African Journal of Hospitality, Tourism and Leisure. ISSN: 2223-814X

April 2023, Vol 12, 2, pp. xxx

Role of Business Intelligence Data in Guest House Management in Gauteng

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How to cite this article: Hader, C., Roberson, J.R. & Smith, A.J. (2023). Role of Business Intelligence Data in Guest House Management in Gauteng. African Journal of Hospitality, Tourism and Leisure, 12(2):476-490. DOI: **https://doi.org/10.46222/ajhtl.19770720.380**

Abstract

This study investigates the acceptance and use of Business Intelligence (BI) systems among guest house managers in Gauteng, addressing a gap in research that typically focuses on larger business entities. The objective was to understand the role of BI in guest house management, specifically its effect on operational efficiency and decision-making processes. Applying the Technology Acceptance Model (TAM) within the Technology-Organisation-Environment (TOE) framework, we evaluated the perceptions and adoption of BI systems in 253 guest houses using a 5-point Likert scale. The findings reveal a strong acceptance of BI systems among participants, highlighting the growing importance of technology in the hospitality industry. Interestingly, the study unearthed a partial influence of competition characteristics and perceived ease of use on attitudes and BI system usage. Furthermore, the results demonstrated a direct relationship between digital literacy and the efficacy of BI system usage. This research contributes to the extant literature by shedding light on BI systems' role in smaller hospitality businesses, offering implications for managers and technology vendors. Recommendations include the need for ongoing training to increase digital literacy among staff and the exploration of user-friendly BI system interfaces to enhance perceived ease of use, encouraging widespread adoption.

Keywords: Business intelligence; guest house; perceived ease of use; technology acceptance model; technology-organisation-environment framework

Introduction

The internet continuously generates openly accessible data and enables real-time information sharing (Chu et al., 2020). The sheer volume of data demands a structured approach to drive profitable outcomes (Lamest & Brady, 2019), making Business Intelligence (BI) systems essential. Modern BI systems help managers identify critical patterns in vast amounts of data (Zafary, 2020). Despite their significance, many managers do not regularly use BI systems for decision-making (Ain et al., 2019). In the tourism industry, global online booking platforms offer accommodations of all sizes. Organisations offering accommodation enter their operational data into these platforms. To maximise the use of accumulated data, accommodation managers should incorporate the BI information dashboards feature of the accommodation booking systems into their daily work processes. Trieu (2022) pointed out, however, while some organisations effectively utilised BI systems to improve their operations,

others needed help to achieve their desired outcomes with the incorporation of technology. This suggested that many professionals must still be educated to implement these systems in their daily work practices. The reluctance towards new technologies could be due to cost and capacity considerations.

Previous research shows that Small and Medium Enterprises (SMEs) in Tshwane benefit from using BI systems in their daily operations (Kikawa et al., 2019). The Perceived Ease of Use (PEOU) of a BI system is a crucial factor affecting SMEs' frequency and manner of use (Kikawa et al., 2019). The Technology Acceptance Model (TAM) within the Technology-Organization-Environment (TOE) framework identifies factors that impact the managers' frequency of use or reluctance to adopt the technology. An earlier study in Tshwane recommended further research into the factors that influence SMEs to adopt but not fully utilise technological innovation (Kikawa et al., 2019). This study investigated the perceptions of Gauteng guest house managers and owners of BI systems. A significant number of businesses in the tourist accommodation sector are SMEs that use online platforms for visibility and provide familiar booking systems to travellers. This study aimed to examine if the information from BI systems integrated into these booking systems was utilised in the daily operations of guest houses.

Literature review

In the era of information, there is a growing recognition of the significance of making decisions based on data (Mariani et al., 2018). Using data to guide operations is increasingly significant, both in the present and future. In many sectors, the trend is moving away from traditional decision-making methods, such as relying on intuition and past experiences, towards utilising real-time data and business intelligence dashboards. This shift resulted in more precise and data-informed decision-making. According to Kikawa et al. (2019), technological advancements have made rich data sources accessible to businesses of all sizes.

Business intelligence systems

A Business Intelligence system is a technology used to analyse data and present insightful information through organised dashboards. They encompass various tools, applications, and techniques that gather and process internal and external data, presenting it in a clear manner (Mariani et al., 2018). It involves using mathematical models and analytical methodologies to transform data into useful information and knowledge to aid strategic planning and informed decision-making (Awamleh & Bustami, 2022). With the current technological advancements, the demand for BI is increasing as it can meet customer expectations (Nithya & Kiruthika, 2020). The literature highlights three perspectives regarding the use and success of BI, namely an organisational perspective, IT infrastructure and user interface perspective, as well a user perspective (Ain et al., 2019).

