



## Business intelligence adoption among small apparel retailers in KwaZulu-Natal



Winiswa Mavutha <sup>(a)\*</sup> Andrew Kamwendo <sup>(b)</sup> Karen Corbishley <sup>(c)</sup>

<sup>(a)</sup>Durban University of Technology, 41/ 43 ML Sultan Road, Greyville, Berea, Durban, 4023, KwaZulu Natal, South Africa

<sup>(b)</sup>Quality Promotions Officer, Faculty of Management Sciences, Durban University of Technology, 41/ 43 ML Sultan Road, Greyville, Berea, Durban, 4023, KwaZulu Natal, South Africa

<sup>(c)</sup>Senior Lecturer, Faculty of Management Sciences, Sciences, Durban University of Technology, 41/ 43 ML Sultan Road, Greyville, Berea, Durban, 4023, KwaZulu Natal, South Africa

### ARTICLE INFO

#### Article history:

Received 16 June 2023

Received in rev. form 13 August 2023

Accepted 26 August 2023

#### Keywords:

Business Intelligence Systems,  
Adoption, Technology Organisation-  
Environment (TOE) Framework,  
Small, Medium, and Micro  
Enterprises (SMMES)

#### JEL Classification:

M15

### ABSTRACT

*Business intelligence (BI) can assist businesses with the analysis of information to make better decisions to improve business performance; however, a lack of research with respect to the adoption of BI tools specifically in the SMME apparel sector has been observed. Developments in information technology (IT) have led to an increase in competitiveness among providers, resulting in a plethora of offerings for customers to choose from. As such, businesses are operating in evolving and complex environments where business intelligence systems (BIS) have become essential. The aim of this study was to establish the factors that influence the adoption of BI by micro-small apparel retailers in KwaZulu-Natal. The study was a cross-sectional survey that sampled 132 apparel business owners who were selected using purposive sampling. A survey questionnaire was used to collect the data. The data was analyzed using the Statistical Package for Social Sciences (SPSS) Version 13.0. This study found that the main inhibitors to the adoption of BI systems among small apparel retailers are cost-related. However, an interesting finding was that although cost had a negative relationship to adoption in the results, most of the respondents still indicated that they were able to make financial plans to adopt BI. The study recommends that small apparel business owners prioritize the adoption of BI as a tool for business operations. The adoption of such tools would have a net positive effect on the operations of such businesses.*

© 2023 by the authors. Licensee SSBFNET, Istanbul, Turkey. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).

## Introduction

Business intelligence (BI) systems are assisting businesses to increase their profits and enhance productivity (Yiu et al, 2021). Developments in innovation and information technology (IT) have led to an increase in competitiveness among providers resulting in a plethora of offerings for customers to choose from. According to Choi et al, (2022) businesses are currently operating within dynamic and complex environments, which require the adoption of critical innovation tools such as business intelligence systems (BIS). BI can be described as the collection, management, and analysis of data to gain insights that can be utilised for better business decision-making processes. The ability to effectively manage, access and analyse volumes of data is essential to business decisions. Not doing so can result in lost business opportunities and more importantly, key lessons may be missed.

The primary objective of Business Intelligence (BI) is to provide business managers and analysts with the necessary tools and resources to effectively conduct comprehensive business analysis (Passlick et al, 2023). However, Raj, Wong and Beaumont (2016) stated that despite all the benefits that BI provides to businesses, smaller businesses generally lack the technical expertise needed to change data into the right information necessary for effective business decision-making processes. Choi et al, (2022) add that, it is imperative for businesses, regardless of their size, to embrace Business Intelligence (BI) in order to facilitate well-informed decision-

\* Corresponding author. ORCID ID: 0000-0002-6078-3225

making processes. Business Intelligence (BI) is a crucial instrument for enhancing business performance, augmenting profitability, and establishing a durable competitive edge, all while concurrently fulfilling customer satisfaction.

Small, Medium and Micro Enterprises (SMMEs) play a substantial role in fostering a nation's economic development and promoting its growth. Small, Medium, and Micro Enterprises (SMMEs) possess the capability to effectively monitor and adapt to the increasing demands of consumers. This is primarily attributed to the expedited turnaround time that SMMEs can offer in terms of manufacturing and distributing novel products. However, there exist several challenging factors that have an impact on the growth and long-term viability of small, medium, and micro enterprises (SMMEs). In conjunction with the array of constraining factors, small, medium, and micro enterprises (SMMEs) often encounter difficulties in establishing a durable competitive advantage (Mkhize, 2022). A potential remedy for smaller businesses is the emergence of innovations that are designed to assist businesses and make them more competitive. The more effective the innovation (such as BI), the more likely it is that challenges in the businesses can be overcome, leading to the likelihood of such innovations being adopted. A recent local study conducted in the eThekweni municipality investigated the integration of management accounting practices as innovations with the potential for positively affecting the sustainability of SMMEs (Msomi et al, 2020). Questions about the generalisability of the finding from the study by Msomi et al (2020) led to an investigation into the adoption of innovations like BI systems. The potential for such innovations to positively affect the sustainability of SMMEs was of keen interest to the researchers. Moreover, SMMEs within the clothing apparel sector, which have seemingly been overlooked by researchers Muhwati et al, (2021), peaked the researchers interest.

Several recommendations have been made in recent publications advocating for investment into BI by SMMEs. Experts interviewed as part of the study recommended adoption of a more agile approach towards such an investment. In addition, Llave et al (2018) recommended an investigation into the state of readiness of SMEs and their capabilities for BI. Becerra-Godínez et al (2020) highlighted that there is no clear approach among SMEs for the adoption of BI as most businesses in this category have yet to take advantage of such innovations. Currently, there is a dearth of research based on BI and analytics in Small Medium Enterprises (SMEs) (Llave, 2017). However, a lack of research with respect to the adoption of BI tools specifically in the SMME apparel sector has been observed and this has led to the study of BI adoption among SMMEs in the apparel retail sector.

This paper is organised as follows: following the introduction, a brief literature review on the technology organisation-environment (TOE) framework regarding SMME adoption for BI follows, including an overview of the SMME sector in South Africa and particularly in the eThekweni Region, in Kwa-Zulu Natal. Thereafter, the research methodology follows including the discussion of results and findings as well the study limitations and recommendations for future research.

## Literature Review

Despite the benefits of BI and other innovative tools, organisations still find it challenging to adopt them. Due to organisational characteristics and limited resources, understanding and fully adopting BI can be an intimidating exercise, particularly, for SMMEs. According to Llave (2017), no studies have been found that have investigated BI and analytics among SMMEs. However, Llave (2017) noted that although there is a shortage of literature on SMMEs, research on BI has been conducted on larger organisations that have adopted various BI tools.

