOVA

An analysis of variance (ANOVA) was conducted to compare mean scores across the level of education on the understanding of digital technology. There are three tables of interest: The first is the descriptive statistics table which provides the mean and standard deviation (SD) of the dependent variable for each group. The second is the ANOVA table which indicates whether there is a statistically significant difference between the groups. The significant difference is determined by the p-value that is supposed to be below 0.05 ($p < 5$) which indicates that there is a significant difference between the mean scores. The third is the post hoc table which should be analysed when the ANOVA shows a significant result. The post hoc table assesses the mean difference within the groups. The Tukey honestly significant difference (HSD) test was used in the ANOVA.

Table 1: Descriptive statistics (Understanding)

Level of education	N	Mean	SD
High school	166	3.951	.514
Diploma	207	3.946	.504
Degree	149	4.020	.551
Postgraduate (honours, master's, doctorate)	66	3.878	.620

Table 1 shows that the average score of understanding of digital technology seems to differ by the respondents' level of education.

Table 2: ANOVA

Understanding	Sum of squares	Df	Mean square	F	p-value
Between groups	1.021	3	.340	1.197	0.310
Within groups	166.000	584	.284		
Total	167.020	587			

From Table 2, it appears that although the means displayed in Table 1 show some differences, the understanding of digital technology does not significantly differ across the respondents' level of education because the p-value of the ANOVA test is non-significant ($p > 0.05$).

Correlations

A Pearson product-moment correlation (or Pearson correlation) analysis was conducted to investigate the association between age and understanding of digital technology, respectively, given that age is a continuous variable.

Table 3: Correlations (Age/Understanding)

		Age
Age	Pearson correlation	
	p-value	
Understanding	Pearson correlation	.008
	p-value	.855

Table 3 indicates that there is no correlation between age and understanding of digital technology (p-value = 0.855 > 0.05). This means that we **cannot** associate the respondents' level of understanding of digital technology with their age.

Correlation analysis

The correlation analysis was conducted to determine whether there is a relationship between the respondents' age and their perception of benefits and challenges when using digital technology in the organisation.

Table 4: Correlations (Age/Perception of benefits/Challenges)

	Age	p-value
Age		
Benefits	-0.065	0.113
Challenges	0.020**	0.633

Note: ** Correlation is significant at the 0.01 level (2-tailed)

The results in Table 4 show that age has **no** relationship with the benefits of using digital technology (r = -0.065; p > 0.05) and challenges encountered while using digital technology (r = 0.020; p < 0.05).

This result points to the fact that irrespective of an employee's age, whether they are a manager or HR manager, their perception of benefits and challenges observed when using digital technology remains the same.

Further to this, the analysis also investigates how age, tenure, company size, education, gender, and function are associated with the attitudes and perceived risks.

Correlation analysis

A Pearson correlation was conducted to investigate the correlation between age, tenure and company size with attitude and risk, respectively, given that these are continuous variables. Table 5 presents the results of the correlation.

Table 5: Correlations (Employees, Managers, HR Managers)

		Risks	Attitudes
Risks	Pearson correlation		
	p-value		
Attitudes	Pearson correlation	0.473**	
	p-value	0.000	
Age	Pearson correlation	-0.097*	-0.050
	p-value	0.018	0.221
Company size	Pearson correlation	0.011	-0.019
	p-value	0.798	0.650
Tenure	Pearson correlation	0.040	0.049
	p-value	0.337	0.242

Note: * Correlation is significant at the 0.05 level; ** Correlation is significant at the 0.01 level

Group difference analysis

The group difference analysis was conducted to investigate the association between the respondents' (1) gender, (2) educational level and (3) function, and their attitudes towards digital technology usage and perceived risks, respectively. An ANOVA was conducted to examine the association between educational level and function while a t-test was applied to test the association with gender.

1. Gender (Employees, Managers, HR Managers)

Table 6: Gender (Employees, Managers, HR Managers)

Group statistics					
	Gender	N	Mean	SD	Std. Error Mean
Risks	Male	232	2.7443	.81809	.05371
	Female	365	2.7758	.82331	.04309
Attitudes	Male	232	1.7787	.81363	.05342
	Female	365	1.8621	.88331	.04623

Table 6 presents the overall mean scores of perceived risks and attitudes for male and female respondents. It appears that the mean scores are almost the same.

Table 7: Independent sample t-test

	t	Df	Sig. (2-tailed)	Mean Difference
Risks	-0.457	595	0.648	-0.03155
Attitudes	-1.159	595	0.247	-0.08336

The independent sample t-test in Table 7 suggests that there is no significant difference between attitudes and perceived risks across gender. This means that irrespective of gender, the attitudes and perception of risks is the same for male and female respondents.

2. Educational level (Employees, Managers, HR Managers)

A similar analysis was conducted across levels of education. However, given that the variable “levels of education” has more than two options, an ANOVA was conducted.

Table 8: ANOVA

Descriptive statistics				
		N	Mean	SD
Risks	High school	169	2.8629	0.806
	Diploma	210	2.7897	0.810
	Degree	149	2.6611	0.817
	Postgraduate (honours, master’s, doctorate)	67	2.6517	0.862
Attitudes	High school	169	1.9122	0.819
	Diploma	210	1.9143	0.930
	Degree	149	1.7338	0.869
	Postgraduate (honours, master’s, doctorate)	67	1.5697	0.57819

Table 9: ANOVA

		Sum of squares	Df	Mean square	F	p-value
Risks	Between groups	4.214	3	1.405	2.105	.098
	Within groups	394.432	591	.667		
	Total	398.646	594			
Attitudes	Between groups	8.555	3	2.852	3.938	.008
	Within groups	427.965	591	.724		
	Total	436.520	594			

From Table 9, it appears that the perception of risks associated with the usage of digital technology does not differ across the respondents’ educational level because the p-value of the ANOVA test is non-significant ($p > 0.05$).

Concerning attitudes, the tables above show that attitudes of respondents towards digital usage considerably vary across the levels of education ($p = 0.008 < 0.05$).

To push the analysis further, a post hoc analysis is applied to identify where the difference lies.

Table 10: Post hoc analysis

Multiple comparisons				
Attitude towards digital technology usage				
(I) Education	(J)	Mean Difference (I – J)	Std. Error	Sig.
High school	Diploma	-0.00206	0.08794	1.000
	Degree	0.17845	0.09563	0.244
	Postgraduate (honours, master’s, doctorate)	0.34258*	0.12285	0.028
Diploma	High school	0.00206	0.08794	1.000
	Degree	0.18050	0.09115	0.197
	Postgraduate (honours, master’s, doctorate)	0.34463*	0.11940	0.021
Degree	High school	-0.17845	0.09563	0.244
	Diploma	-0.18050	0.09115	0.197
	Postgraduate (honours, master’s, doctorate)	0.16413	0.12517	0.556
Postgraduate (honours, master’s, doctorate)	High school	-0.34258*	0.12285	0.028
	Diploma	-0.34463*	0.11940	0.021
	Degree	-0.16413	0.12517	0.556

Note: * The mean difference is significant at the 0.05 level

3. Function (Employees, Managers, HR Managers)

A similar analysis was conducted across the following functions in the organisation: employees, managers and HR managers.

Table 11: Descriptive statistics

		N	Mean	SD
Risks	Employees	360	2.8356	0.80114
	Managers	127	2.5696	0.83213
	HR Managers	110	2.7515	0.84132
Attitudes	Employees	360	1.7819	0.82614
	Managers	127	1.9829	1.01354
	HR Managers	110	1.8091	0.73946

The ANOVA in Table 11 suggests that there are no significant differences in attitudes towards digital technology usage across employees, managers and HR managers ($p = 0.073 > 0.05$). However, the results show that these three segments have significant differences in the manner in which they perceive risks associated with the usage of digital technologies ($p = 0.007 < 0.05$).

Table 12: ANOVA

		Sum of squares	Df	Mean square	f	Sig.
Risks	Between groups	6.667	2	3.333	5.015	.007
	Within groups	394.814	594	.665		
	Total	401.481	596			
Attitudes	Between groups	3.850	2	1.925	2.634	.073
	Within groups	434.059	594	.731		
	Total	437.909	596			

Thus, a post hoc analysis was conducted and is presented in Table 13.

Table 13: Post hoc analysis

Multiple comparisons (Tukey HSD)				
Dependent variable			Mean difference (I – J)	Sig.
Risks	Employees	Managers	0.26609*	0.005
		HR Managers	0.08413	0.611
	Managers	Employees	-0.26609*	0.005
		HR Managers	-0.18196	0.201
	HR Managers	Employees	-0.08413	0.611
		Managers	0.18196	0.201

Note: * The mean difference is significant at the 0.05 level

Table 13 shows that there is a statistically significant difference between the manner in which employees (Mean = 2.835) and managers (Mean = 2.569) perceive the potential risks associated with the usage of digital technologies ($p = 0.005 < 0.05$).

Appendix F: Sector Analysis

List of abbreviations

f = Frequency

N = Number

N/A = Not applicable

% = Percentage

SD = Significant difference

1. Agriculture, Forestry and Fishing

1.1 Understanding of Digital Technology

Table 1.1: Understanding of digital technology (Employees, Managers and HR Managers)

Understanding	Poor	Average	Good	Excellent
Frequency	0	2	19	2
Percentage	0.0%	8.7%	82.6%	8.7%
Mean = 4; SD = 0.43				

1.2 Digital Skills Deployment (Usage)

Table 1.2: Digital technology activities (Employees, Managers and HR Managers)

Activities	N	Mean	SD
Overall results	23	3.09	1.13
Accounting/Financial management	23	2.78	1.81
Making bookings (e.g. travel bookings, scheduling meetings, venue bookings, etc.)	23	2.39	1.59
Emailing	23	3.52	1.38
Making audio or video calls	23	3.09	1.41
Marketing	23	3.22	1.70
Printing and scanning/Googling	23	3.30	1.64
Designing	23	2.87	1.71
Monitoring (e.g. employees, production, security, etc.)	23	4.17	1.03
Research and development/Information processing	23	3.30	1.66
Training	23	2.70	1.61

Filing	23	2.70	1.52
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Table 1.3: Benefits of using digital technology in the workplace (Employees, Managers and HR managers)

Benefits	N	Mean	SD
Ability to manage and monitor my team, activities, projects, etc. whilst not being physically present	23	7.70	2.31
Improved communication tools	23	8.35	1.43
Ability to enhance the capacity to perform my job	23	8.17	1.44
Ability to do different tasks at once (Multi-tasking)	23	8.35	1.50
Limited usage of paper (Paperless processes)	23	7.91	1.78
Less time needed to perform my duties (Time-efficiency)	23	8.04	1.26
Reduced workload	23	7.17	1.56

Table 1.4: Challenges of using digital technology in the workplace (Employees, Managers and HR Managers)

Challenges	N	Mean	SD
Digital technology involves higher costs	23	6.57	1.83
Instability of digital systems (systems going down, load shedding, etc.)	23	5.91	2.00
Lack of human interactions	23	5.57	1.95
Threat of possible retrenchment	23	5.43	2.09
Adjusting to and learning new digital technology	23	5.65	1.82
Lack of required digital skills	23	5.48	1.75
Digital fraud and scamming	23	4.48	2.41

Table 1.5: Digital champions in the organisation (Employees, Managers and HR Managers)

Digital champions	Frequency	Percentage
Management (CEOs, Directors, Managers, Supervisors, etc.)	18	78.3%
IT Department	13	56.5%
Communication Department/Marketing Department	6	26.1%
Project coordinators	6	26.1%
External stakeholders	1	4.3%
Fellow colleagues	5	21.7%

1.3 Digital Skills Demand (Needs)

Table 1.6: Digital technologies used and needed (Employees and Managers)

Technologies	Used		Needed		N/A	
	f	%	f	%	f	%
State-of-the art printers and scanners	15	88.9%	1	5.9%	1	46.7%
Business WhatsApp	5	27.8%	6	35.3%	7	46.7%
Hi-tech telephone	14	77.8%	2	11.8%	2	13.3%
Faster computers and tablets	13	72.2%	5	29.4%	1	6.7%
Digital filing	12	66.7%	5	29.4%	6	40.0%
Mobile applications	9	50.0%	3	17.6%	7	46.7%
Block chain technology	3	16.7%	8	47.1%	2	13.3%
Reliable internet	15	83.3%	1	5.9%	6	40.0%
Smart boards	8	44.4%	4	23.5%	2	13.3%
Software and web applications	14	77.8%	2	11.8%	2	13.3%
Automated equipment	11	61.1%	5	29.4%	4	26.7%
Voice over internet protocol (VOIP)	10	55.6%	4	23.5%	2	13.3%
Video conferencing applications	14	77.8%	2	11.8%		
Artificial intelligence (AI)	5	27.8%	8	47.1%	5	33.3%

Table 1.7: Future digital technologies needed (Employees)

Digital technologies	Frequency	Percentage
Faster internet connection	7	53.8%
Ultra-modern equipment (Upgrade current digital equipment/s)	5	38.5%
Artificial intelligence (AI)	7	53.8%
Internet of things (IoT)	7	53.8%
Robots	3	23.1%
Scanners	6	46.2%
Tracking systems	4	30.8%

Table 1.8: Future digital skills needed (Employees)

Digital skills	Frequency	Percentage
Ability to quickly learn new software (MS packages, accounting packages, designing packages, etc.)	7	53.8%
Computer literacy	8	61.5%
Machine learning	7	53.8%
Digital marketing	7	53.8%
Artificial intelligence (AI)	6	46.2%
Developing a website	4	30.8%
Ability to use and understand digital media	4	30.8%

Table 1.9: Resistance to digital technology in the workplace (Managers)

Reasons for resistance	Frequency	Percentage
Fear of the unknown	1	20%
Lack of digital skills	2	40%
Scepticism (Doubt) of digital technologies	1	20%
Preference for traditional tools	1	20%
Fear of digital technology (Technophobia)	1	20%

Table 1.10: Means of digital transformation (HR Managers)

Actions undertaken	Frequency	Percentage
Skills empowerment	3	60%
Endorsement of digital practices	4	80%

Table 1.11: Frequency of digital skills audit (HR Managers)

Do you conduct any digital skills audit?	Frequency	Percentage
No	3	60%
Yes	2	40%

Table 1.12: Frequency of digital skills audit across sector (HR Managers)

How often do you conduct a digital skills audit?	Frequency	Percentage
No information	3	60%
Twice a year	1	20%
With new equipment	1	20%

1.4 Digital Skills Supply (Recruit and Retain)

Table 1.13: Perceived impact of digital skills on qualification (Employees)

Perceived impact of digital skills	N	Mean	SD
My knowledge of digital technologies boosts my confidence	13	4.31	1.109
The digital skills that I have acquired open doors to more job opportunities	13	4.38	0.650
The usage of digital technologies makes me more knowledgeable	13	4.38	0.870

With the usage of digital technology, I am now able to innovate at work	13	3.92	1.256
How much value does the knowledge of digital technology add to your qualification?	13	3.31	0.855

Table 1.14: Importance of digital technologies (Employees)

Importance of digital technologies	N	Mean	SD
How much value does the knowledge of digital technology add to your qualification?	13	3.31	0.855

Table 1.15: Recruiting staff (Managers and HR Managers)

Strategy	N	Percentage
Online advertising	8	80%
Classified advertisements	1	10%
Recruitment agencies	6	60%
Word-of-mouth	8	80%
Internal advertising	6	60%
Internships	5	50%
Outsourcing	1	10%
Headhunting (Pool of experts)	1	10%
Tech summits	0	0%

Table 1.16: Retaining digital staff (Managers and HR Managers)

Strategy	N	Percentage
Capacity building	4	40%
Creating a conducive environment	8	80%
Providing incentives	7	70%
Counteroffers	5	50%

Table 1.17: Impact of existing policy (Managers and HR Managers)

Impact of existing policy	N	Me an	SD
How does existing policy (either government or organisational) affect your ability to attract the best talent with the latest digital skills?	10	2	1.247

Table 1.18: Perceived challenges (HR Managers)

Perceived challenges	N	Percentage
Costly job portals	1	33.3%
Interference of trade unions	1	33.3%
Stringent regulations	0	0.0%
High competition in acquiring people with digital skills	3	100%

1.5 Digital Skills Development (Training)

Table 1.19: Digital skills acquisition (Employees)

Acquired through ...	N	Percentage
High school	4	30.8%
In-house training	7	53.8%
Peer-learning	6	46.2%
Self-taught	10	76.9%
Short courses	5	38.5%
Tertiary education	7	53.8%
Previous work experience	5	38.5%
External training/Workshops	2	15.4%

Table 1.20: Support systems from the organisation (Employees, Manager and HR Managers)

Support systems	N	Mean	SD
Overall results	23	3.41	0.7
My organisation supports digital technology usage through accredited training (officially recognised or authorised)	23	4.09	1

Digital technology is promoted through in-house training in my organisation	23	3.7	1.02
My organisation does not have a support system to enhance digital skills	23	2.13	1.01
My organisation encourages self-development of staff when it comes to digital technology	23	3.57	1.04
Digital skills in my organisation are promoted through external training (training conducted outside the organisation)	23	3.3	1.15
My organisation encourages the staff to acquire digital skills through online training	23	3.65	0.88

1.6 Risks and Attitudes

Table 1.21: Risks of and attitudes towards digital skills usage (Employees, Managers and HR Managers)

Risks and attitudes	Number of respondents	Mean	SD
Risk 1	23	2.48	1.04
Risk 2	23	2.52	1.34
Risk 3	23	2.83	1.37
Risk 4	23	2.00	0.79
Risk 5	23	2.04	1.06
Risk 6	23	2.30	1.06
Att 1	23	1.57	0.94
Att 2	23	1.35	0.71
Att 3	23	1.30	0.56
Att 4	23	1.48	0.89
Att 5	23	1.87	1.10
Att 6	23	1.52	0.84

2. Mining and Quarrying

2.1 Understanding Digital Technology

Table 2.1: Understanding of digital technology (Employees, Managers and HR managers)

Understanding	Poor	Average	Good	Excellent
Frequency	1	1	20	1
Percentage	4.3%	4.3%	87%	4.3%
Mean = 3.91; SD = 0.51				

2.2 Digital Skills Deployment (Usage)

Table 2.2: Digital technology activities (Employees, Managers and HR Managers)

Activities	N	Mean	SD
Overall results	23	2.75	1.25
Accounting/Financial management	23	2.61	1.80
Making bookings (e.g. travel bookings, scheduling meetings, venue bookings, etc.)	23	2.22	1.57
Emailing	23	3.39	1.70
Making audio or video calls	23	2.70	1.69
Marketing	23	2.09	1.28
Printing and scanning/Googling	23	3.13	1.77
Designing	23	1.96	1.26
Monitoring (e.g. employees, production, security, etc.)	23	3.52	1.73
Research and development/Information processing	23	3.30	1.69
Training	23	2.87	1.89
Filing	23	2.48	1.73

Table 2.3: Benefits of using digital technology in the workplace (Employees, Managers and HR Managers)

Benefits	N	Mean	SD
Ability to manage and monitor my team, activities, projects, etc. whilst not being physically present	23	7.22	3.73
Improved communication tools	23	7.70	3.04
Ability to enhance the capacity to perform my job	23	8.70	1.36
Ability to do different tasks at once (Multi-tasking)	23	7.91	2.31
Limited usage of paper (Paperless processes)	23	7.35	3.10
Less time needed to perform my duties (Time-efficiency)	23	7.70	2.06
Reduced workload	23	6.83	2.50

Table 2.4: Challenges encountered while using digital technology (Employees, Managers and HR Managers)

Challenges	N	Mean	SD
Digital technology involves higher costs	23	6.48	1.47
The instability of digital systems (systems going down, load shedding, etc.)	23	5.17	3.13
Lack of human interactions	23	5.09	2.35
Threat of possible retrenchment	23	4.09	2.29
Adjusting to and learning new digital technology	23	5.57	2.31
Lack of required digital skills	23	4.83	2.08
Digital fraud and scamming	23	4.52	3.10

Table 2.5: Digital champions in the organisation (Employees, Managers and HR Managers)

Digital champions	Frequency	Percentage
Management (CEOs, Directors, Managers, Supervisors, etc.)	22	95.7%
IT Department	16	69.6%
Communication Department/Marketing Department	5	21.7%
Project coordinators	5	21.7%
External stakeholders	2	8.7%
Fellow colleagues	7	30.4%

2.3 Digital Skills Demand (Needs)

Table 2.6: Digital technologies used and needed (Employees and Managers)

Technologies	Used		Needed		N/A	
	f	%	f	%	f	%
State-of-the art printers and scanners	11	64.7%	4	26.7%	3	21.4%
Business WhatsApp	4	23.5%	6	40.0%	8	57.1%
Hi-tech telephone	10	58.8%	4	26.7%	4	28.6%
Faster computers and tablets	11	64.7%	4	26.7%	3	21.4%
Digital filing	9	52.9%	3	20.0%	6	42.9%
Mobile applications	6	35.3%	5	33.3%	7	50.0%
Block chain technology	3	17.6%	5	33.3%	10	71.4%
Reliable internet	13	76.5%	3	20.0%	2	14.3%
Smart boards	7	41.2%	2	13.3%	9	64.3%
Software and web applications	8	47.1%	2	13.3%	8	57.1%
Automated equipment	10	58.8%	3	20.0%	5	35.7%
Voice over internet protocol (VOIP)	8	47.1%	2	13.3%	8	57.1%
Video conferencing applications	9	52.9%	2	13.3%	7	50.0%
Artificial intelligence (AI)	2	11.8%	7	46.7%	9	64.3%

Table 2.7: Future digital technologies needed (Employees)

Digital technologies	Frequency	Percentage
Faster internet connection	7	70%
Ultra-modern equipment (Upgrade current digital equipment/s)	6	60%
Artificial intelligence (AI)	3	30%
Internet of things (IoT)	3	30%
Robots	3	30%
Scanners	2	20%
Tracking systems	2	20%
Voice over internet protocol (VOIP)	7	70%
No idea	6	60%

Table 2.8: Future digital skills needed (Employees)

Digital skills	Frequency	Percentage
Ability to quickly learn new software (MS packages, accounting packages, designing packages, etc.)	6	46.2%
Computer literacy	6	46.2%
Machine learning	7	53.8%

Digital marketing	6	46.2%
Artificial intelligence (AI)	3	23.1%
Develop a website	7	53.8%
Ability to use and understand digital media	7	53.8%

Table 2.9: Resistance to digital technology in the workplace (Managers)

Reasons for resistance	Frequency	Percentage
Fear of the unknown	1	25%
Lack of digital skills	2	50%
Scepticism (Doubt) of digital technologies	1	25%
Preference for traditional tools	2	50%
Fear of digital technology (Technophobia)	1	25%
No resistance	1	25%

Table 2.10: Means of digital transformation (HR Managers)

Actions undertaken	Frequency	Percentage
Skills empowerment	5	100%
Endorsement of digital practices	4	80%
Acquisition of modern technology	2	40%

Table 2.11: Frequency of digital skills audit (HR Managers)

Do you conduct any digital skills audit?	Frequency	Percentage
No	2	40%
Yes	3	60%

Table 2.12: Frequency of digital skills audit across sector (HR Managers)

How often do you conduct a digital skills audit?	Frequency	Percentage
No information	2	40%
Twice a year	1	20%
With new equipment	1	20%

2.4 Digital Skills Supply (Recruit and Retain)

Table 2.13: Perceived impact of digital skills on qualification (Employees)

Perceived impact of digital skills	N	Mean	SD
My knowledge of digital technologies boosts my confidence	13	4.38	0.506
The digital skills that I have acquired open doors to more job opportunities	13	4.23	0.599
The usage of digital technologies makes me more knowledgeable	13	4.31	0.480
With the usage of digital technology, I am now able to innovate at work	13	4.31	0.630
How much value does the knowledge of digital technology add to your qualification?	13	2.54	1.506

Table 2.14: Importance of digital technologies (Employees)

Importance of digital technologies	N	Mean	SD
How much value does the knowledge of digital technology add to your qualification?	13	2.54	1.506

Table 2.15: Recruiting staff (Managers and HR Managers)

Strategy	N	Percentage
Online advertising	7	70%
Classified advertisements	1	10%
Recruitment agencies	4	40%
Word-of-mouth	4	40%
Internal advertising	3	30%
Internships	6	60%
Outsourcing	0	0%
Headhunting (Pool of experts)	4	40%
Tech summits	0	0%

Table 2.16: Retaining digital staff (Managers and HR Managers)

Note: No information available

Table 2.17: Impact of existing policy (Managers and HR Managers)

Impact of existing policy	N	Mean	SD
How does existing policy (either government or organisational) affect your ability to attract the best talent with the latest digital skills?	10	2.20	1135

Table 2.18: Perceived challenges (HR Managers)

Perceived challenges	N	Percentage
Costly job portals	0	0.0%
Interference of trade unions	1	25.0%
Stringent regulations	1	25.0%
High competition in acquiring people with digital skills	3	75.0%

2.5 Digital Skills Development (Training)

Table 2.19: Digital skills acquisition (Employees)

