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Factors affecting Mobile Business Intelligence readiness in the South African telecom sector

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Background: The rapid adoption and accelerated integration of mobile technology into organisational processes have significantly transformed the landscape of data collection and analysis, establishing Mobile Business Intelligence (MBI) as a critical enabler of real time, data-driven decision-making. Mobile Business Intelligence has emerged as a pivotal tool for enhancing the speed and accuracy of strategic business decisions.

Objectives: The study investigated and established factors affecting MBI readiness within the South African telecommunications sector.

Method: Quantitative research methodology and probability sampling were used to select participants, and closed-ended questionnaires were used. One hundred and twenty-eight responses were received and tested. The factors affecting MBI readiness were validated using quantitative analysis.

Results: Fourteen factors affecting MBI readiness were identified, namely: organisational culture, organisational capability, policies and people, infrastructure, security, skills, training, enterprise mobility support, need for change, inhibitors, motivators, and change enablers.

Conclusion: The findings of this study may encourage success in leveraging mobility and developing better strategies and approaches for MBI adoption, enabling organisations to realise expected benefits, make well-informed decisions and conserve costs, time and resources. These organisations could achieve a higher success rate with MBI investments.

Contribution: This study contributed methodologically, theoretically and practically by identifying critical success factors affecting MBI readiness. Methodologically, the identified factors inform the MBI readiness model and provide guidelines for the successful implementation of MBI solutions.

Keywords: Mobile Business Intelligence; Mobile Business Intelligence readiness; technology readiness; telecommunications; Business Intelligence; mobile technology.

Introduction

In the rapidly evolving digital era and wireless network accessibility, the new generations of mobile devices, such as tablets and smartphones, are swiftly gaining popularity because of their wide range of functionality and portability (Annarumma, Tedesco & Vitale 2018; Yang & Yao 2022). With more and more organisations within South Africa moving to embrace remote working following the advent of coronavirus disease 2019 (COVID-19), the use of mobile devices can empower mobile workers to access real-time business insights ubiquitously (Chauhan & Pandey 2023; Michael et al. 2024). However, it remains a challenge to track these insights as well as dynamic technological and business changes within and outside organisations while maintaining sustainable goals (Tavera et al. 2021).

In today's dynamic environment, the key to success for South African organisations in the telecommunications sector is the ability to make the right decisions timeously (Coelho 2024; Michael et al. 2024). Business Intelligence (BI) can be expanded to Mobile Business Intelligence (MBI) when enabled mobile technologies grow in availability, accessibility and performance. Mobile Business Intelligence refers to the technology solution that enables businesses to access critical business data on mobile devices, providing the flexibility and immediacy required in today's dynamic business environment ubiquitously with greater flexibility to aid agile decision-making (Edirisinghe 2022; Michael et al. 2024; Sultan et al. 2024).

However, the MBI implementations are relatively low in spite of the steady increase in mobile technology adoption (Chi & Mahmud 2020; Jaradat et al. 2024). Digitalisation, characterised by digital technologies' integration into every vein of business operations, has heightened and highlighted the value of digital transformation and how it can help organisations remain competitive in the ever-changing market conditions, leveraging digital technologies to radically transform corporate processes, operations and customer experiences (Kraus et al. 2021).

Harnessing insights from several data sources allows organisations to comprehensively understand trends, consumer behaviour and operational effectiveness, among others. This enables decision-makers to make informed and timely decisions, increasing organisational agility and responsiveness to market conditions (Adewusi et al. 2024; Mohammed et al. 2024).

Information has become one of the most valuable and important assets for the South African telecommunications sector and requires innovative tools for its retrieval, analysis, transformation and presentation (Tavera et al. 2021; Tomas et al. 2024). The need for data integration across the organisation, as well as integration with third parties, has increased because of the desire for global competitiveness, ever-changing customer needs and a bigger market share (Bharadiya 2023b; Mungoli 2023).

The various opportunities arising within the South African economy and highly volatile business environment require rapid, efficient and flexible decision-making processes. Access to real-time information makes strategic and operational processes easier through MBI and, in turn, enables employees to perform some of their tasks more easily, and improves decision-making (Chauhan & Pandey 2023).

Although some organisations in South Africa and globally are adopting mobile technology, MBI implementations remain unexplored and unsupported and usually face high failure rates, leading to unrealised benefits as well as a significant waste of time and resources (Al-Okaily, Ai Ping & Al-Okaily 2021). These can be attributed to the lack of MBI readiness within these organisations to guide MBI implementations (Chi & Mahmud 2020; Jaradat et al. 2024). Therefore, organisations must be aware and knowledgeable about critical factors that affect their readiness for MBI investments.

To ensure that MBI implementations are acknowledged, accepted and adopted, organisational readiness is the most critical element (Machado et al. 2021). Organisations that need to invest in MBI initiatives need to understand and appreciate critical factors associated with such investments. These organisations should conduct readiness assessments, which will, in turn, save them time, costs and resources (Bharadiya 2023b). This study seeks to establish factors affecting MBI readiness within the South African telecommunications sector.

Literature review

Mobile Business Intelligence

The rapid proliferation of mobile devices and technologies, as well as MBI's significant potential in organisational decision-making, demonstrates that MBI success requires top management support that enables decision-making in line with organisational objectives, as well as robust security and compliance standards (Jansen 2020; Ngwenya 2023). Mobile Business Intelligence helps the mobile workforce to gain business insights through information analysis utilising mobile-optimised applications (Edirisinghe 2022).

Mobile Business Intelligence is a novel study area for real-time and integrated BI (Chi & Mahmud 2020; Jaradat et al. 2024). It combines BI with Internet standards and wireless communication technologies to make BI usage easier on mobile devices such as tablets and smartphones (Edirisinghe 2022; Hendrawan et al. 2024). Mobile Business Intelligence provides improved access capabilities by enabling employees to connect anytime and anywhere to the organisation's back-end systems (Edirisinghe 2022). Furthermore, MBI plays a critical role in cost savings, removes manual processes, enhances correctness, validity and dependability, in that end users will input data directly into the device instead of through paper.

However, while mobility provides more benefits, it can also pose a larger threat to organisations and the mobile workforce if not handled properly. For instance, some of the mobile workers may possibly feel that they are being tracked, and their privacy is compromised. The lack of trust in mobility might become a barrier for organisations looking to employ mobility to gain a competitive advantage and improve business operations.

Mobile Business Intelligence adoption

The adoption of MBI is critical as it provides decision-makers with useful information to make informed decisions, reaching the goal of their organisation (Jaradat et al. 2024). Successful approaches to designing applications for personal computers cannot be applied to mobile devices directly, owing to limitations of the devices' screen size and computing power, the characteristic behaviours of mobile users and the dynamic impact of the external environment (Weichbroth, Kowal & Kalinowski 2022).

The integration of non-relational databases ensures that these systems remain effective tools for data analysis in the big data era. Organisations throughout the world are battling to benefit from MBI initiatives, resulting in financial loss, waste of time and resources, as well as unrealised benefits (Alali, Nofal & Alharafsheh 2019; Al-Okaily et al. 2021). Thus, it is important that organisations looking to adopt MBI solutions be guided by a readiness model that will enable these organisations to explore all factors necessary for the successful adoption of MBI and to understand MBI users' behaviours, satisfying their real needs.

