



# Investigating Business Intelligence as a Possible Differentiator for Administrative Competitive Edge

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## ABSTRACT

Business Intelligence (BI) has been recognised as a crucial component of the organisation's success. Whilst some organisations are able to exploit and realise the benefits of BI, there are still several organisations that fail to capitalise on its potential. The aim was to investigate BI as a possible differentiator for administrative competitive edge. The study applied a deductive research approach and a quantitative research method. Data was collected using questionnaires from a population of 302 respondents. Results revealed that, the use of BI in organisation is dependent on the employees realising the strong correlation between business alignment, BI and strategy. Management support was found to be a key indicator in demonstrating leadership, commitment, and advocacy towards BI initiatives. The study found that the alignment of BI with strategy within an organisation makes it possible for the organisation to reap the benefits of BI which led to better decision making. BI was found to be useful in assisting respondents to perform and complete their tasks quicker and with ease. The conceptual framework tested in the study comprised of three constructs: strategy alignment, management support and BI utilisation as contributing components in making it a differentiator in gaining a competitive advantage.

**Keywords:** Business Intelligence, Differentiator, Administrations, Competitive Edge

**JEL Classifications:** D7, M1

## 1. INTRODUCTION

The nature of doing business in the 21<sup>st</sup> century differs completely from how business was conducted in the past and it keeps on evolving mainly because of technology (Silahtaroglu and Alayogly, 2016). This relates to services and products developed and offered by businesses, the needs of customers and how the day-to-day activities within and across businesses are carried out throughout the globe. As a result, the business landscape has become complex, but this has brought about not only challenges but opportunities as well (Kelvin and Solomon, 2017).

Organisations are therefore trying to adapt to a new way of doing business by developing strategies that will assist in staying relevant and performing activities better than their competitors. Alnoukari and Hanano (2017) state that integrating Business Intelligence

(BI) with the strategy allows for the adaption of an organisation. This study will be based on an asset-based financial organisation in Gauteng, and it seeks to examine whether Business Intelligence (BI) plays a key role in the organisation achieving a competitive advantage.

## 2. LITERATURE REVIEW AND CONTEXT

Due to the competitive, constantly changing, and uncertain business environment, Business Intelligence (BI) has gained attention from executives and decision makers. Business Intelligence (BI) has been recognised as a crucial component of the organisation's success. However, whilst some organisations are able to exploit and realise the benefits of BI, there are still several organisations that fail to capitalise on its potential (Lautenbach et al., 2017; Gaardboe and Svarre, 2018).

Organisations in financial services industry find themselves having to explore new ways of developing business models and creating value propositions due to evolving competitive landscape and emerging technologies (Gartner, 2020). This evolution throughout the globe, now more than ever, forces organisations to keep abreast of technology and raises a need to be proactive when it comes to decision-making processes to remain competitive and relevant (Kelvin and Solomon, 2017; Ain et al., 2019).

The different business functions in organisations do not operate in isolation of each other. Although each business function might have its own strategy, it is not detached to the other business functions. In fact, each business function's strategy is derived from an organisation's strategy (Thompson et al., 2018). Therefore, business units' strategies are intertwined and should support each other to achieve an organisation's strategy. Wiles (2019) has stated that it is challenging for some managers to understand how the organisational strategy and their role interact and are related to the roles of other managers. Due to the interconnectedness of organisational functions, actions and tactics from some managers may lead to adverse outcomes for other managers irrespective of how well-meaning they may be.

### 2.1. Concept of Business Intelligence (BI)

There is not a single definition for Business Intelligence (BI), but many scholars agree that it is an umbrella term which encompasses various technologies and processes to collect, store, analyse and integrate data to assist in making better decision (Lautenbach et al., 2017. p. 24; Gauzelin and Bentz, 2017. p. 41; Gaardboe and Svarre, 2018). Business Intelligence (BI) encompasses all processes and products that assists organisation gather large data sets, integrate and manage it to support business users in decision making process and providing end-users with capability to discover new knowledge (Ain et al., 2019; Silahtaroglu and Alayoglu, 2016).

In this paper, the broad definition of BI which integrates organisational and technical elements is adopted. The technical element comprises of tools, applications, and technologies used to gather data from various sources, integrate and analyse to make it available whilst the organisational element refers to "holistic and sophisticated approach to cross-organisational decision support" (Olszak, 2016. p. 107). According to Pareek (2018), BI cannot be referred to as a product. It is a constantly evolving strategy, vision, and architecture that continuously seeks to align an organisation's operation and direction with its strategic business goals".