Acquired through ...	N	Percentage
High school	2	15.4%
In-house training	7	53.8%
Peer-learning	1	7.7%
Self-taught	6	46.2%
Short courses	3	23.1%
Tertiary education	1	7.7%
Previous work experience	6	46.2%
External training/Workshops	1	7.7%
I have no digital skills	0	0.0%

Table 2.20: Support systems from the organisation (Employees, Managers and HR Managers)

Support systems	N	Mean	SD
Overall results	23	3.36	0.49
My organisation supports digital technology usage through accredited training (officially recognised or authorised)	23	4.09	0.95
Digital technology is promoted through in-house training in my organisation	23	4.13	0.81

My organisation does not have a support system to enhance digital skills	23	2.17	1.23
My organisation encourages self-development of staff when it comes to digital technology	23	3.65	0.88
Digital skills in my organisation are promoted through external training (training conducted outside the organisation)	23	3.09	1.04
My organisation encourages the staff to acquire digital skills through online training	23	3.04	1.02

2.6 Risks and Attitudes

Table 2.21: Risks of and attitudes towards digital skills usage (Employees, Managers and HR Managers)

Risks and attitudes	Number of respondents	Mean	SD
Risk 1	23	2.22	1.085
Risk 2	23	2.39	1.076
Risk 3	23	2.30	1.020
Risk 4	23	2.09	0.900
Risk 5	23	1.96	0.767
Risk 6	23	2.09	0.793
Att 1	23	1.57	0.788
Att 2	23	1.70	0.974
Att 3	23	1.61	0.839
Att 4	23	1.65	0.775
Att 5	23	1.78	0.998
Att 6	23	1.65	0.832

3. Manufacturing

3.1 Understanding of Digital Technology

Table 3.1: Understanding of digital technology (Employees, Managers and HR Managers)

Understanding	Poor	Average	Good	Excellent
Frequency	0	1	19	4
Percentage	0.0%	4.2%	79.2%	16.7%
Mean = 4.13; SD = 0.448				

3.2 Digital Skills Deployment (Usage)

Table 3.2: Digital technology activities (Employees, Managers and HR Managers)

Activities	N	Mean	SD
Overall results	23	3.70	0.94
Accounting/Financial management	24	3.21	1.82
Making bookings (e.g. travel bookings, scheduling meetings, venue bookings, etc.)	24	3.58	1.59
Emailing	24	4.38	0.97
Making audio or video calls	24	3.67	1.17
Marketing	24	3.63	1.44
Printing and scanning/Googling	24	3.96	1.37
Designing	24	3.17	1.52
Monitoring (e.g. employees, production, security, etc.)	24	4.46	0.66
Research and development/Information processing	24	4.08	0.97
Training	24	3.17	1.52
Filing	24	3.42	1.38

Table 3.3: Benefits of using digital technology in the workplace (Employees, Managers and HR Managers)

Benefits	N	Mean	SD
Ability to manage and monitor my team, activities, projects, etc. whilst not being physically present	24	8.67	2.08
Improved communication tools	24	8.83	1.69
Ability to enhance the capacity to perform my job	24	8.33	2.12
Ability to do different tasks at once (Multi-tasking)	24	8.75	1.54
Limited usage of paper (Paperless processes)	24	8.50	1.91
Less time needed to perform my duties (Time-efficiency)	24	8.54	2.06
Reduced workload	24	8.13	1.99

Table 3.4: Challenges of using digital technology in the workplace (Employees, Managers and HR Managers)

Challenges	N	Mean	SD
Digital technology involves higher costs	24	6.17	2.24
Instability of digital systems (systems going down, load shedding, etc.)	24	6.21	2.52
Lack of human interactions	24	5.25	2.69
Threat of possible retrenchment	24	5.88	2.42
Adjusting to and learning new digital technology	24	6.71	2.26
Lack of required digital skills	24	6.08	1.79
Digital fraud and scamming	24	5.88	2.66

Table 3.5: Digital champions in the organisation (Employees, Managers and HR Managers)

Digital champions	Frequency	Percentage
Management (CEOs, Directors, Managers, Supervisors, etc.)	22	91.7%
IT Department	17	70.8%
Communication Department/Marketing Department	7	29.2%
Project coordinators	7	29.2%
External stakeholders	4	16.7%
Fellow colleagues	11	45.8%

3.3 Digital Skills Demand (Needs)

Table 3.6: Digital technologies used and needed (Employees and Managers)

Technologies	Used		Needed		N/A	
	f	%	f	%	f	%
State-of-the art printers and scanners	17	89.5%	1	6.7%	1	10.0%
Business WhatsApp	8	42.1%	7	46.7%	4	40.0%
Hi-tech telephone	16	84.2%	2	13.3%	1	10.0%
Faster computers and tablets	16	84.2%	3	20.0%	2	20.0%
Digital filing	14	73.7%	3	20.0%	1	10.0%
Mobile applications	12	63.2%	6	40.0%	7	70.0%
Block chain technology	6	31.6%	6	40.0%	6	60.0%
Reliable internet	16	84.2%	3	20.0%	4	40.0%
Smart boards	10	52.6%	3	20.0%	1	10.0%
Software and web applications	12	63.2%	3	20.0%	2	20.0%
Automated equipment	13	68.4%	5	33.3%	4	40.0%
Voice over internet protocol (VOIP)	9	47.4%	8	53.3%	4	40.0%
Video conferencing applications	11	57.9%	4	26.7%		
Artificial intelligence (AI)	8	42.1%	7	46.7%		

Table 3.7: Future digital technologies needed (Employees)

Digital technologies	Frequency	Percentage
Faster internet connection	10	76.9%
Ultra-modern equipment (Upgrade current digital equipment/s)	9	69.2%
Artificial intelligence (AI)	8	61.5%
Internet of things (IoT)	4	30.8%
Robots	5	38.5%
Scanners	6	46.2%
Tracking systems	7	53.8%

Table 3.8: Future digital skills needed (Employees)

Digital skills	Frequency	Percentage
Ability to quickly learn new software (MS packages, accounting packages, designing packages, etc.)	7	53.8%
Computer literacy	8	61.5%
Machine learning	7	53.8%
Digital marketing	7	53.8%
Artificial intelligence (AI)	6	46.2%
Developing a website	4	30.8%
Ability to use and understand digital media	4	30.8%

Table 3.9: Resistance to digital technology in the workplace (Managers)

Reasons for resistance	Frequency	Percentage
Fear of the unknown	3	50.0%
Lack of digital skills	4	66.7%
Scepticism (Doubt) of digital technologies	3	50.0%
Preference for traditional tools	1	16.7%
Fear of digital technology (Technophobia)	2	33.3%

Table 3.10: Means of digital transformation (HR Managers)

Actions undertaken	Frequency	Percentage
Skills empowerment	6	100%
Endorsement of digital practices	3	50%
Acquisition of modern technology	3	50%
No action is undertaken	1	16.7%

Table 3.11: Frequency of digital skills audit (HR Managers)

Do you conduct any digital skills audit?	Frequency	Percentage
No	1	20%
Yes	4	80%

Table 3.12: Frequency of skills audit across sector (HR Managers)

How often do you conduct a digital skills audit?	Frequency	Percentage
No information	1	20%
Annually	2	40%
Three times a year	1	20%
Very often	1	20%

3.4 Digital Skills Supply (Recruit and retain)

Table 3.13: Perceived impact of digital skills on qualification (Employees)

Perceived impact of digital skills	N	Mean	SD
My knowledge of digital technologies boosts my confidence	13	4.69	0.480
The digital skills that I have acquired open doors to more job opportunities	13	4.38	0.961
The usage of digital technologies makes me more knowledgeable	13	4.69	0.480
With the usage of digital technology, I am now able to innovate at work	13	4.31	0.751
How much value does the knowledge of digital technology add to your qualification?	13	3.15	1.068

Table 3.14: Importance of digital technologies (Employees)

Importance of digital technologies	N	Mean	SD
How much value does the knowledge of digital technology add to your qualification?	13	3.15	1.068

Table 3.15: Recruiting staff (Managers and HR Managers)

Strategy	N	Percentage
Online advertising	8	72.7%
Classified advertisements	2	18.2%
Recruitment agencies	5	45.5%
Word-of-mouth	4	36.4%
Internal advertising	9	81.8%
Internships	3	27.3%
Outsourcing	1	9.1%
Headhunting (Pool of experts)	1	9.1%
Tech summits	0	0%

Table 3.16: Retaining digital staff (Managers and HR Managers)

Strategy	N	Percentage
Capacity building	6	54.5%
Creating a conducive environment	9	81.8%
Providing incentives	6	54.4%
Counteroffers	4	36.4%

Table 3.17: Impact of existing policy (Managers and HR Managers)

Impact of existing policy	N	Mean	SD
How does existing policy (either government or organisational) affect your ability to attract the best talent with the latest digital skills?	11	2.27	1.272

Table 3.18: Perceived challenges (HR Managers)

Perceived challenges	N	Percentage
Costly job portals	2	40%
Interference of trade unions	1	20%
Stringent regulations	0	0%
High competition in acquiring people with digital skills	4	80%

3.5 Digital Skills Development (Training)

Table 3.19: Digital skills acquisition (Employees)

Acquired through ...	N	Percentage
High school	4	30.8%
In-house training	8	61.5%
Peer-learning	4	30.8%
Self-taught	5	38.5%
Short courses	2	15.4%
Tertiary education	4	30.8%
Previous work experience	6	46.2%
External training/Workshops	3	23.1%
I have no digital skills	0	0.0%

Table 3.20: Support systems from the organisation (Employees, Managers and HR Managers)

Support systems	N	Mean	SD
Overall results	24	3.49	0.70
My organisation supports digital technology usage through accredited training (officially recognised or authorised)	24	3.96	1.04
Digital technology is promoted through in-house training in my organisation	24	3.71	1.00
My organisation does not have a support system to enhance digital skills	24	2.38	1.10
My organisation encourages self-development of staff when it comes to digital technology	24	3.71	1.12
Digital skills in my organisation are promoted through external training (training conducted outside the organisation)	24	3.58	1.02
My organisation encourages the staff to acquire digital skills through online training	24	3.58	1.14

3.6 Risks and Attitudes

Table 3.21: Risks of and attitudes towards digital skills usage (Employees, Managers and HR Managers)

Risks and attitudes	Number of respondents	Mean	SD
Risk 1	24	2.33	1.049
Risk 2	24	2.42	1.018
Risk 3	24	2.83	1.129
Risk 4	24	2.29	1.083
Risk 5	24	2.04	0.999
Risk 6	24	2.42	0.881
Att 1	24	1.42	0.881
Att 2	24	1.46	0.884
Att 3	24	1.46	0.779
Att 4	24	1.50	0.590
Att 5	24	1.88	1.076
Att 6	24	1.79	1.062

4. Electricity, Gas, Steam and Air Conditioning Supply

4.1 Understanding Digital Technology

Table 4.1: Understanding of digital technology (Employees, Managers and HR managers)

Understanding	Poor	Average	Good	Excellent
Frequency	0	2	20	2
Percentage	0.0%	8.3%	83.3%	8.3%
Mean = 4.00; SD = 0.417				

4.2 Digital Skills Deployment (Usage)

Table 4.2: Digital technology activities (Employees, Managers and HR managers)

Activities	N	Mean	SD
Overall results	24	3.66	0.98
Accounting/Financial management	24	3.79	1.56
Making bookings (e.g. travel bookings, scheduling meetings, venue bookings, etc.)	24	3.71	1.40
Emailing	24	4.92	0.28
Making audio or video calls	24	3.96	1.37
Marketing	24	3.13	1.60
Printing and scanning/Googling	24	4.79	0.66
Designing	24	2.67	1.71
Monitoring (e.g. employees, production, security, etc.)	24	3.25	1.67
Research and development/Information processing	24	3.25	1.67
Training	24	3.00	1.59
Filing	24	3.83	1.34

Table 4.3: Benefits of using digital technology in the workplace (Employees, Managers and HR Managers)

Benefits	N	Mean	SD
Ability to manage and monitor my team, activities, projects, etc. whilst not being physically present	24	7.63	2.60
Improved communication tools	24	7.92	1.91
Ability to enhance the capacity to perform my job	24	8.21	2.04
Ability to do different tasks at once (Multi-tasking)	24	7.96	2.07
Limited usage of paper (Paperless processes)	24	7.71	2.20
Less time needed to perform my duties (Time-efficiency)	24	8.13	1.94
Reduced workload	24	8.00	2.00

Table 4.4: Challenges encountered while using digital technology (Employees, Managers and HR Managers)

Challenges	N	Mean	SD
Digital technology involves higher costs	24	5.88	2.13
The instability of digital systems (systems going down, load shedding, etc.)	24	6.29	2.10
Lack of human interactions	24	6.13	2.23
The threat of possible retrenchment	24	6.50	2.59
Adjusting to and learning new digital technology	24	7.29	1.92
Lack of required digital skills	24	6.63	2.30
Digital fraud and scamming	24	6.79	2.25

Table 4.5: Digital champions in the organisation (Employees, Managers and HR Managers)

Digital champions	Frequency	Percentage
Management (CEOs, Directors, Managers, Supervisors, etc.)	23	95.8%
IT Department	15	62.5%
Communication Department/Marketing Department	10	41.7%
Project coordinators	8	33.3%
External stakeholders	9	37.5%
Fellow colleagues	6	25.0%
No idea	1	4.2%

4.3 Digital Skills Demand (Needs)

Table 4.6: Digital technologies used and needed (Employees and Managers)

Technologies	Used		Needed		N/A	
	f	%	f	%	f	%
State-of-the art printers and scanners	18	94.7%	1	6.7%	7	36.8%
Business WhatsApp	8	42.1%	4	26.7%	2	10.5%
Hi-tech telephone	16	84.2%	3	20.0%	2	10.5%
Faster computers and tablets	17	89.5%	2	13.3%	15	78.9%
Digital filing	14	73.7%	3	20.0%	1	5.3%
Mobile applications	13	68.4%	4	26.7%	8	42.1%
Block chain technology	4	21.1%	6	40.0%	1	5.3%
Reliable internet	18	94.7%	4	26.7%	2	10.5%
Smart boards	5	26.3%	5	33.3%	12	63.2%
Software and web applications	14	73.7%	4	26.7%	6	31.6%
Automated equipment	12	63.2%	4	26.7%	11	57.9%
Voice over internet protocol (VOIP)	3	15.8%	4	26.7%		
Video conferencing applications	9	47.4%				
Artificial intelligence (AI)	4	21.1%				

Table 4.7: Future digital technologies needed (Employees)

Digital technologies	Frequency	Percentage
Faster internet connection	13	100%
Ultra-modern equipment (Upgrade current digital equipment/s)	12	92.3%
Artificial intelligence (AI)	4	30.8%
Internet of things (IoT)	5	38.5%
Robots	2	15.4%
Scanners	4	30.8%
Tracking systems	4	30.8%

Table 4.8: Future digital skills needed (Employees)

Digital skills	Frequency	Percentage
Ability to quickly learn new software (MS packages, accounting packages, designing packages, etc.)	12	85.7%
Computer literacy	11	78.6%
Machine learning	5	35.7%
Digital marketing	8	57.1%
Artificial intelligence (AI)	3	21.4%
Developing a website	7	50.0%
Ability to use and understand digital media	8	57.1%

Table 4.9: Resistance to digital technology (Managers)

Reasons for resistance	Frequency	Percentage
Fear of the unknown	2	50%
Lack of digital skills	3	75%
Scepticism (Doubt) of digital technologies	2	50%
Preference for traditional tools	2	50%

Table 4.10: Means of digital transformation (HR Managers)

Actions undertaken	Frequency	Percentage
Skills empowerment	3	60%
Endorsement of digital practices	3	60%
Acquisition of modern technology	3	60%

Table 4.11: Frequency of digital skills audit (HR Managers)

Do you conduct any digital skills audit?	Frequency	Percentage
No	2	40%
Yes	3	60%

Table 4.12: Frequency of skills audit across sector (HR Managers)

How often do you conduct a digital skills audit?	Frequency	Percentage
No information	2	40%
Annually	1	20%
Three times a year	2	40%

4.4 Digital Skills Supply (Recruit and retain)

Table 4.13: Perceived impact of digital skills on qualification (Employees)

Perceived impact of digital skills	N	Mean	SD
My knowledge of digital technologies boosts my confidence	14	4.14	0.864
The digital skills that I have acquired open doors to more job opportunities	14	4.50	0.519
The usage of digital technologies makes me more knowledgeable	14	4.14	0.864
With the usage of digital technology, I am now able to	14	4.36	0.842

innovate at work			
How much value does the knowledge of digital technology add to your qualification?	14	3.43	0.852

Table 4.14: Importance of digital technologies (Employees)

Importance of digital technologies	N	Mean	SD
How much value does the knowledge of digital technology add to your qualification?	14	3.43	0.852

Table 4.15: Recruiting staff (Managers and HR Managers)

Strategy	N	Percentage
Online advertising	8	80%
Classified advertisements	3	30%
Recruitment agencies	6	60%
Word-of-mouth	5	50%
Internal advertising	4	40%
Internships	3	30%
Outsourcing	0	0%
Headhunting (Pool of experts)	2	20%
Tech summits	0	0%

Table 4.16: Retaining digital staff (Managers and HR Managers)\

Strategy	N	Percentage
Capacity building	5	50%
Creating a conducive environment	7	70%
Providing incentives	4	40%
Counteroffers	1	10%

Table 4.17: Impact of existing policy (Managers and HR Managers)

Impact of existing policy	N	Mean	SD
How does existing policy (either government or organisational) affect your ability to attract the best talent with the latest digital skills?	10	2.50	0.972

Table 4.18: Perceived challenges (HR Managers)

Perceived challenges	N	Percentage
Costly job portals	0	0%
Interference of trade unions	1	50%
Stringent regulations	1	50%
High competition in acquiring people with digital skills	1	50%

4.5 Digital Skills Development (Training)

Table 4.19: Digital skills acquisition (Employees)

Acquired through ...	N	Percentage
High school	7	50.0%
In-house training	8	57.10%
Peer-learning	3	21.4%
Self-taught	10	71.40%
Short courses	3	21.4%
Tertiary education	6	42.9%
Previous work experience	9	64.3%
External training/Workshops	2	14.3%
I have no digital skills	0	0.0%

Table 4.20: Support systems from the organisation (Employees, Managers and HR Managers)

Support systems	N	Mean	SD
Overall results	24	3.41	0.61
My organisation supports digital technology usage through accredited training (officially recognised or authorised)	24	3.92	0.88
Digital technology is promoted through in-house training in my organisation	24	3.88	0.85
My organisation does not have a support system to enhance digital skills	24	2.33	1.24
My organisation encourages self-development of staff when it comes to digital technology	24	3.58	1.18
Digital skills in my organisation are promoted through external training (training conducted outside the organisation)	24	3.29	1.04
My organisation encourages the staff to acquire digital skills through online training	24	3.46	1.10

4.6 Risks and Attitudes

Table 4.21: Risks of and attitudes towards digital skills usage (Employees Managers and HR Managers)

Risks and attitudes	Number of respondents	Mean	SD
Risk 1	24	2.71	1.197
Risk 2	24	3.25	1.152
Risk 3	24	3.29	1.122
Risk 4	24	2.29	0.955
Risk 5	24	2.33	1.007
Risk 6	24	2.38	1.135
Att 1	24	1.38	0.495
Att 2	24	1.54	0.588
Att 3	24	1.46	0.509
Att 4	24	1.63	0.647
Att 5	24	1.75	0.897
Att 6	24	1.63	0.647

5. Water Supply; Sewerage, Waste Management and Remediation Activities

5.1 Understanding Digital Technology

Table 5.1: Understanding of digital technology (Employees, Managers and HR Managers)

Understanding	Poor	Average	Good	Excellent
Frequency	2	3	19	0
Percentage	8.3%	12.5%	79.2%	0%
Mean = 3.71; SD = 0.624				

5.2 Digital Skills Deployment (Usage)

Table 5.2: Digital technology activities (Employees, Managers and HR Managers)

Activities	N	Mean	SD
Overall results	24	3.93	0.58
Accounting/Financial management	24	4.33	1.24
Making bookings (e.g. travel bookings, scheduling meetings, venue bookings, etc.)	24	4.13	1.19
Emailing	24	4.88	0.34
Making audio or video calls	24	4.17	1.05
Marketing	24	3.33	1.34

Printing and scanning/Googling	24	4.54	0.93
Designing	24	3.33	1.34
Monitoring (e.g. employees, production, security, etc.)	24	3.54	1.41
Research and development/Information processing	24	3.46	1.56
Training	24	3.17	1.37
Filing	24	4.38	1.01

Table 5.3: Benefits of using digital technology in the workplace (Employees, Managers and HR Managers)

Benefits	N	Mean	SD
Ability to manage and monitor my team, activities, projects, etc. whilst not being physically present	24	8.17	2.66
Improved communication tools	24	8.17	1.81
Ability to enhance the capacity to perform my job	24	8.25	2.03
Ability to do different tasks at once (Multi-tasking)	24	8.67	1.83
Limited usage of paper (Paperless processes)	24	7.83	2.53
Less time needed to perform my duties (Time-efficiency)	24	8.33	2.20
Reduced workload	24	7.58	2.50

Table 5.4: Challenges of using digital technology in the workplace (Employees, Managers and HR Managers)

Challenges	N	Mean	SD
Digital technology involves higher costs	24	6.96	1.94
Instability of digital systems (systems going down, load shedding, etc.)	24	8.00	1.82
Lack of human interactions	24	6.08	2.59
Threat of possible retrenchment	24	6.58	2.76
Adjusting to and learning new digital technology	24	6.25	2.57
Lack of required digital skills	24	6.08	2.32
Digital fraud and scamming	24	7.33	2.30

Table 5.5: Digital champions in the organisation (Employees, Managers and HR Managers)

Digital champions	Frequency	Percentage
Management (CEOs, Directors, Managers, Supervisors, etc.)	19	79.2%
IT Department	13	54.2%
Communication Department/Marketing Department	8	33.3%
Project coordinators	8	33.3%
External stakeholders	5	20.8%
Fellow colleagues	12	50.0%
No one	1	4.2%
No idea	1	4.2%

5.3 Digital Skills Demand (Needs)

Table 5.6: Digital technologies used and needed (Employees and Managers)

Technologies	Used		Needed		N/A	
	f	%	f	%	f	%
State-of-the art printers and scanners	15	78.9%	4	30.8%	2	14.3%
Business WhatsApp	12	63.2%	5	38.5%	2	14.3%
Hi-tech telephone	16	84.2%	1	7.7%	2	14.3%
Faster computers and tablets	15	78.9%	4	30.8%	9	64.3%
Digital filing	17	89.5%	2	15.4%	8	57.1%
Mobile applications	14	73.7%	3	23.1%	2	14.3%
Block chain technology	6	31.6%	4	30.8%	6	42.9%
Reliable internet	17	89.5%	2	15.4%	7	50.0%
Smart boards	4	21.1%	7	53.8%	8	57.1%
Software and web applications	14	73.7%	5	38.5%		
Automated equipment	14	73.7%	3	23.1%		
Voice over internet protocol (VOIP)	8	42.1%	5	38.5%		
Video conferencing applications	8	42.1%	4	30.8%		
Artificial intelligence (AI)	4	21.1%	7	53.8%		

Table 5.7: Future digital technologies needed (Employees)

Digital technologies	Frequency	Percentage
Faster internet connection	13	92.9%
Ultra-modern equipment (Upgrade current digital equipment/s)	9	64.3%
Artificial intelligence (AI)	1	7.1%
Internet of things (IoT)	6	42.9%
Robots	2	14.3%
Scanners	7	50.0%
Tracking systems	8	57.1%

Table 5.8: Future digital skills needed (Employees)

Digital skills	Frequency	Percentage
Ability to quickly learn new software (MS packages, accounting packages, designing packages, etc.)	11	78.6%
Computer literacy	9	64.3%
Machine learning	9	64.3%
Digital marketing	8	57.1%
Artificial intelligence (AI)	2	14.3%
Developing a website	10	71.40%
Ability to use and understand digital media	6	42.9%

Table 5.9: Resistance to digital technology (Managers)

Reasons for resistance	Frequency	Percentage
Fear of the unknown	1	20%
Lack of digital skills	3	60%
Scepticism (Doubt) of digital technologies	1	20%
Preference for traditional tools	3	60%
Fear of digital technology (Technophobia)	2	40%

Table 5.10: Means of digital transformation (HR Managers)

Actions undertaken	Frequency	Percentage
Skills empowerment	3	60%
Endorsement of digital practices	3	60%
Acquisition of modern technology	4	80%

Table 5.11: Frequency of digital skills audit (HR Managers)

Do you conduct any digital skills audit?	Frequency	Percentage
No	2	40%
Yes	3	60%

Table 5.12: Frequency of skills audit across sector (HR Managers)

How often do you conduct a digital skills audit?	Frequency	Percentage
No information	2	40%
Annually	2	40%
Every two months	1	20%