The readiness factors will help to ensure that all important factors are considered in a timely manner, which will, in turn, save organisational resources such as time and costs in realising anticipated benefits.

Mobile Business Intelligence benefits

Through the use of handheld devices, MBI gives a mobile workforce access to real-time data and analytics reports at any time and from any location (Michael et al. 2024). Mobile Business Intelligence improves the quality and timeliness of data by embracing a broad range of technologies and applications that acquire, store, evaluate and then make integrated data available for use in making decisions (Bharadiya 2023a; Edirisinghe 2022; Tavera et al. 2021). The effectiveness and promptness of MBI can determine not just the distinction between loss and profit but also whether the organisation survives or fails in the best and worst times.

Mobile Business Intelligence improves the ability to access, analyse and act on data from anywhere, leading to better business outcomes and more flexible and informed decision-making processes (Jaradat et al. 2024). Mobile Business Intelligence lowers expenses, increases operational effectiveness and improves customer happiness, giving a competitive edge, offering real-time information and improving network performance and service delivery (Roberts 2022). Ensuring that the organisation has real-time insights at its fingertips.

Challenges of Mobile Business Intelligence adoption

South African organisations have limited Internet access, particularly in remote areas where there is no infrastructure, and there is a scarcity of critical services such as electricity, water and Internet (Musonda et al. 2024). The exorbitant cost of data and mobile devices in South Africa is also a hurdle, as organisations must invest in data and mobile devices so as to make MBI solutions accessible to their employees. Other challenges include political and regulatory aspects, inadequate knowledge and skills, inadequate infrastructure, primitive user interface, MBI implementation failures, lack of readiness and more (Al-Okaily et al. 2021).

Furthermore, insufficient skills and knowledge, complexities of mobile devices, lack of in-house expertise, high cost and data irregularities continue to discourage many organisations from adopting MBI solutions (Matoza et al. 2021). Adopting a cloud computing paradigm that delivers MBI solutions as a service over the Internet will dramatically remove the obstacles of high costs and lack of in-house expertise and assist in speeding the adoption of mobile solutions (Muriithi & Kotzé 2013).

It is imperative for organisations seeking to invest in MBI solutions to be knowledgeable and adept at factors affecting MBI readiness. This will assist in ensuring that organisations make informed decisions towards MBI investments. Knowing and understanding factors affecting MBI readiness will potentially save organisations a considerable amount of time and resources, as well as ensure the return on investments. Although the established factors are based on the South African telecommunications sector, other organisations in other industries can adapt factors relevant to their specific environment.

Mobility, cybersecurity and privacy

There is a need for increased privacy and security of organisational data on mobile devices and applications.

With these portable devices (i.e. laptops, smartphones, Personal Digital Assistant [PDA] etc.), data transmitted can be intercepted with ease, and working in public places increases the risk of ubiquitous access and accidental dissemination of information to unauthorised parties.

Ensuring that data usage respects user privacy and security requirements is critical for retaining trust (Hutt, Das & Baker 2023). As data in high-security contexts becomes more open and accessible, it is crucial to prioritise improving privacy so as to preserve the integrity, confidentiality and availability of data on MBI solutions (Zaerens 2023).

Organisational personnel may be a significant security vulnerability, whether or not they are aware of it; therefore, it is imperative that all personnel receive security awareness, policy and practice training to safeguard organisations against security threats and vulnerabilities and to bridge the digital divide (Aljedaani et al. 2020). Implementing MBI becomes more secure and seamless when employees comprehend and adhere to mobile-security requirements and cybersecurity measures employed by the organisation.

Cybersecurity is a multi-faceted domain that refers to professional practices, tested processes and technologies designed to protect networks, systems, devices, information, programmes and data from unauthorised access, damage or attack (Ahmad et al. 2024; Peslak & Hunsinger 2019). Mobile devices such as tablets and smartphones are the most highly used smart devices across the globe and are considerably pervasive in society.

Notably, hackers or cybercriminals gradually develop malware (malicious software) to compromise mobile devices, consequently making mobile devices the main targets for malware attacks (Ahmad et al. 2024; Alazab et al. 2020).

Malware compromises information stored on mobile devices by spreading onto these devices. Cybercriminals can undermine businesses by installing malicious apps on mobile devices that pose as trustworthy apps (Ferdous et al. 2025). Mobile devices can further be used to launch Distributed Denial of Service attacks against corporate networks (Ahmad et al. 2024; Siris 2020). This can cause enormous financial losses and negatively affect the integrity, confidentiality and

availability of mobile devices (Alazab et al. 2020; Gao & Zhuang 2020).

The telecommunication sector is overwhelmingly becoming more susceptible to cyberattacks with the rise of the Internet of Things extending to interconnected devices such as smart buildings, driverless cars, digitalised home appliances, smart devices, drones, etc. (Ahmad et al. 2024). Traditional protection mechanisms are ineffective and incapable. Thus, there is a need to employ modern security measures that will empower organisations to identify, protect, detect and timeously respond to and recover from security breaches (Kamoun et al. 2020).

Recent studies identified some key dimensions that are likely to influence cybersecurity, such as digital literacy, security awareness and support availability (Vrhovec et al. 2024). It is, therefore, fundamental that organisations seeking to invest in MBI technology are guided on critical factors for such investments in order to ascertain their level of readiness. Furthermore, this will ensure that the correct measures are employed suitable to the organisational needs, thus saving time and resources.

Research methods and design

Study design

The study employed a descriptive design, distinguished by research questions beginning with or including 'What', 'Who', 'When', 'How' or 'Where' (Saunders, Lewis & Thornhill 2019). According to Leedy and Ormrod (2016), descriptive research investigates a situation rather than changing or modifying it. The study extensively reviewed literature relating to MBI. The questionnaire's measuring items were then designed using the information that had been gathered. Following data collection, Statistical Package for Social Sciences (SPSS) version 20 (IBM Corporation, Armonk, NY, United States) was used to code and transcribe the questionnaire for analysis. Quantitative analysis and validation were carried out.

Furthermore, the quantitative research design was adopted in this study, which provides an in-depth understanding of the present state of MBI readiness in the South African telecommunication sector. The design provided deeper knowledge related to the research. This led to critical factors that are significantly affecting MBI readiness within South Africa (Bentouhami, Casas & Weyler 2021).

Study setting

The research was conducted with a focus on the South African telecommunications sector, which is dominated by Vodacom, MTN, Telkom, Cell C and newer entrants, including Rain and several Mobile Virtual Network Operators. The participants were chosen using a probability random sampling method; the study also ensured that the survey was as inclusive as possible, including employees from various business units such as information and communications technology, communications, marketing, strategic enablement, operations, human resources management, governance risk and compliance, finance, supply chain management, audit and so on. The total number of 128 questionnaire responses was received and tested and was found to be valid and reliable.

Employees who were deemed to understand BI and MBI participated in the study with a background in the telecommunications industry. Executives, managers, specialists, analysts, architects, developers, testers, support and BI users were among the workers.

Participants' demographics

Demographics, knowledge and experience with computers or mobile devices, the Internet and BI, general experience, occupation and BI involvement, as well as their impressions of BI concepts and effects on preparation, were all collected as shown in Table 1. Furthermore, to confirm the relevance and correctness of the obtained data, participants were asked to indicate whether or not they were familiar with MBI.