While it is widely acknowledged that small, medium, and micro enterprises (SMMEs) make a substantial contribution to the economic growth of South Africa, these entities continue to face numerous challenges. In fact, the survival rate for SMMEs in South Africa, stands at a mere 40% over a six-year timeframe (Mkhize, 2022). The apparel industry in South Africa, and more specifically KwaZulu Natal is recognised as a major employer. Van Dyk and Van Belle (2019) states that the industry is once more in a state of development with an expectation of reaching revenues of approximately 17.5 billion SAR in 2023. This industry is characterised by a proliferation of SMMEs. However, it has been noted that the SMMEs in this industry frequently struggle with innovation due to their lack of education as running a small business requires little to know formal education. (Sun and Cao, 2022) concur, stating that despite the important role that the clothing industry plays in China's economic growth, many apparel manufacturers still stick to traditional business methods, thereby failing to optimise their processes and progress as they should. This serves to exacerbate problems with competitiveness.

The adoption of BI technology to support businesses has escalated because of the technology's rising affordability and businesses' need to make rapid choices speedily. As a result, SMME's today require BI just as much as large businesses do. Despite this, in contrast to larger companies, SMME adoption is still lagging. Because of this, SMMEs may have a more difficult time competing with larger companies and keeping their competitive edge (Puklavec et al, 2018)

This paper investigates the factors that influence the adoption of BI in the SMME sector of the apparel business sector in the eThekweni region of Kwazulu Natal, South Africa.

## Theoretical and Conceptual Background

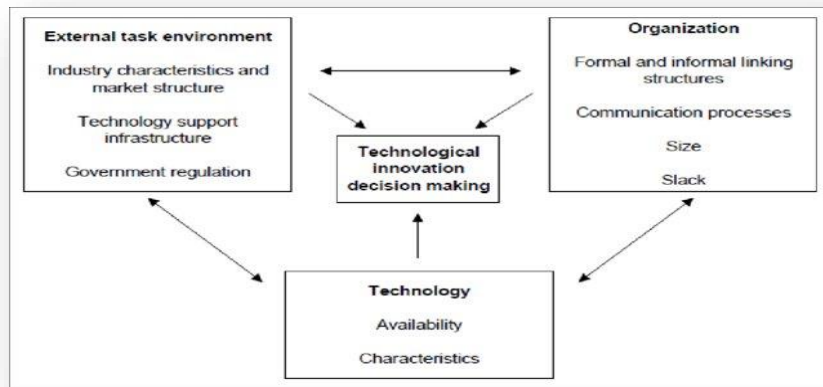
### The TOE Framework

The TOE framework (figure 1) provides a useful analytical approach to analysing how different types of IT innovation are accepted under diverse technological, organisational, and environmental conditions (Puklavec et al, 2018). The objectives of this paper were

derived from the TOE Framework in order to establish the factors that influence the adoption of BI for micro-small apparel retailers in eThekweni.

The technical context in terms of the TOE framework consists of innovations and technological readiness. The organisational context includes formal and informal structures, collaboration, resource availability, and management perceptions of technology acceptance. According to Puklavec et al (2018) the environmental context includes the technological support infrastructure, industry characteristics, market structure, and governmental rules. The perceived relative advantage in adopting a new technology is determined and described using the TOE framework. The compatibility of the new technology and the innovation's complexity are both determined using the framework. These innovative features have a significant impact on how owners and managers perceive BI's ability to support their essential business operations.

According to Puklavec et al (2014), this competence has been cited as a motivating element for business owners and managers to adopt BI technology since it enables the improvement of planning, evaluating, and forecasting approaches for the responses of new technology users. The TOE framework was developed by Tornatzky and Fleischer in 1990, and it is used to examine potential facilitating factors that may influence the adoption of technological innovation (Van Dyk and Van Belle, 2019)



**Figure 1:** Technology Organisation-Environment (TOE) Framework; *Source:* Tornatzky & Fleischer 1990:154

## Empirical Review

*Objective 1: To establish the relationship between technological factors and BI for micro-small apparel retailers in eThekweni*

### *Technological Impact on the Adoption of BI*

One of the primary goals of a BI system is to supply real-time and helpful information to owners and managers of a company, with the end goal of helping the company improve its decision-making processes and become more competitive. According to Bryan and Zuva (2021), the technological attributes of a company constitute a crucial requirement in determining its adoption of Business Intelligence (BI). The technical context, as defined within the TOE framework, encompasses innovations and the level of technological readiness. The usage of BI technology to support businesses has expanded because of the technology's rising affordability and businesses' need to make rapid choices. As a result, SMMEs today require BI just as much as large businesses do. In contrast to larger companies, SMME adoption is still lagging. Due to their low adoption rate, SMMEs may have a more difficult time competing with larger companies and keeping their competitive edge (Puklavec et al, 2018).

Because of this, a technological innovation is more likely to be accepted for the purpose of providing support for the operations of an SMME depending on the degree to which the system will add value to the company by providing solutions to the problems that the company is now experiencing. When introducing new technology, it is also important to consider the specific steps and protocols that need to be followed to do so correctly. Furthermore, Akpan et al (2022) stated that when companies believe that implementing new technology will provide them with a competitive edge over the processes and systems that they are now utilising, then they will be more likely to adopt the new technology. Puklavec, Oliveira, and Popovic (2014) used the factors of relative advantage, cost, and BIS as part of enterprise resource planning in their model to illustrate the adoption of BI in SMMEs and the significance benefits of enhancing business performance. This allowed them to demonstrate the significance of the benefits of improving business performance.

The term "relative advantage" refers to the degree to which a particular technology, such as BI, is considered to be effective. The framework has shown that one of the predictors most frequently used in information systems (IS) adoption study is the relative advantage of BI (Premkumar and Roberts, 1999; Oliveira, Thomas, and Espadanal, 2014; Thong, 1999; Tsai, Lee, and Wu, 2010 as cited in Puklavec et al, 2018). This is one of the findings that can be attributed to the development of the framework. The extent to

which SMMEs embrace software is influenced by how positively they view the benefits of business intelligence (BI). Because business owners and managers want evidence of the benefits of BI before they will even consider adopting it, a positive influence on BI adoption in this circumstance ought to have been highlighted at the evaluation stage. However, the research that was carried out by Puklavec et al (2018), disproved their premise that relative advantage accurately predicts BIS acceptance during the adoption phases.