5.4 Digital Skills Supply (Recruit and Retain)

Table 5.13: Perceived impact of digital skills on qualification (Employees)

Perceived impact of digital skills	N	Mean	SD
My knowledge of digital technologies boosts my confidence	14	4.29	1.069
The digital skills that I have acquired open doors to more job opportunities	14	3.86	0.949
The usage of digital technologies makes me more knowledgeable	14	3.86	1.231
With the usage of digital technology, I am now able to innovate at work	14	4.14	1.099
How much value does the knowledge of digital technology add to your qualification?	14	3.21	1.051

Table 5.14: Importance of digital technologies (Employees)

Importance of digital technologies	N	Mean	SD
How much value does the knowledge of digital technology add to your qualification?	14	3.21	1.051

Table 5.15: Recruiting staff (Managers and HR Managers)

Strategy	N	Percentage
Online advertising	6	60%
Classified advertisements	2	20%

Recruitment agencies	4	40%
Word-of-mouth	3	30%
Internal advertising	3	30%
Internships	3	30%
Outsourcing	3	30%
Headhunting (Pool of experts)	2	20%
Tech summits	2	20%

Table 5.16: Retaining digital staff (Managers and HR Managers)

Strategy	N	Percentage
Capacity building	4	44.4%
Creating a conducive environment	3	33.3%
Providing incentives	6	66.8%
Counteroffers	0	0.0%

Table 5.17: Impact of existing policy (Managers and HR Managers)

Impact of existing policy	N	Mean	SD
How does existing policy (either government or organisational) affect your ability to attract the best talent with the latest digital skills?	10	2	1.155

Table 5.18: Perceived challenges (HR Managers)

Perceived challenges	N	Percentage
Costly job portals	4	80%
Interference of trade unions	2	40%
Stringent regulations	1	20%
High competition in acquiring people with digital skills	2	40%

5.5 Digital Skills Development (Training)

Table 5.19: Digital skills acquisition (Employees)

Acquired through ...	N	Percentage
High school	7	50.0%
In-house training	8	57.1%
Peer-learning	4	28.6%
Self-taught	7	50.0%
Short courses	4	28.6%

Tertiary education	7	50.0%
Previous work experience	8	57.1%
External training/Workshops	3	21.4%
I have no digital skills	0	0.0%

Table 5.20: Support systems from the organisation (Employees, Managers and HR Managers)

Support systems	N	Mean	SD
Overall results	24	3.60	0.53
My organisation supports digital technology usage through accredited training (officially recognised or authorised)	24	4.13	0.90
Digital technology is promoted through in-house training in my organisation	24	4.08	0.72
My organisation does not have a support system to enhance digital skills	24	2.58	1.14
My organisation encourages self-development of staff when it comes to digital technology	24	3.79	0.93
Digital skills in my organisation are promoted through external training (training conducted outside the organisation)	24	3.54	0.98
My organisation encourages the staff to acquire digital skills through online training	24	3.50	1.02

5.6 Risks and Attitudes

Table 5.21: Risks of and attitudes towards digital skills usage (Employees, Managers and HR Managers)

Risks and attitudes	Number of respondents	Mean	SD
Risk 1	24	2.96	1.122
Risk 2	24	3.08	1.060
Risk 3	24	2.88	1.154
Risk 4	24	2.29	0.955
Risk 5	24	2.38	0.970
Risk 6	24	3.00	1.022
Att 1	24	1.92	1.283
Att 2	24	1.79	1.141
Att 3	24	2.00	1.383
Att 4	24	2.08	1.018
Att 5	24	2.29	1.268
Att 6	24	2.42	1.316

6. Construction

6.1 Understanding of Digital Technology

Table 6.1: Understanding of digital technology (Employees, Managers and HR Managers)

Understanding	Poor	Average	Good	Excellent
Frequency	0	2	21	1
Percentage	0%	8.3%	87.5%	4.2%
Mean = 3.96; SD = 0.359				

6.2 Digital Skills Deployment (Usage)

Table 6.2: Digital technology activities (Employees, Managers and HR Managers)

Activities	N	Mean	SD
Overall results	24	3.87	0.83
Accounting/Financial management	24	4.00	1.29
Making bookings (e.g. travel bookings, scheduling meetings, venue bookings, etc.)	24	4.04	1.40
Emailing	24	4.75	0.61
Making audio or video calls	24	3.83	1.37
Marketing	24	4.04	1.23
Printing and scanning/Googling	24	4.25	1.07
Designing	24	3.88	1.48
Monitoring (e.g. employees, production, security, etc.)	24	3.33	1.27
Research and development/Information processing	24	4.04	1.40
Training	24	3.21	1.47
Filing	24	4.17	1.34

Table 6.3: Benefits of using digital technology in the workplace (Employees, Managers and HR managers)

Benefits	N	Mean	SD
Ability to manage and monitor my team, activities, projects, etc. whilst not being physically present	24	7.17	3.14
Improved communication tools	24	8.29	2.22
Ability to enhance the capacity to perform my job	24	8.50	1.98
Ability to do different tasks at once (Multi-tasking)	24	8.50	2.04
Limited usage of paper (Paperless processes)	24	8.25	2.31
Less time needed to perform my duties (Time-efficiency)	24	8.29	2.03
Reduced workload	24	8.04	2.44

Table 6.4: Challenges of using digital technology in the workplace (Employees, Managers and HR Managers)

Challenges	N	Mean	SD
Digital technology involves higher costs	24	6.33	2.48
Instability of digital systems (systems going down, load shedding, etc.)	24	6.29	2.49
Lack of human interactions	24	5.96	2.12
Threat of possible retrenchment	24	6.67	2.24
Adjusting to and learning new digital technology	24	6.58	2.59
Lack of required digital skills	24	6.63	2.30
Digital fraud and scamming	24	6.38	2.76

Table 6.5: Digital champions in the organisation (Employees, Managers and HR Managers)

Digital champions	Frequency	Percentage
Management (CEOs, Directors, Managers, Supervisors, etc.)	19	79.2%
IT Department	12	50.0%
Communication Department/Marketing Department	14	58.3%
Project coordinators	11	45.8%
External stakeholders	3	12.5%
Fellow colleagues	8	33.3%
No one	4	16.7%

6.3 Digital Skills Demand (Needs)

Table 6.6: Digital technologies used and needed (Employees and Managers)

Technologies	Used		Needed		N/A	
	f	%	f	%	f	%
State-of-the art printers and scanners	14	73.7%	3	17.6%	2	11.8%
Business WhatsApp	11	57.9%	1	5.9%	7	41.2%
Hi-tech telephone	8	42.1%	9	52.9%	2	11.8%
Faster computers and tablets	13	68.4%	5	29.4%	1	5.9%
Digital filing	13	68.4%	3	17.6%	3	17.6%
Mobile applications	13	68.4%	6	35.3%		
Block chain technology	3	15.8%	4	23.5%	12	70.6%
Reliable internet	16	84.2%	3	17.6%		
Smart boards	9	47.4%	3	17.6%	7	41.2%
Software and web applications	13	68.4%	4	23.5%	2	11.8%
Automated equipment	5	26.3%	9	52.9%	5	29.4%

Voice over internet protocol (VOIP)	7	36.8%	4	23.5%	8	47.1%
Video conferencing applications	9	47.4%	3	17.6%	7	41.2%
Artificial intelligence (AI)	2	10.5%	8	47.1%	9	52.9%

Table 6.7: Future digital technologies needed (Employees)

Digital technologies	Frequency	Percentage
Faster internet connection	13	100%
Ultra-modern equipment (Upgrade current digital equipment/s)	9	69.2%
Artificial intelligence (AI)	5	38.5%
Internet of things (IoT)	7	53.8%
Robots	2	15.4%
Scanners	8	61.5%
Tracking systems	10	76.9%

Table 6.8: Future digital skills needed (Employees)

Digital skills	Frequency	Percentage
Ability to quickly learn new software (MS packages, accounting packages, designing packages, etc.)	11	78.6%
Computer literacy	10	71.4%
Machine learning	7	50%
Digital marketing	10	71.4%
Artificial intelligence (AI)	4	28.6%
Developing a website	8	57.10%
Ability to use and understand digital media	9	64.3%

Table 6.9: Resistance to digital technology (Managers)

Reasons for resistance	Frequency	Percentage
Fear of the unknown	5	100%
Lack of digital skills	5	100%
Scepticism (Doubt) of digital technologies	1	20.0%
Preference for traditional tools	1	20.0%
Fear of digital technology (Technophobia)	1	20.0%

Table 6.10: Means of digital transformation (HR Managers)

Actions undertaken	Frequency	Percentage
Skills empowerment	3	60%

Endorsement of digital practices	2	40%
Acquisition of modern technology	4	80%
No action is undertaken	1	20%

Table 6.11: Frequency of digital skills audit (HR Managers)

Do you conduct any digital skills audit?	Frequency	Percentage
No	4	80%
Yes	1	20%

Table 6.12: Frequency of skills audit across sector (HR Managers)

How often do you conduct a digital skills audit?	Frequency	Percentage
No information	4	80%
Quarterly	1	20%

6.4 Digital Skills Supply (Recruit and Retain)

Table 6.13: Perceived impact of digital skills on qualification (Employees)

Perceived impact of digital skills	N	Mean	SD
My knowledge of digital technologies boosts my confidence	14	4.14	1.099
The digital skills that I have acquired open doors to more job opportunities	14	3.93	1.072
The usage of digital technologies makes me more knowledgeable	14	4.14	1.231
With the usage of digital technology, I am now able to innovate at work	14	4.21	1.051
How much value does the knowledge of digital technology add to your qualification?	14	3.50	0.855

Table 6.14: Importance of digital technologies (Employees)

Importance of digital technologies	N	Mean	SD
How much value does the knowledge of digital technology add to your qualification?	14	3.50	0.855

Table 6.15: Recruiting staff (Managers and HR Managers)

Strategy	N	Percentage
Online advertising	4	40%
Classified advertisements	1	10%
Recruitment agencies	3	30%
Word-of-mouth	7	70%
Internal advertising	4	40%
Internships	1	10%
Outsourcing	3	30%
Headhunting (Pool of experts)	1	10%
Tech summits	0	0%

Table 6.16: Retaining digital staff (Managers and HR Managers)

Strategy	N	Percentage
Capacity building	5	50%
Creating a conducive environment	6	60%
Providing incentives	4	40%
Counteroffers	3	30%

Table 6.17: Impact of existing policy (Managers and HR Managers)

Impact of existing policy	N	Mean	SD
How does existing policy (either government or organisational) affect your ability to attract the best talent with the latest digital skills?	10	2.80	1.135

Table 6.18: Perceived challenges (HR Managers)

Perceived challenges	N	Percentage
Costly job portals	3	60%
Interference of trade unions	0	0%
Stringent regulations	1	20%
High competition in acquiring people with digital skills	3	60%

6.5 Digital Skills Development (Training)

Table 6.19: Digital skills acquisition (Employees)

Acquired through ...	N	Percentage
High school	4	28.6%
In-house training	5	35.7%
Peer-learning	7	50.0%
Self-taught	11	78.6%
Short courses	5	35.7%
Tertiary education	5	35.7%
Previous work experience	5	35.7%
External training/Workshops	3	21.4%
I have no digital skills	1	7.1%

Table 6.20: Support systems from the organisation (Employees, Managers and HR Managers)

Support systems	N	Mean	SD
Overall results	24	3.53	0.71
My organisation supports digital technology usage through accredited training (officially recognised or authorised)	24	3.88	1.15
Digital technology is promoted through in-house training in my organisation	24	3.63	1.10
My organisation does not have a support system to enhance digital skills	24	3.00	1.29
My organisation encourages self-development of staff when it comes to digital technology	24	3.79	0.93
Digital skills in my organisation are promoted through external training (training conducted outside the organisation)	24	3.54	1.18
My organisation encourages the staff to acquire digital skills through online training	24	3.33	1.20

6.6 Risks and Attitudes

Table 6.21: Risks of and attitudes towards digital skills usage (Employees, Managers and HR Managers)

Risks and attitudes	Number of respondents	Mean	SD
Risk 1	24	3.17	1.090
Risk 2	24	3.17	1.308
Risk 3	24	3.63	1.013
Risk 4	24	2.67	1.007
Risk 5	24	2.79	1.215

Risk 6	24	2.67	1.129
Att 1	24	1.79	1.021
Att 2	24	1.88	1.227
Att 3	24	1.88	1.329
Att 4	24	1.83	1.167
Att 5	24	2.17	0.917
Att 6	24	2.33	1.239

7. Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles

7.1 Understanding of Digital Technology

Table 7.1: Understanding of digital technology (Employees, Managers and HR Managers)

Understanding	Poor	Average	Good	Excellent
Frequency	1	7	29	2
Percentage	2.6	17.9	74.4	5.1
Mean = 3.82; SD = 0.556				

7.2 Digital Skills Deployment (Usage)

Table 7.2: Digital technology activities (Employees, Managers and HR Managers)

Activities	N	Mean	SD
Overall results	39	3.61	0.71
Accounting/Financial management	39	3.85	1.37
Making bookings (e.g. travel bookings, scheduling meetings, venue bookings, etc.)	39	3.59	1.48
Emailing	39	4.23	0.99
Making audio or video calls	39	3.77	1.37
Marketing	39	3.64	1.25
Printing and scanning/Googling	39	4.44	0.91
Designing	39	2.92	1.35
Monitoring (e.g. employees, production, security, etc.)	39	3.49	1.19
Research and development/Information processing	39	3.18	1.39
Training	39	3.21	1.30
Filing	39	3.59	1.31

Table 7.3: Benefits of using digital technology in the workplace (Employees, Managers and HR Managers)

Benefits	N	Mean	SD
Ability to manage and monitor my team, activities, projects, etc. whilst not being physically present	39	7.77	2.36
Improved communication tools	39	8.03	1.86
Ability to enhance the capacity to perform my job	39	7.97	1.97
Ability to do different tasks at once (Multi-tasking)	39	8.21	1.66
Limited usage of paper (Paperless processes)	39	8.31	2.05
Less time needed to perform my duties (Time-efficiency)	39	7.74	2.01
Reduced workload	39	7.26	2.04

Table 7.4: Challenges of using digital technology in the workplace (Employees, Managers and HR Managers)

Challenges	N	Mean	SD
Digital technology involves higher costs	39	6.46	2.543
Instability of digital systems (systems going down, load shedding, etc.)	39	7.33	2.649
Lack of human interactions	39	5.77	2.454
Threat of possible retrenchment	39	5.74	3.126
Adjusting to and learning new digital technology	39	5.77	2.433
Lack of required digital skills	39	4.92	2.252
Digital fraud and scamming	39	6.54	2.972

Table 7.5: Digital champions in the organisation (Employees, Managers and HR managers)

Digital champions	Frequency	Percentage
Management (CEOs, Directors, Managers, Supervisors, etc.)	28	71.8%
IT Department	12	30.8%
Communication Department/Marketing Department	6	15.4%
Project coordinators	6	15.4%
External stakeholders	4	10.3%
Fellow colleagues	8	20.5%
No one	2	5.1%
No idea	3	7.7%

7.3 Digital Skills Demand (Needs)

Table 7.6: Digital technologies used and needed (Employees and Managers)

Technologies	Used		Needed		N/A	
	f	%	f	%	f	%
State-of-the art printers and scanners	25	78.1%	2	7.1%	5	19.2%
Business WhatsApp	21	65.6%	7	25.0%	4	15.4%
Hi-tech telephone	19	59.4%	10	35.7%	3	11.5%
Faster computers and tablets	18	56.3%	9	32.1%	5	19.2%
Digital filing	17	53.1%	9	32.1%	6	23.1%
Mobile applications	14	43.8%	9	32.1%	9	34.6%
Block chain technology	2	6.3%	19	67.9%	11	42.3%
Reliable internet	23	71.9%	5	17.9%	4	15.4%
Smart boards	4	12.5%	6	21.4%	22	84.6%
Software and web applications	12	37.5%	11	39.3%	9	34.6%
Automated equipment	8	25.0%	7	25.0%	17	65.4%
Voice over internet protocol (VOIP)	12	37.5%	9	32.1%	11	42.3%
Video conferencing applications	5	15.6%	12	42.9%	15	57.7%
Artificial intelligence (AI)	4	12.5%	7	25.0%	21	80.8%

Table 7.7: Future digital technologies needed (Employees)

Digital technologies	Frequency	Percentage
Faster internet connection	19	79.2%
Ultra-modern equipment (Upgrade current digital equipment/s)	4	16.7%
Artificial intelligence (AI)	7	29.2%
Internet of things (IoT)	6	25.0%
Robots	3	12.5%
Scanners	14	58.3%
Tracking systems	5	20.8%

Table 7.8: Future digital skills needed (Employees)

Digital skills	Frequency	Percentage
Ability to quickly learn new software (MS packages, accounting packages, designing packages, etc.)	10	41.7%
Computer literacy	18	75.0%
Machine learning	9	37.5%
Digital marketing	11	45.8%
Artificial intelligence (AI)	6	25.0%
Developing a website	6	25.0%
Ability to use and understand digital media	10	41.7%

Table 7.9: Resistance to digital technology (Managers)

Reasons for resistance	Frequency	Percentage
Fear of the unknown	5	62.5%
Lack of digital skills	5	62.5%
Scepticism (Doubt) of digital technologies	5	62.5%
Preference for traditional tools	3	37.5%
Fear of digital technology (Technophobia)	1	12.5%

Table 7.10: Means of digital transformation (HR Managers)

Actions undertaken	Frequency	Percentage
Skills empowerment	4	50.0%
Endorsement of digital practices	2	25.0%
Acquisition of modern technology	3	37.5%
No action is undertaken	3	37.5%

Table 7.11: Frequency of digital skills audit (HR Managers)

Do you conduct any digital skills audit?	Frequency	Percentage
No	5	71.4%
Yes	2	28.6%

Table 7.12: Frequency of skills audit across sector (HR Managers)

How often do you conduct a digital skills audit?	Frequency	Percentage
No information	5	71.4%
Every two months	1	14.3%
Twice a month	1	14.3%

7.4 Digital Skills Supply (Recruit and retain)

Table 7.13: Perceived impact of digital skills on qualification (Employees)

Perceived impact of digital skills	N	Mean	SD
My knowledge of digital technologies boosts my confidence	24	4.00	0.780
The digital skills that I have acquired open doors to more job opportunities	24	3.88	1.035
The usage of digital technologies makes me more knowledgeable	24	4.17	0.963
With the usage of digital technology, I am now able to innovate at work	24	4.08	0.654
How much value does the knowledge of digital technology add to your qualification?	24	3.50	0.933

Table 7.14: Importance of digital technologies (Employees)

Importance of digital technologies	N	Mean	SD
How much value does the knowledge of digital technology add to your qualification?	24	3.50	0.933

Table 7.15: Recruiting staff (Managers and HR Managers)

Strategy	N	Percentage
Online advertising	14	93.3%
Classified advertisements	2	13.3%
Recruitment agencies	4	26.7%
Word-of-mouth	8	53.3%
Internal advertising	4	26.7%
Internships	3	20.0%
Outsourcing	4	26.7%
Headhunting (Pool of experts)	2	13.3%
Tech summits	1	6.7%

Table 7.16: Retaining digital staff (Managers and HR Managers)

Strategy	N	Percentage
Capacity building	3	21.4%
Creating a conducive environment	6	42.9%
Providing incentives	11	78.6%
Counteroffers	0	0.0%

Table 7.17: Impact of existing policy (Managers and HR Managers)

Impact of existing policy	N	Mean	SD
How does existing policy (either government or organisational) affect your ability to attract the best talent with the latest digital skills?	15	2.53	0.743

Table 7.18: Perceived challenges (HR Managers)

Perceived challenges	N	Percentage
Costly job portals	1	33.3%
Interference of trade unions	1	33.3%
Stringent regulations	0	0.0%
High competition in acquiring people with digital skills	3	100%

7.5 Digital Skills Development (Training)

Table 7.19: Digital skills acquisition (Employees)

Acquired through ...	N	Percentage
High school	11	45.8%
In-house training	9	35.7%
Peer-learning	6	25.0%
Self-taught	8	33.3%
Short courses	7	29.2%
Tertiary education	3	12.5%
Previous work experience	5	20.8%
External training/Workshops	2	8.3%
I have no digital skills	0	0.0%

Table 7.20: Support systems from the organisation (Employees, Managers and HR Managers)

Support systems	N	Mean	SD
Overall results	39	3.15	0.43
My organisation supports digital technology usage through accredited training (officially recognised or authorised)	39	3.36	1.01
Digital technology is promoted through in-house training in my organisation	39	3.54	1.05
My organisation does not have a support system to enhance digital skills	39	2.38	0.96
My organisation encourages self-development of staff when it	39	3.41	0.85

comes to digital technology			
Digital skills in my organisation are promoted through external training (training conducted outside the organisation)	39	3.13	1.00
My organisation encourages the staff to acquire digital skills through online training	39	3.08	0.84

7.6 Risks and Attitudes

Table 7.21: Risks of and attitudes towards digital skills usage (Employees, Managers and HR Managers)

Risks and attitudes	Number of respondents	Mean	SD
Risk 1	39	3.13	0.951
Risk 2	39	3.36	1.158
Risk 3	39	3.67	1.009
Risk 4	39	2.74	0.715
Risk 5	39	2.72	1.276
Risk 6	39	2.77	1.224
Att 1	39	1.67	0.869
Att 2	39	1.92	1.133
Att 3	39	1.79	1.031
Att 4	39	1.95	1.146
Att 5	39	2.33	1.155
Att 6	39	2.46	1.144

8. Transportation and Storage

8.1 Understanding of Digital Technology

Table 8.1: Understanding of digital technology (Employees, Managers and HR Managers)

Understanding	Poor	Average	Good	Excellent
Frequency	0	4	22	2
Percentage	0.0%	14.3%	78.6%	7.1%
Mean = 3.03; SD = 0.46				

8.2 Digital Skills Deployment (Usage)

Table 8.2: Digital technology activities (Employees, Managers and HR Managers)

Activities	N	Mean	SD
Overall results	28	3.27	0.72
Accounting/Financial management	28	3.32	1.49
Making bookings (e.g. travel bookings, scheduling meetings, venue bookings, etc.)	28	3.43	1.43
Emailing	28	3.96	1.45
Making audio or video calls	28	3.64	1.34
Marketing	28	2.86	1.41
Printing and scanning/Googling	28	4.11	1.13
Designing	28	1.82	1.47
Monitoring (e.g. employees, production, security, etc.)	28	3.57	1.55
Research and development/Information processing	28	3.11	1.50
Training	28	2.50	1.69
Filing	28	3.68	1.09

Table 8.3: Benefits of using digital technology in the workplace (Employees, Managers and HR Managers)

Benefits	N	Mean	SD
Ability to manage and monitor my team, activities, projects, etc. whilst not being physically present	28	7.4	2.8
Improved communication tools	28	8.0	2.4
Ability to enhance the capacity to perform my job	28	8.2	2.3
Ability to do different tasks at once (Multi-tasking)	28	7.8	2.3
Limited usage of paper (Paperless processes)	28	7.1	2.8
Less time needed to perform my duties (Time-efficiency)	28	8.2	2.3
Reduced workload	28	7.9	2.4

Table 8.4: Challenges of using digital technology in the workplace (Employees, Managers and HR Managers)

Challenges	N	Mean	SD
Digital technology involves higher costs	28	6.64	2.61
Instability of digital systems (systems going down, load shedding, etc.)	28	7.64	2.36
Lack of human interactions	28	5.86	3.01
Threat of possible retrenchment	28	5.18	3.31
Adjusting to and learning new digital technology	28	5.64	2.91
Lack of required digital skills	28	3.68	2.65
Digital fraud and scamming	28	7.46	2.81

Table 8.5: Digital champions in the organisation (Employees, Managers and HR Managers)

Digital champions	Frequency	Percentage
Management (CEOs, Directors, Managers, Supervisors, etc.)	21	75.0%
IT Department	7	25.0%
Communication Department/Marketing Department	7	25.0%
Project coordinators	4	14.3%
External stakeholders	3	10.7%
Fellow colleagues	11	39.3%
No one	4	14.3%
No idea	3	10.7%

8.3 Digital Skills Demand (Needs)

Table 8.6: Digital technologies used and needed (Employees and Managers)

Technologies	Used		Needed		N/A	
	f	%	f	%	f	%
State-of-the art printers and scanners	16	72.7%	5	22.7%	2	10.0%
Business WhatsApp	14	63.6%	5	22.7%	4	20.0%
Hi-tech telephone	15	68.2%	4	18.2%	4	20.0%
Faster computers and tablets	10	45.5%	11	50.0%	2	10.0%
Digital filing	5	22.7%	11	50.0%	7	35.0%
Mobile applications	7	31.8%	10	45.5%	6	30.0%
Block chain technology	3	13.6%	5	22.7%	15	75.0%
Reliable internet	14	63.6%	6	27.3%	3	15.0%
Smart boards	3	13.6%	3	13.6%	17	85.0%
Software and web applications	5	22.7%	7	31.8%	11	55.0%
Automated equipment	4	18.2%	6	27.3%	13	65.0%
Voice over internet protocol (VOIP)	2	9.1%	5	22.7%	16	80.0%
Video conferencing applications	3	13.6%	2	9.1%	18	90.0%
Artificial intelligence (AI)	1	4.5%	5	22.7%	17	85.0%