There was a total number of 128 participants. The male participants contributed 70.3%, while female participants contributed 29.7%. The respondents were grouped into different factors such as gender, education level, work experience, business unit, occupation and their involvement in BI.

The approach of the study and strategy

The quantitative approach was employed to effectively achieve the study objectives. This approach allowed the researchers to gather large-scale data and to use statistical techniques to analyse trends, correlations, and the influence of variables (Saunders et al. 2019; Watson, Kim & Liu 2023). The quantitative research provides objectivity, control and accurate measurement.

This strategy was the best option for providing unambiguous, data-driven insights regarding MBI readiness across a broad sector in which objectivity, generalisability and scalability are essential (Dos Santos et al. 2021).

Data collection and analysis

The data for this study were collected using the quantitative technique; namely, a survey was conducted using closed-ended questionnaires based on a five-point ordinal scale. The selected data-collection method (i.e. closed-ended questionnaires) empowered the researcher to accomplish the goals of the study, which is considered the best method for the study, particularly when examining specialised phenomena such as MBI readiness in the telecom industry. This method ensured that the study is more objective, is cost-efficient, saves time and is easy to complete; the data are easy to analyse; the method speeds up the process of collecting data and coding it using statistical packages (Babbie 2020).

TABLE 1: Participants' demographics.

Factor	Category	Frequency	%	Cumulative %
Gender	Male	90	70.3	70.3
	Female	38	29.7	100.0
	Total	128	100.0	-
Education level	Below grade 12	2	1.6	1.6
	Grade 12	1	0.8	2.3
	Diploma	28	21.9	24.2
	Degree	55	43.0	67.2
	Masters	39	30.5	97.7
	PhD	3	2.3	100.0
	Total	128	100.0	-
Overall work experience (years)	0–3	15	11.7	11.7
	4–7	24	18.8	30.5
	8–11	39	30.5	60.9
	12–15	23	18.0	78.9
	16–19	14	10.9	89.8
	≥ 20	13	10.2	100.0
	Total	128	100.0	-
Business unit	Information technology	88	68.8	68.8
	Communications	9	7.0	75.8
	Finance	5	3.9	79.7
	Supply chain management	1	0.8	80.5
	Governance, risk and compliance	5	3.9	84.4
	Audit	3	2.3	86.7
	Human resources	2	1.6	88.3
	Marketing	2	1.6	89.8
	Operations	5	3.9	93.8
	Strategic enablement	2	1.6	95.3
	Support	2	1.6	96.9
	Other	4	3.1	100.0
	Total	128	100.0	-
Occupation	Executive	6	4.7	4.7
	Senior management	10	7.8	12.5
	Management	26	20.3	32.8
	Specialist	57	44.5	77.3
	Operations and support	15	11.7	89.1
	Administration	4	3.1	92.2
	End-user	1	0.8	93.0
	Staff	9	7.0	100.0
	Total	128	100.0	-
BI involvement	Manager	24	18.8	18.8
	Specialist	16	12.5	31.3
	Analyst	21	16.4	47.7
	Architect	5	3.9	51.6
	Developer	12	9.4	60.9
	Tester	5	3.9	64.8
	Bi user	9	7.0	71.9
	Support	20	15.6	87.5
	Staff	16	12.5	100.0
	Total	128	100.0	-

PhD, Doctor of Philosophy; BI, Business Intelligence.

The use of this method assisted in reducing respondent bias by limiting the potential for being too subjective or giving long responses, which may be influenced by personal interpretation (Creswell 2021). This method provides a form of standardisation that facilitates ensuring that all respondents answer the same set of questions in the same way, thus improving the reliability of results (Fink 2017). The collected data were coded and transcribed using the SPSS version 20, and Cronbach's alpha was used for reliability testing (Ghanem 2023).

Furthermore, the study employed quantitative analysis because it makes it possible to extrapolate findings from a sample to a larger population, providing findings that are accurate, quantifiable and amenable to statistical analysis, making it easier to compare groupings over time and eliminating bias (Taherdoost 2021). A large number of participants could be readily reached using quantitative data-collection methods, such as online surveys, which make them appropriate for extensive evaluations. The efficiency and representativeness of research are enhanced by extensive data collection, especially in MBI readiness-assessment contexts (Pallant 2020).

According to Johnson and Christensen (2014), one of the main advantages of quantitative research is its reproducibility, which enhances its legitimacy and decision-making value. Thus, this method is particularly useful for this study in that it allows organisations to objectively test readiness, compare results across units and forecast the influence of readiness factors on MBI readiness. The scalability and statistical rigour of quantitative research render it indispensable for evidence-based decision-making.

Data screening was performed to uncover potential mistakes, miscoding, missing data and normalcy, as well as to guarantee that statistical analysis processes were precise and estimations had a solid foundation. A normality assessment was performed to identify how to handle nonnormality. To eliminate biased results, the data were checked for univariate and multivariate outliers. Furthermore, all items were checked for accuracy. Microsoft Excel 2013 (Microsoft Corporation, Redmond, WA, United States) and SPSS version 20 were further used to check the missing data in the questionnaires, and the incomplete questionnaires were discarded.

Descriptive statistics

Descriptive statistics were used to summarise data in a manner that explains the correlation between variables in a population. This was a necessary first step towards computing statistics, which is undertaken during research, and it is always recommended to carry out prior to making inferential statistical comparisons (Kaur, Stoltzfus & Yellapu 2018). The variables were descriptively analysed, and the minimum, maximum, mean, standard deviation and skewness were determined. The questionnaire used for the variables was based on a five-point Likert scale.

Reliability and validity of constructs

Reliability testing strengthens and ensures the replicability and validity of study findings, enhances credibility and relevancy and ensures that the construct represents the concept being studied, enabling meaningful and trustworthy conclusions. It ensures that constructs assess what they should measure throughout time or across diverse settings (DeVellis 2016). Before testing for the validity and reliability of constructs, each item was evaluated for its reliability and validity. The validity and reliability of the collected data were then examined to ensure that it was dependable and could be utilised to derive reasonable conclusions.

Cronbach's alpha was used to assess questionnaire reliability. The surveys have an aggregate α-coefficient of 0.960, exceeding the minimum value of 0.7. As a result, the surveys were proven to be reliable and usable. Furthermore, the reliability and validity of each construct were assessed. Ninety-five per cent (95%) of constructs exceeded the minimum α-coefficient of 0.7. Five per cent (5%) of constructions with α-coefficient values below 0.7 were abandoned.

Ethical considerations

Ethical clearance to conduct this study was obtained from the Faculty of Research Ethics, Tshwane University of Technology (No. FCRE/ICT/2017/05/002[2]).

Results

The study identified 14 critical factors for MBI readiness within the South African telecommunications sector, as shown in Table 2.

These factors were classified into three major sections, namely:

- *Organisational readiness:* Focuses on various organisational aspects such as organisational culture, people and policies;
- *Technology readiness:* Focuses on various technological factors such as infrastructure, security, training and skills and
- *Core readiness:* Focuses on various critical aspects such as inhibitors, motivators and need for change.

Several theories were used in identifying these factors, including the literature, namely the Technology Readiness Index, McKinsey 7s model and change-management theories.