Business Intelligence helps companies to make informed decisions using accumulated data. They gather, store, analyse, and present data (Khoshbakht & Quadri, 2023). It involves competitive intelligence, and the continuous monitoring of competitors, to provide organisations with actionable and meaningful intelligence. With an increasingly competitive and challenging business landscape, a BI system is crucial (Khoshbakht & Quadri, 2023). Leveraging and unleashing the potential of BI data tools and techniques are vital to steer competitive business intelligence and integrate valuable knowledge into competitive business strategies (Ranjan & Foropon, 2021). BI has gained widespread adoption across numerous industries where decision-making is paramount. By leveraging BI, companies can effectively access, evaluate, and anticipate critical business information, ultimately driving better outcomes (Khoshbakht & Quadri, 2023).

Tourist accommodation industry

Nyanga et al. (2020) established the influence of BI systems usage in competitive strategising in the tourism industry. Accommodation businesses can use well-known and trusted online booking websites to access customers' information and utilise valuable BI for informed decision-making and competitiveness (Rahman et al., 2016). The use of these online platforms has been associated with several benefits, including increased bookings and revenue, enhanced international exposure, and improved competitiveness, thereby facilitating the ease of conducting business (Sigauke & Erdis, 2018). Nyanga et al. (2020) see the future of the overall tourism industry in adopting BI. Webb (2016) previously noted that changes in travel booking behaviour are closely linked to technological advancements. In this age of last-minute bookings, effective revenue management requires an in-depth understanding of customer behaviour, competition, and external factors.

This study focused on the tourist accommodation industry since it is naturally subject to customers' online research and bookings, resulting in data creation. Customers often prefer to book through trusted intermediaries for transaction processing. Collaborating with established reservation platforms is crucial for gaining visibility and staying competitive, particularly for small businesses with limited resources and budgets for marketing and sales efforts (Martin-Fuentes & Mellinas, 2018). BI dashboards with real-time data are widely underestimated. They are frequently included in comprehensive solution packages provided by trusted marketplaces to support tourism accommodation businesses' inventory management and marketing.

Business intelligence in Gauteng's guest houses

The advent of the Fourth Industrial Revolution (4IR) has underscored the significance of data as a strategic business asset. However, in the South African business context, the full potential of data intelligence as a mechanism for business development and management is yet to be realised (Malapane, 2019). South Africa's tourism sector, a substantial economic contributor, greatly enhances the national Gross Domestic Product (GDP), with technology being a critical enabler (Sifolo et al., 2014). The high failure rate of small businesses in South Africa, particularly at the early stages - 75%, according to Kikawa et al. (2019) - highlights a need for more informed decision-making. Business Intelligence (BI) systems can play a pivotal role in addressing this need. Despite the South African government's recognition of the potential of the SME sector in spurring innovation and creating jobs, which are integral to the country's efforts to mitigate high unemployment, there are still emerging barriers affecting these businesses (Matsiliza, 2018).

The province of Gauteng, being a primary entry point for international tourists and a popular destination for visitors from neighbouring countries, heavily leans on technology to stimulate its tourism sector (Department of Tourism, 2020). In 2020, Gauteng accommodated 52.1% of all international tourists visiting South Africa, highlighting its strategic position in the national tourism landscape (Department of Tourism, 2021). Thus, Gauteng emerges as an ideal region for examining the influence and adoption of BI systems in guest houses.

Recent studies emphasise the role of BI in formulating strategic decisions and the capability of small businesses to harness its potential effectively. These systems offer pertinent data for businesses of varying sizes (Kikawa et al., 2019). A considerable share of businesses in the tourism industry comprises SMEs that utilise Online Travel Agents (OTAs) for increased exposure, providing travellers with user-friendly online booking and payment options. These OTA platforms extend BI dashboards to accommodation businesses.

The present study focuses on the influence of Business Intelligence (BI) on managing guest houses. The survey participants comprised guest house owners who listed their properties on well-known online booking platforms. Such listings are crucial in ensuring the competitiveness and visibility of the properties (Martin-Fuentes & Mellinas, 2018). Small and medium-sized enterprises (SMEs), the common category for most tourism accommodations, including guest houses, rely heavily on these online booking platforms. These Business-to-Business (B2B) platforms provide more than basic functionalities, like price comparison and availability; they furnish comprehensive BI dashboards with real-time data, including operational insights from the platform's entire user base (Martin-Fuentes & Mellinas, 2018).