Table 8.7: Future digital technologies needed (Employees)

Digital technologies	Frequency	Percentage
Faster internet connection	16	100%
Ultra-modern equipment (Upgrade current digital equipment/s)	11	68.8%
Artificial intelligence (AI)	1	6.3%
Internet of things (IoT)	1	6.3%
Robots	1	6.3%
Scanners	3	18.8%
Tracking systems	3	18.8%

Table 8.8: Future digital skills needed (Employees)

Digital skills	Frequency	Percentage
Ability to quickly learn new software (MS packages, accounting packages, designing packages, etc.)	5	29.4%
Computer literacy	9	52.9%
Machine learning	3	17.6%
Digital marketing	5	29.4%
Artificial intelligence (AI)	1	5.9%
Developing a website	4	23.5%
Ability to use and understand digital media	4	23.5%

Table 8.9: Resistance to digital technology (Managers)

Reasons for resistance	Frequency	Percentage
Fear of the unknown	2	33.3%
Lack of digital skills	4	66.7%
Scepticism (Doubt) of digital technologies	1	16.7%
Preference for traditional tools	6	100%
Fear of digital technology (Technophobia)	3	50.0%

Table 8.10: Means of digital transformation (HR Managers)

Actions undertaken	Frequency	Percentage
Skills empowerment	5	83.3%
Endorsement of digital practices	6	100%
Acquisition of modern technology	3	50.0%
No action is undertaken	1	16.7%

Table 8.11: Frequency of digital skills audit (HR Managers)

Do you conduct any digital skills audit?	Frequency	Percentage
No	4	80%
Yes	1	20%

Table 8.12: Frequency of skills audit across sector (HR Managers)

How often do you conduct a digital skills audit?	Frequency	Percentage
No information	4	80%
Monthly	1	20%

8.4 Digital Skills Supply (Recruit and retain)

Table 8.13: Perceived impact of digital skills on qualification (Employees)

Perceived impact of digital skills	N	Mean	SD
My knowledge of digital technologies boosts my confidence	17	4.12	1.054
The digital skills that I have acquired open doors to more job opportunities	17	4.06	1.029
The usage of digital technologies makes me more knowledgeable	17	4.00	0.935
With the usage of digital technology, I am now able to innovate at work	17	3.71	1.047
How much value does the knowledge of digital technology add to your qualification?	17	3.29	1.312

Table 8.14: Importance of digital technologies (Employees)

Importance of digital technologies	N	Mean	SD
How much value does the knowledge of digital technology add to your qualification?	17	3.29	1.312

Table 8.15: Recruiting staff (Managers and HR Managers)

Note: No information available

Table 8.16: Retaining digital staff (Managers and HR Managers)

Strategy	N	Percentage
Capacity building	5	50%
Creating a conducive environment	8	80%
Providing incentives	9	90%
Counteroffers	3	30%

Table 8.17: Impact of existing policy (Managers and HR Managers)

Impact of existing policy	N	Mean	SD
How does existing policy (either government or organisational) affect your ability to attract the best talent with the latest digital skills?	11	2.82	0.982

Table 8.18: Perceived challenges (HR Managers)

Perceived challenges	N	Percentage
Costly job portals	1	20%
Interference of trade unions	1	20%
Stringent regulations	1	20%
High competition in acquiring people with digital skills	4	80%

8.5 Digital Skills Development (Training)

Table 8.19: Digital skills acquisition (Employees)

Acquired through ...	N	Percentage
High school	8	47.1%
In-house training	2	11.8%
Peer-learning	5	29.4%
Self-taught	4	23.5%
Short courses	6	35.3%
Tertiary education	4	23.5%
Previous work experience	6	35.3%
External training/Workshops	4	23.5%
I have no digital skills	0	0.0%

Table 8.20: Support systems from the organisation (Employees, Managers and HR Managers)

Support systems	N	Mean	SD
Overall results	28	3.22	0.65
My organisation supports digital technology usage through accredited training (officially recognised or authorised)	28	3.61	0.99
Digital technology is promoted through in-house training in my organisation	28	3.18	1.02
My organisation does not have a support system to enhance digital skills	28	2.93	0.94
My organisation encourages self-development of staff when it comes to digital technology	28	3.36	0.78
Digital skills in my organisation are promoted through external training (training conducted outside the organisation)	28	3.18	0.90
My organisation encourages the staff to acquire digital skills through online training	28	3.07	0.86

8.6 Risks and Attitudes

Table 8.21: Risks of and attitudes towards digital skills usage (Employees, Managers and HR Managers)

Risks and attitudes	Number of respondents	Mean	SD
Risk 1	28	3.75	1.110
Risk 2	28	4.18	0.723
Risk 3	28	3.82	1.124
Risk 4	28	2.54	0.881
Risk 5	28	2.68	0.983
Risk 6	28	3.18	0.945
Att 1	28	1.86	0.803
Att 2	28	1.68	0.723
Att 3	28	1.71	0.810
Att 4	28	2.07	0.979
Att 5	28	2.04	0.922
Att 6	28	3.00	1.277

9. Accommodation and Food Service Activities

9.1 Understanding of Digital Technology

Table 9.1: Understanding of digital technology (Employees, Managers and HR Managers)

Understanding	Poor	Average	Good	Excellent
Frequency	1	4	23	3
Percentage	3.2%	12.9%	74.2%	0.7%
Mean = 3.90; SD = 0.597				

9.2 Digital Skills Deployment (Usage)

Table 9.2: Digital technology activities (Employees, Managers and HR Managers)

Activities	N	Mean	SD
Overall results	33	3.48	1.25
Accounting/Financial management	33	3.79	1.67
Making bookings (e.g. travel bookings, scheduling meetings, venue bookings, etc.)	33	3.09	1.89
Emailing	33	4.06	1.48
Making audio or video calls	33	3.15	1.94
Marketing	33	3.45	1.64
Printing and scanning/Googling	33	4.06	1.62
Designing	33	2.79	1.96
Monitoring (e.g. employees, production, security, etc.)	33	3.67	1.74
Research and development/Information processing	33	3.76	1.75
Training	33	3.48	1.68
Filing	33	2.94	1.69

Table 9.3: Benefits of using digital technology in the workplace (Employees, Managers and HR Managers)

Benefits	N	Mean	SD
Ability to manage and monitor my team, activities, projects, etc. whilst not being physically present	33	7.12	3.13
Improved communication tools	33	8.48	2.66
Ability to enhance the capacity to perform my job	33	8.30	2.58
Ability to do different tasks at once (Multi-tasking)	33	8.30	2.53
Limited usage of paper (Paperless processes)	33	7.48	2.83
Less time needed to perform my duties (Time-efficiency)	33	7.55	2.80
Reduced workload	33	7.00	2.91

Table 9.4: Challenges of using digital technology in the workplace (Employees, Managers and HR Managers)

Challenges	N	Mean	SD
Digital technology involves higher costs	33	6.76	2.48
Instability of digital systems (systems going down, load shedding, etc.)	33	6.48	3.03
Lack of human interactions	33	6.27	2.67
Threat of possible retrenchment	33	5.73	3.19
Adjusting to and learning new digital technology	33	6.58	2.94
Lack of required digital skills	33	5.88	2.81
Digital fraud and scamming	33	6.36	3.55

Table 9.5: Digital champions in the organisation (Employees, Managers and HR Managers)

Digital champions	Frequency	Percentage
Management (CEOs, Directors, Managers, Supervisors, etc.)	29	87.9%
IT Department	14	42.4%
Communication Department/Marketing Department	13	39.4%
Project coordinators	10	30.3%
External stakeholders	2	6.1%
Fellow colleagues	9	27.3%
No one	3	9.1%

9.3 Digital Skills Demand (Needs)

Table 9.6: Digital technologies used and needed (Employees and Managers)

Technologies	Used		Needed		N/A	
	f	%	f	%	f	%
State-of-the art printers and scanners	19	76.0%	5	25.0%	2	8.7%
Business WhatsApp	14	56.0%	4	20.0%	8	34.8%
Hi-tech telephone	18	72.0%	2	10.0%	6	26.1%
Faster computers and tablets	19	76.0%	6	30.0%	1	4.3%
Digital filing	15	60.0%	5	25.0%	6	26.1%
Mobile applications	16	64.0%	5	25.0%	5	21.7%
Block chain technology	3	12.0%	7	35.0%	16	69.6%
Reliable internet	15	60.0%	5	25.0%	6	26.1%
Smart boards	9	36.0%	6	30.0%	11	47.8%
Software and web applications	16	64.0%	4	20.0%	6	26.1%
Automated equipment	8	32.0%	5	25.0%	13	56.5%

Voice over internet protocol (VOIP)	8	32.0%	4	20.0%	14	60.9%
Video conferencing applications	7	28.0%	10	50.0%	9	39.1%
Artificial intelligence (AI)	1	4.0%	9	45.0%	16	69.6%

Table 9.7: Future digital technologies needed (Employees)

Digital technologies	Frequency	Percentage
Faster internet connection	13	81.3%
Ultra-modern equipment (Upgrade current digital equipment/s)	10	62.5%
Artificial intelligence (AI)	3	18.8%
Internet of things (IoT)	3	18.8%
Robots	4	25%
Scanners	9	56.3%
Tracking systems	7	43.8%

Table 9.8: Future digital skills needed (Employees)

Digital skills	Frequency	Percentage
Ability to quickly learn new software (MS packages, accounting packages, designing packages, etc.)	11	61.1%
Computer literacy	14	77.8%
Machine learning	8	44.4%
Digital marketing	9	50%
Artificial intelligence (AI)	4	22.2%
Developing a website	9	50%
Ability to use and understand digital media	12	66.7%

Table 9.9: Resistance to digital technology in the workplace (Managers)

Reasons for resistance	Frequency	Percentage
Fear of the unknown	3	42.9%
Lack of digital skills	6	85.7%
Scepticism (Doubt) of digital technologies	4	57.1%
Preference for traditional tools	6	85.7%
Fear of digital technology (Technophobia)	2	28.6%

Table 9.10: Means of digital transformation (HR Managers)

Actions undertaken	Frequency	Percentage
Skills empowerment	6	85.7%

Endorsement of digital practices	5	71.4%
Acquisition of modern technology	6	85.7%

Table 9.11: Frequency of digital skills audit (HR Managers)

Do you conduct any digital skills audit?	Frequency	Percentage
No	3	60%
Yes	2	40%

Table 9.12: Frequency of skills audit across sector (HR Managers)

How often do you conduct a digital skills audit?	Frequency	Percentage
No information	6	85.7%
On employment	1	14.3%

9.4 Digital Skills Supply (Recruit and Retain)

Table 9.13: Perceived impact of digital skills on qualification (Employees)

Perceived impact of digital skills	N	Mean	SD
My knowledge of digital technologies boosts my confidence	19	4.21	0.713
The digital skills that I have acquired open doors to more job opportunities	19	4.42	0.692
The usage of digital technologies makes me more knowledgeable	19	4.37	0.684
With the usage of digital technology, I am now able to innovate at work	19	4.05	0.848
How much value does the knowledge of digital technology add to your qualification?	19	2.84	1.463

Table 9.14: Importance of digital technologies (Employees)

Importance of digital technologies	N	Mean	SD
How much value does the knowledge of digital technology add to your qualification?	19	2.84	1.463

Table 9.15: Recruiting staff (Managers and HR Managers)

Strategy	N	Percentage
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Online advertising	10	71.4%
Classified advertisements	0	0.0%
Recruitment agencies	1	7.1%
Word-of-mouth	8	57.1%
Internal advertising	7	50.0%
Internships	3	21.4%
Outsourcing	4	28.6%
Headhunting (Pool of experts)	2	14.3%
Tech summits	0	0.0%

Table 9.16: Retaining digital staff (Managers and HR Managers)

Strategy	N	Percentage
Capacity building	4	33.3%
Creating a conducive environment	7	58.3%
Providing incentives	9	75.0%
Counteroffers	3	33.3%

Table 9.17: Impact of existing policy (Managers and HR Managers)

Impact of existing policy	N	Mean	SD
How does existing policy (either government or organisational) affect your ability to attract the best talent with the latest digital skills?	14	3.29	0.994

Table 9.18: Perceived challenges (HR Managers)

Perceived challenges	N	Percentage
Costly job portals	2	50%
Interference of trade unions	0	0%
Stringent regulations	1	25%
High competition in acquiring people with digital skills	2	50%

9.5 Digital Skills Development (Training)

Table 9.19: Digital skills acquisition (Employees)

Acquired through ...	N	Percentage
High school	11	61.1%
In-house training	14	77.8%

Peer-learning	10	55.6%
Self-taught	11	61.1%
Short courses	6	33.3%
Tertiary education	10	55.6%
Previous work experience	9	50.0%
External training/Workshops	5	27.8%
I have no digital skills	0	0.0%

Table 9.20: Support systems from the organisation (Employees, Managers and HR Managers)

Support systems	N	Mean	SD
Overall results	23	3.41	0.70
My organisation supports digital technology usage through accredited training (officially recognised or authorised)	23	4.09	1.00
Digital technology is promoted through in-house training in my organisation	23	3.70	1.02
My organisation does not have a support system to enhance digital skills	23	2.13	1.01
My organisation encourages self-development of staff when it comes to digital technology	23	3.57	1.04
Digital skills in my organisation are promoted through external training (training conducted outside the organisation)	23	3.30	1.15
My organisation encourages the staff to acquire digital skills through online training	23	3.65	0.88

9.6 Risks and Attitudes

Table 9.21: Risks of and attitudes towards digital skills usage (Employees, Managers and HR Managers)

Risks and attitudes	Number of respondents	Mean	SD
Risk 1	33	2.45	1.121
Risk 2	33	3.03	1.159
Risk 3	33	3.24	1.062
Risk 4	33	2.70	1.237
Risk 5	33	2.61	1.116
Risk 6	33	2.91	1.100
Att 1	33	1.76	1.032
Att 2	33	1.91	1.208
Att 3	33	1.88	1.166
Att 4	33	2.00	1.173
Att 5	33	2.09	1.156
Att 6	33	2.67	1.384

10. Information and Communication

10.1 Understanding of Digital Technology

Table 10.1: Understanding of digital technology (Employees, Managers and HR managers)

Understanding	Poor	Average	Good	Excellent
Frequency	1	8	24	3
Percentage	2.8%	22.2%	66.7%	8.3%
Mean = 3.81; SD = 0.624				

10.2 Digital Skills Deployment (Usage)

Table 10.2: Digital technology activities (Employees, Managers and HR managers)

Activities	N	Mean	SD
Overall results	36	3.77	0.93
Accounting/Financial management	36	3.72	1.63
Making bookings (e.g. travel bookings, scheduling meetings, venue bookings, etc.)	36	3.53	1.61
Emailing	36	4.75	0.84
Making audio or video calls	36	4.19	1.31

Marketing	35	3.26	1.60
Printing and scanning/Googling	36	4.36	1.25
Designing	36	3.03	1.70
Monitoring (e.g. employees, production, security, etc.)	36	3.81	1.60
Research and development/Information processing	36	3.92	1.52
Training	36	3.58	1.48
Filing	36	3.61	1.57

Table 10.3: Benefits of using digital technology in the workplace (Employees, Managers and HR managers)

Benefits	N	Mean	SD
Ability to manage and monitor my team, activities, projects, etc. whilst not being physically present	36	7.75	2.76
Improved communication tools	36	7.81	2.77
Ability to enhance the capacity to perform my job	36	8.81	1.60
Ability to do different tasks at once (Multi-tasking)	36	8.81	1.72
Limited usage of paper (Paperless processes)	36	7.33	3.12
Less time needed to perform my duties (Time-efficiency)	36	8.03	2.57
Reduced workload	36	7.92	2.70

Table 10.4: Challenges encountered while using digital technology (Employees, Managers and HR managers)

Challenges	N	Mean	SD
Digital technology involves higher costs	36	7.11	2.39
The instability of digital systems (systems going down, load shedding, etc.)	36	6.36	2.91
Lack of human interactions	36	6.08	2.91
The threat of possible retrenchment	36	6.47	3.29
Adjusting to and learning new digital technology	36	7.00	3.00
Lack of required digital skills	35	6.14	2.70
Digital fraud and scamming	35	6.86	3.08

Table 10.5: Digital champions in the organisation (Employees, Managers and HR managers)

Digital champions	Frequency	Percentage
Management (CEOs, Directors, Managers, Supervisors, etc.)	33	91.7%
IT Department	26	72.2%
Communication Department/Marketing Department	23	63.9%
Project coordinators	13	36.1%
External stakeholders	14	38.9%
Fellow colleagues	19	52.8%
No one	1	2.8%

10.3 Digital Skills Demand (Needs)

Table 10.6: Digital technologies used and needed (Employees and Managers)

Technologies	Used		Needed		N/A	
	f	%	f	%	f	%
State-of-the art printers and scanners	23	82.1%	6	26.1%	2	10.5%
Business WhatsApp	15	53.6%	8	34.8%	8	42.1%
Hi-tech telephone	21	75.0%	6	26.1%	4	21.1%
Faster computers and tablets	20	71.4%	9	39.1%	2	10.5%
Digital filing	19	67.9%	8	34.8%	4	21.1%
Mobile applications	18	64.3%	8	34.8%	5	26.3%
Block chain technology	8	28.6%	12	52.2%	11	57.9%
Reliable internet	24	85.7%	7	30.4%		
Smart boards	17	60.7%	7	30.4%	7	36.8%
Software and web applications	23	82.1%	6	26.1%	2	10.5%
Automated equipment	18	64.3%	9	39.1%	4	21.1%
Voice over internet protocol (VOIP)	18	64.3%	8	34.8%	5	26.3%
Video conferencing applications	17	60.7%	5	21.7%	9	47.4%
Artificial intelligence (AI)	9	32.1%	11	47.8%	11	57.9%

Table 10.7: Future digital technologies needed (Employees)

Digital technologies	Frequency	Percentage
Faster internet connection	23	100%
Ultra-modern equipment (Upgrade current digital equipment/s)	16	69.6%
Artificial intelligence (AI)	11	47.8%
Internet of things (IoT)	12	52.2%
Robots	1	4.3%
Scanners	17	73.9%
Tracking systems	15	65.2%

Table 10.8: Future digital skills needed (Employees)

Digital skills	Frequency	Percentage
Ability to quickly learn new software (MS packages, accounting packages, designing packages, etc.)	15	65.2%
Computer literacy	15	65.2%
Machine learning	13	56.5%
Digital marketing	17	73.9%
Artificial intelligence (AI)	11	47.8%
Developing a website	11	47.8%
Ability to use and understand digital media	16	66.6%

Table 10.9: Resistance to digital technology (Managers)

Reasons for resistance	Frequency	Percentage
Fear of the unknown	4	80%
Lack of digital skills	4	80%
Scepticism (Doubt) of digital technologies	2	40%
Preference for traditional tools	2	40%
Fear of digital technology (Technophobia)	2	40%

Table 10.10: Means of digital transformation (HR Managers)

Actions undertaken	Frequency	Percentage
Skills empowerment	6	85.7%
Endorsement of digital practices	6	85.7%
Acquisition of modern technology	5	71.4%
No action is undertaken	1	14.3%

Table 10.11: Frequency of digital skills audit (HR Managers)

Do you conduct any digital skills audit?	Frequency	Percentage
No	2	40%
Yes	3	60%

Table 10.12: Frequency of skills audit across sector (HR Managers)

How often do you conduct a digital skills audit?	Frequency	Percentage
No information	2	40%
Monthly	1	20%
Twice a year	2	40%

10.4 Digital Skills Supply (Recruit and Retain)

Table 10.13: Perceived impact of digital skills on qualification (Employees)

Perceived impact of digital skills	N	Mean	SD
My knowledge of digital technologies boosts my confidence	24	4.25	0.847
The digital skills that I have acquired open doors to more job opportunities	24	4.46	0.721
The usage of digital technologies makes me more knowledgeable	24	4.54	0.658
With the usage of digital technology, I am now able to innovate at work	24	4.29	0.806
How much value does the knowledge of digital technology add to your qualification?	23	3.78	0.422

Table 10.14: Importance of digital technologies (Employees)

Importance of digital technologies	N	Mean	SD
How much value does the knowledge of digital technology add to your qualification?	23	3.78	0.422

Table 10.15: Recruiting staff (Managers and HR Managers)

Strategy	N	Percentage
Online advertising	8	66.7%
Classified advertisements	5	41.7%
Recruitment agencies	7	58.3%

Word-of-mouth	5	41.7%
Internal advertising	6	50.0%
Internships	6	50.0%
Outsourcing	4	33.3%
Headhunting (Pool of experts)	6	50.0%
Tech summits	1	8.3%

Table 10.16: Retaining digital staff (Managers and HR Managers)

Strategy	N	Percentage
Capacity building	3	25.0%
Creating a conducive environment	10	83.3%
Providing incentives	6	50.0%
Counteroffers	5	41.7%

Table 10.17: Impact of existing policy (Managers and HR Managers)

Impact of existing policy	N	Mean	SD
How does existing policy (either government or organisational) affect your ability to attract the best talent with the latest digital skills?	12	3.17	0.937

Table 10.18: Perceived challenges (HR Managers)

Perceived challenges	N	Percentage
Costly job portals	3	60%
Interference of trade unions	1	20%
Stringent regulations	0	0%
High competition in acquiring people with digital skills	4	80%

10.5 Digital Skills Development (Training)

Table 10.19: Digital skills acquisition (Employees)

Acquired through ...	N	Percentage
High school	17	70.8%
In-house training	8	33.3%
Peer-learning	11	45.8%
Self-taught	16	66.7%
Short courses	9	37.5%
Tertiary education	13	54.2%
Previous work experience	17	70.8%
External training/Workshops	10	41.7%
I have no digital skills	0	0.0%

Table 10.20: Support systems from the organisation (Employees, Managers and HR Managers)

Support systems	N	Mean	SD
Overall results	36	3.44	0.70
My organisation supports digital technology usage through accredited training (officially recognised or authorised)	36	4.03	1.00
Digital technology is promoted through in-house training in my organisation	36	3.89	1.09
My organisation does not have a support system to enhance digital skills	36	2.00	1.12
My organisation encourages self-development of staff when it comes to digital technology	36	3.72	1.19
Digital skills in my organisation are promoted through external training (training conducted outside the organisation)	36	3.17	1.28
My organisation encourages the staff to acquire digital skills through online training	36	3.83	1.13

10.6 Risks and Attitudes

Table 10.21: Risks of and attitudes towards digital skills usage (Employees, Managers and HR Managers)

Risks and attitudes	Number of respondents	Mean	SD
Risk 1	36	2.47	1.055
Risk 2	36	2.83	1.254
Risk 3	36	3.47	1.320
Risk 4	36	2.53	1.207
Risk 5	36	2.22	0.959
Risk 6	36	3.06	1.241
Att 1	36	1.69	1.142
Att 2	36	1.53	1.055
Att 3	36	1.44	0.809
Att 4	36	1.47	0.810
Att 5	36	1.86	1.046
Att 6	36	2.17	1.276

11. Financial and Insurance Activities

11.1 Understanding of Digital Technology

Table 11.1: Understanding of digital technology (Employees, Managers and HR managers)

Understanding	Poor	Average	Good	Excellent
Frequency	1	3	28	4
Percentage	2.8%	8.3%	77.8%	11.17%
Mean = 3.97; SD = 0.560				

11.2 Digital Skills Deployment (Usage)

Table 11.2: Digital technology activities (Employees, Managers and HR managers)

Activities	N	Mean	SD
Overall results	36	3.88	0.92
Accounting/Financial management	36	3.78	1.68
Making bookings (e.g. travel bookings, scheduling meetings, venue bookings, etc.)	36	3.81	1.45
Emailing	36	4.81	0.58
Making audio or video calls	36	3.86	1.48

Marketing	36	3.39	1.59
Printing and scanning/Googling	36	4.61	0.90
Designing	36	2.81	1.91
Monitoring (e.g. employees, production, security, etc.)	36	4.03	1.52
Research and development/Information processing	36	4.17	1.48
Training	36	3.86	1.51
Filing	36	3.61	1.50

Table 11.3: Benefits of using digital technology in the workplace (Employees, Managers and HR managers)

Benefits	N	Mean	SD
Ability to manage and monitor my team, activities, projects, etc. whilst not being physically present	36	8.50	2.13
Improved communication tools	36	8.78	1.46
Ability to enhance the capacity to perform my job	36	8.75	1.36
Ability to do different tasks at once (Multi-tasking)	36	8.53	1.96
Limited usage of paper (Paperless processes)	36	8.81	1.74
Less time needed to perform my duties (Time-efficiency)	36	8.44	1.95
Reduced workload	36	8.17	2.16

Table 11.4: Challenges of using digital technology in the workplace (Employees, Managers and HR managers)