Organisational readiness

Organisational culture

Every organisation has its own uniqueness in how it conducts its business and operates, which is a mark of distinction when defining or describing that organisation. The same uniqueness can also be attributed to different countries. The culture of South African organisations in conducting their business and operations is different from the culture of other organisations in other countries. In other instances, the same organisation that is operating in different countries will need to have a culture unique to its business and the country in which it is operating.

TABLE 2: Mobile Business Intelligence readiness factors.

Factor	Cronbach's alpha	Significance value (*p*-value)	Cronbach's alpha (Standardized items)	No. of items
Culture	0.876	$p = 0.000 < 0.05$	0.876	3
Policies	0.835	$p = 0.001 < 0.05$	0.834	5
People	0.807	$p = 0.003 < 0.05$	0.811	2
Infrastructure	0.866	$p = 0.021 < 0.05$	0.867	2
Security	0.773	$p = 0.001 < 0.05$	0.803	6
Skills/capability	0.852	$p = 0.000 < 0.05$	0.852	2
Training	0.940	$p = 0.001 < 0.05$	0.940	4
Need for change	0.842	$p = 0.000 < 0.05$	0.847	6
Motivators	0.775	$p = 0.002 < 0.05$	0.798	8
Inhibitors	0.763	$p = 0.001 < 0.05$	0.767	9
Organisational capability	0.830	$p = 0.000 < 0.05$	0.831	3
Enterprise mobility	0.851	$p = 0.033 < 0.05$	0.860	4
Support	0.915	$p = 0.013 < 0.05$	0.916	4
Change enablers	0.788	$p = 0.000 < 0.05$	0.789	2

Although the organisation might have, among others, relevant structures, strategies, systems and processes in place to enable MBI readiness, these will remain ineffective and insignificant unless the culture of the organisation is conducive. The phrase by Peter Drucker, 'Culture eats strategy for breakfast, lunch, and dinner', remains a reality in most South African organisations, particularly in the telecommunications sector.

Organisations that fail to embrace the importance and impact of culture put their success at risk. The diverse workforce demands a culture emphasising creativity and inclusivity.

This study found that it is of utmost importance to maintain cultural coherence throughout the organisation, which, in turn, enables strategic alignment and MBI implementation among others. A supportive culture that embraces innovation, policies that align with MBI goals and a workforce capable of adapting to MBI demands are non-negotiables for organisations seeking to leverage MBI implementations. According to Kalema, Olugbara and Kekwaletswe (2012), organisations must involve employees in planning and change-management processes so as to embrace change and avoid resistance.

Policies

Policies that align with organisational strategy, support a data-driven culture, enforce compliance, allow for structural alterations and encourage constant innovation are critical for the effective implementation of MBI solutions. These policy-driven reforms foster an atmosphere in which MBI may thrive, ultimately offering a competitive advantage in a rapidly changing industry. It is essential that security policies and procedures are well -defined, documented and incorporated into the enterprise's overall organisational strategy. Such policies and procedures should also be widely accessible and understood by all employees and users, and they must be rigorously enforced.

Based on researchers Karanja, Njeru and Otieno (2023), a policy-driven approach ensures that required resources (e.g. financial, human, technological, etc.) are provided and that organisational culture, strategy and structure are ready to comply with regulatory obligations while implementing MBI technologies. This is fundamental to avert potential legal concerns while also assuring that the organisation can leverage MBI capabilities without infringing data privacy standards and regulations; this applies particularly in the South African telecommunications sector, where resources are limited and budgets are constrained.

Organisational personnel may be a significant security vulnerability, whether or not they are aware of it; therefore, it is imperative that all personnel receive security awareness, policy and practice training to safeguard organisations against security threats and vulnerabilities and to bridge the digital divide (Aljedaani et al. 2020). Implementing MBI becomes more secure and seamless when employees comprehend and adhere to mobile-security policy requirements.

People

Every aspect of culture, structure, strategy, policy and process needs people to foster collaboration, make informed decisions and ensure that MBI technologies are efficiently and effectively integrated into organisational operations. It is vital for organisations to focus on developing a workforce that is both technically skilled and strategically aligned in order to achieve MBI readiness. Mobile Business Intelligence preparedness is largely dependent on the organisation's roles and duties being clearly defined and assigned.

People who hold leadership positions must build an atmosphere conducive to embracing new technology, such as MBI, ensuring that staff at all levels understand the need to employ MBI for strategic decision-making and operational efficiencies (Matthysee & Nzuza 2019). Furthermore, people involved in MBI strategy development must ensure that the MBI tools improve, among others, decision-making, customer insights, operational efficiencies, service delivery and market competitiveness (Chong, Chan & Goh 2019).

Technological readiness

Infrastructure

Infrastructure plays a crucial role in shaping the dimensions of the organisation. The integral role of infrastructure in supporting the strategic framework of an organisation is fundamental. Mobile Business Intelligence systems require a secure infrastructure to prevent data loss or unwanted access. This encompasses network security, server security and data storage solutions. As explained by Van der Merwe (2021), organisations must invest in secure, scalable infrastructure capable of handling the growing volume and complexity of MBI data.

This includes implementing intrusion detection systems, firewalls and secure cloud storage to protect data at rest, in use and in transit. The influence on infrastructure underscores its relevance in ensuring operational effectiveness and efficiency, depicting its critical role in optimising workflows and enhancing technological alignment with organisational goals. On the authority of Hlatshwayo (2024), secure infrastructure is critical for safeguarding sensitive data for MBI.

Security

Organisations that are looking to implement MBI solutions must foster a security-first culture. In organisations, where MBI delivers real-time data insights, security awareness must be ingrained in the organisational culture. This entails cultivating a culture of trust and responsibility in which all employees are aware of the risks related to MBI solutions, such as data breaches and cyberattacks. According to Olivier (2023), building a security-conscious culture reduces internal security risks and aligns employee behaviour with organisational security policy.

Security has a significant impact on the MBI readiness in organisations. To secure sensitive data and ensure operational integrity, security measures must be integrated into all parts of the organisation, from culture to device management. According to Zhang and Liu (2022), mobile device management is critical for ensuring the overall security of MBI systems, especially in contexts where workers regularly work remotely or on the go. Organisations can mitigate security risks and successfully adopt and implement MBI solutions by prioritising security across culture, structure, strategy, policy, process, people, infrastructure, systems and device management, as well as ensuring legal compliance and customer trust.

Skills

Skills development is critical to the readiness and success of MBI investments. Inadequate skills expose organisations to various risks such as illegal access, data breaches, regulatory violations and more, all of which can seriously harm customer trust and organisational reputation. Organisations can maximise the efficiency of MBI solutions and improve organisational performance by ensuring that staff have the necessary skills (Govender 2023). Investing in ongoing skill development not only enables employees to make more data-driven decisions but also improves the overall security and efficiency.

Employees should also be equipped with the necessary mobile technology skills and expertise. Training, experience, observations, organisations (such as professional bodies and mentorship), self-learning and other methods can all be used to gain these skills (Weritz 2022). One of the key technological inhibitors towards mobile technology is the lack of necessary skills or expertise (Heinis, Hilario & Meboldt 2018). Organisations must give employees the resources, opportunity and knowledge necessary to use mobile technology effectively (Weritz 2022). According to the study, failure is inevitable when top management does not push its staff or employees to build vital abilities or competence in their particular fields of work.