*Objective 2: To establish the relationship between organisational factors and BI for micro-small apparel retailers in eThekweni*

#### *Organisational Impact on the Adoption of BI*

The organisational impact is a significant issue that plays a role in the decision-making process of SMMEs regarding the implementation of BI. According to Hoque et al (2016), one of the most important factors that influences the implementation of BI in an SMME is the support and dedication of the owners and management of the business. The assistance makes it possible for the associated software engineering activities to gain access to physical resources. These resources may include the contribution of skilled labour and capital funding, resource allocation, or the reduction of potential resistance brought on by the modification to the internal organizational structure of the company (Hung et al, 2016).

According to Ain et al (2019) and Brinkhues et al (2014), for small and medium-sized enterprises to successfully implement business intelligence, a link must be established between organisational capability, information administration capability, and BI implementation. A business intelligence system or solution (BIS) for a large organisation will differ from a BIS for an SMME. These variations are the result of the fact that the requirements for various organisations vary based on their size. As a result, implementing BI in a company looks very different depending on factors like as the sector in which it operates and the size of the company. According to Ali et al (2017), an organisation's skill with regard to information management and BI implementation may have an effect on the organisation's ability to adapt. Because it brings together a company's resources and its insights, this appears to be the primary factor that decides whether or not an SMME would adopt BI. Puklavec et al (2018) established that the organisational context consists of factors such as management support, rational decision-making culture, project champion, organisational data environment, and organisational readiness.

If management is not satisfied that a BI will benefit the company, there is a good chance that the innovation will not be implemented. When discussing the various stages of the adoption process, Chan and Chong (2012) highlight the fact that management support may be a crucial aspect in all three stages of BI adoption. The idea that management support has a beneficial impact on BIS evaluation, adoption, and use was proposed by Puklavec et al, (2014) who all reached the same conclusion. Puklavec et al, (2014) found that in the setting of an SME, management support is related to assessment and use in a way that is both significantly and positively associated with the two concepts. Nonetheless, it was determined that the association with adoption was not substantial in any way.

A culture that places a high value on measuring, testing, and evaluating quantitative data as part of the decision-making process is an indication of an organization that makes reasonable decisions. According to Kulkarni et al (2017), a culture like this encourages the utilization of data and information in order to assist work processes and carry out analysis. According to findings from past studies, the degree to which a BIS is adopted fast is significantly impacted favourably by the company's culture (Jum'a et al, 2023). Medeiros et al (2020) revealed that the presence of fact-based decision-making cultures exerts a notable influence on the utilisation of BIS. Hence, Puklavec Oliveira, and Popovic's (2018) expectation was that the culture of rational decision-making that exists within organizations would contribute to the evaluation stage in a way that was positive. Yet, what this showed was that the culture of rational decision-making has a non-significant relationship to adoption of BI.

Another component that is essential to an organization is the data environment that has been set up on the premises of the company. Having access to information on the quality, availability, and loading of data related to the process of producing input data for BIS is referred to as having an organizational data environment (Puklavec et al, 2018). This refers to the fact that an organization has access to information on these aspects of the data. It is vital for the environment of organizational data to have an understanding of data resource management, which can bring some benefits (e.g. reducing costs, expanding the capacity to access previously inaccessible data, interpret and share information over IT applications). Poorly managed data environments are associated with various challenges, including issues pertaining to accessibility, quality, integrity, security, and information standards. Inadequately administered data ecosystems. When a corporation is considering the adoption of BIS, the presence of an inadequately managed data environment can pose significant challenges (Ahmad et al., 2020). This is because BIS is primarily reliant on the integration of multiple sources of data. The usage of the organizational data environment is deemed to be vital and advantageous by Puklavec et al (2018), research; however, evaluation and adoption are not regarded as advantageous.

The availability of organizational resources that are essential for the implementation of innovation is referred to as "organizational readiness," and this word is used to characterize the preparedness of an organization to accept new ideas (Lacovou et al, 1995). In addition to BI skills and proficiency within the recipient company, Puklavec et al (2014). investigated this factor by looking at the availability of financial, technological, and other pertinent resources.

*Objective 3: To establish the relationship between environmental factors and BI for micro-small apparel retailers in eThekweni*

#### *Environmental Impact on the Adoption of BI*

According to Puklavec et al (2018), the environmental context includes the technological support infrastructure, industry characteristics, market structure, and governmental rules. The environmental context, which comprises customer demand, the competitive environment, and the regulatory environment, has a considerable impact on the degree to which SMMEs use business intelligence. For instance, the regulatory environment is a crucial environmental factor that plays a role in shaping how an organization decides to adopt new technology (AlBar and Hoque, 2019). In addition, in terms of the competitive environment, the rapid pace of technology progress results in the introduction of new competitors, markets, goods, and business strategies over a wider network.

The rapid rate at which technology advances creates an environment fraught with unpredictability and intense competition for enterprises. Alterations in consumer preferences, market requirements, pricing, and the management of supply chains all bring new opportunities and obstacles respectively. Some of the possibilities include adaptability, low-cost networking, cost reduction, and efficient two-way communication. Concerns include the loss of business order and the protection of sensitive information (Ali et al, 2017). Another challenge associated with the implementation of BI is reasonable trust, which can be defined as the conviction held by one business that another business will not exploit its weaknesses if given the opportunity to do so. According to Puklavec, Oliveira, and Popovi's (2014), regulations are additional environment-related variables that influence adoption through the imposition of legal constraints.

Hence, in the absence of regulatory frameworks, enterprises are susceptible to external fraudulent activities and cyberattacks, thereby hindering the adoption and utilisation of emerging technologies. Another crucial aspect in this sector pertains to what is commonly referred to as "government support," denoting the provision of assistance by governmental entities to foster the development of business intelligence technologies within companies. (Mathrani, 2021). When SMMEs get sufficient backing for an invention from a vendor or from the outside, they are also more ready to take a chance and test it. The highest predictors of business intelligence adoption are help from vendors and aid from the government ((Yiu et al, 2021)

When more SMMEs are convinced to embrace business intelligence, they will gain more support from the outside community. There is a substantial barrier to entry for the implementation of advanced BI in SMMEs caused by the absence of internal IT expertise in those organizations. Not only is the practice of BI helped forward by outside support, but also its implementation and use. According to Puklavec et al, (2018), none of the three phases of adoption associated to external aid are significant in the context of the environment. This is based on their findings.