Challenges	N	Mean	SD
Digital technology involves higher costs	36	6.81	2.39
Instability of digital systems (systems going down, load shedding, etc.)	36	6.75	2.75
Lack of human interactions	36	6.97	2.89
Threat of possible retrenchment	36	7.89	2.68
Adjusting to and learning new digital technology	36	7.03	2.43
Lack of required digital skills	36	6.61	2.76
Digital fraud and scamming	36	7.83	2.68

Table 11.5: Digital champions in the organisation (Employees, Managers and HR managers)

Digital champions	Frequency	Percentage
Management (CEOs, Directors, Managers, Supervisors, etc.)	33	91.7%
IT Department	26	72.2%
Communication Department/Marketing Department	26	72.2%

Project coordinators	17	47.2%
External stakeholders	18	50.0%
Fellow colleagues	22	61.1%
No one	3	8.3%

11.3 Digital Skills Demand (Needs)

Table 11.6: Digital technologies used and needed (Employees, Managers)

Technologies	Used		Needed		N/A	
	f	%	f	%	f	%
State-of-the art printers and scanners	28	93.3%	1	5.0%	1	4.2%
Business WhatsApp	18	60.0%	5	25.0%	7	29.2%
Hi-tech telephone	28	93.3%	1	5.0%	1	4.2%
Faster computers and tablets	26	86.7%	3	15.0%	1	4.2%
Digital filing	19	63.3%	9	45.0%	2	8.3%
Mobile applications	22	73.3%	3	15.0%	5	20.8%
Block chain technology	11	36.7%	5	25.0%	14	58.3%
Reliable internet	27	90.0%	2	10.0%	1	4.2%
Smart boards	15	50.0%	9	45.0%	6	25.0%
Software and web applications	27	90.0%			3	12.5%
Automated equipment	17	56.7%	8	40.0%	5	20.8%
Voice over internet protocol (VOIP)	16	53.3%	4	20.0%	10	41.7%
Video conferencing applications	15	50.0%	9	45.0%	6	25.0%
Artificial intelligence (AI)	6	20.0%	8	40.0%	16	66.7%

Table 11.7: Future digital technologies needed (Employees)

Digital technologies	Frequency	Percentage
Faster internet connection	20	83.3%
Ultra-modern equipment (Upgrade current digital equipment/s)	15	62.5%
Artificial intelligence (AI)	11	45.8%
Internet of things (IoT)	6	25.0%
Robots	3	12.5%
Scanners	11	45.8%
Tracking systems	14	58.3%

Table 11.8: Future digital skills needed (Employees)

Digital skills	Frequency	Percentage
Ability to quickly learn new software (MS packages,	16	64%

accounting packages, designing packages, etc.)		
Computer literacy	19	76%
Machine learning	16	64%
Digital marketing	13	52%
Artificial intelligence (AI)	13	52%
Developing a website	12	48%
Ability to use and understand digital media	18	72%

Table 11.9: Resistance to digital technology (Managers)

Reasons for resistance	Frequency	Percentage
Fear of the unknown	3	60%
Lack of digital skills	3	60%
Scepticism (Doubt) of digital technologies	2	20%
Preference for traditional tools	3	60%
Fear of digital technology (Technophobia)	3	60%

Table 11.10: Means of digital transformation (HR Managers)

Actions undertaken	Frequency	Percentage
Skills empowerment	5	100%
Endorsement of digital practices	5	100%
Acquisition of modern technology	4	80%

Table 11.11: Frequency of digital skills audit (HR Managers)

Do you conduct any digital skills audit?	Frequency	Percentage
No	2	33.3%
Yes	4	66.7%

Table 11.12: Frequency of skills audit across sector (HR Managers)

How often do you conduct a digital skills audit?	Frequency	Percentage
No information	2	40%
Monthly	1	20%
Twice a year	2	40%

11.4 Digital Skills Supply (Recruit and Retain)

Table 11.13: Perceived impact of digital skills on qualification (Employees)

Perceived impact of digital skills	N	Mean	SD
My knowledge of digital technologies boosts my confidence	25	4.48	0.770
The digital skills that I have acquired open doors to more job opportunities	25	4.60	0.645
The usage of digital technologies makes me more knowledgeable	25	4.56	0.583
With the usage of digital technology. I am now able to innovate at work	25	4.64	0.569
How much value does the knowledge of digital technology add to your qualification?	25	3.60	0.577

Table 11.14: Importance of digital technologies (Employees)

Importance of digital technologies	N	Mean	SD
How much value does the knowledge of digital technology add to your qualification?	25	3.60	0.577

Table 11.15: Recruiting staff (Managers and HR Managers)

Strategy	N	Percentage
Online advertising	11	100%
Classified advertisements	3	27.3%
Recruitment agencies	7	63.6%
Word-of-mouth	5	45.5%
Internal advertising	8	72.7%
Internships	8	72.7%
Outsourcing	4	36.4%
Headhunting (Pool of experts)	9	81.8%
Tech summits	2	18.2%

Table 11.16: Retaining digital staff (Managers and HR Managers)

Strategy	N	Percentage
Capacity building	8	80%
Creating a conducive environment	10	100%
Providing incentives	9	90%
Counteroffers	5	50%

Table 11.17: Impact of existing policy (Managers and HR Managers)

Impact of existing policy	N	Mean	SD
How does the existing policy either governmental or organisational policy affect the ability to attract the best talent with the latest digital skills?	11	2.45	1.036

Table 11.18: Perceived challenges (HR Managers)

Perceived challenges	N	Percentage
Costly job portals	4	66.7%
Interference of trade unions	2	33.3%
Stringent regulations	3	50.0%
High competition in acquiring people with digital skills	6	100%

11.5 Digital Skills Development (Training)

Table 11.19: Digital skills acquisition (Employees)

Acquired through ...	N	Percentage
High school	8	32%
In-house training	8	32%
Peer-learning	16	64%
Self-taught	14	56%
Short courses	8	32%
Tertiary education	13	52%
Previous work experience	16	64%
External training/Workshops	8	32%
I have no digital skills	0	0%

Table 11.20: Support systems from the organisation (Employees, Managers and HR Managers)

Support systems	N	Mean	SD
Overall results	36	3.56	0.56
My organisation supports digital technology usage through accredited training (officially recognised or authorised)	36	4.19	0.98
Digital technology is promoted through in-house training in my organisation	36	3.86	1.02
My organisation does not have a support system to enhance digital skills	36	2.19	1.33
My organisation encourages self-development of staff when it	36	3.81	1.19

comes to digital technology			
Digital skills in my organisation are promoted through external training (training conducted outside the organisation)	36	3.42	1.23
My organisation encourages the staff to acquire digital skills through online training	36	3.92	1.13

11.6 Risks and Attitudes

Table 11.21: Risks of and attitudes towards digital skills usage (Employees, Managers and HR Managers)

Risks and attitudes	Number of respondents	Mean	SD
Risk 1	36	2.89	1.237
Risk 2	36	2.92	1.381
Risk 3	36	3.17	1.384
Risk 4	36	2.25	1.025
Risk 5	36	2.03	0.774
Risk 6	36	2.47	1.055
Att 1	36	1.39	0.599
Att 2	36	1.33	0.535
Att 3	36	1.31	0.577
Att 4	36	1.42	0.649
Att 5	36	1.64	0.833
Att 6	36	2.17	1.159

12. Real Estate Activities

12.1 Understanding of Digital Technology

Table 12.1: Understanding of digital technology (Employees, Managers and HR Managers)

Understanding	Poor	Average	Good	Excellent
Frequency	0	1	32	5
Percentage	0%	2.6%	84.2%	13.2%
Mean = 4.11; SD = 0.388				

12.2 Digital Skills Deployment (Usage)

Table 12.2: Digital technology activities (Employees, Managers and HR Managers)

Activities	N	Mean	SD
Overall results	39	3.89	0.75
Accounting/Financial management	39	3.33	1.80
Making bookings (e.g. travel bookings, scheduling meetings, venue bookings, etc.)	39	3.59	1.63
Emailing	39	4.77	0.63
Making audio or video calls	38	3.76	1.38
Marketing	39	3.82	1.55
Printing and scanning/Googling	39	4.62	0.75
Designing	39	3.23	1.60
Monitoring (e.g. employees, production, security, etc.)	39	3.49	1.68
Research and development/Information processing	39	4.31	1.06
Training	39	3.64	1.56
Filing	38	3.92	1.32

Table 12.3: Benefits of using digital technology in the workplace (Employees, Managers and HR Managers)

Benefits	N	Mean	SD
Ability to manage and monitor my team, activities, projects, etc. whilst not being physically present	39	7.33	2.63
Improved communication tools	39	8.56	1.47
Ability to enhance the capacity to perform my job	39	9.18	1.07
Ability to do different tasks at once (Multi-tasking)	39	8.64	1.83
Limited usage of paper (Paperless processes)	39	8.31	2.00
Less time needed to perform my duties (Time-efficiency)	39	8.69	1.58
Reduced workload	39	8.33	2.04

Table 12.4: Challenges of using digital technology in the workplace (Employees, Managers and HR Managers)

Challenges	N	Mean	SD
Digital technology involves higher costs	39	6.21	2.13
Instability of digital systems (systems going down, load shedding, etc.)	39	7.10	1.97
Lack of human interactions	39	6.36	2.68
Threat of possible retrenchment	39	5.18	3.19
Adjusting to and learning new digital technology	39	6.59	2.90
Lack of required digital skills	39	4.95	2.87

Digital fraud and scamming	39	6.69	3.09
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Table 12.5: Digital champions in the organisation (Employees, Managers and HR Managers)

Digital champions	Frequency	Percentage
Management (CEOs, Directors, Managers, Supervisors, etc.)	34	87.2%
IT Department	18	46.2%
Communication Department/Marketing Department	17	43.6%
Project coordinators	14	35.9%
External stakeholders	6	15.4%
Fellow colleagues	18	46.2%
No one	1	2.6%

12.3 Digital Skills Demand (Needs)

Table 12.6: Digital technologies used and needed (Employees and Managers)

Technologies	Used		Needed		N/A	
	f	%	f	%	f	%
State-of-the art printers and scanners	29	87.9%	1	4.0%	4	13.3%
Business WhatsApp	24	72.7%	5	20.0%	5	16.7%
Hi-tech telephone	21	63.6%	7	28.0%	6	20.0%
Faster computers and tablets	21	63.6%	11	44.0%	2	6.7%
Digital filing	20	60.6%	6	24.0%	8	26.7%
Mobile applications	25	75.8%	4	16.0%	5	16.7%
Block chain technology	3	9.1%	5	20.0%	26	86.7%
Reliable internet	28	84.8%	5	20.0%	1	3.3%
Smart boards	6	18.2%	8	32.0%	20	66.7%
Software and web applications	27	81.8%	3	12.0%	4	13.3%
Automated equipment	10	30.3%	10	40.0%	14	46.7%
Voice over internet protocol (VOIP)	14	42.4%	8	32.0%	12	40.0%
Video conferencing applications	14	42.4%	7	28.0%	13	43.3%
Artificial intelligence (AI)	5	15.2%	6	24.0%	23	76.7%

Table 12.7: Future digital technologies needed (Employees)

Digital technologies	Frequency	Percentage
Faster internet connection	23	88.5%
Ultra-modern equipment (Upgrade current digital equipment/s)	19	73.1%
Artificial intelligence (AI)	6	23.1%
Internet of things (IoT)	9	34.6%
Scanners	12	46.2%
Tracking systems	11	42.3%

Table 12.8: Future digital skills needed (Employees)

Digital skills	Frequency	Percentage
Ability to quickly learn new software (MS packages, accounting packages, designing packages, etc.)	16	64.0%
Computer literacy	14	53.8%
Machine learning	8	30.8%
Digital marketing	19	73.1%
Artificial intelligence (AI)	10	38.5%
Developing a website	14	53.8%
Ability to use and understand digital media	13	50.0%

Table 12.9: Resistance to digital technology (Managers)

Reasons for resistance	Frequency	Percentage
Fear of the unknown	4	50%
Lack of digital skills	4	50%
Scepticism (Doubt) of digital technologies	6	75%
Preference for traditional tools	5	62%
Fear of digital technology (Technophobia)	4	50%

Table 12.10: Means of digital transformation (HR Managers)

Actions undertaken	Frequency	Percentage
Skills empowerment	7	87.5%
Endorsement of digital practices	6	75.0%
Acquisition of modern technology	5	62.5%

Table 12.11: Frequency of digital skills audit (HR Managers)

Do you conduct any digital skills audit?	Frequency	Percentage
No	3	60%
Yes	2	40%

Table 12.12: Frequency of skills audit across sector (HR Managers)

How often do you conduct a digital skills audit?	Frequency	Percentage
No information	4	80%
Twice a year	1	20%

12.4 Digital Skills Supply (Recruit and Retain)

Table 12.13: Perceived impact of digital skills on qualification (Employees)

Perceived impact of digital skills	N	Mean	SD
My knowledge of digital technologies boosts my confidence	26	4.04	0.999
The digital skills that I have acquired open doors to more job opportunities	26	3.96	0.999
The usage of digital technologies makes me more knowledgeable	26	4.27	0.604
With the usage of digital technology, I am now able to innovate at work	26	4.08	0.891
How much value does the knowledge of digital technology add to your qualification?	26	3.31	1.087

Table 12.14: Importance of digital technologies (Employees)

Importance of digital technologies	N	Mean	SD
How much value does the knowledge of digital technology add to your qualification?	26	3.31	1.087

Table 12.15: Recruiting staff (Managers and HR Managers)

Strategy	N	Percentage
Online advertising	10	76.9%
Classified advertisements	6	46.2%
Recruitment agencies	4	30.8%
Word-of-mouth	7	53.8%
Internal advertising	8	61.5%

Internships	6	46.2%
Outsourcing	2	15.4%
Headhunting (Pool of experts)	4	30.8%
Tech summits	0	0.0%

Table 12.16: Retaining digital staff (Managers and HR Managers)

Strategy	N	Percentage
Capacity building	6	46.2%
Creating a conducive environment	10	76.9%
Providing incentives	11	84.6%
Counteroffers	1	7.7%

Table 12.17: Impact of existing policy (Managers and HR Managers)

Impact of existing policy	N	Mean	SD
How does existing policy (either government or organisational) affect your ability to attract the best talent with the latest digital skills?	13	3.08	0.954

Table 12.18: Perceived challenges (HR Managers)

Perceived challenges	N	Percentage
Costly job portals	2	40%
Interference of trade unions	1	20%
Stringent regulations	0	0%
High competition in acquiring people with digital skills	5	100%

12.5 Digital Skills Development (Training)

Table 12.19: Digital skills acquisition (Employees)

Acquired through ...	N	Percentage
High school	15	57.7%
In-house training	10	38.5%
Peer-learning	10	38.5%
Self-taught	18	69.2%
Short courses	11	42.3%
Tertiary education	10	38.5%
Previous work experience	11	42.3%
External training/Workshops	4	15.4%

I have no digital skills	2	3.8%
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Table 12.20: Support systems from the organisation (Employees, Managers and HR Managers)

Support systems	N	Mean	SD
Overall results	39	3.31	0.63
Digital technology is promoted through in-house training in my organisation	39	3.36	1.06
My organisation does not have a support system to enhance digital skills	39	2.62	1.11
My organisation encourages self-development of staff when it comes to digital technology	39	3.44	1.07
Digital skills in my organisation are promoted through external training (training conducted outside the organisation)	39	3.26	1.07
My organisation encourages the staff to acquire digital skills through online training	39	3.54	1.02

12.6 Risks and Attitudes

Table 12.21: Risks of and attitudes towards digital skills usage (Employees, Managers and HR Managers)

Risks and attitudes	Number of respondents	Mean	SD
Risk 1	39	2.92	1.010
Risk 2	39	3.21	1.105
Risk 3	39	3.38	0.990
Risk 4	39	2.69	0.950
Risk 5	39	2.44	0.995
Risk 6	39	2.85	1.040
Att 1	39	1.95	1.356
Att 2	39	1.79	1.031
Att 3	39	1.85	1.247
Att 4	39	1.87	0.864
Att 5	39	2.15	1.226
Att 6	39	2.15	1.065

13. Professional, Scientific and Technical Activities

13.1 Understanding of Digital Technology

Table 13.1: Understanding of digital technology (Employees, Managers and HR Managers)

Understanding	Poor	Average	Good	Excellent
Frequency	2	1	17	3
Percentage	8.7	4.3	73.9	13
Mean = 3.91; SD = 0.733				

13.2 Digital Skills Deployment (Usage)

Table 13.2: Digital technology activities (Employees, Managers and HR Managers)

Activities	N	Mean	SD
Overall results	23	3.51	0.97
Accounting/Financial management	23	3.26	1.74
Making bookings (e.g. travel bookings, scheduling meetings, venue bookings, etc.)	23	3.52	1.83
Emailing	23	4.22	1.38
Making audio or video calls	23	3.74	1.32
Marketing	23	3.00	1.71
Printing and scanning/Googling	23	3.87	1.49
Designing	23	2.91	1.70
Monitoring (e.g. employees, production, security, etc.)	23	3.65	1.67
Research and development/Information processing	23	3.87	1.55
Training	23	3.09	1.81
Filing	23	3.48	1.53

Table 13.3: Benefits of using digital technology in the workplace (Employees, Managers and HR managers)

Benefits	N	Mean	SD
Ability to manage and monitor my team, activities, projects, etc. whilst not being physically present	23	8.91	1.68
Improved communication tools	23	8.30	2.93
Ability to enhance the capacity to perform my job	23	9.26	1.36
Ability to do different tasks at once (Multi-tasking)	23	8.61	1.70
Limited usage of paper (Paperless processes)	23	8.48	1.88
Less time needed to perform my duties (Time-efficiency)	23	8.17	2.04
Reduced workload	23	7.65	2.37

Table 13.4: Challenges of using digital technology in the workplace (Employees, Managers and HR Managers)

Challenges	N	Mean	SD
Digital technology involves higher costs	23	6.13	2.40
Instability of digital systems (systems going down, load shedding, etc.)	23	6.35	2.71
Lack of human interactions	23	5.91	2.43
Threat of possible retrenchment	23	5.91	2.97
Adjusting to and learning new digital technology	23	6.48	2.69
Lack of required digital skills	23	5.96	2.75
Digital fraud and scamming	23	5.22	3.44

Table 13.5: Digital champions in the organisation (Employees, Managers and HR Managers)

Digital champions	Frequency	Percentage
Management (CEOs, Directors, Managers, Supervisors, etc.)	20	87.0%
IT Department	21	91.3%
Communication Department/Marketing Department	8	34.8%
Project coordinators	5	21.7%
External stakeholders	6	26.1%
Fellow colleagues	6	26.1%

13.3 Digital Skills Demand (Needs)

Table 13.6: Digital technologies used and needed (Employees and Managers)

Technologies	Used		Needed		N/A	
	f	%	f	%	f	%
State-of-the art printers and scanners	16	88.9%	2	15.4%		
Business WhatsApp	5	27.8%	6	46.2%	7	63.6%
Hi-tech telephone	16	88.9%	2	15.4%		
Faster computers and tablets	15	83.3%	3	23.1%		
Digital filing	16	88.9%	2	15.4%		
Mobile applications	11	61.1%	5	38.5%	2	18.2%
Block chain technology	8	44.4%	6	46.2%	4	36.4%
Reliable internet	17	94.4%	1	7.7%		
Smart boards	13	72.2%	1	7.7%	4	36.4%
Software and web applications	16	88.9%	2	15.4%		
Automated equipment	14	77.8%	2	15.4%	2	18.2%

Voice over internet protocol (VOIP)	14	77.8%	1	7.7%	3	27.3%
Video conferencing applications	15	83.3%	1	7.7%	2	18.2%
Artificial intelligence (AI)	9	50.0%	6	46.2%	3	27.3%

Table 13.7: Future digital technologies needed (Employees)

Digital technologies	Frequency	Percentage
Faster internet connection	8	66.7%
Ultra-modern equipment (Upgrade current digital equipment/s)	9	75%
Artificial intelligence (AI)	7	58.3%
Internet of things (IoT)	8	66.7%
Robots	3	25%
Scanners	4	33.3%
Tracking systems	2	16.7%

Table 13.8: Future digital skills needed (Employees)

Digital skills	Frequency	Percentage
Ability to quickly learn new software (MS packages, accounting packages, designing packages, etc.)	9	69.2%
Computer literacy	9	69.2%
Machine learning	6	46.2%
Digital marketing	5	38.5%
Artificial intelligence (AI)	6	46.2%
Developing a website	5	38.5%
Ability to use and understand digital media	6	46.2%

Table 13.9: Resistance to digital technology (Managers)

Reasons for resistance	Frequency	Percentage
Fear of the unknown	2	40%
Lack of digital skills	3	60%
Scepticism (Doubt) of digital technologies	1	20%
Preference for traditional tools	3	60%
Fear of digital technology (Technophobia)	1	20%

Table 13.10: Means of digital transformation (HR Managers)

Actions undertaken	Frequency	Percentage
Skills empowerment	5	100%

Endorsement of digital practices	5	100%
Acquisition of modern technology	2	40%

Table 13.11: Frequency of digital skills audit (HR Managers)

Do you conduct any digital skills audit?	Frequency	Percentage
No	2	40%
Yes	3	60%

Table 13.12: Frequency of skills audit across sector (HR Managers)

How often do you conduct a digital skills audit?	Frequency	Percentage
No information	2	40%
Annually	2	40%
Twice a year	1	20%

13.4 Digital Skills Supply (Recruit and Retain)

Table 13.13: Perceived impact of digital skills on qualification (Employees)

Perceived impact of digital skills	N	Mean	SD
My knowledge of digital technologies boosts my confidence	13	4.31	1.182
The digital skills that I have acquired open doors to more job opportunities	13	4.46	1.127
The usage of digital technologies makes me more knowledgeable	13	4.31	1.182
With the usage of digital technology. I am now able to innovate at work	13	4.23	1.166
How much value does the knowledge of digital technology add to your qualification?	13	3.54	0.877

Table 13.14: Importance of digital technologies (Employees)

Importance of digital technologies	N	Mean	SD
How much value does the knowledge of digital technology add to your qualification?	14	2.93	1.141

Table 13.15: Recruiting staff (Managers and HR Managers)

Strategy	N	Percentage
Online advertising	6	60%
Classified advertisements	3	30%
Recruitment agencies	6	60%
Word-of-mouth	4	40%
Internal advertising	6	60%
Internships	8	80%
Outsourcing	3	30%
Headhunting (Pool of experts)	1	10%
Tech summits	0	0%

Table 13.16: Retaining digital staff (Managers and HR Managers)

Strategy	N	Percentage
Capacity building	6	60%
Creating a conducive environment	8	80%
Providing incentives	7	70%
Counteroffers	2	20%

Table 13.17: Impact of existing policy (Managers and HR Managers)

Impact of existing policy	N	Mean	SD
How does existing policy (either government or organisational) affect your ability to attract the best talent with the latest digital skills?	10	1.70	0.949

Table 13.18: Perceived challenges (HR Managers)

Perceived challenges	N	Percentage
Costly job portals	2	40%
Interference of trade unions	1	20%
Stringent regulations	3	60%
High competition in acquiring people with digital skills	4	80%

13.5 Digital Skills Development (Training)

Table 13.19: Digital skills acquisition (Employees)

Acquired through ...	N	Percentage
High school	4	8%
In-house training	9	18%
Peer-learning	4	8%
Self-taught	10	20%
Short courses	5	10%
Tertiary education	6	12%
Previous work experience	7	14%
External training/Workshops	4	8%
I have no digital skills	1	2%

Table 13.20: Support systems from the organisation (Employees Managers and HR Managers)

Support systems	N	Mean	SD
Overall results	23	3.75	0.49
My organisation supports digital technology usage through accredited training (officially recognised or authorised)	23	4.09	0.90
Digital technology is promoted through in-house training in my organisation	23	4.17	0.58
My organisation does not have a support system to enhance digital skills	23	2.00	1.24
My organisation encourages self-development of staff when it comes to digital technology	23	4.30	0.63
Digital skills in my organisation are promoted through external training (training conducted outside the organisation)	23	3.83	0.78
My organisation encourages the staff to acquire digital skills through online training	23	4.13	0.76

13.6 Risks and Attitudes

Table 13.21: Risks of and attitudes towards digital skills usage (Employees, Managers and HR Managers)

Risks and attitudes	Number of respondents	Mean	SD
Risk 1	23	2.70	1.146
Risk 2	23	2.70	1.222
Risk 3	23	2.91	1.164

Risk 4	23	2.43	1.472
Risk 5	23	2.04	1.107
Risk 6	23	2.17	1.302
Att 1	23	1.57	1.161
Att 2	23	1.61	1.076
Att 3	23	1.61	0.988
Att 4	23	1.74	1.096
Att 5	23	1.91	1.125
Att 6	23	1.83	1.230

14. Administrative and Support Service Activities

14.1 Understanding of Digital Technology

Table 14.1: Understanding of digital technology (Employees, Managers and HR Managers)