### 2.2. Business Intelligence (BI) Functions

Business Intelligence (BI) is an input in the strategic decision-making process and planning. It considers the organisation's strengths and weaknesses from an internal perspective and opportunities and threats from an external perspective. This seeks to understand and proactively anticipate the needs of an organisation and ensure effective, informed, and strategic decisions (Alnoukari and Hanano, 2017; Rouhani et al., 2016).

Executives can have visibility and the understanding of the whole organisation and the market it operates in because BI provides

information used in strategic planning and on areas which give an organisation a competitive advantage (Gauzelin and Bentz, 2017).

BI allows the organisation to have a better understanding of its data interrelations across business functions, the potential to create synergy and the capability to describe, prescribe and predict steps to take towards the organisational goal. Although it may be difficult to directly link or measure the return on investment for BI, as an enabler, it assists organisations to perform activities better, and smarter by providing essential tools that help in analysing information, effective reporting and aiding better decision making (Larson and Chang, 2016. p. 2; Gauzelin and Bentz, 2017).

Business Intelligence (BI) provides management with the ability to enhance strategic positioning and competitiveness. It provides supporting tools to improve decision-making abilities across different areas and allows for access quicker which enhances business processes (Rouhani et al., 2016. p. 21; Olszak, 2016; Alnoukari and Hanano, 2017).

### 2.3. Benefits and Challenges of Business Intelligence (BI)

Gauzelin and Bentz (2017) revealed that employees agreed that BI assists in enhancing end-user's productivity and performance which leads to improved organisational performance. Both managers and junior employees agreed to the use of BI as it extends beyond facilitating decision-making to allowing the organisation to meet needs. Organisations that applied BI in their business operations were able to reduce risk and found it to be beneficial in support of risk management. Organisations embracing BI have the potential to increase strategic planning effectiveness, improve business efficiency and productivity and gain competitive advantage (Kfoury and Skyrius, 2016. p. 96).

Organisations should be cognisant that although there are common challenges when it comes to BI, these may vary from one organisation to another due to factors such as culture, infrastructure, technology, and the size of the company (Olszak, 2016. p. 105). These factors contribute to about 60% to 70% of the organisations not being able to realise the benefits of BI and therefore falling short in gaining a competitive advantage (Olszak, 2016. p. 105).

Management support is one of the critical factors in the success of BI and one of most common challenge in the adoption and utilisation of BI (Lautenbach et al., 2017. p. 26; Kulkarni et al., 2017. p. 522).

When management is not clear on the objective of BI, it poses as a challenge for business users to adopt BI within the organisation as there will be lack of support (Hasan et al., 2016. p. 176). Data related issues are cited as one of the highest technical challenges in BI and contribute significantly to failure of BI. This is due to organisations usually underestimating the time and effort required to prepare the data into a format which is usable and make sense to business users. It is difficult to derive insights and interpret data if it is incomplete and unclear (Lautenbach et al., 2017. p. 24; Hasan et al., 2016. p. 76).

Due to the rapidly growing use of data-rich applications, firms are collecting and storing more information than ever with the intention to use it as a competitive weapon. This enables organisations to make effective decisions through the application of BI as potential source of competitive advantage (Kohtamaki and Farmer, 2017. p. 11; Rouhani et al., 2016). The complexity of the solution remains in the top list of barriers to the utilisation of BI in the organisation (Gauzelin and Bentz, 2017. p. 45) and this is usually as a result of poor implementation where BI is not driven by business requirements and no alignment exist between business and BI (Yeoh and Popovic, 2016).

#### 2.4. Strategy and Alignment in Business Intelligence (BI)

In an environment where change is inevitable and technology has rapidly evolved in the past decade, organisations need to ensure that they adapt to external factors such as technology, climate, and economy if they want to survive, thrive and remain relevant (Rouhani et al., 2016). Alnoukari and Hanano (2017. p. 6) define strategy as a framework through which an organisation can preserve its permanency in the market and maintain its flexibility to location changes to gain good compensations. Strategy is defined as plans and actions developed by the organisation to outcompete its rivals and maximize profitability (Thompson, Peteraf, Gamble and Strickland, 2018. p. 2). Strategy begins with the vision and mission of the organisation, it is then cascaded down to objectives, tactics and then design and development of policies which will guide the organisation on how things ought to be done (Thompson et al., 2018).