#### *Business intelligence adoption determinants for SMMEs*

SMMEs are important to the economies of nations because they foster innovation and job growth. Because of this, information technology is crucial for sustaining, facilitating, and advancing the internal and external business activities of SMMEs (Afolayan and de la Harpe, 2020). SMMEs must be in line with business procedures in order to realise the positive effects of BIS (Ain et al, 2019)

SMMEs are adopting BI systems slowly. According to a study by (Mittal et al, 2018), there is little interest in adopting smart technologies like BI software in the United States of America (USA). According to Eze et al (2018) as cited in Afolayan and de la Harpe (2020), comparable decision-making issues were encountered in the UK, which were mostly impacted by the fear and uncertainty of obtaining BI. This problem results from BI considerations that lack forethought and review (Reynolds et al, 2019). SMMEs need to plan and analyse BI against their business strategy and business processes, and use the innovation as a strategy to bridge the technology gap and sustain competitiveness (Afolayan and de la Harpe, 2020). Bakry (2023) found that entrepreneurs from various sectors, regardless of the scale of their business operations or their geographical location, universally acknowledge the importance of adopting decision-making solutions and utilising business intelligence tools. Moreover, it is imperative for businesses to consider various internal factors that commonly serve as primary obstacles for SMMEs in their adoption of BI. These factors should be taken into consideration when selecting a decision support solution and utilising BI tools. However, Bakry (2023) discovered that the main barriers to BI system adoption were largely financial in nature. Costs involve the price of initial setup and support, as well as the cost and amount of time needed for staff employees to receive system handling training.

According to Ali et al (2017), BI identifies challenges with decision-making through the management of information to produce high-quality decisions. Business entities and perspectives on BI performance vary, nevertheless. Therefore, the same BI should not include the same applications for SMMEs and major industries. The organisational standards of SMMEs, which differ from those of large organisations, should be accommodated by BI developments as well.

Popovic et al (2012) claimed that it might be challenging to match the capabilities of the BI system to users' evolving demands, expectations, and preferred working methods. Therefore, it is crucial for firms to assess their operational procedures and use BI software that is tailored to their specific requirements. In addition, it is reasonable to assume that the owner/perceived manager's results and appreciation of the use of BI will be reinforced if they have a positive perception of the usage of BI and how it can fit into the organisational work environment. Furthermore, an individual will have a stronger view of BI adoption if there is greater organisational support, management incentives, visibility of BI, and peer support (Popovic et al, 2012).

## **Research and Methodology**

The study was a quantitative cross-sectional study which involved analysing information about the study population at a particular point in time. This study made use of both analytical and descriptive cross-sectional designs. Analytical cross-sectional studies examined the relationship between two variables. Descriptive cross-sectional studies determined the frequency, extent or severity of a particular trait across a given demography (Capili, 2021).

The population for this study consisted of retailers within the micro-small apparel sector, which is inclusive of micro-small retail fashion boutiques as well as micro-small cut, make and trim clothing (CMT) manufacturers, in the eThekweni region. The study employed non-probability sampling with purposive sampling being chosen for this study. The sample for this study was drawn from apparel businesses within the micro-small sector in the eThekweni region. A response rate of 132 was achieved, falling within acceptable sample sizes. Data was collected by means of a quantitative survey. The structured questionnaire was adapted from one developed by Puklavec, Oliveira and Popovic in 2018. Questions were presented in a Likert scale format.

## **Data Analysis**

The data was analysed and presented in the form of frequency tabulations and cross tabulations. Data was analysed using the Statistical Package for Social Sciences (SPSS) Version 13.0. In order to test how valid the various constructs were in the questionnaire; an exploratory factor analysis was carried out in order to decide if each individual question contributed towards the main constructs in the questionnaire. Face validity was ensured by selecting scale items that have previously met the requirements of measuring the construct of research. To check the accuracy of the questionnaire, the researcher consulted with various research experts. Cronbach's alpha was used to determine the reliability of the composite measures. The coefficient for Cronbach's alpha lies between 0 and 1, with any value that is below 0.6 considered to represent less than satisfactory internal consistency and hence reliability. Ideally, values that are above 0.7 can be stated to indicate that statements in a group are internally consistent with each other.

### **Validity**

An exploratory factor analysis was conducted to assess the validity of the constructs in the questionnaire and determine whether each question contributes to the primary constructs. To ensure face validity in this study, the selection of scale items was based on their prior success in measuring the research construct. Face validity pertains to the assessment of the clarity and comprehensibility of the questions. A preliminary investigation was carried out to evaluate these items. To ensure the questionnaire's precision, the researcher sought the input of several research specialists.

### **Reliability**

An exploratory factor analysis is conducted in order to evaluate the questionnaire's construct validity and ascertain the extent to which each question contributes to the primary constructs. To establish face validity in the present study, the choice of scale items was predicated on their previous efficacy in gauging the targeted research construct. The concept of face validity concerns the evaluation of the lucidity and intelligibility of the inquiries. An initial inquiry was conducted to assess these items. In order to enhance the accuracy of the questionnaire, the researcher solicited the feedback of multiple research experts.

### **Ethical Clearance**

This study was approved by the Durban University of Technology's (DUT) ethics committee approved this research. A letter asking for permission to conduct the study at their place of business, a letter of information, and a letter of consent were sent to each participant before the survey began. The goal of the study was fully explained to each respondent. The participants were made aware that identity and secrecy would be maintained even though the subject matter might not be debatable.

## **Findings and Discussions**

### **Findings**

A one-sample statistics on Table 2 indicate that there is significant disagreement that businesses are currently training their staff on the use of BI, and that businesses are uncertain about adopting BI (in both cases  $p < .001$ ). However, there is significant agreement that businesses have decided that it is in their best interests to adopt BI and that it is feasible for their businesses in this sector to adopt BI (in all cases  $p < .001$ ).

Furthermore, there is neither significant agreement nor significant disagreement that businesses have adopted customised elements of BI to support specific areas of need in the business and that businesses have decided that it is in their best interests to adopt BI and are currently preparing to use it.