Training

According to Díaz-Arancibia et al. (2024), organisations must have a clear and mandatory mobile education and training plan, as well as training sessions that employees must attend that are aligned with the organisation's mobile strategy. They assert that mobile technology companies must provide training sessions on mobile technology for businesses, as this will help ensure the availability of the skills required to properly and efficiently adopt MBI technology. Training is essential for ensuring that personnel inside businesses have

the requisite skills and knowledge for MBI preparation (Audrin, Audrin & Salamin 2024; Za, Scornavacca & Pallud 2022). When training is facilitated by adequate support systems and a high level of MBI readiness, employees are better equipped to adopt new technologies, leading to improved organisational readiness.

Furthermore, education becomes critical from both organisational and personal perspectives. Thus, users must be educated on how to use these mobile devices for organisational advancements in line with the policy directive, while on the other hand, organisations must be educated on the risks and opportunities presented by mobility and how to curb the risks while maximising opportunities.

Core readiness

Need for change

Organisational changes successfully conveyed by top management or leadership to all employees, regardless of rank, are critical. Management and the rest of the organisation's leadership should embrace change rather than fear it (Kasrim et al. 2025). Effective communication is essential for facilitating change. It is therefore necessary that technical updates be communicated to all staff on a regular basis, utilising the many communication channels and platforms available to the organisation (Asare & Tony 2025).

This inclusive approach will allow all employees to participate in organisational decision-making, making it easier for these people to embrace change and hence ensure MBI readiness. This indicates that change should be viewed not only as management's job but also as the responsibility of every individual in the business.

Motivators

Mobile technology offers greater mobility and control over day-to-day activities (Yueh, Lu & Lin 2016). Organisations with MBI readiness benefit greatly from staying up to date with the latest technological advancements. This allows these organisations to analyse and implement technologies that are appropriate for their needs rather than adopting technologies without taking the environment and anticipated return on investment into account.

Additionally, factors that motivate workers to use mobile technology should be taken into account, such as security, comfort, enhanced control, flexibility, technological efficiency, being the first to adopt a new technology, etc.

Inhibitors

In a similar vein, factors that deter workers from embracing or utilising mobile technology – such as mistrust, anxiety, discomfort, insecurities, etc. – should be taken into account. Organisational-wide preparedness for MBI is likely to be adversely affected by the belief that mobile technology makes it simpler for firms to spy on individuals or their staff. While some employees think that human interaction is crucial when working with technology, others think that if something is automated, they should make sure the computer or machine is operating correctly.

Furthermore, several participants claimed that information communicated via the Internet or a machine could never be guaranteed to reach its intended destination or the correct location. Thus, when assessing MBI preparedness, businesses must identify potential barriers and mistrust. Failure to identify and evaluate these aspects or inhibitors will have a detrimental impact on the organisation's preparation for MBI adoption.

Mediating factors

Organisational capabilities

Organisations must be able to attract and retain the essential skills in order to achieve their goals and objectives.

Organisations that experience frequent turbulence and rapid change rely on their skill and aptitude to adapt to the new market and environmental demands. These organisations must have staff who are skilled and adept at implementing and managing mobile technologies, as well as systems in place to foster and sustain high levels of employee morale.

Furthermore, companies must be adaptable and capable of generating a competitive advantage, aligning business strategies to directly support organisational goals, introducing new products or services and improving customer connections. These businesses must provide faster and more convenient access to valuable, accurate and reliable internal and external information. The study discovered that organisational mobility enhances corporate efficiency, procedures, new business strategies and models, financial resources, structure, processes, skill levels and capability expansion.

Support

The accomplishment of organisational goals and objectives, MBI readiness and new technology advancements and implementations all depend on top management support as well as assistance from all levels of management. Top management and leadership support during the implementation process of new technology are critical at all times. This is supported by Ashfaq et al. (2023), who emphasise that empathy, foresight and consideration in dealing with employees foster a sense of value and improve their overall well-being.

Additionally, inadequate funding could lead to the implementation and support of MBI readiness failing or being impossible. To ensure MBI readiness, organisations must have a defined budget and funding plan.

Enterprise mobility

To ensure MBI readiness, organisations must be able to gain a competitive edge, align organisational plans to solutions,

strengthen relationships with clients and directly support organisational objectives. These organisations must provide faster and more convenient access to valuable, accurate and trustworthy internal and external data. Enterprise mobility enhances corporate efficiency, business processes, new business plans and models, financial resources, structure, process skill levels and increased capacities.

According to Harris and Patten (2014), organisations can integrate enterprise mobility to leverage productivity and flexibility into their business strategy so as to employ new policies to address processes, people and technology implications from the mobile way of doing business. Thus, when dealing with MBI readiness, enterprise mobility will be instrumental in measuring levels of end-user convenience, efficiency, productivity, process improvement and decision speed.

Change enablers

Change involves aligning activities with organisational strategy, fulfilling goals and objectives and actively engaging stakeholders when adopting MBI solutions. Maintaining normal operations and collaboration during the changeover period is a priority. Communication is essential during a transformation for maintaining stakeholder involvement and responding to staff concerns. According to Larkin and Atkinson (2024), a communication plan that includes all stakeholders, delivers vital messages and is timely and engaging is essential for change enablement, as well as for sustaining relationships and understanding of the task for MBI readiness.

Change enablers contribute significantly to MBI readiness by facilitating and supporting the adoption and deployment of MBI solutions. Organisations can overcome barriers to MBI readiness, accelerate deployment timelines and maximise the value of MBI solutions by leveraging change enablers. The enablers work together to support a comprehensive approach to successfully integrate MBI into organisational strategy and operations.

Key findings

Mobile Business Intelligence solutions have the potential to improve decision-making, but adoption challenges remain; these include, among others, high costs, limited skills, perceived complexity and technology distrust. Furthermore, the MBI adoption process is hampered by a reluctance to change, inadequate resources and a lack of support from relevant stakeholders, including the organisational leadership, as well as data security and privacy concerns.

There is a need for more economical and user-friendly solutions and a culture that values technology, teamwork, continuous learning, innovation and data-driven approaches to improve the adoption and use of MBI.

South African organisations continue to struggle with the integration of MBI technologies, which is worsened by a lack of qualified personnel. According to Dube and Ruxwana (2022), the difficulty of comprehending the unique requirements and challenges encountered by South African organisations when implementing MBI solutions is further compounded by the lack of local research. This is mainly because mobility brings about various challenges as well as opportunities, which the telecommunications sector needs to embrace.

The challenges presented by mobility include among others: Security and privacy of proprietary information; limited processing, graphics, display, etc.; lack of standardisation in mobile offerings from mobile platform vendors; lack of adoption of globally available mobility solutions; fragmented mobile platforms and diversity issues, e.g., different types of mobile browsers, inputs methods, operating systems, inter alia; adherence to policies and standards and lack of MBI readiness factors that will enable organisations to make informed decisions in adopting MBI solutions.

Fourteen critical factors that affect MBI readiness were identified, which will aid in improving the adoption of MBI within organisations. South African organisations are lagging behind in terms of the adoption of MBI compared with other countries. This is exacerbated by the fact that South Africa is plagued by high levels of poverty, an unequal society, a high cost of mobile data, unequal access to technology and a persistent digital divide, among other factors. Internet connectivity remains a dream in some poor and disadvantaged communities despite MBI's heavy reliance on Internet access.