The strategy making hierarchy shows that the Chief Executive Officer (CEO) as the custodian and the strategic visionary takes the ultimate responsibility to lead the strategy-making process. The senior executives and heads of different areas develop a game plan with elements that support the business strategy and the managers, team leaders and key employees get involved in managing specific activities adding details and completeness (Thompson et al., 2018. p. 34). Thompson et al. (2018. p. 12) state that a strategy must pass the three fit tests in order to be considered a winning strategy, namely, the fit test, competitive advantage test and the performance test. The fit test checks the strategy's ability to deal with both internal and external factors in an uncertain environment. The strategic fit is fundamental in the strategy alignment model for the organisation's success. An internal analysis of the organisation's resources and capabilities is conducted to be able to best position the organisation to deal with the external factors in the marketplace (Alnoukari and Hanano, 2017. p. 8).

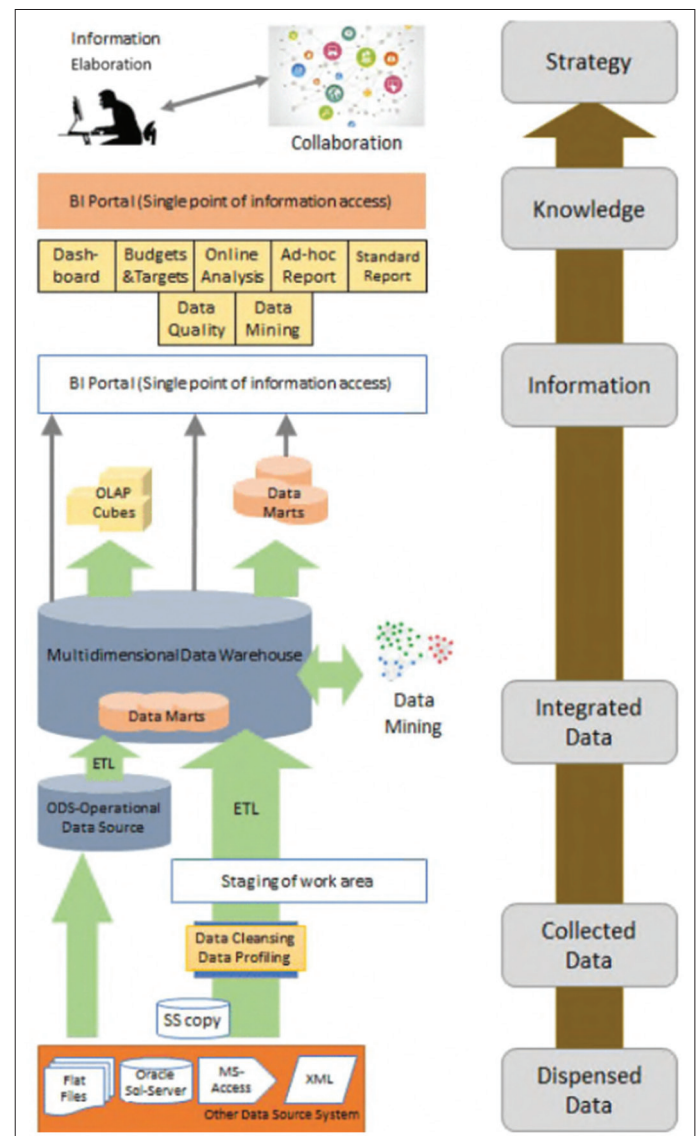
The alignment between strategy and BI is referred to as strategic intelligence. It is described as defined as a continuous process of producing needed intelligence of strategic value in an actionable form to facilitate long-term decision making (Alnoukari and Hanano, 2017. p. 7). BI has a role to play at all levels of the organisation and within all functional areas. From the strategic level, it assists with developing and monitoring of organisational objectives. At a tactical level, allows management to implement strategies and plans for various functions such as marketing, finance, and supply chain then at operational level, business users can track and monitor performance indicators and perform ad-hoc

analysis for a specific query. Information ought to be accessible for decision making process at every step of the performance by all relevant users (Mudzana and Maharaj, 2017. p. 24; Alnoukari and Hanano, 2017).

It is crucial that all users be equipped with the necessary and relevant information in order to perform their tasks effectively and that is a role played by BI (Rouhani et al., 2016). Alnoukari and Hanano, (2017:7) state that the borders between all levels from strategic to operational are somewhat diminishing as the continuous company renewal increases allowing more users to be involved in the decision-making process. The integration between BI and strategy assists decision makers with the implementation of strategic plans and allows the organisation to adapt easily to the changing market in order to gain competitive advantage (Alnoukari and Hanano, 2017. p. 7).