**Table 1: Significance of Adoption**

No	Statements	Mean	Standard Deviation	p-value
A2.1	Our business has adopted customised elements of BI to support specific areas of need in the business.	3.42	1.662	.537
A2.2	Our business is uncertain about adopting a BIS.	2.49	1.360	<.001*
A2.3	Our business has decided that it is feasible to adopt BI.	4.01	1.334	<.001*
A2.4	Our business has decided that it is in their best interests to adopt BI.	4.66	1.082	<.001*
A2.5	Our business has decided that it is in their best interests to adopt BI and is currently preparing to use it	3.68	1.647	.184
A2.5	Our business is currently training our staff on the use of Business Intelligence.	2.53	1.453	<.001*

\*indicates significance at the 95% level

Source: Author (2022)

The results in Table 3 indicate that 56.3% of the respondents disagree with the statement that their business has adopted customised elements of BI to support specific areas of need in the business. A total of 78.8% of the respondents disagree with the statement that their business is uncertain about adopting a BIS. Regarding the statement that businesses have decided that it is feasible to adopt BI, there was a total of 65.6% of respondents that agree 74.5% of the respondents agree that their business has decided that it is in their best interests to adopt BI. A total of 55.5% of the respondents agree that their business has decided that it is in their best interests to adopt BI and is currently preparing to use it. There is a total of 76.7% of respondents disagree with the statement that their business is currently training the staff on the use of BI.

**Table 2: Frequencies of Adoption**

No	Adoption	Responses as Frequency (%)					
		Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree
A2.1	Our business has adopted customised elements of BI to support specific areas of need in the business.	17 (10.6)	47 (29.4)	26 (16.3)	16 (10.0)	30 (18.8)	24 (15.0)
A2.2	Our business is uncertain about adopting a BIS.	35 (21.9)	71 (44.4)	20 (12.5)	17 (10.6)	9 (5.6)	8 (5.0)
A2.3	Our business has decided that it is feasible to adopt BI.	8 (5.0)	17 (10.6)	30 (18.8)	28 (17.5)	65 (40.6)	12 (7.5)
A2.4	Our business has decided that it is in their best interests to adopt BI.	0	0	40 (25)	10 (6.3)	75 (46.3)	35 (21.9)
A2.5	Our business has decided that it is in their best interests to adopt BI and is currently preparing to use it	9 (5.6)	54 (33.8)	9 (5.6)	21 (13.1)	42 (26.3)	25 (15.6)
A2.6	Our business is currently training our staff on the use of Business Intelligence.	33 (20.6)	84 (52.5)	6 (3.6)	1 (0.6)	34 (21.3)	2 (1.3)

Source: Author (2022)

**Exploratory Factor Analysis – Dependent Variable**

To obtain single composite measures for both dependent variables, factor analysis with promax rotation was applied to determine groupings of the items under each construct. Composite measures were formed by calculating the average of the agreement scores across items included in the composite factor.

Items that did not load strongly enough or cross-loaded were removed during the process. Cronbach’s alpha was used to determine the reliability of the composite measure. The coefficient for Cronbach’s alpha lies between 0 and 1, with any value that is below 0.6 considered to represent less than satisfactory internal consistency or hence reliability. Ideally, values above 0.7 can be stated to indicate that statements in a group are internally consistent (Saunders, Lewis, and Thornhill, 2019).

As can be seen in Table 4, the composite measures are reliable (Cronbach’s alpha >.7). In addition, a Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was run to see how appropriate the factor analysis was. A KMO of >.7, indicates that the factor analysis was successful. During the process of factor analysis items that either cross load or do not load strongly enough are removed.

**Table 3:** Summary of The Exploratory Factor Analysis

Construct	KMO	Percentage variance extracted	Items retained	Cronbach’s alpha
Adoption	.839	62.29	2.1; 2.3-2.6	.879

Source: Author (2022)

Table 4 details the items for the dependent variables that were retained once the factor analysis had taken place.

**Table 4:** Items Retained Post-Factor Analysis For The Dependent Variables

Adoption	2.1.	Our business has adopted customised elements of BI to support specific areas of need in the business.
	2.3.	Our business has decided that it is feasible to adopt BI.
	2.4.	Our business has decided that it is in their best interests to adopt BI.
	2.5.	Our business has made the decision to adopt BI and is currently preparing to use it.
	2.6.	Our business is currently training our staff on the use of Business Intelligence.

Source: Author (2022)

**Significance of Responses for Adoption Stages**

Respondents were asked to indicate which stage of BI adoption their business was currently at. The chi-square goodness-of fit-test was carried out to test whether any responses were selected more significantly than others with regards to the question, by comparing the observed frequencies in each category (cell) with the theoretical expected frequencies. The test aims to ascertain whether any of the categories for a specific question are ‘chosen’ more often or if they are ‘equally chosen’. The 0.05 level of significance is used. This means that at most 5% of the time the null hypothesis of equal expected frequencies will be rejected when in fact it is true and should be accepted.

In response to the first question (A5), “At what stage of BI adoption is your company currently”, it was found that all options were selected equally and therefore not significant (p=0.81). Options on offer consisted of “not considering; currently evaluating, or having already adopted BI”. However, responses to Question A5 which asked “If you are anticipating that your company will adopt BI in the future, how soon do you think it will happen?”, exhibited a different picture, with 33% of respondents indicating that they would probably adopt BI within 2 to 5 years and a further 23% within a year. The chi-square test confirmed that a significant number indicated that they plan to adopt BI within the next year or between 2 and 5 years, p <.001.

**Regression Analysis**

Regression analysis was applied to test for the effect of the independent variables (technological, organizational, and environmental factors) on the three dependent variables (evaluation, adoption, and usage). Table 5 shows the results of the regression analysis for the dependent variable adoption to test the effect of the dependent variables.

**Table 5:** Regression Analysis for Adoption

CONSTRUCTS	R2	F	df1; df2	p-value	B (regression coefficient)	t	p-value
T_Perceived Relative Advantage	.827	103.824	7; 152	<.001	.256	3.861	<.001
T_Cost					-.235	-4.047	<.001
O_Organisational Readiness					.787	15.489	<.001
O_Rational Decision-making Culture					-.209	-3.303	.001
O_Management Support					.099	2.069	.040
O_Organisational Data Environment					.638	10.610	<.001
E_Environmental Support					-.247	-5.542	<.001

Source: Author (2022)

These seven independent variables/factors account for 82.7% of the variance of adoption ( $R^2 = .827$ ),  $F(7, 152) = 103.824$ ,  $p < .001$ . The results indicate that the factors that significantly predict adoption are perceived relative advantage ( $\beta = .256$ ,  $p < .001$ ); organisational readiness ( $\beta = .787$ ,  $p < .001$ ); management support ( $\beta = .099$ ,  $p = .040$ ); and organisational data environment ( $\beta = .638$ ,  $p < .001$ ). Factors that influence adoption negatively are cost ( $\beta = -.235$ ,  $p < .001$ ); rational decision-making culture ( $\beta = -.209$ ,  $p = .001$ ); and external support ( $\beta = -.247$ ,  $p < .001$ ).