Research has shown the importance of BI in making strategic decisions and the ability of small businesses to utilise it effectively. These systems are designed to provide relevant data for operations of any size (Kikawa et al., 2019). A significant portion of businesses in the tourism industry is SMEs that use Online Travel Agents (OTA) for increased visibility and to provide travellers with convenient online booking and payment options. The OTA platforms offer BI dashboards to accommodation businesses.

The focus of this study was on the impact of Business Intelligence (BI) information on managing guest houses. The survey participants were guest house owners who listed their properties on popular online booking sites. These listings are vital in ensuring the property's competitiveness and visibility (Martin-Fuentes & Mellinas, 2018). Small and medium-sized enterprises (SMEs), a common classification for most tourism accommodations, including guest houses, rely on online booking platforms. These Business-to-Business (B2B) platforms offer more than just basic features like price comparison and availability; they provide comprehensive BI dashboards with real-time data, including operational insights from the platform's entire user base. These well-known platforms offer extensive databases of business users with access to real-time BI dashboards (Martin-Fuentes & Mellinas, 2018).

Theoretical models grounding this study

The Technology Acceptance Model (TAM) components, placed within the Technology-Organization-Environment (TOE) framework, are frequently used to understand the adoption readiness of new technologies (Ain et al., 2019; Ahmed, 2020; Kikawa et al., 2019).

Technology acceptance model

The Technology Acceptance Model (TAM) is a method applied to assess user acceptance of technology by evaluating the impact of various influencing factors.

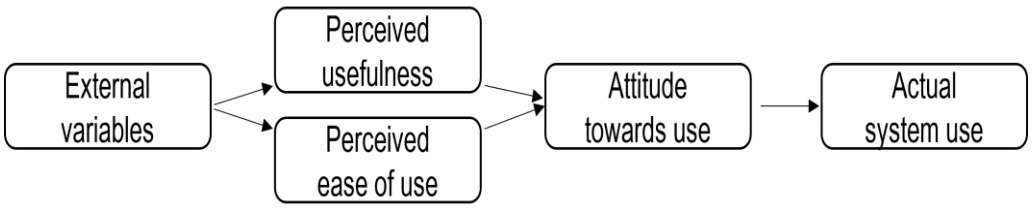

Figure 1: Technology acceptance model (TAM)
Source: Adapted from Davis et al. (1989)

As shown in Figure 1, the TAM suggests that user behaviour (actual technology usage) is influenced by their behavioural intention (attitude towards using the technology), which in turn is determined by two primary factors: perceived usefulness and perceived ease of use (PEOU). Additionally, external factors also impact perceived usefulness and PEOU (Davis et al., 1989):

- External variables refer to factors not intrinsic to the BI system, such as the user's comfort level with technology.
- Perceived Usefulness evaluates if utilising BI enhances operational efficiency.
- Perceived Ease of Use (PEOU) considers the user-friendliness of BI dashboards compared to the effort required to understand them.
- Attitude towards using balances the perceived advantages and the effort required to access BI information.
- Actual system use reflects user behaviour and measures the proportion of users who regularly access BI information.

The two resulting behavioural traits are perceived usefulness and PEOU, which reflect the user's perception of streamlining and enhancing their work processes and their attitude towards accessing Business Intelligence information (Kikawa et al., 2019).

Technology-organisation-environment framework

The Technology-Organisation-Environment framework (TOE) theorises that the adoption and acceptance of technological innovations in a business are influenced by technological, organisational, and environmental factors (Ahmed, 2020). These three dimensions play a role in determining the success of technology implementation (Ahmed, 2020):

- Technology compatibility: The new technology must be compatible with the existing technology used by the organisation.
- Organisational fit: The new technology must align with the organisation's characteristics and needs.
- Environmental demands: The technology must meet the needs of the business environment to a certain extent.

Acceptance measurement characteristics

The theoretical framework of this study integrates the components of the Technology Acceptance Model (TAM) within the Theory of Everything (TOE) framework. The survey design, based on the work of Kikawa et al. (2019), serves as a guide for the data collection process. Their research identifies traits that align the behavioural factors of TAM with the TOE framework. Table 1 lists the integrated characteristics of the models and then presents a descriptor that explains the characteristic.