The adoption of MBI within the South African telecommunications sector will most likely increase significantly in the future. The anticipated increase will be attributed to, among others, unprecedented culture change, government programmes, increased MBI models and the prevalence of rare diseases such as the outbreak of COVID-19, which forced most businesses and workforce locally and across the globe to operate remotely.

The policy landscape assists organisations in navigating compliance and security challenges while implementing mobile technologies. South Africa continues to focus on digital literacy and technical capability improvements. A large part of MBI adoption is dependent on employee readiness, which encompasses training employees to effectively utilise MBI solutions. It is anticipated that South Africa will be particularly deliberate about upskilling and reskilling programmes and continue to employ various measures to fight the high levels of poverty, positioning MBI as a critical tool for improving data-driven decision-making.

The use of mobile technology can be a beacon of hope, enabling billions of people across the world to connect. Since the reign of COVID-19, most organisations in South Africa and across the globe have adapted so as to conduct their businesses remotely. It is vital for organisations to focus on

designing and integrating mobile solutions that are specifically tailored to local demands. According to Botha and Smit (2020), MBI solutions must be customised to address the unique issues and challenges that each organisation faces, including cultural diversity, varied languages and industry-specific requirements.

To increase the adoption of MBI, organisations must continue to focus on various initiatives, such as improving mobile infrastructure, building capacity through training, fostering government and policy support, encouraging industry-specific adoption and addressing security concerns. Together, these initiatives create a more conducive atmosphere for the adoption of MBI, enabling organisations to use real-time data to make decisions and boost operational effectiveness.

Strengths, limitations and future work

The study focused on South Africa, with data gathered especially from South African organisations in the telecommunications sector. As a result, it does not accurately reflect all countries around the world. Although some readiness factors may be comparable across countries and industries, generalisation of the results should be approached with care. Future research should consider a broader range of industries to gain a more comprehensive knowledge and understanding of the problem and its implications across sectors.

A cross-sectional survey was used in the study; data were gathered at a specific time. The results of this study may not be as useful in predicting future trends; results could be attributed to a variety of circumstances, including the increasing use of the Internet, rapid technological advancements, natural or man-made disasters, rare disease outbreaks (e.g., COVID-19), cultural shifts and the increasing automation of business operations.

Future research could therefore focus on longitudinal studies

The study makes a significant theoretical, methodological and practical contribution by providing organisations with a practical guide for assessing their MBI readiness, reflecting opportunities to look into critical readiness factors that will help them realise anticipated benefits and make informed decisions while saving money, time and resources. The identification of the key factors influencing MBI readiness through various theories, literature and surveys makes a substantial theoretical, methodological and practical contribution and has paved the way for future research. Organisations could use the knowledge provided by these critical readiness factors and their impact on practice to design better strategies and tactics for MBI adoption. These organisations could further experience a high success rate on MBI investments and better support while exploring MBI initiatives.

Conclusion

Mobile technologies are becoming rapidly accepted in the South African telecommunications sector and are now having a dramatic impact on MBI and decision-making. Mobile Business Intelligence is quickly becoming a valuable management tool that supports organisational decision-making by delivering crucial, real-time information through mobile platforms. This flexibility is extremely useful in South Africa, which has a rapidly evolving business environment in which organisations are using MBI to enhance customer experiences, increase efficiency and augment operational efficiencies.

The implementation of MBI in the value chain is vital for streamlining MBI operations and customers in the ecosystem. It is important for organisations utilising their massive stocks of data as a strategic resource to create critical information that will support business adaptation and differentiation. Nevertheless, issues such as data security and privacy, as well as limited infrastructure, should be strengthened to fully utilise these technologies. The identified factors could be used by organisations as a practical guide for assessing their readiness for MBI.

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The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

CRediT authorship contribution

Marothi P. Lemekwane: Conceptualisation, Methodology, Formal analysis, Investigation, Writing – original draft, Visualisation, Project administration, Software, Validation,

Data curation, Resources, Writing – review & editing, Funding acquisition. Nkqubela Ruxwana: Conceptualisation, Methodology, Project administration, Writing – review & editing, Supervision. Tendani J. Lavhengwa: Writing – review & editing, Supervision. Sunday O. Ojo: Writing – review & editing, Supervision. All authors reviewed the article, contributed to the discussion of results, approved the final version for submission and publication and take responsibility for the integrity of its findings.

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References

Adewusi, A.O., Okoli, U.I., Adaga, E., Olorunsogo, T., Asuzu, O.F. & Daraojimba, D.O., 2024, 'Business intelligence in the era of big data: A review of analytical tools and competitive advantage', *Computer Science & IT Research Journal* 5(2), 415–431. https://doi.org/10.51594/csitrj.v5i2.791

Ahmad, J., Zia, M.U., Naqvi, I.H., Chattha, J.N., Butt, F.A., Huang, T. et al., 2024, 'Machine learning and blockchain technologies for cybersecurity in connected vehicles', *WIREs Data Mining and Knowledge Discovery* 14(1), e1515. https://doi.org/10.1002/widm.1515

Al-Okaily, A., Ai Ping, T. & Al-Okaily, M., 2021, 'Towards business intelligence success measurement in an organization: A conceptual study', *Journal of System and Management Sciences* 11(2), 155–170. https://doi.org/10.33168/JSMS.2021.0210

Alali, H., Nofal, M. & Alharafsheh, M., 2019, 'Business intelligence implementation success framework: A literature review', *European Journal of Business and Management* 11(6), 9–14. https://doi.org/10.7176/EJBM/11-6-02

Alazab, M., Alazab, M., Shalaginov, A., Mesleh, A. & Awajan, A., 2020, 'Intelligent mobile malware detection using permission requests and API calls', *Future Generation Computer Systems* 107, 509–521. https://doi.org/10.1016/J.FUTURE.2020.02.002

Aljedaani, B., Ahmad, A., Zahed, M. & Ali Babar, M., 2020, 'Security awareness of end-users of mobile health applications: An empirical study', in M. Mühlhäuser, G.C. Polyzos, F. Michahelles, A.S. Guinea & L. Wang (eds.), *Proceedings of the 17th EAI International Conference on Mobile and Ubiquitous Systems: Computing, Networking and Services (MobiQuitous 2020)*, MobiQuitous '20: Computing, Networking and Services, Darmstadt, Germany, December 7–9, 2020, pp. 125–136, Association for Computing Machinery, New York, NY.

Annarumma, M., Tedesco, I. & Vitale, L., 2018, 'Mobile generation, digital devices and preschool education', *International Journal of Digital Literacy and Digital Competence (IJDLDC)* 9(4), 19–32.

Asare, E. & Tony, A.O., 2025, 'The role of corporate communication in organisational change management', *Convergence Chronicles* 6(3), 83–94.

Ashfaq, F., Abid, G., Ilyas, S. & Binte Mansoor, K., 2023, 'Perceived organisational support and work engagement among health sector workers during the COVID-19 pandemic: A multicentre, time-lagged, cross-sectional study among clinical hospital staff in Pakistan', *BMJ Open* 13(6), e065678. https://doi.org/10.1136/bmjopen-2022-065678

Audrin, B., Audrin, C. & Salamin, X., 2024, 'Digital skills at work – Conceptual development and empirical validation of a measurement scale', *Technological Forecasting and Social Change* 202, 123279. https://doi.org/10.1016/j.techfore.2024.123279

Babbie, E.R., 2020, *The practice of social research*, Cengage, Boston, Australia.