However, when looking at the constructs individually, for example, the seven constructs used to measure adoption, individually they have different variances. Rational decision-making culture and management support are not significant for adoption ( $p = > .001$ ), while cost is significant for adoption but has a negative relationship ( $p = < .001$ ).

## Discussion

*Objective 1: To establish the relationship between technological factors and BI adoption by micro-small apparel retailers in eThekweni*

In terms of perceived relative advantage being identified as a positive influencing factor of adoption, both Jaklica et al (2018) and Simon and Suarez (2022) support this by stating that if an owner/manager’s knowledge and perceptions regarding the use of BI and its fit within the organisational work environment is positive, then one can reasonably assume that the owner/managers appreciation of the use of BI will be reinforced (Jacklinca et al, 2018; Simon and Suarez, 2022; Matsepe and van der Lingen, 2022). Matsepe and van der Lingen (2022), also stated that when businesses were able to test the technology before committing to it, they often felt more at ease with taking the final step towards adoption. Jaklica et al (2018) concurred, by finding that the greater the degree of organisational support, management incentives, and visibility of BI and peer support, the more enhanced the positive perceptions towards BI adoption will be by employees in the organisation. The findings of this study concurred with these findings, as perceived relative advantage was found to have a positive influence on adoption in the micro-small apparel.

Mittal et al (2018) found that perceptions of risk and uncertainty can result in decreasing the technology adoption rate. The associated challenges come in understanding the risks associated with technology, the numerous varieties of technology and solutions, along with the evolving nature of technology. In addition, they discovered that SMMEs take a conservative attitude on adoption because of their perception of the risks associated with the technology. The nature of uncertainty surrounding the return on investment (ROI) on the technology is a concern as they can understand the possibilities and associated risks involved.

Contradictory to the findings from Mittal et al (2018), Van Dyk and Van Belle (2019), argued that the main inhibitors towards the adoption of BI systems were mostly cost related. This included the cost of the initial setup and support, as well as the cost and time required for the required training of staff members to handle the system. In support of the findings from Van Dyk and Van Belle (2019), this study also found that cost has a negative influence.

It is interesting to note that perceived relative advantage has a positive relationship with adoption. The assumption for this would be due to the fact that prior to this study the majority of the respondents had little to no knowledge of BI. However, after the researcher had explained the concept of BI and elaborated further on the benefits of BI, they started gaining interest in the technology.

Cost proves to have a significant variance with adoption, although it indicates a negative relationship. The assumption related to this finding would be that the adoption of BI or any other cloud-based technology requires capital resources which the majority of businesses in micro-small apparel sector do not have. As much as the respondents indicated they could make financial plans to adopt BI, it could still be an obstacle for them, hence the negative relationship. The findings of this study also indicated that the respondents believed it would be cost effective for their businesses to adopt BI, which seems contradictory to the negative relationship. However, my understanding is that the respondent's perception of the relative advantage of BI is that it will save unnecessary costs for their businesses and assist with maximising profit.

*Objective 2: To establish the relationship between organisational factors and BI adoption by micro-small apparel retailers in eThekweni*

With regards to organisational factors, this study established management support as being a positive influencing factor for the adoption of BI. Previous studies are in support of this, as it was established that the idea that management support is important to the successful adoption and application of innovations in SMMEs is also experimentally supported by prior research, as managers act as change operators during the adoption process (Bakry, 2023). If management is not convinced of a BI, it is likely that the innovation will not be adopted. Ahmad et al (2020) emphasise that management support may be a key factor in all three stages of BI adoption with regard to the various adoption process stages. Akpan et al (2022) concur that the top management's explicit and proactive support for the introduction and advancement of an IT innovation is regarded as the management support factor. Thus, the adoption of a BIS is positively correlated with management support. Since members of the senior management team frequently make decisions in SMMEs, the adoption of a BIS should have their unwavering support.

Pertaining organisational data environment being determined as a positive influence factor adoption of BI in this study, this concurs with Puklavec et al (2014) who found that an information sharing culture (organisational data environment) is perceived as a dominant factor for adoption. Therefore, organisations need to develop an organisational data environment that enables successful adoption. In addition, the authors found that organisational readiness was another important determining factor for adoption. This supports the findings on the micro-small apparel retailers from this study which also established that organisational readiness is a positive influencing factor for the adoption of BI.

Factors that influence adoption negatively are cost, relational decision-making culture, and external support. However, when you look at the constructs individually, with regards to the seven constructs used to measure adoption, they have different variances. Rational decision-making culture and management support are not significant for adoption ( $p > .001$ ).

Kulkarni et al (2017) established that a rational decision-making culture shows the presence of an organisation-wide respect for measuring, testing, and evaluating quantitative evidence in decision processes. Such a culture encourages the use of information and data to support work processes and perform analyses, also with progressed procedures.

*Objective 3: To establish the relationship between environmental factors and the adoption of BI by micro-small apparel retailers in eThekweni*

BI providers actively market BI software by offering incentives for adoption and promote the use of BI software providing free training sessions, according to the results generated on external support as an environmental factor. The respondents also significantly disagree with the claims that government regulations support the adoption of BI and that all factors needed to be taken into consideration during the advertising process. This study also found that in the regression analysis, environmental factors had an insignificant relationship with adoption.

*Contribution to The Field*

This study has encompassed various facets that contribute to the existing corpus of knowledge. The initial facet pertains to the adoption of BI within the micro-small apparel sector in the South African context. The study focused on the determinants that impact BI adoption, utilizing the Technology-Organization-Environment (TOE) framework, which emphasizes the three phases of adoption, namely: assessment, adoption, and utilization. The present investigation focused on micro and small-scale apparel enterprises situated in the eThekweni region of KwaZulu-Natal province in South Africa. Thus, this study offers a novel viewpoint to the existing research conducted in South Africa or other parts of the globe, thereby making a valuable contribution to the field.

## **Conclusions**

The findings of this study with respect to the aim concur with the majority of the findings from previous research. (Puklavec et al., 2018) found that the main inhibitors towards the adoption of BI systems are cost related. This included the cost of initial setup and support, as well as the cost and time required for training the staff members to handle the system. An interesting finding was that although cost had a negative relationship to adoption in the results, most of the respondents still indicated that they were able to make financial plans to adopt BI and that BI could ultimately turn out to be cost-effective for their businesses. However, despite these findings, funding still remains elusive for some businesses.