Table 1: Business intelligence system acceptance characteristics

Characteristic	Description
Compatibility & Observability	The compatibility with the operational processes and result demonstrability (observability) through integration in existing systems.
Relative Advantage	The relative benefit of employing BI compared to a pure property inventory management system.
Trialability	The offer of cost-free trial periods.
Organisational Competency	An organisation's ability to allocate resources to this task.
Training and Education	Self-training content that allows users to develop an understanding of the featuring BI dashboards and their implementation.
Management Support	Top management keeps the final say on whether a new technology is adopted and the allocation of resources.
Competitive Pressure	Brand loyalty and staying on top of customer reviews are crucial to maintaining a competitive standing in tourist accommodation
Trading Partner Support	Environmental uncertainty enhances the reliance on trading partner support for data management and interpretation.
Overall acceptance of BI	Behavioural intentions towards the use of BI systems.

Source: Kikawa et al. (2019)

Research design and data collection

This study employed a quantitative, descriptive approach with a cross-sectional survey design. On-site paper-based questionnaires were used to gather primary data. The questionnaire was structured in two parts: the first part asked general questions about the respondents and their organisational profile. The second part focused on determining the factors that influence the acceptance of BI systems. To assess guest house managers' perceptions of BI systems, a systematic sampling method was used to select a random sample from the population of guest house managers in Gauteng, South Africa. The sample was drawn from guest house managers listed on online booking websites Afristay.com (n.d.), Booking.com (n.d.), and Expedia.com (n.d.), which had a consistent representation of guest houses in the area. The total number of guest houses listed on the selected websites was summed to determine a population size of 690. The sample size of 253 was then calculated using the proportional stratified statistical formula by Yamane (1967), as demonstrated in the study by Kikawa et al. (2019). Paper-based questionnaires were provided during on-site visits at Guest Houses. The data collection process continued until 253 responses were successfully obtained to meet the minimum calculated sample size requirements.

Results and discussion

The data was organised and subsequently transferred to the Statistical Package for Social Science (IBM SPSS) for analysis. Descriptive statistics were employed to present the demographic information.

Demographic data

The study surveyed a total of 253 professionals in the guest house management industry in Gauteng, South Africa. Most respondents were female (69.4%), higher than the 41.6% female representation in Small and Medium Enterprises (SMEs) in Tshwane, as shown in the Kikawa et al. (2019) study. The age distribution of the participants varied, with a notable concentration in the 34 to 41 years bracket (28.6%) and 26 to 33 years group (25.5%). Regarding education, 89.1% of the respondents had a qualification level between NQF5 and NQF7, with 45.9% owning an NQF6 diploma. This contrasts with the Kikawa et al. (2019) study, which reported 97.5% of SME respondents having an NQF7 qualification. A majority of female participants (55.9%) had over eight years of work experience, whereas 58.5% of males had less than seven years. This work experience is evenly split, with 46.3% having between 1-7 years of experience and 50.17% having more than seven years. In terms of business longevity, 47.1% of the surveyed guest houses had been operational for over 12 years, a significant contrast to the 4.9% in the Kikawa et al. (2019) study.

Technology utilisation and BI adoption

The survey, adapted from Kikawa et al. (2019) with permission, explored the use of technology in guest house management. 23.1% of respondents utilised technology for booking management, while others applied it for marketing research (7.1%), accounting (7.1%), financial forecasting (6.7%), and cash flow management (6.3%). Regarding computer knowledge, most respondents (63.5%) rated their knowledge as moderate, followed by advanced (31.0%) and beginner (5.5%). It was found that 94.5% had sufficient computer knowledge to utilise business intelligence (BI) information, and 96.1% incorporated data insights, such as online reviews, in their decision-making. The frequency of data access varied, with respondents accessing data on a daily (22.7%), every three days (18.8%), weekly (16.9%), monthly (22.0%), or less than monthly (19.6%) basis.

The survey also gauged perceptions of BI systems. Compatibility was assessed by three items: transitioning to a new BI system, integrating property management platforms into daily operations, and compatibility with current processes. The majority of respondents (88.6%, 86.3%, and 88.2%) agreed or strongly agreed with these items, resulting in a mean score of 4.149. The relative advantage of BI was evaluated in terms of ease of decision-making, operational effectiveness, and automation. Respondents expressed high levels of agreement (88.6%, 89.4%, and 86.7%), resulting in a mean score of 4.220.