Bentouhami, H., Casas, L. & Weyler, J., 2021, 'Reporting of "theoretical design" in explanatory research: A critical appraisal of research on early life exposure to antibiotics and the occurrence of asthma', *Clinical Epidemiology* 13, 755–767. https://doi.org/10.2147/CLEP.S318287

Bharadiya, J., 2023a, 'A comparative study of business intelligence and artificial intelligence with big data analytics', *American Journal of Artificial Intelligence* 7(1), 24–30. https://doi.org/10.11648/j.ajai.20230701.14

Bharadiya, J., 2023b, 'Machine learning and AI in business intelligence: Trends and opportunities', *International Journal of Computer (IJC)* 48(1), 123–134.

Botha, A. & Smit, E., 2020, 'Bridging the education and skills gap in Mobile Business Intelligence adoption', *South African Journal of Information Management* 22(1), 1–11.

Chauhan, H. & Pandey, R., 2023, 'Unlocking user acceptance in Mobile Business Intelligence: Factors shaping the transition in the digital era', *International Journal of Scientific Research in Computer Science, Engineering and Information Technology* 9(6), 118–121. https://doi.org/10.32628/CSEIT239064

Chi, T.W. & Mahmud, I., 2020, 'Business intelligence system adoption: A systematic literature review of two decades', *International Journal of Industrial Management* 6, 1–8. https://doi.org/10.15282/ijim.6.0.2020.5624

Chong, A.Y.L., Chan, F.T.S. & Goh, M., 2019, *Business intelligence systems: Theory and applications*, Springer, Cham, Switzerland.

Coelho, J.G.N., 2024, 'Business intelligence in a data driven bank: Potentiating compliance', Master's thesis, Universidade NOVA de Lisboa.

Creswell, J.W., 2021, *A concise introduction to mixed methods research*, SAGE Publications, Thousand Oaks, CA, USA.

DeVellis, R.F., 2016, *Scale development: Theory and applications*, 4th edn., SAGE Publications, Thousand Oaks, CA, USA.

Díaz-Arancibia, J., Hochstetter-Diez, J., Bustamante-Mora, A., Sepúlveda-Cuevas, S., Albayay, I. & Arango-López, J., 2024, 'Navigating digital transformation and technology adoption: A literature review from small and medium-sized enterprises in developing countries', *Sustainability* 16(14), 5946. https://doi.org/10.3390/su16145946

Dos Santos, A., Du Toit, J., Faasen, N., Quesada, L.L., Masenge, A., Van Aardt, I. et al., 2021, *Research methodology: Business and management contexts*, Oxford University Express, Oxford.

Dube, P. & Ruxwana, N., 2022, 'Adoption of Mobile Business Intelligence by South African small and medium enterprises', *South African Journal of Business Management* 53(2), 23–34.

Edirisinghe, S., 2022, *Business intelligence trends: A review of mobile business intelligence*, Technological University Dublin, Dublin, Ireland.

Ferdous, J., Islam, R., Mahboubi, A. & Islam, M.Z., 2025, 'A survey on ML techniques for multi-platform malware detection: Securing PC, mobile devices, IoT, and cloud environments', *Sensors* 25(4), 1153. https://doi.org/10.3390/s25041153

Fink, A., 2017, *How to conduct surveys: A step-by-step guide*, SAGE Publications, Los Angeles, CA, USA.

Gao, Q. & Zhuang, J., 2020, 'Stability analysis and control strategies for worm attack in mobile networks via a VEIQS propagation model', *Applied Mathematics and Computation* 368, 124584. https://doi.org/10.1016/j.amc.2019.124584

Ghanem, S.K.R., 2023, 'TOE factors and SME's performance: The mediating and moderating roles of social media benefits and organizational culture', Doctoral dissertation, Universiti Tun Hussein Onn.

Govender, R., 2023, 'Device management in South African telecommunications: Infrastructure considerations', *Journal of Telecommunications and Digital Media* 12(4), 56–68.

Harris, M. & Patten, K., 2014, 'Mobile device security considerations for small- and medium-sized enterprise business mobility', *Information Management & Computer Security* 22(1), 97–114. https://doi.org/10.1108/IMCS-03-2013-0019

Heinis, T.B., Hilario, J. & Meboldt, M., 2018, 'Empirical study on innovation motivators and inhibitors of Internet of Things applications for industrial manufacturing enterprises', *Journal of Innovation and Entrepreneurship* 7(1), 10. https://doi.org/10.1186/s13731-018-0090-7

Hendrawan, S.A., Chatra, A., Iman, N., Hidayatullah, S. Suprayitno, D., 2024, 'Digital transformation in MSMEs: Challenges and opportunities in technology management', *Jurnal Informasi Dan Teknologi* 6(2), 141–149. https://doi.org/10.60083/jidt.v6i2.551

Hlatshwayo, M., 2024, 'The importance of securing telecommunications infrastructure', *Journal of Cybersecurity and Technology* 15(3), 67–81.

Hutt, S., Das, S. & Baker, R.S., 2023, 'The right to be forgotten and educational data mining: Challenges and paths forward', in *Proceedings of the 16th International Conference on Educational Data Mining*, International Conference on Educational Data Mining, Bengaluru, India, pp. 1–9.

Jansen, M., 2020, 'Management support for Mobile BI adoption in South Africa', *African Business Review* 39(3), 55–68.

Jaradat, Z., Al-Dmour, A., Alshurafat, H., Al-Hazaima, H. & Al Shbail, M.O., 2024, 'Factors influencing business intelligence adoption: Evidence from Jordan', *Journal of Decision Systems* 33(2), 242–262. https://doi.org/10.1080/12460125.2022.2094531

Johnson, R.B. & Christensen, L.B., 2014, *Educational research: Quantitative, qualitative, and mixed approaches*, SAGE Publications, Thousand Oaks, CA, USA.

Kalema, M.B., Olugbara, O.O. & Kekwaletswe, M.R., 2012, 'The application of structural equation modeling technique to analyse students priorities in using course management systems', *International Journal of Computing and ICT Research* 5, 34–44.

Kamoun, F., Iqbal, F., Esseghir, M.A. & Baker, T., 2020, 'AI and machine learning: A mixed blessing for cybersecurity', in *2020 International Symposium on Networks, Computers and Communications (ISNCC)*, Montreal, Quebec, Canada, October 20–22, 2020, pp. 1–7, Institute of Electrical and Electronics Engineers (IEEE), Piscataway, NJ.

Karanja, S., Njeru, A. & Otieno, J., 2023, 'Data governance in telecom: Policy challenges and Mobile BI readiness in South Africa', *Journal of Business Research* 138, 159–170.

Kasrim, A., Murcahyanto, H., Yusda, D.D. & Ghade, F., 2025, 'Impact of change management, communication effectiveness, and organizational readiness on digital transformation success', *Journal Management & Economics Review (JUMPER)* 3(5), 547–564.