Understanding	Poor	Average	Good	Excellent
Frequency	0	0	20	4
Percentage	0	0	83.3	16.7
Mean = 4.17; SD = 0.38				

14.2 Digital Skills Deployment (Usage)

Table 14.2: Digital technology activities (Employees, Managers and HR Managers)

Activities	N	Mean	SD
Overall results	24	3.27	0.94
Accounting/Financial management	24	2.25	2.01
Making bookings (travel bookings, scheduling meetings, venue bookings, etc.)	24	3.00	1.67
Emailing	24	3.88	1.30
Making audio or video calls	24	3.79	1.25
Marketing	24	2.42	1.61
Printing and scanning/Googling	24	4.08	1.35
Designing	24	2.79	1.69
Monitoring (e.g. employees, production, security, etc.)	24	3.75	1.51
Research and development/Information processing	24	3.92	1.41
Training	24	2.71	1.71
Filing	24	3.33	1.49

Table 14.3: Benefits of using digital technology in the workplace (Employees, Managers and HR Managers)

Benefits	N	Mean	SD
Ability to manage and monitor my team, activities, projects, etc. whilst not being physically present	24	9.17	1.34
Improved communication tools	24	8.63	2.32
Ability to enhance the capacity to perform my job	24	9.25	1.11
Ability to do different tasks at once (Multi-tasking)	24	8.50	1.18
Limited usage of paper (Paperless processes)	24	8.54	1.28
Less time needed to perform my duties (Time-efficiency)	24	8.54	1.50
Reduced workload	24	8.13	1.57

Table 14.4: Challenges of using digital technology in the workplace (Employees, Managers and HR Managers)

Challenges	N	Mean	SD
Digital technology involves higher costs	24	6.25	1.94
Instability of digital systems (systems going down, load shedding, etc.)	24	5.13	2.33
Lack of human interactions	24	4.58	2.15
Threat of possible retrenchment	24	5.75	2.80
Adjusting to and learning new digital technology	24	6.50	1.89
Lack of required digital skills	24	5.75	2.07
Digital fraud and scamming	24	4.21	2.86

Table 14.5: Digital champions in the organisation (Employees, Managers and HR Managers)

Digital champions	Frequency	Percentage
Management (CEOs, Directors, Managers, Supervisors, etc.)	19	79.2%
IT Department	18	75.0%
Communication Department/Marketing Department	5	20.8%
Project coordinators	6	25.0%
Fellow colleagues	5	20.8%

14.3 Digital Skills Demand (Needs)

Table 14.6: Digital technologies used and needed

Technologies	Used		Needed		N/A	
	f	%	f	%	f	%
State-of-the art printers and	18	94.7%	1	5.9%		

scanners						
Business WhatsApp	6	31.6%	9	52.9%	4	36.4%
Hi-tech telephone	17	89.5%			2	18.2%
Faster computers and tablets	18	94.7%	1	5.9%		
Digital filing	18	94.7%	1	5.9%		
Mobile applications	14	73.7%	2	11.8%	3	27.3%
Block chain technology	9	47.4%	3	17.6%	7	63.6%
Reliable internet	19	100%	1	5.9%		
Smart boards	12	63.2%	2	11.8%	6	54.5%
Software and web applications	16	84.2%			1	9.1%
Automated equipment	13	68.4%	6	35.3%		
Voice over internet protocol (VOIP)	13	68.4%	3	17.6%	3	27.3%
Video conferencing applications	16	84.2%	1	5.9%	2	18.2%
Artificial intelligence (AI)	4	21.1%	10	58.8%	5	45.5%

Table 14.7: Future digital technologies needed (Employees)

Digital technologies	Frequency	Percentage
Faster internet connection	5	35.7%
Ultra-modern equipment (Upgrade current digital equipment/s)	11	78.6%
Artificial intelligence (AI)	10	71.4%
Internet of things (IoT)	6	42.9%
Robots	3	21.4%
Scanners	1	7.1%
Tracking systems	3	21.4%

Table 14.8: Future digital skills needed (Employees)

Digital skills	Frequency	Percentage
Ability to quickly learn new software (MS packages, accounting packages, designing packages, etc.)	9	64.3%
Computer literacy	3	21.4%
Machine learning	7	50%
Digital marketing	2	14.3%
Artificial intelligence (AI)	10	71.4%
Developing a website	2	14.3%
Ability to use and understand digital media	4	28.6%

Table 14.9: Resistance to digital technology in the workplace (Managers)

Reasons for resistance	Frequency	Percentage
Fear of the unknown	2	40%
Lack of digital skills	3	60%
Scepticism (Doubt) of digital technologies	2	40%
Preference for traditional tools	1	20%
Fear of digital technology (Technophobia)	2	40%

Table 14.10: Means of digital transformation (HR Managers)

Actions undertaken	Frequency	Percentage
Skills empowerment	5	100%
Endorsement of digital practices	2	40%
Acquisition of modern technology	5	100%

Table 14.11: Frequency of digital skills audit (HR Managers)

Do you conduct any digital skills audit?	Frequency	Percentage
No	3	60%
Yes	2	40%

Table 14.12: Frequency of skills audit (HR Managers)

How often do you conduct a digital skills audit?	Frequency	Percentage
No information	3	60%
Monthly	1	20%
With new equipment	1	20%

14.4 Digital Skills Supply (Recruit and Retain)

Table 14.13: Perceived impact of digital skills on qualification (Employees)

Perceived impact of digital skills	N	Mean	SD
My knowledge of digital technologies boosts my confidence	14	4.36	0.929
The digital skills that I have acquired open doors to more job opportunities	14	4.36	0.929
The usage of digital technologies makes me more knowledgeable	14	4.36	1.082
With the usage of digital technology. I am now able to	14	4.36	0.842

innovate at work			
How much value does the knowledge of digital technology add to your qualification?	14	3.21	0.802

Table 14.14: Importance of digital technologies (Employees)

Importance of digital technologies	N	Mean	SD
How much value does the knowledge of digital technology add to your qualification?	14	3.21	0.802

Table 14.15: Recruiting staff (Managers and HR Managers)

Strategy	N	Percentage
Online advertising	9	90%
Classified advertisements	3	30%
Recruitment agencies	6	60%
Word-of-mouth	5	50%
Internal advertising	6	60%
Internships	3	30%
Outsourcing	1	10%
Headhunting (Pool of experts)	0	10%
Tech summits	0	0%

Table 14.16: Retaining digital staff (Managers and HR Managers)

Strategy	N	Percentage
Capacity building	3	33.3%
Creating a conducive environment	5	55.6%
Providing incentives	8	88.9%
Counteroffers	1	11.1%

Table 14.17: Impact of existing policy (Managers and HR Managers)

Impact of existing policy	N	Mean	SD
How does existing policy (either government or organisational) affect your ability to attract the best talent with the latest digital skills?	10	2.80	1.033

Table 14.18: Perceived challenges (Managers and HR Managers)

Perceived challenges	N	Percentage
Costly job portals	2	66.7%
Interference of trade unions	1	33.3%
Stringent regulations	3	100%
High competition in acquiring people with digital skills	2	66.7%

14.5 Digital Skills Development (Training)

Table 14.19: Digital skills acquisition

Acquired through ...	N	Percentage
High school	2	14.3%
In-house training	7	50.0%
Peer-learning	4	28.6%
Self-taught	8	57.1%
Short courses	4	28.6%
Tertiary education	6	42.9%
Previous work experience	7	50.0%
External training/Workshops	2	14.3%

Table 14.20: Support systems from the organisation (Employees, Managers and HR Managers)

Support systems	N	Mean	SD
Overall results	24	3.41	0.47
My organisation supports digital technology usage through accredited training (officially recognised or authorised)	24	3.92	0.93
Digital technology is promoted through in-house training in my organisation	24	4.00	0.59
My organisation does not have a support system to enhance digital skills	24	2.25	1.07
My organisation encourages self-development of staff when it comes to digital technology	24	3.71	1.04
Digital skills in my organisation are promoted through external training (training conducted outside the organisation)	24	2.92	1.10
My organisation encourages the staff to acquire digital skills through online training	24	3.67	0.70

14.6 Risks and Attitudes

Table 14.21: Risks of and attitudes towards digital technology usage (Employees, Managers and HR Managers)

Risks and attitudes	Number of respondents	Mean	SD
Risk 1	24	2.21	0.833
Risk 2	24	2.29	0.955
Risk 3	24	2.46	1.141
Risk 4	24	2.21	0.884
Risk 5	24	1.83	0.816
Risk 6	24	1.96	0.859
Att 1	24	1.25	0.442
Att 2	24	1.21	0.415
Att 3	24	1.29	0.464
Att 4	24	1.46	0.658
Att 5	24	1.54	0.779
Att 6	24	1.58	0.830

15. Public Administration and Defence; Compulsory Social Security

15.1 Understanding of Digital Technology

Table 15.1: Understanding of digital technology (Employees, Managers and HR Managers)

Understanding	Poor	Average	Good	Excellent
Frequency	1	1	21	1
Percentage	4.2	4.2	87.5	4.2
Mean = 3.92; SD = 0.504				

15.2 Digital Skills Deployment (Usage)

Table 15.2: Digital technology activities (Employees, Managers and HR Managers)

Activities	N	Mean	SD
Overall results	24	3.21	1.02
Accounting/Financial management	24	3.21	1.69
Making bookings (travel bookings, scheduling meetings, venue bookings, etc.)	24	3.29	1.60
Emailing	24	4.29	1.00
Making audio or video calls	24	2.75	1.45
Marketing	24	2.58	1.50
Printing and scanning/Googling	24	4.13	1.30
Designing	24	2.50	1.44
Monitoring (e.g. employees, production, security, etc.)	24	3.25	1.45
Research and development/Information processing	24	3.25	1.48
Training	24	2.75	1.54
Filing	24	3.33	1.79

Table 15.3: Benefits of using digital technology in the workplace (Employees, Managers and HR Managers)

Benefits	N	Mean	SD
Ability to manage and monitor my team, activities, projects, etc. whilst not being physically present	24	7.54	2.65
Improved communication tools	24	8.08	2.24
Ability to enhance the capacity to perform my job	24	7.79	1.64
Ability to do different tasks at once (Multi-tasking)	24	7.54	2.08
Limited usage of paper (Paperless processes)	24	7.21	2.87
Less time needed to perform my duties (Time-efficiency)	24	6.75	2.45
Reduced workload	24	6.38	2.73

Table 15.4: Challenges of using digital technology in the workplace (Employees, Managers and HR Managers)

Challenges	N	Mean	SD
Digital technology involves higher costs	24	5.75	2.33
Instability of digital systems (systems going down, load shedding, etc.)	24	5.92	2.70
Lack of human interactions	24	6.21	2.77
Threat of possible retrenchment	24	5.92	3.12
Adjusting to and learning new digital technology	24	6.50	2.54
Lack of required digital skills	24	5.96	2.37
Digital fraud and scamming	24	6.63	2.62

Table 15.5: Digital champions in the organisation (Employees, Managers and HR Managers)

Digital champions	Frequency	Percentage
Management (CEOs, Directors, Managers, Supervisors, etc.)	17	70.8%
IT Department	18	75.0%
Communication Department/Marketing Department	10	41.7%
Project coordinators	6	25.0%
External stakeholders	11	45.8%
Fellow colleagues	8	33.3%
No one	1	4.2%

15.3 Digital Skills Demand (Needs)

Table 15.6: Digital technologies used and needed

Technologies	Used		Needed		N/A	
	f	%	f	%	f	%
State-of-the art printers and scanners	11	64.7%	5	33.3%	3	17.6%
Business WhatsApp	6	35.3%	6	40.0%	7	41.2%
Hi-tech telephone	14	82.4%	4	26.7%	1	5.9%
Faster computers and tablets	10	58.8%	7	46.7%	2	11.8%
Digital filing	10	58.8%	7	46.7%	2	11.8%
Mobile applications	10	58.8%	7	46.7%	2	11.8%
Block chain technology	3	17.6%	6	40.0%	10	58.8%
Reliable internet	15	88.2%	4	26.7%		
Smart boards	4	23.5%	12	80.0%	3	17.6%
Software and web applications	14	82.4%	3	20.0%	2	11.8%
Automated equipment	8	47.1%	9	60.0%	2	11.8%
Voice over internet protocol (VOIP)	6	35.3%	4	26.7%	9	52.9%
Video conferencing applications	12	70.6%	4	26.7%	3	17.6%
Artificial intelligence (AI)	3	17.6%	5	33.3%	11	64.7%

Table 15.7: Future digital technologies needed (Employees)

Digital technologies	Frequency	Percentage
Faster internet connection	11	78.6%
Ultra-modern equipment (Upgrade current digital equipment/s)	8	57.1%
Artificial intelligence (AI)	6	42.9%
Internet of things (IoT)	5	35.7%
Scanners	8	57.1%
Tracking systems	10	71.4%

Table 15.8: Future digital skills needed (Employees)

Digital skills	Frequency	Percentage
Ability to quickly learn new software (MS packages, accounting packages, designing packages, etc.)	13	92.9%
Computer literacy	9	64.3%
Machine learning	6	42.9%
Digital marketing	5	35.7%
Artificial intelligence (AI)	3	21.4%
Developing a website	6	42.9%
Ability to use and understand digital media	6	42.9%

Table 15.9: Resistance to digital technology in the workplace (Managers)

Reasons for resistance	Frequency	Percentage
Fear of the unknown	4	80%
Lack of digital skills	2	40%
Scepticism (Doubt) of digital technologies	4	80%
Preference for traditional tools	2	40%
Fear of digital technology (Technophobia)	1	20%

Table 15.10: Means of digital transformation (HR Managers)

Actions undertaken	Frequency	Percentage
Skills empowerment	4	100%
Endorsement of digital practices	2	50%
Acquisition of modern technology	5	50%

Table 15.11: Frequency of digital skills audit (HR Managers)

Do you conduct any digital skills audit?	Frequency	Percentage
No	2	40%
Yes	3	60%

Table 15.12: Frequency of skills audit across sector (HR Managers)

How often do you conduct a digital skills audit?	Frequency	Percentage
No information	2	40%
Annually	1	20%
Quarterly	1	20%
With new equipment	1	20%

15.4 Digital Skills Supply (Recruit and Retain)

Table 15.13: Perceived impact of digital skills on qualification (Employees)

Perceived impact of digital skills	N	Mean	SD
My knowledge of digital technologies boosts my confidence	14	4.43	0.646
The digital skills that I have acquired open doors to more job opportunities	14	4.21	0.975
The usage of digital technologies makes me more knowledgeable	14	4.36	0.745
With the usage of digital technology. I am now able to innovate at work	14	3.93	0.997
How much value does the knowledge of digital technology add to your qualification?	14	2.93	1.141

Table 15.14: Importance of digital technologies (Employees)

Importance of digital technologies	N	Mean	SD
How much value does the knowledge of digital technology add to your qualification?	14	2.93	1.141

Table 15.15: Recruiting staff (Managers and HR Managers)

Strategy	N	Percentage
Online advertising	5	50%
Classified advertisements	3	30%
Recruitment agencies	4	40%
Word-of-mouth	4	40%
Internal advertising	9	90%
Internships	5	50%
Outsourcing	1	100%
Headhunting (Pool of experts)	1	100%

Tech summits	1	10%
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Table 15.16: Retaining digital staff (Managers and HR Managers)

Strategy	N	Percentage
Capacity building	6	60%
Creating a conducive environment	9	90%
Providing incentives	5	50%
Counteroffers	2	20%

Table 15.17: Impact of existing policy (Managers and HR Managers)

Impact of existing policy	N	Mean	SD
How does existing policy (either government or organisational) affect your ability to attract the best talent with the latest digital skills?	10	1.90	1.197

Table 15.18: Perceived challenges (Managers and HR Managers)

Perceived challenges	N	Percentage
Costly job portals	3	75%
Interference of trade unions	1	25%
Stringent regulations	1	25%
High competition in acquiring people with digital skills	2	50%

15.5 Digital Skills Development (Training)

Table 15.19: Digital skills acquisition (Employees)

Acquired through ...	N	Percentage
High school	4	28.6%
In-house training	7	50.0%
Peer-learning	5	35.7%
Self-taught	5	35.7%
Short courses	3	21.4%
Tertiary education	6	42.9%
Previous work experience	5	35.7%
External training/Workshops	4	28.6%
I have no digital skills	0	0.0%

Table 15.20: Support systems from the organisation (Employees, Managers and HR Managers)

Support systems	N	Mean	SD
Overall results	24	3.53	0.41
My organisation supports digital technology usage through accredited training (officially recognised or authorised)	24	4.08	0.83
Digital technology is promoted through in-house training in my organisation	24	3.88	0.61
My organisation does not have a support system to enhance digital skills	24	2.63	1.01
My organisation encourages self-development of staff when it comes to digital technology	24	3.75	0.74
Digital skills in my organisation are promoted through external training (training conducted outside the organisation)	24	3.63	1.13
My organisation encourages the staff to acquire digital skills through online training	24	3.25	0.94

15.6 Risks and Attitudes

Table 15.21: Risks of and attitudes towards digital technology usage (Employees, Managers and HR Managers)

Risks and attitudes	Number of respondents	Mean	SD
Risk 1	24	2.88	1.076
Risk 2	24	2.75	1.152
Risk 3	24	3.58	0.974
Risk 4	24	2.71	0.955
Risk 5	24	2.58	0.974
Risk 6	24	2.75	1.189
Att 1	24	1.67	0.816
Att 2	24	1.75	0.944
Att 3	24	1.75	0.847
Att 4	24	1.83	1.007
Att 5	24	2.04	0.999
Att 6	24	2.33	1.167

16. Education

16.1 Understanding of Digital Technology

Table 16.1: Understanding of digital technology (Employees, Managers and HR Managers)

Understanding	Poor	Average	Good	Excellent
Frequency	0	5	25	6
Percentage	0	13.9	69.4	16.7
Mean = 4.03; SD = 0.560				

16.2 Digital Skills Deployment (Usage)

Table 16.2: Digital technology activities (Employees, Managers and HR Managers)

Activities	N	Mean	SD
Overall results	37	3.62	0.83
Accounting/Financial management	37	3.05	1.68
Making bookings (travel bookings, scheduling meetings, venue bookings, etc.)	37	3.30	1.45
Emailing	37	4.70	0.62
Making audio or video calls	37	3.73	1.30
Marketing	37	3.03	1.48
Printing and scanning/Googling	37	4.41	1.01
Designing	37	3.19	1.58
Monitoring (e.g. employees, production, security, etc.)	37	3.16	1.42
Research and development/Information processing	37	3.86	1.06
Training	37	3.76	1.06
Filing	37	3.62	1.06

Table 16.3: Benefits of using digital technology in the workplace (Employees, Managers and HR Managers)

Benefits	N	Mean	SD
Ability to manage and monitor my team, activities, projects, etc. whilst not being physically present	37	6.81	3.04
Improved communication tools	37	6.92	2.84
Ability to enhance the capacity to perform my job	37	8.11	1.95
Ability to do different tasks at once (Multi-tasking)	37	8.11	2.28
Limited usage of paper (Paperless processes)	37	8.05	2.43
Less time needed to perform my duties (Time-efficiency)	37	6.97	3.01
Reduced workload	37	6.57	3.37

Table 16.4: Challenges of using digital technology in the workplace (Employees, Managers and HR Managers)

Challenges	N	Mean	SD
Digital technology involves higher costs	37	6.24	2.67
Instability of digital systems (systems going down, load shedding, etc.)	37	5.84	2.53
Lack of human interactions	37	5.95	2.55
Threat of possible retrenchment	37	5.54	3.39
Adjusting to and learning new digital technology	37	6.46	2.61
Lack of required digital skills	37	6.11	2.81
Digital fraud and scamming	37	6.81	3.00

Table 16.5: Digital champions in the organisation (Employees, Managers and HR Managers)

Digital champions	Frequency	Percentage
Management (CEOs, Directors, Managers, Supervisors, etc.)	33	89.2%
IT Department	25	67.6%
Communication Department/Marketing Department	15	40.5%
Project coordinators	16	43.2%
External stakeholders	11	29.7%
Fellow colleagues	19	51.4%
No one	1	2.7%

16.3 Digital Skills Demand (Needs)

Table 16.6: Digital technologies used and needed

Technologies	Used		Needed		N/A	
	f	%	f	%	f	%
State-of-the art printers and scanners	19	65.5%	7	29.2%	6	26.1%
Business WhatsApp	16	55.2%	9	37.5%	7	30.4%
Hi-tech telephone	9	31.0%	10	41.7%	12	52.2%
Faster computers and tablets	17	58.6%	10	41.7%	5	21.7%
Digital filing	13	44.8%	15	62.5%	4	17.4%
Mobile applications	17	58.6%	7	29.2%	8	34.8%
Block chain technology	3	10.3%	10	41.7%	19	82.6%
Reliable internet	23	79.3%	5	20.8%	4	17.4%
Smart boards	14	48.3%	10	41.7%	8	34.8%
Software and web applications	21	72.4%	6	25.0%	5	21.7%

Automated equipment	8	27.6%	11	45.8%	13	56.5%
Voice over internet protocol (VOIP)	5	17.2%	14	58.3%	13	56.5%
Video conferencing applications	16	55.2%	12	50.0%	4	17.4%
Artificial intelligence (AI)	2	6.9%	17	70.8%	13	56.5%

Table 16.7: Future digital technologies needed (Employees)

Digital technologies	Frequency	Percentage
Faster internet connection	20	87.0%
Ultra-modern equipment (Upgrade current digital equipment/s)	12	52.2%
Artificial intelligence (AI)	7	30.4%
Internet of things (IoT)	11	47.8%
Robots	7	30.4%
Scanners	14	60.9%
Tracking systems	14	60.9%

Table 16.8: Future digital skills needed (Employees)

Digital skills	Frequency	Percentage
Ability to quickly learn new software (MS packages, accounting packages, designing packages, etc.)	14	60.9%
Computer literacy	17	73.9%
Machine learning	11	47.8%
Digital marketing	11	47.8%
Artificial intelligence (AI)	10	43.5%
Developing a website	16	69.6%
Ability to use and understand digital media	15	65.2%

Table 16.9: Resistance to digital technology in the workplace (Managers)

Reasons for resistance	Frequency	Percentage
Fear of the unknown	6	85.7%
Lack of digital skills	4	57.1%
Scepticism (Doubt) of digital technologies	3	42.9%
Preference for traditional tools	4	57.1%
Fear of digital technology (Technophobia)	4	57.1%

Table 16.10: Means of digital transformation (HR Managers)

Actions undertaken	Frequency	Percentage
Skills empowerment	8	88.9%
Endorsement of digital practices	2	22.2%
Acquisition of modern technology	6	66.7%

Table 16.11: Frequency of digital skills audit (HR Managers)

Do you conduct any digital skills audit?	Frequency	Percentage
No	2	40%
Yes	3	60%

Table 16.12: Frequency of skills audit across sector (HR Managers)

How often do you conduct a digital skills audit?	Frequency	Percentage
No information	2	40%
Annually	1	20%
Per term	1	20%
Twice a year	1	20%

16.4 Digital Skills Supply (Recruit and Retain)

Table 16.13: Perceived impact of digital skills on qualification (Employees)

Perceived impact of digital skills	N	Mean	SD
My knowledge of digital technologies boosts my confidence	23	4.35	0.832
The digital skills that I have acquired open doors to more job opportunities	23	4.26	0.915
The usage of digital technologies makes me more knowledgeable	23	4.30	0.765
With the usage of digital technology. I am now able to innovate at work	23	4.26	0.752
How much value does the knowledge of digital technology add to your qualification?	23	3.74	0.449

Table 16.14: Importance of digital technologies (Employees)

Importance of digital technologies	N	Mean	SD
How much value does the knowledge of digital technology add to your qualification?	23	3.74	0.449

Table 16.15: Recruiting staff (Managers and HR Managers)

Strategy	N	Percentage
Online advertising	9	81.8%
Classified advertisements	2	18.2%
Recruitment agencies	2	18.2%
Word-of-mouth	4	36.4%
Internal advertising	7	63.6%
Internships	8	72.7%
Outsourcing	4	36.4%
Headhunting (Pool of experts)	4	36.4%
Tech summits	1	9.1%

Table 16.16: Retaining digital staff (Managers and HR Managers)

Strategy	N	Percentage
Capacity building	8	80%
Creating a conducive environment	6	60%
Providing incentives	6	60%
Counteroffers	0	0%

Table 16.17: Impact of existing policy (Managers and HR Managers)

Impact of existing policy	N	Mean	SD
How does existing policy (either government or organisational) affect your ability to attract the best talent with the latest digital skills?	13	2.23	1.301

Table 16.18: Perceived challenges (Managers and HR Managers)

Perceived challenges	N	Percentage
Costly job portals	1	25%
Interference of trade unions	1	25%
Stringent regulations	1	25%
High competition in acquiring people with digital skills	4	100%

16.5 Digital Skills Development (Training)

Table 16.19: Digital skills acquisition (Employees)