A number of studies agreed that when the owner/manager's perceptions about the use of BI and how it fits within the organisational work environment were positive, it was reasonable to believe that the owner/managers willingness to adopt BI would be reinforced (Pukavec et al, 2018; Mittal et al, 2018; and Afolayan and de la Harpe, 2020)

Furthermore, Simon & Saurez (2022) concurred that the greater the organisational support, management incentives, visibility of BI and peer support is, the more positive the perceptions towards the adoption of BI will be from employees in the organisation. These findings concur with those of this study which identified perceived relative advantage, organisational readiness, management support and organisational data environment as factors that generated a positive influence towards adoption.

### *Recommendations*

This research project has the potential to be expanded by collecting information on other companies operating in the micro-small company sector on a broader scale. The eThekweni Area was the only location that had any micro-small clothing firms included in this investigation. Expanding the scope of the study to collect data on the use of business intelligence software by micro- and small firms in other parts of KZN or throughout South Africa is something that needs to be done. Spaza shops and informal merchants are two examples of the many other types of enterprises that are considered to be part of the micro-small retail sector. It would be interesting to examine how owner/managers in these different categories see the usage of BI software. There is a possibility for future study to investigate the benefits of such tools for financial reporting and data management.

Taking into consideration the use of Yoco, which is a BI tool that is predominantly used by small firms, there is a possibility for this. A study of this nature might also evaluate whether or not business intelligence tools like Yoco add to the profitability of companies operating in this area.

An additional suggestion for follow-up research from this project is to conduct a comparative examination of the adoption of BI among micro-small enterprises that operate online and those that operate traditional brick and mortar stores. It is strongly suggested that research be conducted to determine whether these distinct business activities each have their own unique perceptions of the ease of use and adoption of business intelligence systems. It was difficult to do this analysis for this study since it only focused on the factors of adoption, and there was no comparative analysis undertaken between the various types of business operations. This made it difficult to create this analysis.

It would be interesting to find out if business intelligence is necessary for SMMEs, despite the fact that its benefits have been established for large organizations. This is because the findings of empirical studies that are discussed in this paper are very similar. SMMEs appear to have examined business intelligence (BI) and made the decision to use it; nonetheless, there are still a significant number of SMMEs that have not successfully adopted BI. Consequently, it is strongly advised that research be conducted to determine whether SMMEs actually require BI for the long-term viability of their firms. The comparison of the success rates of SMMEs that have implemented BI with those of SMMEs that have not adopted BI is one of the recommended objectives for this study.

### **Acknowledgements**

This research paper wouldn't have been possible without the following colleagues and organisations:

My Master's supervisor Dr Karen Corbishley and my co-supervisor Dr Andrew Kamwendo, I appreciate all your support and guidance throughout the duration of this research. My statistician Dr Gill Hendry, thank you for your expertise in the data analysis chapter. The Wholesale and Retail SETA, for funding my first year of research.

All authors have read and agreed to the published version of the manuscript.

**Author Contributions:** Conceptualization, W.M., A.K. and K.C.; methodology, W.M., A.K.; validation, K.C.; formal analysis, W.M., A.K. and K.C.; investigation, W.M.; resources, W.M.; writing—original draft preparation, W.M.; writing—review and editing, W.M., A.K. and A.K.

**Informed Consent Statement:** Informed consent was obtained from all subjects involved in the study.

**Data Availability Statement:** The data presented in this study are available on request from the corresponding author. The data are not publicly available due to restrictions.

**Conflicts of Interest:** The authors declare no conflict of interest.

### **References**

- Afolayan, A. O., & de la Harpe, A. C. (2020). The role of evaluation in SMMEs' strategic decision-making on new technology adoption. *Technology Analysis and Strategic Management*, 32(6), 697–710. <https://doi.org/10.1080/09537325.2019.1702637>
- Ahmad, S., Miskon, S., Alabdan, R., & Tlili, I. (2020). Towards sustainable textile and apparel industry: Exploring the role of business intelligence systems in the era of industry 4.0. *Sustainability (Switzerland)*, 12(7). <https://doi.org/10.3390/su12072632>
- Ain, N. U., Vaia, G., DeLone, W. H., & Waheed, M. (2019). Two decades of research on business intelligence system adoption, utilization and success – A systematic literature review. *Decision Support Systems*, 125. <https://doi.org/10.1016/j.dss.2019.113113>
- Akpan, I. J., Udoh, E. A. P., & Adebisi, B. (2022). Small business awareness and adoption of state-of-the-art technologies in emerging and developing markets, and lessons from the COVID-19 pandemic. *Journal of Small Business and Entrepreneurship*, 34(2), 123–140. <https://doi.org/10.1080/08276331.2020.1820185>