Figure 1 shows the link between the organisation strategy and BI. In defining the organisational strategy, it crucial that BI serves as input in order to support decision-making at every level and

Figure 1: Typical BI architecture



Source: (Lee, 2018. p. 2)

enables tactics to be implemented to achieve the strategy. The link between BI and business is one of the key elements in towards the BI and organisation success (Villamarin-Garcia and Diaz-Pinzon, 2017. p. 53).

Thamir and Poulis (2015) advise that most organisations have had to review their strategies regarding how some of the business functions operate in order to enable their business process to be more efficient and create exploit opportunities to create competitive advantage as a result of the BI revolution. It also crucial that all stakeholders and their actions in the organisation pull towards the same directions (Gauzelin and Bentz, 2017. p. 42).

### 2.5. Management Support of Business Intelligence (BI)

Gaardboe and Svarre (2018. p. 7) define management support as leaders acting as champions, sponsors or promoters as well as portraying the willingness to avail and allocate resources in support of BI initiatives. Kulkarni et al. (2017. p. 522) refer to the degree to which the organisation's top management considers BI to be of strategical importance as management championship. The anchoring of BI in top management ensures that resources required are available, which makes it easier for BI to be adopted because it is endorsed, promoted and driven from the top down (Gaardboe and Svarre, 2018. p. 7).

Lautenbach et al. (2017. p. 24) state that the task is made easier when top management is educated and has the knowledge of value and benefits that can be derived from BI. Management has to constantly reinvent themselves and find new solutions for an organisation to exist and prosper in the market. (Giurgiu and Borza, 2015. p. 1110).

Ain et al. (2019), found that management support falls under organisational perspective which is one of the factors that influences the success of BI. The organisational perspective focuses on the alignment between organisational strategy and BI to have an organisation succeed. It is also supported by Gaardboe and Svarre (2018. p. 7) that management support poses as most critical factor in the success of BI. The utilisation of BI is the intensity or the extent to which BI is the adopted and used in the organisation.

### 2.6. Ease of Access

Organisations are likely to benefit from BI when it is made easily available to the business users. Business users at all levels across the organisation have to be supported in order to have access to information which enables them to make better decision Kuntonbutr and Kulken (2017. p. 1801). When business users cannot access the relevant information required to make better decisions due to limitation of tools or solutions, it impacts on the realisation of the value that BI provides (Kulkarni et al., 2017).

### 2.7. Ease of Use

Organisations with high performance are usually use BI for various objectives such as growth or competitive advantage and it allows them to gain insights into key areas to drive effective decision making (Lautenbach et al., 2017. p. 23). The easy-to-use aspect of BI is one of the key factors of BI success, adoption, and utilisation (Ain et al., 2019. p. 7). Gauzelin and Bentz (2017. p. 45) state that

the degree in which BI is perceived to be complex remains one of the barriers to adoption or utilization.

### 2.8. Quality of Information

The quality of information used in the decision-making process is very crucial as it determines whether managers make better, accurate and reliable decisions. Therefore, BI should provide organisations with information of high quality (Hasan et al., 2016. p. 176; Gauzelin and Bentz, 2017. p. 45). The success of BI is also determined by the quality of data which leads to organisations attaining competitive advantage (Olszak, 2016. p. 113). Božič and Dimovski (2019. p. 95) state that data and accessibility to business users across organisation is essential in supporting decision making process. It also helps in improving the ability to anticipate threats and opportunities to position the organisation better.

### 2.9. Availability of Data in Time

The availability of information at the when the time when decisions need to be made is essential to the decision-makers. Business users from all levels and across the organisations require information to ensure that the tasks executed are done properly and the decisions taken are based on facts rather than intuition (Salmasi et al., 2016). The fast-paced market has propelled organisations to reduce the turnaround time when it comes to decision making process, therefore, having the information at the right time supports the success of decision makers (Rouhani et al., 2016. p. 23).

### 2.10. Link to Competitive Advantage

An organisation is said to have achieved a competitive advantage when it is able to provide a higher value to the customers than its competitors or the same value at a less cost to the firm (Thompson et al., 2018. p. 7).

The focus of competitive advantage has shifted from an organisation which just implement advanced technologies to that employ technology to enable the organisation derive insights, manage knowledge, and make better informed decisions (Alnoukari and Hanano, 2017. p. 6).

The Resource-Based View (RBV) state that an organisation can only achieve a competitive advantage if the resources are valuable, rare, inimitable, and non-substitutable. BI on its own doesn't meet these criteria but can be integrated with other resources to create synergy and then qualify to gain a competitive advantage (Olszak, 2016. p. 112).