Acquired through ...	N	Percentage
High school	8	34.8%
In-house training	12	52.2%
Peer-learning	14	60.9%
Self-taught	13	56.5%
Short courses	10	43.5%
Tertiary education	16	69.6%
Previous work experience	9	39.1%
External training/Workshops	8	34.8%
I have no digital skills	0	0.0%

Table 16.20: Support systems from the organisation (Employees, Managers and HR Managers)

Support systems	N	Mean	SD
Overall results	37	3.54	0.56
My organisation supports digital technology usage through accredited training (officially recognised or authorised)	37	3.73	1.07
Digital technology is promoted through in-house training in my organisation	37	4.03	0.87
My organisation does not have a support system to enhance digital skills	37	2.65	1.09
My organisation encourages self-development of staff when it comes to digital technology	37	3.89	1.02
Digital skills in my organisation are promoted through external training (training conducted outside the organisation)	37	3.30	1.08
My organisation encourages the staff to acquire digital skills through online training	37	3.65	1.03

16.6 Risks and Attitudes

Table 16.21: Risks of and attitudes towards digital technology usage (Employees, Managers and HR Managers)

Risks and attitudes	Number of respondents	Mean	SD
Risk 1	24	2.88	1.076
Risk 2	24	2.75	1.152
Risk 3	24	3.58	0.974
Risk 4	24	2.71	0.955

Risk 5	24	2.58	0.974
Risk 6	24	2.75	1.189
Att 1	24	1.67	0.816
Att 2	24	1.75	0.944
Att 3	24	1.75	0.847
Att 4	24	1.83	1.007
Att 5	24	2.04	0.999
Att 6	24	2.33	1.167

17. Human Health and Social Work Activities

17.1 Understanding of Digital Technology

Table 17.1: Understanding of digital technology (Employees, Managers and HR Managers)

Understanding	Poor	Average	Good	Excellent
Frequency	0	3	24	4
Percentage	0	9.7	77.4	12.9
Mean = 4.03; SD = 0.482				

17.2 Digital Skills Deployment (Usage)

Table 17.2: Digital technology activities (Employees, Managers and HR Managers)

Activities	N	Mean	SD
Overall results	32	3.44	1.11
Accounting/Financial management	32	2.53	2.21
Making bookings (travel bookings, scheduling meetings, venue bookings, etc.)	32	3.31	1.65
Emailing	32	4.81	0.74
Making audio or video calls	32	3.22	1.72
Marketing	32	3.03	1.84
Printing and scanning/Googling	32	4.59	0.91
Designing	32	2.72	2.13
Monitoring (e.g. employees, production, security, etc.)	32	3.16	1.89
Research and development/Information processing	32	3.31	1.89
Training	32	3.16	1.65
Filing	32	4.00	1.16

Table 17.3: Benefits of using digital technology in the workplace (Employees, Managers and HR Managers)

Benefits	N	Mean	SD
Ability to manage and monitor my team, activities, projects, etc. whilst not being physically present	32	5.66	3.46
Improved communication tools	32	7.00	3.24
Ability to enhance the capacity to perform my job	32	7.41	2.77
Ability to do different tasks at once (Multi-tasking)	32	7.00	3.24
Limited usage of paper (Paperless processes)	32	6.31	3.18
Less time needed to perform my duties (Time-efficiency)	32	6.97	2.95
Reduced workload	32	6.34	3.17

Table 17.4: Challenges of using digital technology in the workplace (Employees, Managers and HR Managers)

Challenges	N	Mean	SD
Digital technology involves higher costs	32	6.44	3.21
Instability of digital systems (systems going down, load shedding, etc.)	32	6.03	3.10
Lack of human interactions	32	6.25	3.57
Threat of possible retrenchment	32	5.19	3.71
Adjusting to and learning new digital technology	32	6.63	3.31
Lack of required digital skills	31	6.35	3.07
Digital fraud and scamming	31	6.03	3.53

Table 17.5: Digital champions in the organisation (Employees, Managers and HR Managers)

Digital champions	Frequency	Percentage
Management (CEOs, Directors, Managers, Supervisors, etc.)	26	83.9%
IT Department	16	51.6%
Communication Department/Marketing Department	9	29.0%
Project coordinators	12	38.7%
External stakeholders	10	32.3%
Fellow colleagues	9	29.0%

17.3 Digital Skills Demand (Needs)

Table 17.6: Digital technologies used and needed

Technologies	Used		Needed		N/A	
	f	%	f	%	f	%
State-of-the art printers and scanners	20	83.3%	4	20.0%	3	13.6%
Business WhatsApp	12	50.0%	8	40.0%	7	31.8%
Hi-tech telephone	15	62.5%	7	35.0%	5	22.7%
Faster computers and tablets	18	75.0%	7	35.0%	2	9.1%
Digital filing	18	75.0%	5	25.0%	4	18.2%
Mobile applications	17	70.8%	6	30.0%	4	18.2%
Block chain technology	7	29.2%	10	50.0%	10	45.5%
Reliable internet	19	79.2%	7	35.0%	1	4.5%
Smart boards	7	29.2%	8	40.0%	12	54.5%
Software and web applications	15	62.5%	7	35.0%	5	22.7%
Automated equipment	11	45.8%	7	35.0%	9	40.9%
Voice over internet protocol (VOIP)	14	58.3%	6	30.0%	7	31.8%
Video conferencing applications	15	62.5%	5	25.0%	7	31.8%
Artificial intelligence (AI)	6	25.0%	6	30.0%	15	68.2%

Table 17.7: Future digital technologies needed (Employees)

Digital technologies	Frequency	Percentage
Faster internet connection	20	95.2%
Ultra-modern equipment (Upgrade current digital equipment/s)	13	61.9%
Artificial intelligence (AI)	5	23.8%
Internet of things (IoT)	5	23.8%
Robots	3	14.3%
Scanners	10	47.6%
Tracking systems	7	33.3%

Table 17.8: Future digital skills needed (Employees)

Digital skills	Frequency	Percentage
Ability to quickly learn new software (MS packages, accounting packages, designing packages, etc.)	21	95.5%
Computer literacy	17	77.3%
Machine learning	6	27.3%
Digital marketing	9	40.9%
Artificial intelligence (AI)	5	22.7%
Developing a website	6	27.3%

Ability to use and understand digital media	10	45.5%
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Table 17.9: Resistance to digital technology in the workplace (Managers)

Reasons for resistance	Frequency	Percentage
Fear of the unknown	3	60%
Lack of digital skills	5	100%
Scepticism (Doubt) of digital technologies	1	20%
Preference for traditional tools	4	80%
Fear of digital technology (Technophobia)	1	20%

Table 17.10: Means of digital transformation (HR Managers)

Actions undertaken	Frequency	Percentage
Skills empowerment	4	80%
Endorsement of digital practices	4	80%
Acquisition of modern technology	3	60%

Table 17.11: Frequency of digital skills audit (HR Managers)

Do you conduct any digital skills audit?	Frequency	Percentage
No	5	100%

Table 17.12: Frequency of digital skills audit across sector (HR Managers)

How often do you conduct a digital skills audit?	Frequency	Percentage
No information	5	100%

17.4 Digital Skills Supply (Recruit and Retain)

Table 17.13: Perceived impact of digital skills on qualification (Employees)

Perceived impact of digital skills	N	Mean	SD
My knowledge of digital technologies boosts my confidence	22	4.23	1.152
The digital skills that I have acquired open doors to more job opportunities	22	4.05	1.214
The usage of digital technologies makes me more knowledgeable	22	4.41	1.008
With the usage of digital technology. I am now able to	22	4.27	1.077

innovate at work			
How much value does the knowledge of digital technology add to your qualification?	22	3.50	1.058

Table 17.14: Importance of digital technologies (Employees)

Importance of digital technologies	N	Mean	SD
How much value does the knowledge of digital technology add to your qualification?	23	3.74	0.449

Table 17.15: Recruiting staff (Managers and HR Managers)

Strategy	N	Percentage
Online advertising	5	55.6%
Classified advertisements	0	0.0%
Recruitment agencies	3	33.3%
Word-of-mouth	6	66.7%
Internal advertising	7	77.8%
Internships	3	33.3%
Outsourcing	4	44.4%
Headhunting (Pool of experts)	2	22.2%
Tech summits	0	0.0%

Table 17.16: Retaining digital staff (Managers and HR Managers)

Strategy	N	Percentage
Capacity building	4	57.1%
Creating a conducive environment	5	71.4%
Providing incentives	2	28.6%
Counteroffers	1	14.3%

Table 17.17: Impact of existing policy (Managers and HR Managers)

Impact of existing policy	N	Mean	SD
How does existing policy (either government or organisational) affect your ability to attract the best talent with the latest digital skills?	10	3.50	1.080

Table 17.18: Perceived challenges (Managers and HR Managers)

Perceived challenges	N	Percentage
Costly job portals	1	25%
Interference of trade unions	1	25%
Stringent regulations	1	25%
High competition in acquiring people with digital skills	4	100%

17.5 Digital Skills Development (Training)

Table 17.19: Digital skills acquisition (Employees)

Acquired through ...	N	Percentage
High school	6	27.3%
In-house training	7	31.8%
Peer-learning	12	54.5%
Self-taught	13	59.1%
Short courses	11	50.0%
Tertiary education	7	31.8%
Previous work experience	7	31.8%
External training/Workshops	4	18.2%
I have no digital skills	1	4.5%

Table 17.20: Support systems from the organisation (Employees, Managers and HR Managers)

Support systems	N	Mean	SD
Overall results	32	2.98	0.92
My organisation supports digital technology usage through accredited training (officially recognised or authorised)	32	2.78	1.41
Digital technology is promoted through in-house training in my organisation	32	3.16	1.30
My organisation does not have a support system to enhance digital skills	32	2.84	1.32
My organisation encourages self-development of staff when it comes to digital technology	32	3.53	1.19
Digital skills in my organisation are promoted through external training (training conducted outside the organisation)	32	2.78	1.18
My organisation encourages the staff to acquire digital skills through online training	32	2.81	1.28

17.6 Risks and Attitudes

Table 17.21: Risks of and attitudes towards digital technology usage (Employees, Managers and HR Managers)

Risks and attitudes	Number of respondents	Mean	SD
Risk 1	32	2.56	1.190
Risk 2	32	3.03	1.121
Risk 3	32	3.53	1.244
Risk 4	32	2.72	1.143
Risk 5	32	2.41	1.160
Risk 6	32	2.88	1.129
Att 1	32	1.91	0.893
Att 2	32	1.94	1.162
Att 3	32	1.94	1.045
Att 4	32	2.06	1.014
Att 5	32	2.09	0.963
Att 6	32	2.38	1.070

18. Arts, Entertainment and Recreation

18.1 Understanding of Digital Technology

Table 18.1: Understanding of digital technology (Employees, Managers and HR Managers)

Understanding	Poor	Average	Good	Excellent
Frequency	0	3	25	7
Percentage	0	8.6	71.4	20
Mean = 4.11; SD = 0.530				

18.2 Digital Skills Deployment (Usage)

Table 18.2: Digital technology activities (Employees, Managers and HR Managers)

Activities	N	Mean	SD
Overall results	35	3.57	1.07
Accounting/Financial management	35	3.11	1.91
Making bookings (e.g. travel bookings, scheduling meetings, venue bookings, etc.)	35	3.71	1.69
Emailing	35	4.43	1.22

Making audio or video calls	35	3.26	1.56
Marketing	35	3.46	1.96
Printing and scanning/Googling	35	4.20	1.41
Designing	35	2.83	1.84
Monitoring (e.g. employees, production, security, etc.)	35	4.09	1.12
Research and development/ Information processing	35	3.34	1.89
Training	35	3.51	1.46
Filing	35	3.31	1.64

Table 18.3: Benefits of using digital technology in the workplace (Employees, Managers and HR Managers)

Benefits	N	Mean	SD
Ability to manage and monitor my team, activities, projects, etc. whilst not being physically present	35	7.43	2.83
Improved communication tools	35	8.37	2.09
Ability to enhance the capacity to perform my job	35	8.71	2.05
Ability to do different tasks at once (Multi-tasking)	35	8.29	2.22
Limited usage of paper (Paperless processes)	35	7.94	2.38
Less time needed to perform my duties (Time-efficiency)	35	8.34	1.66
Reduced workload	35	7.54	2.38

Table 18.4: Challenges of using digital technology in the workplace (Employees, Managers and HR Managers)

Challenges	N	Mean	SD
Digital technology involves higher costs	35	6.91	2.33
Instability of digital systems (systems going down, load shedding, etc.)	35	7.49	2.75
Lack of human interactions	35	5.80	2.71
Threat of possible retrenchment	35	5.71	3.34
Adjusting to and learning new digital technology	35	6.09	2.80
Lack of required digital skills	35	5.54	2.63
Digital fraud and scamming	35	6.17	3.52

Table 18.5: Digital champions in the organisation (Employees, Managers and HR Managers)

Digital champions	Frequency	Percentage
Management (CEOs, Directors, Managers, Supervisors, etc.)	31	88.6%
IT Department	23	65.7%
Communication Department/Marketing Department	15	42.9%
Project coordinators	8	22.9%
External stakeholders	7	20.0%
Fellow colleagues	11	31.4%
No one	1	2.9%

18.3 Digital Skills Demand (Needs)

Table 18.6: Digital technologies used and needed (Employees and Managers)

Technologies	Used		Needed		N/A	
	f	%	f	%	f	%
State-of-the art printers and scanners	26	86.7%	4	16.0%		
Business WhatsApp	13	43.3%	9	36.0%	8	28.6%
Hi-tech telephone	19	63.3%	8	32.0%	3	10.7%
Faster computers and tablets	20	66.7%	7	28.0%	3	10.7%
Digital filing	21	70.0%	5	20.0%	4	14.3%
Mobile applications	19	63.3%	3	12.0%	8	28.6%
Block chain technology	11	36.7%	8	32.0%	11	39.3%
Reliable internet	24	80.0%	6	24.0%		
Smart boards	12	40.0%	7	28.0%	11	39.3%
Software and web applications	24	80.0%	4	16.0%	2	7.1%
Automated equipment	16	53.3%	11	44.0%	3	10.7%
Voice over internet protocol (VOIP)	13	43.3%	6	24.0%	11	39.3%
Video conferencing applications	16	53.3%	5	20.0%	9	32.1%
Artificial intelligence (AI)	1	3.3%	12	48.0%	17	60.7%

Table 18.7: Future digital technologies needed (Employees)

Digital technologies	Frequency	Percentage
Faster internet connection	18	94.7%
Ultra-modern equipment (Upgrade current digital equipment/s)	19	100%
Artificial intelligence (AI)	4	21.1%
Internet of things (IoT)	3	15.8%

Robots	1	5.3%
Scanners	10	52.6%
Tracking systems	15	78.9%

Table 18.8: Future digital skills needed (Employees)

Digital skills	Frequency	Percentage
Ability to quickly learn new software (MS packages, accounting packages, designing packages, etc.)	18	94.7%
Computer literacy	14	73.7%
Machine learning	14	73.7%
Digital marketing	15	78.9%
Artificial intelligence (AI)	8	42.1%
Developing a website	11	57.9%
Ability to use and understand digital media	17	89.5%

Table 18.9: Resistance to digital technology in the workplace (Managers)

Reasons for resistance	Frequency	Percentage
Fear of the unknown	7	63.6%
Lack of digital skills	6	54.5%
Scepticism (Doubt) of digital technologies	5	45.5%
Preference for traditional tools	5	45.5%
Fear of digital technology (Technophobia)	2	18.2%
No resistance	2	18.2%

Table 18.10: Means of digital transformation (HR Managers)

Actions undertaken	Frequency	Percentage
Skills empowerment	9	81.8%
Endorsement of digital practices	6	54.5%
Acquisition of modern technology	7	63.6%

Table 18.11: Frequency of digital skills audit (HR Managers)

Do you conduct any digital skills audit?	Frequency	Percentage
No	5	100%

Table 18.12: Frequency of skills audit across sector (HR Managers)

How often do you conduct a digital skills audit?	Frequency	Percentage
No information	5	100%

18.4 Digital Skills Supply (Recruit and Retain)

Table 18.13: Perceived impact of digital skills on qualification (Employees)

Perceived impact of digital skills	N	Mean	SD
My knowledge of digital technologies boosts my confidence	19	4.37	0.684
The digital skills that I have acquired open doors to more job opportunities	19	4.26	0.806
The usage of digital technologies makes me more knowledgeable	19	4.42	0.507
With the usage of digital technology. I am now able to innovate at work	19	4.37	0.684
How much value does the knowledge of digital technology add to your qualification?	19	3.58	0.961

Table 18.14: Importance of digital technologies (Employees)

Importance of digital technologies	N	Mean	SD
How much value does the knowledge of digital technology add to your qualification?	19	3.58	0.961

Table 18.15: Recruiting staff (Managers and HR Managers)

Strategy	N	Percentage
Online advertising	10	62.5%
Classified advertisements	1	6.3%
Recruitment agencies	1	6.3%
Word-of-mouth	7	43.8%
Internal advertising	8	50.0%
Internships	3	18.8%
Outsourcing	5	31.3%
Headhunting (Pool of experts)	2	12.5%
Tech summits	0	0.0%

Table 18.16: Retaining digital staff (Managers and HR Managers)

Strategy	N	Percentage
Capacity building	6	40.0%
Creating a conducive environment	4	26.7%
Providing incentives	7	46.7%
Counteroffers	3	20.0%

Table 18.17: Impact of existing policy (Managers and HR Managers)

Impact of existing policy	N	Mean	SD
How does existing policy (either government or organisational) affect your ability to attract the best talent with the latest digital skills?	16	2.75	1.125

Table 18.18: Perceived challenges (HR Managers)

Perceived challenges	N	Percentage
Costly job portals	2	66.7%
Interference of trade unions	0	0.0%
Stringent regulations	1	33.3%
High competition in acquiring people with digital skills	1	33.3%

18.5 Digital Skills Development (Training)

Table 18.19: Digital skills acquisition (Employees)

Acquired through ...	N	Percentage
High school	7	36.8%
In-house training	11	57.9%
Peer-learning	10	52.6%
Self-taught	14	73.7%
Short courses	6	31.6%
Tertiary education	11	57.9%
Previous work experience	12	63.2%
External training/Workshops	5	26.3%
I have no digital skills	0	0.0%

Table 18.20: Support systems from the organisation (Employees, Managers and HR Managers)

Support systems	N	Mean	SD
Overall results	35	3.69	0.68
My organisation supports digital technology usage through accredited training (officially recognised or authorised)	35	4.14	0.97
Digital technology is promoted through in-house training in my organisation	35	4.11	0.90
My organisation does not have a support system to enhance digital skills	35	3.00	1.06
My organisation encourages self-development of staff when it comes to digital technology	35	3.83	1.10
Digital skills in my organisation are promoted through external training (training conducted outside the organisation)	35	3.57	1.24
My organisation encourages the staff to acquire digital skills through online training	35	3.49	1.09

18.6 Risks and Attitudes

Table 18.21: Risks of and attitudes towards digital skills usage (Employees, Managers and HR Managers)

Risks and attitudes	Number of respondents	Mean	SD
Risk 1	35	3.03	1.175
Risk 2	35	3.51	1.121
Risk 3	35	3.66	1.211
Risk 4	35	2.66	0.998
Risk 5	35	2.51	0.981
Risk 6	35	3.17	1.098
Att 1	35	1.94	0.968
Att 2	35	1.91	1.121
Att 3	35	1.86	0.845
Att 4	35	2.11	1.078
Att 5	35	2.31	1.105
Att 6	35	2.66	1.305

19. Other Service Activities

19.1 Understanding of Digital Technology

Table 19.1: Understanding of digital technology (Employees, Managers and HR Managers)

Understanding	Poor	Average	Good	Excellent
Frequency	0	4	17	1
Percentage	0	18.2	77.3	4.5
Mean = 3.86; SD = 0.468				

19.2 Digital Skills Deployment (Usage)

Table 19.2: Digital technology activities (Employees, Managers and HR Managers)

Activities	N	Mean	SD
Overall results	22	3.59	0.93
Accounting/Financial management	22	3.05	1.81
Making bookings (e.g. travel bookings, scheduling meetings, venue bookings, etc.)	22	3.27	1.80
Emailing	22	4.41	0.96
Making audio or video calls	22	4.14	1.21
Marketing	22	3.18	1.76
Printing and scanning/Googling	22	4.14	0.94
Designing	22	2.95	1.59
Monitoring (e.g. employees, production, security, etc.)	22	3.95	1.59
Research and development/Information processing	22	3.77	1.60
Training	22	3.14	1.52
Filing	22	3.50	1.34

Table 19.3: Benefits of using digital technology in the workplace (Employees, Managers and HR Managers)

Benefits	N	Mean	SD
Ability to manage and monitor my team, activities, projects, etc. whilst not being physically present	22	7.95	3.03
Improved communication tools	22	8.36	1.94
Ability to enhance the capacity to perform my job	22	8.91	1.60
Ability to do different tasks at once (Multi-tasking)	22	7.95	1.79
Limited usage of paper (Paperless processes)	22	8.32	2.06
Less time needed to perform my duties (Time-efficiency)	22	8.45	1.57
Reduced workload	22	7.45	1.71

Table 19.4: Challenges of using digital technology in the workplace (Employees, Managers and HR Managers)

Challenges	N	Mean	SD
Digital technology involves higher costs	22	6.27	2.27
Instability of digital systems (systems going down, load shedding, etc.)	22	5.55	2.72
Lack of human interactions	22	5.41	2.28
Threat of possible retrenchment	22	5.23	2.62
Adjusting to and learning new digital technology	22	5.59	2.44
Lack of required digital skills	22	5.09	2.31
Digital fraud and scamming	22	5.32	3.59

Table 19.5: Digital champions in the organisation (Employees, Managers and HR Managers)

Digital champions	Frequency	Percentage
Management (CEOs, Directors, Managers, Supervisors, etc.)	19	90.5%
IT Department	13	61.9%
Communication Department/Marketing Department	10	47.6%
Project coordinators	5	23.8%
External stakeholders	3	14.3%
Fellow colleagues	7	33.3%

19.3 Digital Skills Demand (Needs)

Table 19.6: Digital technologies used and needed (Employees and Managers)

Technologies	Used		Needed		N/A	
	f	%	f	%	f	%
State-of-the art printers and scanners	14	87.5%	1	6.7%	2	20.0%
Business WhatsApp	9	56.3%	6	40.0%	2	20.0%
Hi-tech telephone	11	68.8%	4	26.7%	2	20.0%
Faster computers and tablets	13	81.3%	4	26.7%		
Digital filing	12	75.0%	2	13.3%	3	30.0%
Mobile applications	8	50.0%	7	46.7%	2	20.0%
Block chain technology	6	37.5%	7	46.7%	4	40.0%
Reliable internet	15	93.8%	2	13.3%		
Smart boards	8	50.0%	4	26.7%	5	50.0%
Software and web applications	12	75.0%	3	20.0%	2	20.0%
Automated equipment	11	68.8%	4	26.7%	2	20.0%

Voice over internet protocol (VOIP)	10	62.5%	7	46.7%		
Video conferencing applications	14	87.5%	1	6.7%	2	20.0%
Artificial intelligence (AI)	8	50.0%	6	40.0%	3	30.0%

Table 19.7: Future digital technologies needed (Employees)

Digital technologies	Frequency	Percentage
Faster internet connection	10	83.3%
Ultra-modern equipment (Upgrade current digital equipment/s)	7	58.3%
Artificial intelligence (AI)	4	33.3%
Internet of things (IoT)	5	
Robots	1	8.3%
Scanners	2	16.7%
Tracking systems	5	41.7%

Table 19.8: Future digital skills needed (Employees)

Digital skills	Frequency	Percentage
Ability to quickly learn new software (MS packages, accounting packages, designing packages, etc.)	9	75.0%
Computer literacy	4	33.3%
Machine learning	3	25.0%
Digital marketing	7	58.3%
Artificial intelligence (AI)	6	50%
Developing a website	7	58.3%
Ability to use and understand digital media	6	50%

Table 19.9: Resistance to digital technology in the workplace (Managers)

Reasons for resistance	Frequency	Percentage
Fear of the unknown	1	25%
Lack of digital skills	2	50%
Preference for traditional tools	2	50%
Fear of digital technology (Technophobia)	1	25%
No resistance	1	25%

Table 19.10: Means of digital transformation (HR Managers)

Actions undertaken	Frequency	Percentage
Skills empowerment	5	100%

Endorsement of digital practices	4	80%
Acquisition of modern technology	2	40%

Table 19.11: Frequency of digital skills audit (HR Managers)

Do you conduct any digital skills audit?	Frequency	Percentage
No	1	20%
Yes	4	80%

Table 19.12: Frequency of skills audit across sector (HR Managers)

How often do you conduct a digital skills audit?	Frequency	Percentage
Annually	2	40%
Every two years	1	20%
Twice a year	1	20%

19.4 Digital Skills Supply (Recruit and Retain)

Table 19.13: Perceived impact of digital skills on qualification (Employees)