Trialability was tested by considering trying out the BI dashboard before introduction, using a trial version, and not needing to try out the dashboard before adoption. The agreement levels for these items were 83.9%, 83.5%, and 43.1%, respectively, resulting in a mean score of 3.723. Observability was assessed in terms of awareness of BI dashboards in the market, ease of communicating about BI systems to others, and acceptance of new technology. The agreement levels for these items were 82.4%, 83.5%, and 74.5%, respectively, with a mean score of 4.021. Organisational competency was measured by four items: fit with work style, compatibility with operations, financial resources, and network connections. Agreement levels were high (89.5%, 88.3%, 81.6%, and 80.8%, respectively), with a mean score of 4.143.

Training and education were evaluated by considering knowledgeable staff, resource availability, and management support for skills development. The agreement levels for these items were 85.9%, 76.1%, and 87.0%, respectively, with a mean score of 4.131. Management support was assessed in terms of willingness to adapt to technology and understanding of IT technologies. The agreement levels for these items were 80% and 81%, respectively, resulting in a mean score of 4.012. External competitors as drivers of technology adoption were assessed by considering industry pressure, competition, and supplier impact. The agreement levels for these items were 89.1%, 88.3%, and 79.2%, respectively. Trading partner support was evaluated by three items: unaffected working relationships, vendor support, and awareness of property management platforms. Agreement levels were 78.4%, 78.1%, and 80.8%, respectively, with a mean score of 4.062. The survey concluded by assessing the overall acceptance of BI among different stakeholders. High acceptance was reported by 77.3% of employees, 85.9% of owners, and 86.7% of management.

Factors affecting BI system acceptance

The researcher used Oblimin rotation with Kaiser normalisation to find a factor solution that is both simple and interpretable (Smith & Johnson, 2021). The Kaiser normalisation is applied to the correlation matrix before the factors are extracted. The Oblimin rotation is then used to understand how those factors relate to each other. The presence of convergent validity indicates whether the intended correlation between concepts exists. Discriminant validity, conversely, is confirmed when the measurement objects of a construct exhibit a low correlation with the measurement objects of other constructs (Rodriguez et al., 2016). This is evident when each object loads more strongly on its correlated factors than on non-correlated factors, allowing for the identification of any unintended correlations between concepts. Through convergent validity analysis, researchers can determine whether their instrument provides an appropriate measure for the test being conducted. In cases where objects do not load highly on the targeted factors, they may be excluded from further analysis. Convergent validity is demonstrated when closely related factors exhibit high standardised loading, with a minimum value of 0.50 (Kikawa et al., 2019).

The study examined four technological features or dimensions of BI, namely compatibility, relative advantage, trialability, and observability. Respondents were asked to classify these characteristics using three questionnaire items each, except in one instance, where four items were tested.

Table 2 confirmed that all the technological characteristics had acceptable measures except for compatibility (items 1 and 3). Compatibility and observability were loaded onto the first factor. The second factor had a loading on trialability and the third on relative advantage. The small loadings were left blank since they were less than 0.35 and considered insignificant.

Table 2: Construct convergent validity analysis for technological characteristics

Component	1	2	3
Relative Advantage 1			0.815
Relative Advantage 2			0.806
Relative Advantage 3			0.808
Compatibility 1	0.446		
Compatibility 2	0.555		
Compatibility 3	0.417		
Trialability 1		-0.651	
Trialability 2		-0.632	
Trialability 3		0.718	
Observability 1	0.810		
Observability 2	0.674		
Observability 3	0.704		

The three organisational characteristics considered to evaluate the organisational factors relating to BI were organisational competency, training and education, and management support. The results presented in Table 3 show that both questionnaire items to the management support characteristic scored below the acceptable threshold of 0.5. The other factors all had a loading of greater than 0.50, indicating that they are valid measures. The results show that the first factor loaded on the organisational competency and management support characteristics, while the second factor was related to training and education. Any loadings smaller than 0.35 were considered insignificant and were therefore left blank.