- AlBar, A. M., & Hoque, M. R. (2019). Factors affecting the adoption of information and communication technology in small and medium enterprises: a perspective from rural Saudi Arabia. *Information Technology for Development*, 25(4), 715–738. <https://doi.org/10.1080/02681102.2017.1390437>
- Ali, M. S., Khan, S., & Miah, S. J. (2017). Understanding towards Interactions between Business Intelligence and SMEs: Learn from Each Other. *Journal of Information Systems and Technology Management*, 14(2), 151–168. <https://doi.org/10.4301/S1807-17752017000200002>
- Bakry, D. S. (2023). *An Evaluation of the Effectiveness of Innovation an Evaluation of the Effectiveness of Innovation Ecosystems in Facilitating the Adoption of Ecosystems in Facilitating the Adoption of Sustainable Entrepreneurship Sustainable Entrepreneurship*. [https://pdxscholar.library.pdx.edu/open\\_access\\_etds](https://pdxscholar.library.pdx.edu/open_access_etds)
- Becerra-Godínez, J. A., Serralde-Coloapa, J. L., Ulloa-Márquez, M. S., Gordillo-Mejía, A., & Acosta-Gonzaga, E. (2020). Identifying the main factors involved in business intelligence implementation in SMEs. *Bulletin of Electrical Engineering and Informatics*, 9(1), 304–310. <https://doi.org/10.11591/eei.v9i1.1459>
- Brinkhkues, R., Maçada, A. C., & Casalinho, G. (2014). Information Management Capabilities: Antecedents and Consequences Completed Research Paper. *AMCIS Conference Proceedings*. <https://www.researchgate.net/publication/263272671>
- Bryan, J. D., & Zuva, T. (2021). A Review on TAM and TOE Framework Progression and How These Models Integrate. *Advances in Science, Technology and Engineering Systems Journal*, 6(3), 137–145. <https://doi.org/10.25046/aj060316>
- Capili, B. (2021). Cross-Sectional Studies. *American Journal of Nursing*, 121(10), 59–62. <https://doi.org/10.1097/01.NAJ.0000794280.73744.fe>
- Choi, L. K., Panjaitan, A. S., & Apriliasari, D. (2022). The Effectiveness of Business Intelligence Management Implementation in Industry 4.0. *Startupreneur Business Digital (SABDA Journal)*, 1(2), 115–125. <https://doi.org/10.34306/sabda.v1i2.106>
- Hoque, M. R., Saif, A. N. M., AlBar, A. M., & Bao, Y. (2016). Adoption of information and communication technology for development: A case study of small and medium enterprises in Bangladesh. *Information Development*, 32(4), 986–1000. <https://doi.org/10.1177/0266666915578202>
- Hung, S.-Y., Huang, Y.-W., Lin, C.-C., Chen, K., Michael Tarn, J., & Michael, J. (2016). Factors influencing Business Intelligence Systems implementation success in the Enterprises. *PACIS Conference Proceedings*, 297. <http://aisel.aisnet.org/pacis2016/297>
- Jum'a, L., Zimon, D., & Madzik, P. (2023). Impact of big data technological and personal capabilities on sustainable performance on Jordanian manufacturing companies: the mediating role of innovation. *Journal of Enterprise Information Management*.
- Kulkarni, U. R., Antonio Robles-Flores, J., & Popovič, A. (2017). A I S ssoication for information systems Business Intelligence Capability: The Effect of Top Management and the Mediating Roles of User Participation and Analytical Decision Making Orientation Business Intelligence Capability: The Effect of Top Management and the Mediating Roles of User Participation and Analytical Decision Making Orientation. *Journal*.
- Llave, M. R. (2017). Business Intelligence and Analytics in Small and Medium-sized Enterprises: A Systematic Literature Review. *Procedia Computer Science*, 121, 194–205. <https://doi.org/10.1016/j.procs.2017.11.027>
- Llave, M. R., Hustad, E., & Olsen, D. H. (2018). Creating Value from Business Intelligence and Analytics in SMEs: Insights from Experts Call for Papers: Special issue at Scandinavian Journal of Information Systems on Enterprise Systems View project VOIL-Virtual Open Innovation Lab View project. *Twenty-Fourth Americas Conference on Information Systems*. <https://www.researchgate.net/publication/330765646>
- Mathrani, S. (2021). Critical business intelligence practices to create meta-knowledge. In *Int. J. Business Information Systems*, 36(1). <http://creativecommons.org/licenses/by/4.0/>
- Medeiros, M. M. de, Hoppen, N., & Maçada, A. C. G. (2020). Data science for business: benefits, challenges and opportunities. *Bottom Line*, 33(2), 149–163. <https://doi.org/10.1108/BL-12-2019-0132>
- Mittal, S., Khan, M. A., Romero, D., & Wuest, T. (2018). A critical review of smart manufacturing & Industry 4.0 maturity models: Implications for small and medium-sized enterprises (SMEs). In *Journal of Manufacturing Systems* (Vol. 49, pp. 194–214). Elsevier B.V. <https://doi.org/10.1016/j.jmsy.2018.10.005>
- Mkhize, D. M. (2022). *Factors influencing the competitiveness of Small and Medium Clothing Manufacturing enterprises in the eThekwinini municipal district in KwaZulu-Natal*. [Master's dissertation, Durban University of Technology]
- Msomi, M. P., Ngibe, M., & Bingwa, L. L. (2020). The integration of management accounting practices as an innovative strategy towards sustaining small businesses operating in eThekwinini metropolitan, South Africa. In *Problems and Perspectives in Management* (Vol. 18, Issue 3, pp. 266–282). LLC CPC Business Perspectives. [https://doi.org/10.21511/ppm.18\(3\).2020.23](https://doi.org/10.21511/ppm.18(3).2020.23)
- Muhwati, C., Hans, R., & Salisbury, T. (2021). *Closed-loop supply chain opportunities for SMME retailers in the South African fashion industry School of Management, IT and Governance College of Law and Management Studies*.
- Passlick, J., Grütznert, L., Schulz, M., & Breitner, M. H. (2023). Self-service business intelligence and analytics application scenarios: A taxonomy for differentiation. *Information Systems and E-Business Management*, 21(1), 159–191. <https://doi.org/10.1007/s10257-022-00574-3>
- Puklavec, B., Oliveira, T., & Popovič, A. (2014). Unpacking Business Intelligence Systems Adoption Determinants: An Exploratory Study of Small and Medium Enterprises. *Economic and Business Review*, 16(2). <https://doi.org/10.15458/2335-4216.1278>

- Puklavec, B., Oliveira, T., & Popovič, A. (2018). Understanding the determinants of business intelligence system adoption stages an empirical study of SMEs. *Industrial Management and Data Systems*, 118(1), 236–261. <https://doi.org/10.1108/IMDS-05-2017-0170>
- Reynolds, A., Fourie, H., & Erasmus, L. (2019). A generic balanced scorecard for small and medium manufacturing enterprises in South Africa. *The Southern African Journal of Entrepreneurship and Small Business Management*, 11(1). <https://doi.org/10.4102/sajesbm.v11i1.193>
- Simon, R., & Saurez, M. (2022). Examining the Behavioral Intention of Philippine MSMEs Toward Business Intelligence Adoption. *Journal of Business & Management*, 28(1), 67–99.
- Sun, N., & Cao, B. (2022). Production Scheduling Optimization of Garment Intelligent Manufacturing System Based on Big Data. *Computational Intelligence and Neuroscience*, 2022. <https://doi.org/10.1155/2022/2293473>
- Van Dyk, R., & Van Belle, J. P. (2019). Factors influencing the intended adoption of digital transformation: A South African case study. *Proceedings of the 2019 Federated Conference on Computer Science and Information Systems, FedCSIS 2019*, 519–528. <https://doi.org/10.15439/2019F166>
- Yiu, L. M. D., Yeung, A. C. L., & Cheng, T. C. E. (2021). The impact of business intelligence systems on profitability and risks of firms. *International Journal of Production Research*, 59(13), 3951–3974. <https://doi.org/10.1080/00207543.2020.1756506>

**Publisher's Note:** SSBFNET stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



© 2023 by the authors. Licensee SSBFNET, Istanbul, Turkey. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).

International Journal of Research in Business and Social Science (2147-4478) by SSBFNET is licensed under a Creative Commons Attribution 4.0 International License.