Perceived impact of digital skills	N	Mean	SD
My knowledge of digital technologies boosts my confidence	12	3.75	1.603
The digital skills that I have acquired open doors to more job opportunities	12	4.17	1.193
The usage of digital technologies makes me more knowledgeable	12	4.08	1.165
With the usage of digital technology. I am now able to innovate at work	12	3.92	1.240
How much value does the knowledge of digital technology add to your qualification?	12	3.42	1.165

Table 19.14: Importance of digital technologies (Employees)

Importance of digital technologies	N	Mean	SD
How much value does the knowledge of digital technology add to your qualification?	12	3.42	1.165

Table 19.15: Recruiting staff (Managers and HR Managers)

Strategy	N	Percentage
Online advertising	7	70%
Classified advertisements	6	60%
Recruitment agencies	5	50%
Word-of-mouth	5	50%
Internal advertising	7	70%
Internships	4	40%
Outsourcing	3	30%
Headhunting (Pool of experts)	1	10%
Tech summits	1	10%

Table 19.16: Retaining digital staff (Managers and HR Managers)

Strategy	N	Percentage
Capacity building	5	50%
Creating a conducive environment	7	70%
Providing incentives	8	80%
Counteroffers	5	50%

Table 19.17: Impact of existing policy (Managers and HR Managers)

Impact of existing policy	N	Mean	SD
How does existing policy (either government or organisational) affect your ability to attract the best talent with the latest digital skills?	10	1.90	0.994

Table 19.18: Perceived challenges (HR Managers)

Perceived challenges	N	Percentage
Costly job portals	3	60%
Interference of trade unions	1	20%
Stringent regulations	0	0%
High competition in acquiring people with digital skills	4	80%

19.5 Digital Skills Development (Training)

Table 19.19: Digital skills acquisition (Employees)

Acquired through ...	N	Percentage
High school	2	16.7%
In-house training	6	50.0%
Peer-learning	6	50.0%
Self-taught	4	33.3%
Short courses	2	16.7%
Tertiary education	3	25.0%
Previous work experience	6	50.0%
External training/Workshops	3	25.0%
I have no digital skills	0	0.0%

Table 19.20: Support systems from the organisation (Employees, Managers and HR Managers)

Support systems	N	Mean	SD
Overall results	22	3.52	0.59
My organisation supports digital technology usage through accredited training (officially recognised or authorised)	22	4.23	0.97
Digital technology is promoted through in-house training in my organisation	22	3.95	0.84
My organisation does not have a support system to enhance digital skills	22	2.27	1.52
My organisation encourages self-development of staff when it comes to digital technology	22	3.73	1.08
Digital skills in my organisation are promoted through external training (training conducted outside the organisation)	22	3.05	1.05
My organisation encourages the staff to acquire digital skills through online training	22	3.91	0.87

19.6 Risks and Attitudes

Table 19.21: Risks of and attitudes towards digital skills usage (Employees, Managers and HR Managers)

Risks and attitudes	Number of respondents	Mean	SD
Risk 1	22	2.55	1.101

Risk 2	22	2.55	1.224
Risk 3	22	2.59	1.297
Risk 4	22	2.50	1.263
Risk 5	22	2.18	1.220
Risk 6	22	2.41	1.260
Att 1	22	1.68	1.211
Att 2	22	1.64	0.953
Att 3	22	1.59	0.796
Att 4	22	1.59	1.182
Att 5	22	2.14	1.283
Att 6	22	1.86	1.283

20. Activities of Households as Employers; Undifferentiated Goods- and-Service-Producing Activities of Households for Own Use

20.1 Understanding of Digital Technology

Table 20.1: Understanding of digital technology (Employees, Managers and HR Managers)

Understanding	Poor	Average	Good	Excellent
Frequency	1	3	15	4
Percentage	4.3	13	65.2	17.4
Mean = 3.96; SD = 0.706				

20.2 Digital Skills Deployment (Usage)

Table 20.2: Digital technology activities (Employees, Managers and HR Managers)

Activities	N	Mean	SD
Overall results	24	3.79	1.29
Accounting/Financial management	24	3.92	1.56
Making bookings (e.g. travel bookings, scheduling meetings, venue bookings, etc.)	24	3.92	1.86
Emailing	24	4.38	1.44
Making audio or video calls	24	4.17	1.52
Marketing	24	4.17	1.61
Printing and scanning/Googling	24	4.13	1.45
Designing	24	3.13	2.11
Monitoring (e.g. employees, production, security, etc.)	24	2.96	1.94
Research and development/Information processing	24	3.92	1.77
Training	24	3.63	1.56

Filing	24	3.42	1.74
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Table 20.3: Benefits of using digital technology in the workplace (Employees, Managers and HR Managers)

Benefits	N	Mean	SD
Ability to manage and monitor my team, activities, projects, etc. whilst not being physically present	24	6.75	2.91
Improved communication tools	24	8.08	2.98
Ability to enhance the capacity to perform my job	24	7.46	3.05
Ability to do different tasks at once (Multi-tasking)	24	8.25	2.83
Limited usage of paper (Paperless processes)	24	6.96	3.82
Less time needed to perform my duties (Time-efficiency)	24	7.42	3.01
Reduced workload	24	7.04	2.97

Table 20.4: Challenges of using digital technology in the workplace (Employees, Managers and HR Managers)

Challenges	N	Mean	SD
Digital technology involves higher costs	24	6.75	2.95
Instability of digital systems (systems going down. load shedding, etc.)	24	6.46	2.95
Lack of human interactions	24	6.17	3.17
Threat of possible retrenchment	24	5.71	3.07
Adjusting to and learning new digital technology	24	6.21	2.69
Lack of required digital skills	24	5.67	3.27
Digital fraud and scamming	24	6.04	3.13

Table 20.5: Digital champions in the organisation (Employees, Managers and HR Managers)

Digital champions	Frequency	Percentage
Management (CEOs, Directors, Managers, Supervisors, etc.)	18	75.0%
IT Department	10	41.7%
Communication Department/Marketing Department	8	33.3%
Project coordinators	6	25.0%
External stakeholders	4	16.7%
Fellow colleagues	4	16.7%

No one	2	8.3%
No idea	2	8.3%

20.3 Digital Skills Demand (Needs)

Table 20.6: Digital technologies used and needed (Employees and Managers)

Technologies	Used		Needed		N/A	
	f	%	f	%	f	%
State-of-the art printers and scanners	12	70.6%	5	33.3%	2	11.8%
Business WhatsApp	13	76.5%	3	20.0%	3	17.6%
Hi-tech telephone	7	41.2%	5	33.3%	7	41.2%
Faster computers and tablets	14	82.4%	3	20.0%	2	11.8%
Digital filing	10	58.8%	5	33.3%	4	23.5%
Mobile applications	13	76.5%	1	6.7%	5	29.4%
Block chain technology	2	11.8%	3	20.0%	14	82.4%
Reliable internet	13	76.5%	4	26.7%	2	11.8%
Smart boards	4	23.5%	5	33.3%	10	58.8%
Software and web applications	12	70.6%	4	26.7%	3	17.6%
Automated equipment	5	29.4%	3	20.0%	11	64.7%
Voice over internet protocol (VOIP)	5	29.4%	5	33.3%	9	52.9%
Video conferencing applications	6	35.3%	3	20.0%	10	58.8%
Artificial intelligence (AI)	4	23.5%	2	13.3%	13	76.5%

Table 20.7: Future digital technologies needed (Employees)

Digital technologies	Frequency	Percentage
Faster internet connection	9	75.0%
Ultra-modern equipment (Upgrade current digital equipment/s)	8	66.7%
Artificial intelligence (AI)	2	16.7%
Internet of things (IoT)	2	16.7%
Robots	1	8.3%
Scanners	8	66.7%
Tracking systems	8	66.7%

Table 20.8: Future digital skills needed (Employees)

Digital skills	Frequency	Percentage
Ability to quickly learn new software (MS packages, accounting packages, designing packages, etc.)	8	61.5%
Computer literacy	6	46.2%
Machine learning	5	38.5%
Digital marketing	8	61.5%
Artificial intelligence (AI)	4	30.8%
Developing a website	8	61.5%
Ability to use and understand digital media	7	53.8%

Table 20.9: Resistance to digital technology in the workplace (Managers)

Reasons for resistance	Frequency	Percentage
Fear of the unknown	2	40%
Lack of digital skills	5	100%
Scepticism (Doubt) of digital technologies	1	20%
Preference for traditional tools	1	20%

Table 20.10: Means of digital transformation (HR Managers)

Actions undertaken	Frequency	Percentage
Skills empowerment	5	100%
Endorsement of digital practices	3	60%
Acquisition of modern technology	1	20%

Table 20.11: Frequency of digital skills audit (HR Managers)

Do you conduct any digital skills audit?	Frequency	Percentage
No	4	80%
Yes	1	20%

Table 20.12: Frequency of skills audit across sector (HR Managers)

How often do you conduct a digital skills audit?	Frequency	Percentage
No information	4	80%
Twice a year	1	20%

20.4 Digital Skills Supply (Recruit and Retain)

Table 20.13: Perceived impact of digital skills on qualification (Employees)

Perceived impact of digital skills	N	Mean	SD
My knowledge of digital technologies boosts my confidence	14	4.29	0.825
The digital skills that I have acquired open doors to more job opportunities	14	4.36	0.929
The usage of digital technologies makes me more knowledgeable	14	4.43	0.852
With the usage of digital technology. I am now able to innovate at work	14	4.14	1.167
How much value does the knowledge of digital technology add to your qualification?	14	2.79	1.578

Table 20.14: Importance of digital technologies (Employees)

Importance of digital technologies	N	Mean	SD
How much value does the knowledge of digital technology add to your qualification?	14	2.79	1.578

Table 20.15: Recruiting staff (Managers and HR Managers)

Strategy	N	Percentage
Online advertising	5	62.5%
Classified advertisements	1	12.5%
Recruitment agencies	3	37.5%
Word-of-mouth	4	50.0%
Internal advertising	2	25.0%
Internships	2	25.0%
Outsourcing	2	25.0%
Headhunting (Pool of experts)	0	0.0%
Tech summits	0	0.0%

Table 20.16: Retaining digital staff (Managers and HR Managers)

Strategy	N	Percentage
Capacity building	1	20%
Creating a conducive environment	3	60%

Providing incentives	3	60%
Counteroffers	0	0%

Table 20.17: Impact of existing policy (Managers and HR Managers)

Impact of existing policy	N	Mean	SD
How does existing policy (either government or organisational) affect your ability to attract the best talent with the latest digital skills?	10	3.40	1.075

Table 20.18: Perceived challenges (HR Managers)

Perceived challenges	N	Percentage
Costly job portals	1	50%
Interference of trade unions	0	0%
Stringent regulations	0	0%
High competition in acquiring people with digital skills	2	100%

20.5 Digital Skills Development Training)

Table 20.19: Digital skills acquisition (Employees)

Acquired through ...	N	Percentage
High school	7	50.0%
In-house training	6	42.9%
Peer-learning	4	28.6%
Self-taught	6	42.9%
Short courses	1	7.1%
Tertiary education	7	50.0%
Previous work experience	6	42.9%
External training/Workshops	4	28.6%
I have no digital skills	1	7.1%

Table 20.20: Support systems from the organisation (Employees, Managers and HR Managers)

Support systems	N	Mean	SD
Overall results	24	2.85	0.74
My organisation supports digital technology usage through accredited training (officially recognised or authorised)	24	3.00	1.18

Digital technology is promoted through in-house training in my organisation	24	2.96	1.27
My organisation does not have a support system to enhance digital skills	24	2.79	1.32
My organisation encourages self-development of staff when it comes to digital technology	24	3.21	1.22
Digital skills in my organisation are promoted through external training (training conducted outside the organisation)	24	2.33	1.13
My organisation encourages the staff to acquire digital skills through online training	24	2.79	1.28

20.6 Risks and Attitudes

Table 20.21: Risks of and attitudes towards digital skills usage (Employees, Managers and HR Managers)

Risks and attitudes	Number of respondents	Mean	SD
Risk 1	24	3.04	1.197
Risk 2	24	3.13	1.296
Risk 3	24	3.83	1.129
Risk 4	24	2.83	1.239
Risk 5	24	2.25	1.359
Risk 6	24	3.17	1.274
Att 1	24	1.58	0.974
Att 2	24	1.29	0.550
Att 3	24	1.38	0.711
Att 4	24	1.75	1.113
Att 5	24	1.88	1.116
Att 6	24	2.58	1.501

21. Activities of Extraterritorial Organisations and Bodies, Not Economically Active People, Unemployed People, etc.

21.1 Understanding of Digital Technology

Table 21.1: Understanding of digital technology (Employees, Managers and HR Managers)

Understanding	Poor	Average	Good	Excellent
Frequency	1	2	19	1
Percentage	4.3	8.7	82.6	4.3

Mean = 3.87; SD = 0.548

21.2 Digital Skills Deployment (Usage)

Table 21.2: Digital technology activities (Employees, Managers and HR Managers)

Activities	N	Mean	SD
Overall results	23	3.74	0.97
Accounting/Financial management	23	3.74	1.42
Making bookings (e.g. travel bookings, scheduling meetings, venue bookings, etc.)	23	3.61	1.37
Emailing	23	4.74	0.69
Making audio or video calls	23	4.09	1.35
Marketing	23	3.48	1.50
Printing and scanning/Googling	23	4.52	0.99
Designing	23	3.39	1.95
Monitoring (e.g. employees, production, security, etc.)	23	3.43	1.62
Research and development/Information processing	23	3.61	1.62
Training	23	3.22	1.41
Filing	23	3.35	1.43

Table 21.3: Benefits of using digital technology in the workplace (Employees, Managers and HR Managers)

Benefits	N	Mean	SD
Ability to manage and monitor my team, activities, projects, etc. whilst not being physically present	23	7.00	2.83
Improved communication tools	23	8.52	1.93
Ability to enhance the capacity to perform my job	23	8.00	2.24
Ability to do different tasks at once (Multi-tasking)	23	8.35	1.75
Limited usage of paper (Paperless processes)	23	8.61	1.67
Less time needed to perform my duties (Time-efficiency)	23	8.52	1.83
Reduced workload	23	8.43	1.97

Table 21.4: Challenges of using digital technology in the workplace (Employees, Managers and HR Managers)

Challenges	N	Mean	SD
Digital technology involves higher costs	23	7.00	2.41
Instability of digital systems (systems going down, load shedding, etc.)	23	6.39	2.78
Lack of human interactions	23	6.74	3.03
Threat of possible retrenchment	23	6.13	3.51
Adjusting to and learning new digital technology	23	6.96	2.53
Lack of required digital skills	23	6.35	3.19
Digital fraud and scamming	23	7.39	2.50

Table 21.5: Digital champions in the organisation (Employees, Managers and HR Managers)

Digital champions	Frequency	Percentage
Management (CEOs, Directors, Managers, Supervisors, etc.)	18	78.3%
IT Department	9	39.1%
Communication Department/Marketing Department	12	52.2%
Project coordinators	6	26.1%
External stakeholders	6	26.1%
Fellow colleagues	12	52.2%
No one	2	8.7%
No idea	1	4.3%

21.3 Digital Skills Demand (Needs)

Table 21.6: Digital technologies used and needed (Employees and Managers)

Technologies	Used		Needed		N/A	
	F	%	f	%	f	%
State-of-the art printers and scanners	9	69.2%	1	8.3%	3	27.3%
Business WhatsApp	4	30.8%	3	25.0%	6	54.5%
Hi-tech telephone	5	38.5%	6	50.0%	2	18.2%
Faster computers and tablets	7	53.8%	5	41.7%	1	9.1%
Digital filing	8	61.5%	4	33.3%	1	9.1%
Mobile applications	3	23.1%	7	58.3%	3	27.3%
Block chain technology			3	25.0%	10	90.9%
Reliable internet	10	76.9%	3	25.0%		
Smart boards			8	66.7%	5	45.5%
Software and web applications	3	23.1%	8	66.7%	2	18.2%

Automated equipment	3	23.1%	6	50.0%	4	36.4%
Voice over internet protocol (VOIP)	2	15.4%	7	58.3%	4	36.4%
Video conferencing applications	4	30.8%	5	41.7%	4	36.4%
Artificial intelligence (AI)			5	41.7%	8	72.7%

Table 21.7: Future digital technologies needed (Employees)

Digital technologies	Frequency	Percentage
Faster internet connection	11	91.7%
Ultra-modern equipment (Upgrade current digital equipment/s)	8	66.7%
Artificial intelligence (AI)	2	16.7%
Internet of things (IoT)	4	33.3%
Scanners	6	50.0%
Tracking systems	5	41.7%

Table 21.8: Future digital skills needed (Employees)

Digital skills	Frequency	Percentage
Ability to quickly learn new software (MS packages, accounting packages, designing packages, etc.)	8	61.5%
Computer literacy	7	53.8%
Machine learning	3	23.1%
Digital marketing	9	69.2%
Artificial intelligence (AI)	3	23.1%
Developing a website	11	84.6%
Ability to use and understand digital media	7	53.8%

Table 21.9: Resistance to digital technology in the workplace (Managers)

Reasons for resistance	Frequency	Percentage
Fear of the unknown	2	50%
Lack of digital skills	4	100%
Scepticism (Doubt) of digital technologies	1	25%
Preference for traditional tools	3	75%
Fear of digital technology (Technophobia)	3	75%

Table 21.10: Means of digital transformation (HR Managers)

Actions undertaken	Frequency	Percentage
Skills empowerment	4	80%

Endorsement of digital practices	3	60%
Acquisition of modern technology	4	80%
No action is undertaken	1	20%

Table 21.11: Frequency of digital skills audit (HR Managers)

Do you conduct any digital skills audit?	Frequency	Percentage
No	4	80%
Yes	1	20%

Table 21.12: Frequency of skills audit across sector (HR Managers)

How often do you conduct a digital skills audit?	Frequency	Percentage
No information	4	80%
Twice a year	1	20%

21.4 Digital Skills Supply (Recruit and Retain)

Table 21.13: Perceived impact of digital skills on qualification (Employees)

Perceived impact of digital skills	N	Mean	SD
My knowledge of digital technologies boosts my confidence	13	3.77	1.423
The digital skills that I have acquired open doors to more job opportunities	13	3.92	1.441
The usage of digital technologies makes me more knowledgeable	13	3.77	1.481
With the usage of digital technology. I am now able to innovate at work	13	3.92	1.498
How much value does the knowledge of digital technology add to your qualification?	13	3.38	1.121

Table 21.14: Importance of digital technologies (Employees)

Importance of digital technologies	N	Mean	SD
How much value does the knowledge of digital technology add to your qualification?	13	3.38	1.121

Table 21.15: Recruiting staff (Managers and HR Managers)

Strategy	N	Percentage
Online advertising	6	66.7%
Classified advertisements	3	33.3%
Recruitment agencies	4	44.4%
Word-of-mouth	6	66.7%
Internal advertising	5	55.6%
Internships	3	33.3%
Outsourcing	4	44.4%
Headhunting (Pool of experts)	5	55.6%
Tech summits	1	11.1%

Table 21.16: Retaining digital staff (Managers and HR Managers)

Strategy	N	Percentage
Capacity building	7	70%
Creating a conducive environment	8	80%
Providing incentives	6	60%
Counteroffers	2	20%

Table 21.17: Impact of existing policy (Managers and HR Managers)

Impact of existing policy	N	Mean	SD
How does existing policy (either government or organisational) affect your ability to attract the best talent with the latest digital skills?	10	2.30	1.160

Table 21.18: Perceived challenges (HR Managers)

Perceived challenges	N	Percentage
Costly job portals	3	75%
Interference of trade unions	1	25%
Stringent regulations	2	50%
High competition in acquiring people with digital skills	3	75%

21.5 Digital Skills Development (Training)

Table 21.19: Digital skills acquisition (Employees)

Acquired through ...	N	Percentage
High school	2	15.4%
In-house training	4	30.8%
Peer-learning	2	15.4%
Self-taught	11	84.6%
Short courses	3	23.1%
Tertiary education	4	30.8%
Previous work experience	9	69.2%
External training/Workshops	3	23.1%
I have no digital skills	0	0.0%

Table 21.20: Support systems from the organisation (Employees, Managers and HR Managers)

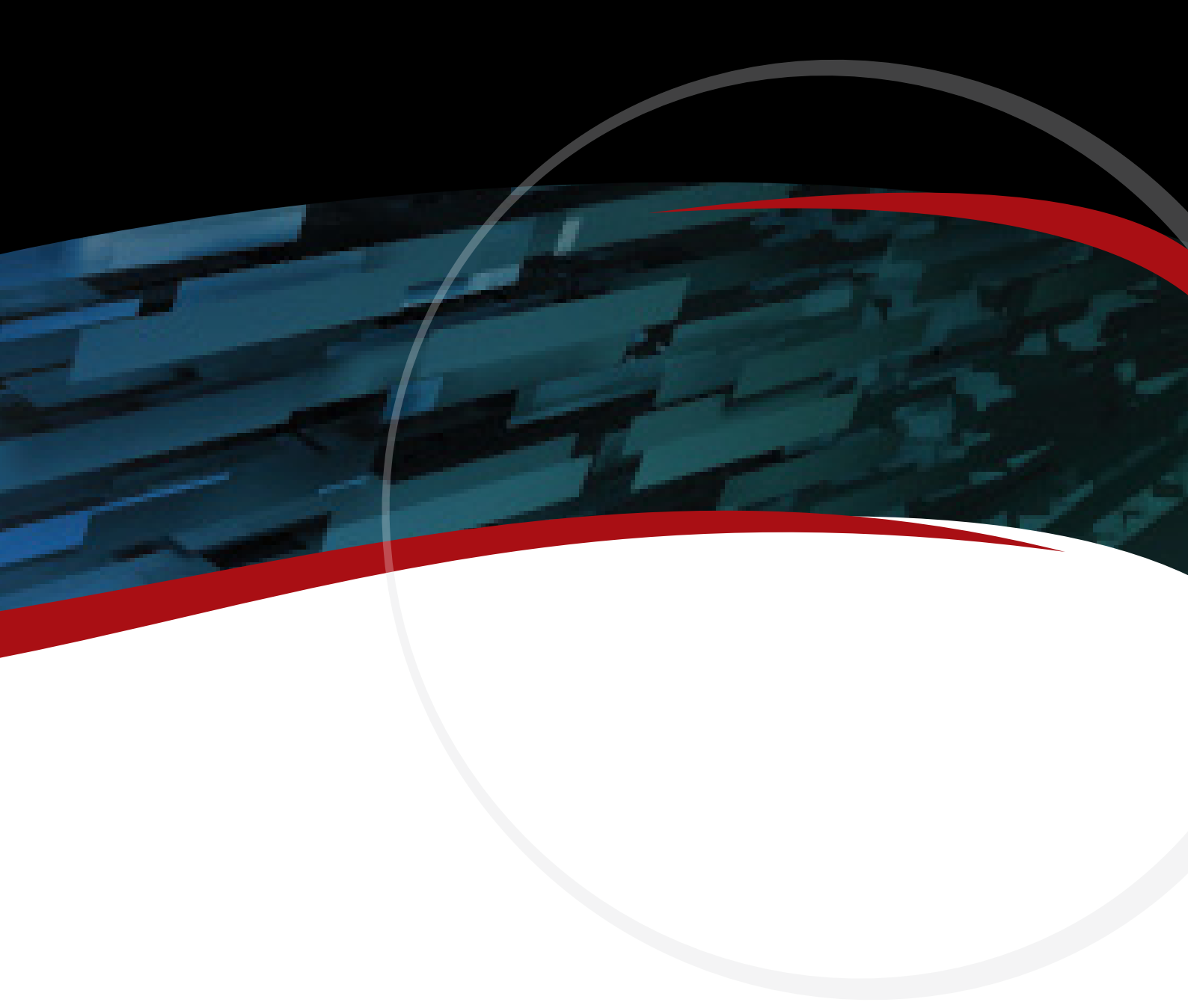
Support systems	N	Mean	SD
Overall results	23	3.38	0.98
My organisation supports digital technology usage through accredited training (officially recognised or authorised)	23	3.39	1.34
Digital technology is promoted through in-house training in my organisation	23	3.30	1.22
My organisation does not have a support system to enhance digital skills	23	3.30	1.22
My organisation encourages self-development of staff when it comes to digital technology	23	3.57	1.44
Digital skills in my organisation are promoted through external training (training conducted outside the organisation)	23	3.22	1.38
My organisation encourages the staff to acquire digital skills through online training	23	3.48	1.20

21.6 Risks and Attitudes

Table 21.21: Risks of and attitudes towards digital skills usage (Employees, Managers and HR Managers)

Risks and attitudes	Number of respondents	Mean	SD
Risk 1	23	2.74	1.389
Risk 2	23	2.65	1.191
Risk 3	23	3.65	0.982
Risk 4	23	2.57	1.343
Risk 5	23	2.61	1.469
Risk 6	23	2.78	1.347

Att 1	23	1.91	1.276
Att 2	23	1.87	1.254
Att 3	23	1.78	1.204
Att 4	23	1.87	1.254
Att 5	23	2.17	1.337
Att 6	23	2.52	1.504



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