Table 3: Construct convergent validity analysis for organisational characteristics

Component	**1**	**2**
Organisational Competency1	0.732	
Organisational Competency2	0.680	
Organisational Competency3	0.710	
Organisational Competency4	0.768	
Training&Education1		0.697
Training&Education2		0.820
Training&Education3		0.796
Management Support1	0.499	
Management Support2	0.322	

To evaluate the dependency level of the responses, convergent validity scales were utilised. The study examined two environmental factors, namely competitive pressure and trading partner support, which were assessed through three-item classifications by the participants. Table 4 displays the validation of both environmental characteristics, except for the third questionnaire item for trading partner support, which scored lower. All other items had loadings greater than 0.50, confirming their construct convergent validity. Each characteristic was expected to be measured by a distinct factor, as shown in Table 4, with the first factor measuring competitive pressure and the second factor measuring the second questionnaire item of trading partner support. The insignificant weightings are left blank since the loadings were lower than 0.35.

Table 4: Construct convergent validity analysis for environmental characteristics

Component	1	2
Competitive Pressure 1	0.678	
Competitive Pressure 2	0.617	
Competitive Pressure 3	0.574	
Trading Partner Support 1		0.567
Trading Partner Support 2	0.622	
Trading Partner Support 3	0.379	

This study further focuses on assessing two behavioural traits, namely PEOU and PU. Each of these characteristics was assessed using a set of three items by the participants. According to Table 5, all behavioural characteristics were deemed convergent valid.

Table 5: Construct convergent validity analysis for behavioural characteristics

Component	1	2
PU Perceived usefulness 1	0.836	
PU Perceived usefulness 2	0.800	
PU Perceived usefulness 3	0.725	
PEOU Perceived ease of use 1		0.501
PEOU Perceived ease of use 2		0.740
PEOU Perceived ease of use 3		0.878

Reliability

The convergent and discriminant validity was verified in the previous section. The Cronbach's alpha coefficient scores were further applied to test the credibility, data continuity, reliability and questionnaire items' consistency (Saunders et al., 2007). A score in the range of 0.6 to 0.7 is considered acceptable, while a score above 0.8 is considered excellent (Saunders et al., 2007). Table 6 reveals that the technological characteristic trialability, the organisational characteristic management support, and both environmental characteristics (competitive pressure and training partner support) scored below acceptability, indicating that these items are not proven reliable by the test. The low alpha score could be attributed to a limited number of questions, insufficient correlation of items, or assorted constructs. However, no further analysis was conducted to prevent this.

Table 6: Reliability analysis

Measurement items	Cronbach's alpha	Number of items
Technological characteristics		
Compatibility	0.654	3
Relative advantage	0.736	3
Trialability	0.005	3
Observability	0.643	3
Organisational characteristics		
Organisational Competency	0.716	4
Training & Education	0.686	3
Management support	0.400	2
Environmental characteristics		
Competitive Pressure	0.537	3
Training Partner Support	0.403	3
Behavioural intentions		
PEOU	0.621	3
PU	0.710	3

Logistic regression model

For response variables with multiple result categories, a multi-equation model, the multinominal logistic regression model, was used. The model assesses the impact of

independent variables (characteristics) on the dependent variables (overall BI acceptance). Calculating the difference between -2 log-likelihoods of the reduced and final models results in the Chi-square statistic. A recess in the final model stems from the reduced model.

Table 7: Likelihood ratio tests

Enabling Factors	Model Fitting Criteria	Likelihood ratio tests		
	-2 log-likelihood of the reduced model	Chi-square	df	Sig.
Intercept	87.291	4.295	2	.117
Relative advantage	88.591	5.595	2	.061
Compatibility	84.405	1.409	2	.494
Trialability	84.323	1.327	2	.515
Observability	83.406	.409	2	.815
Competitive pressure	91.644	8.647	2	.013
Trading partner support	83.148	.151	2	.927
Organisational competency	83.002	.005	2	.997
Management Support	83.676	.679	2	.712
Training & Education	84.575	1.579	2	.454
PEOU	90.325	7.328	2	.026
PU	87.723	4.727	2	.094

A significance level of 0 confirms a strong relationship with the null hypothesis (Kikawa et al., 2019). The null hypothesis stands for the relevance of the respective characteristic to the degree of acceptance of the BI technology. In the logistic regression, all the characteristics are loaded towards the overall BI acceptance. To confirm the significance of the null hypothesis, it has to load between 0 and 0.05, which establishes the relationship between the hypothesis and the overall BI acceptance. This study's results did not load as distinctively (see Table 7).