Kaur, P., Stoltzfus, J. & Yellapu, V., 2018, 'Descriptive statistics', *International Journal of Academic Medicine* 4(1), 60. https://doi.org/10.4103/IJAM.IJAM_7_18

Kraus, S., Jones, P., Kailer, N., Weinmann, A., Chaparro-Banegas, N. & Roig-Tierno, N., 2021, 'Digital transformation: An overview of the current state of the art of research', *SAGE Open* 11(3), 215824402110475. https://doi.org/10.1177/21582440211047576

Larkin, M. & Atkinson, L., 2024, 'Change implementation – Managing the transition of a librarian service towards a sustainable future', *Journal of the Australian Library and Information Association* 73(1), 55–65. https://doi.org/10.1080/24750158.2023.2298188

Leedy, P.D. & Ormrod, J.E., 2016, *Practical research: Planning and design*, 11th edn., Pearson Merrill Prentice Hall, Harlow, Essex, England.

Machado, C.G., Winroth, M., Almström, P., Ericson Öberg, A., Kurdve, M. & AlMashalah, S., 2021, 'Digital organisational readiness: Experiences from manufacturing companies', *Journal of Manufacturing Technology Management* 32(9), 167–182. https://doi.org/10.1108/JMTM-05-2019-0188

Matoza, R., Jr., Miranda, L.M.P., Sitoy, J.I. & Intal, G.L.D., 2021, 'Mobile Business Intelligence application design for retail micro and small enterprises (MSEs)', in *Proceedings of the 11th Annual International Conference on Industrial Engineering and Operations Management*, Singapore, March 7–11, 2021, pp. 3109–3117.

Matthysee, A. & Nzuza, M., 2019, 'Mobile Business Intelligence: A key enabler in South African telecommunications', *South African Journal of Business Analytics* 17(2), 98–112.

Michael, C.I., Ipede, O.J., Adejumo, A.D., Adenekan, I.O., Adebayo, D., Ojo, A.S. et al., 2024, 'Data-driven decision making in IT: Leveraging AI and data science for business intelligence', *World Journal of Advanced Research and Reviews* 23(1), 472–480. https://doi.org/10.30574/wjarr.2024.23.1.2010

Mohammed, A.B., Manaf, A.-O., Dhia, Q. & Al-Majali, M.K., 2024, 'Towards an understanding of business intelligence and analytics usage: Evidence from the banking industry', *International Journal of Information Management Data Insights* 4(1), 100215. https://doi.org/10.1016/j.jjimei.2024.100215

Mungoli, N., 2023, *Adaptive ensemble learning: Boosting model performance through intelligent feature fusion in deep neural networks*, arXiv, Cornell University Library, Ithaca, NY, USA.

Mungoli, N., 2023, *Adaptive ensemble learning: Boosting model performance through intelligent feature fusion in deep neural networks*.

Muriithi, G.M. & Kotzé, J.E., 2013, 'A conceptual framework for delivering cost effective business intelligence solutions as a service', in *SAICSIT '13: 2013 South African Institute for Computer Scientists and Information Technologists*, East London, South Africa, October 7–9, 2013, pp. 96–100, Association for Computing Machinery, New York, United States.

Musonda, I., Mwanaumo, E., Onososen, A. & Kalaoane, R., 2024, *Development and infrastructure in developing countries: A 10-year reflection*, CRC Press, Boca Raton, Florida.

Ngwenya, P., 2023, 'Technological infrastructure and Mobile BI readiness in South African organizations', *South African Journal of Technology and Development* 31(2), 78–91.

Olivier, M., 2023, 'Building a security-first culture for Mobile BI', *Journal of Organizational Security* 22(1), 88–102.

Pallant, J., 2020, *SPSS survival manual: A step by step guide to data analysis using IBM SPSS*, Routledge, New York, USA.

Peslak, A. & Hunsinger, D.S., 2019, 'What is cybersecurity and what cybersecurity skills are employers seeking?', *Issues in Information Systems* 20(2), 62–72. https://doi.org/10.48009/2_iis_2019_62-72

Roberts, J., 2022, 'Competitive pressure and Mobile BI adoption in South African telecom companies', *Technology and Business Review* 16(5), 125–138.

Saunders, M., Lewis, P. & Thornhill, A., 2019, *Research methods for business students*, 8th edn., Pearson, Harlow, England, United Kingdom.

Siris, V.A., 2020, 'Popularity-aware mobile content management: When is knowing less better?', *Computer Networks* 170, 107080. https://doi.org/10.1016/j.comnet.2019.107080

Sultan, H., Chan, L.-K., Siew, P.-H. & Lee, C.K., 2024, 'Factors influencing cloud business intelligence adoption and use at organisational level', *ITM Web of Conferences* 67, 01019. https://doi.org/10.1051/itmconf/20246701019

Taherdoost, H., 2021, 'Data collection methods and tools for research: A step-by-step guide to choose data collection technique for academic and business research projects', *International Journal of Academic Research in Management (IJARM)* 10(1), 10–38.

Tavera, R.C.A., Ortiz, J.H., Khalaf, O.I. & Ríos Prado, A., 2021, 'Business intelligence: Business evolution after Industry 4.0', *Sustainability* 13(18), 10026. https://doi.org/10.3390/su131810026

Tomas, C.M.M., Amsler, A., Pinto-López, I.N. & Montaudon-Tomás, I.M., 2024, *Evolution of business intelligence*, pp. 57–80, IGI Global, Hershey, Pennsylvania.

Van der Merwe, A., 2021, 'Infrastructure security in Mobile BI systems', *Journal of Network and Information Security* 33(5), 202–219.

Vrhovec, S., Bernik, I., Fujs, D. & Vavpotič, D., 2024, *Cybersecurity competence of older adult users of mobile devices*, Association for Computing Machinery, Xanthi, Greece.

Watson, J., Kim, S. & Liu, T., 2023, 'Digital survey methods in higher education: Quantitative insights into student engagement', *Educational Technology Research and Development* 7(1), 88–102.

Weichbroth, P., Kowal, J. & Kalinowski, M., 2022, 'Toward a unified model of Mobile Business Intelligence (m-BI) acceptance and use', in T.X. Bui (ed.), *Proceedings of the 55th Hawaii International Conference on System Sciences*, January 3–7, 2022, pp. 304–313, IEEE Computer Society,Honolulu, Hawaii, USA.

Weritz, P., 2022, 'Hey leaders, it's time to train the workforce: Critical skills in the digital workplace', *Administrative Sciences* 12(3), 94. https://doi.org/10.3390/admsci12030094

Yang, F. & Yao, Z., 2022, 'Methodology for mobile phone location data mining', in F. Yang & Z. Yao (eds.), *Travel behavior characteristics analysis technology based on mobile phone location data*, pp. 65–93, Springer, Singapore.

Yueh, H.-P., Lu, M.-H. & Lin, W., 2016, 'Employees' acceptance of mobile technology in a workplace: An empirical study using SEM and fsQCA', *Journal of Business Research* 69(6), 2318–2324. https://doi.org/10.1016/j.jbusres.2015.12.048

Za, S., Scornavacca, E. & Pallud, J., 2022, 'Enhancing workplace competence acquisition through a persuasive system', *Information Systems and E-Business Management* 20(4), 819–846. https://doi.org/10.1007/s10257-022-00571-6

Zaerens, K., 2023, *Privacy preserving data mining in high security public authority environment*, Finnish National Defence University, Helsinki, Finland.

Zhang, L. & Liu, T., 2022, 'Mobile device management for secure Mobile BI access', *International Journal of Mobile Computing* 26(3), 157–172.