Table 8: Summary of the study hypothesis and their outcomes

Hypo-thesis	TOE Factor	TAM Variable	Characteristic	Valid	Reliable	Result
H1	Technological	External Variables	Compatibility		X	Not supported (0.494)
			Relative Advantage	X	X	Not supported (0.061)
			Trialability	X		Not supported (0.515)
			Observability	X	X	Not supported (0.815)
H2	Organisational	PU - Perceived Usefulness	Organisational Competency	X	X	Not supported (0.997)
			Training and Education	X	X	Not supported (0.454)
		PEOU - Perceived Ease Of Use				
			Management Support			Not supported (0.712)
H3	Environmental	Attitude Towards Use	Competitive Pressure	X		Supported (0.013)
			Trading Partner Support			Not supported (0.927)
H4	Behavioural	Actual System Use	PU	X	X	Not supported (0.094)
			PEOU	X	X	Supported (0.026)

Table 8 summarises the eleven characteristics used to test the four hypotheses. The null hypotheses were rejected since none had a loading smaller than 0. The hypotheses regarding competitive pressure and PEOU are the only ones that have support from their underlying characteristics. The consistency and accuracy of the characteristics, as well as the questionnaire items, were called into question by the reliability test. The technological characteristic of trialability, the organisational characteristic of management support, and both environmental characteristics - competitive pressure and training partner support - all scored below the acceptable level.

The validity test examines the correlation between characteristics within a construct and verifies the accuracy of the research tool. However, the test results indicate that the

technological characteristic of compatibility, the organisational characteristic of management support, and the environmental characteristic of trading partner support scored below the acceptable level.

A. Technological characteristics

The secondary objective of this study was to assess the technological characteristics and maturity of guest house managers as BI system users in their decision-making processes. The participants were asked to rate the compatibility, relative advantage, trialability, and observability of the system on a 5-point Likert scale, where 1 indicated strong disagreement, and 5 indicated strong agreement. The responses for all items relating to the characteristics yielded a domain mean score of 4, indicating agreement with the questionnaire items.

Only one item was rated as neutral, indicating that there was no need to try out the dashboard before adoption and theoretical training would suffice. However, the suggestion to provide the opportunity for a trial was rated with an agreement score of four. Despite this, the results of the analysis indicated that none of the characteristics was deemed significant. Compatibility was not considered a valid measure, and trialability did not qualify as a reliable measure.

H1: The study results indicated that none of the technology-related factors was considered significant. The theory that an individual's affinity for technology affects their willingness to adopt BI systems in guest house management in Gauteng was not supported. The measures for compatibility and trialability were found to be invalid and unreliable, respectively. It can be inferred that users are willing to explore and experiment with BI systems based on their current level of BI system understanding.

B. Organisational characteristics

Another objective of the study was to examine organisational characteristics' influence on the user's PEOU and PU regarding the use of BI systems. The responses for all items relating to the characteristics yielded a mean domain score of 4, indicating that the participants agreed with the questionnaire items. H2: The study results showed that none of the organisational factors was deemed significant. The measure for management support was found to be both invalid and unreliable. The findings did not support the idea that organisational factors play a role in shaping an individual's PU and PEOU of BI systems in guest house management in Gauteng.

C. Environmental characteristics

The study further investigated the environmental characteristics that prompt businesses to incorporate BI systems in their operations. The responses for all items relating to these characteristics yielded a domain mean score of 4, indicating agreement with the questionnaire items.

H3: Watson and Wixom (2007) recognised the increasing impact of BI systems on competitive strategy. The study results revealed that competitive pressure was considered a significant factor in the environment construct but was not deemed reliable. The measure for trading partner support was found to be invalid and unreliable. The theory that environmental factors affect a user's attitude towards implementing BI systems in guest house management in Gauteng was partially supported by the findings.

D. Behavioural characteristics

The study set out to evaluate the user attitude towards the use of BI systems by weighing the PU against the PEOU in terms of behavioural characteristics. According to Kikawa et al. (2019), the behavioural dimensions, PU and PEOU, determine the experience of simplification

and improvements of work processes and the attitude towards the consultation of BI systems. All questionnaire items were rated with a domain mean of 4, indicating agreement with the items.

H4: The analysis of the behavioural construct revealed that PEOU was considered a significant and valid measure. The hypothesis that PU of BI systems affects PEOU and overall acceptance in guest house management in Gauteng was not supported, as respondents placed more importance on PEOU. This aligns with the conclusion of Bahari et al. (2018) that a user's intention to regularly use a system largely depends on a high PEOU, with PU having less influence.

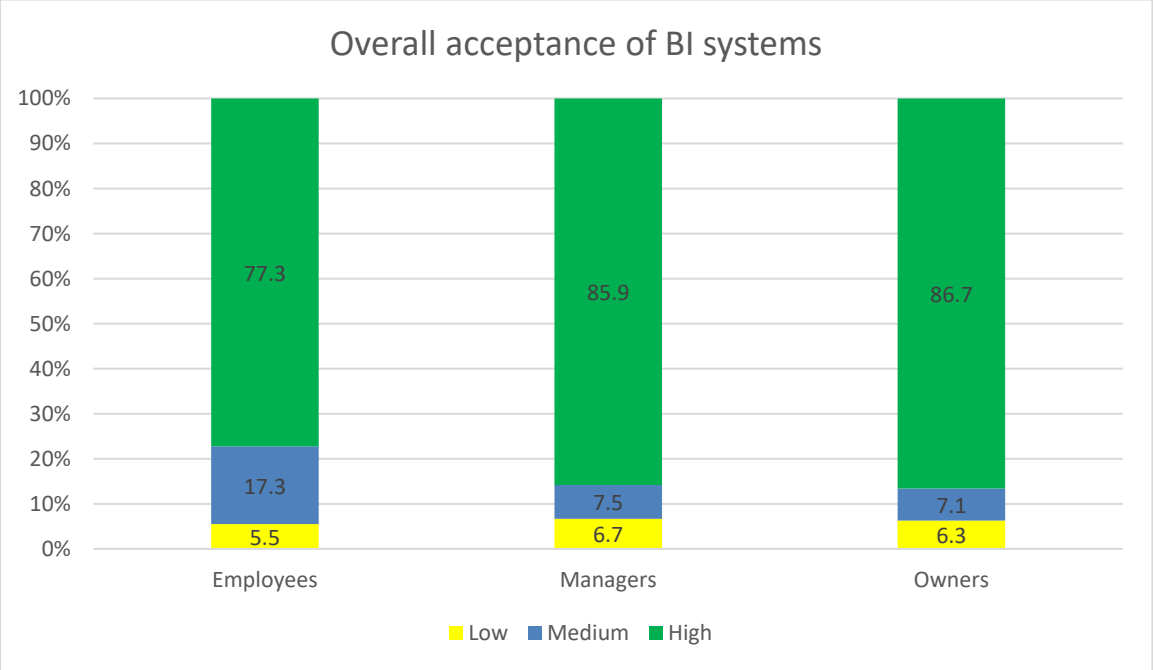

Figure 2: Overall acceptance of BI systems

The final survey question asked respondents to rate the overall acceptance of BI systems among three user groups (employees, managers, and owners), as illustrated in Figure 2. Results showed that 77.3% of employees, 85.9% of managers, and 86.7% of owners had a high level of acceptance. This suggests an overall positive attitude towards BI systems acceptance.

Conclusion

This study primarily investigated the acceptance and utilisation of Business Intelligence (BI) systems in guest house management in Gauteng, South Africa, particularly those leveraging online booking platforms. The survey findings reveal high levels of acceptance of BI systems across all respondent categories, including employees, managers, and owners. However, the motivations behind this adoption appear to be rooted more in competitive pressure and Perceived Ease of Use (PEOU) rather than a deep understanding of the system's benefits.

Notably, this approach could potentially constrain the expansion and industry-specific advancements of BI solutions, as users' limited awareness of their benefits may limit their optimal use. The results align with previous research positing that mere access to BI systems, devoid of a thorough understanding of their usefulness, cannot yield substantial performance improvements (Kikawa et al., 2019). Thus, while the study's objectives were largely met, with most respondents agreeing with the survey items, the results didn't fully support the initial hypothesis.

Recognising the vital role of training, this study recommends that BI suppliers invest more in user education, emphasising the comprehensive benefits and functionalities of their systems. An improved understanding of BI systems could potentially enhance their strategic use in guest houses and provide better operational outcomes.

However, it's worth noting the study's limitations, including the lack of focus on internal business needs, organisational culture, government support, and knowledge management. Future research could expand the scope to include a longitudinal approach, allowing for more in-depth insights and potential applicability beyond the Gauteng province. This could provide a more holistic understanding of BI adoption and utilisation across different regions and business contexts, ultimately contributing to the broader field of BI research in the tourism sector.

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