### 2.11. Theoretical Framework

The theoretical model in this study is based on the updated DeLone and McLean information system (IS) model (2003) and the theory of Critical Success Factors (CSFs) for BI. According to Yeoh and Popovic (2016), the DeLone and McLean IS success model was originally developed in 1992 and updated in 2003. The updated model comprises of six factors, namely. p. system quality, information quality, service quality, system use, user satisfaction and net benefits. These are explained as:

- System Quality – relates to the desired characteristics of a system by the organisation. The characteristics includes ease of use, data quality, flexibility, reliability, and integration.
- Information Quality – relates to the content and output of the

system such as timelines, accuracy, completeness, consistency, and relevance.

- Service Quality – relates to the support from the “owners” of BI within an organisation as business users are referred to customers who require support be it empathy or technical competency.
- System Use – relates to the voluntary use of system capabilities by the users, the frequency of use, dependency, usage pattern and reasons behind using it.
- User Satisfaction – relates to how satisfied the user is with the result of the system
- Net Benefits – the success measures which capture the balance of positive and negative impacts. The degree to which IS are contributing to the success of individuals, groups, or organisations such as increase in productivity or improved decision making.

The CSFs are variables which are important to determine whether business objectives have been achieved. In relation to BI, these give good guidance in terms of the alignment to business objectives and what criteria to follow to achieve BI success (Olszak, 2016. p. 112). As shown in Table 1, the factors are classified under three dimensions: organisation, process, and technology. According to Yeoh and Popovic (2016), the organisation dimension relates to a clear vision, well-established business case, committed management support and sponsorship. The process dimension includes business-driven and interactive development approach, business centric championship and balanced team composition and user-oriented change management.

In this study, the key concepts which are identified are business alignment, management, and BI utilisation. The alignment between BI and business strategy drives the success of BI which leads to an improved organisational performance. The commitment and support from management creates an environment where business users are able to utilise BI to increase productivity and perform their tasks better and as a result the organisation is able to position itself better in the market. These key concepts serve as levers to push towards the success of BI developing and implementing a winner strategy to achieve competitive advantage (Olszak, 2016; Yeoh and Popovic, 2017).

The strategy process comprises of four phases, formulation, implementation, evaluation, and control. The strategy formulation involves setting the organisation’s vision and mission, the objectives, strategies, and policies. The next phase of implementation is converting the strategy into action. The evaluation phase monitors the actual performance against the

**Table 1: Critical Success Factors for BI systems**

Dimension	Critical Success Factor (CSF)
Organization	A clear vision and well-established business case Committed management support and sponsorship
Process	Business centric championship and a balanced team composition Business driven and iterative development approach User-oriented change management
Technology	Business driven, scalable and flexible technical framework Sustainable data quality integrity

planned performance and then take the necessary corrective measures in the control phase (Alnoukari and Hanano, 2017. p. 6). BI drives the movement from raw data in various sources into information, from information to knowledge and insights through different processes, tools, and technologies to ensure value add to the organisation. Using these insights and knowledge, managers are able to make better decisions in formulating and executing strategies and consequently, attaining competitive advantage for the organisation (Eidizadeh et al., 2017).

### 3. RESEARCH METHODOLOGY

This study applies a deductive research approach, and a research approach outlines the plans, structure and procedures of data collection and analysis to be carried out in the research in order to accomplish the purpose of the study (Creswell, 2014). Zegeye et al. (2009. p. 9) state that deductive method or reasoning is as a result of the underlying idea of priori method. The quantitative method is used in this study, and it is mainly an objective type of research, emphasising quantifiable observations involving numerical or statistical data (Zegeye et al., 2009. p. 77).

The data used was cross-sectional collected over a period of 2 weeks using questionnaires from a sample of 108 respondents out of a population of 302 potential respondents at a managerial level. The population of this study consists of employees who are at a management level. A pilot study was conducted where the questionnaires were sent to 3 respondents as pilot tests to check if the instructions and questions would be understood by respondents. The pilot tests were also to validate that the instrument that will be used to collect data were appropriate to resolve the research questions (Tichapondwa, 2013. p. 210). The Cronbach alpha test was which is mostly used when determining the internal consistency of an instrument was used in this study. The Cronbach alpha test assists to check the alignment between the questions and objective which will be informed by the score of between 0.5 and 0.8. A score of 0.7 or higher is deemed to be an acceptable reliability score (Table 2).

### 4. RESULTS FROM THE ANALYSIS

Multiple regression analysis was conducted to establish the relationship between independent variables and dependent variables. This form of analysis was chosen because the dependent variable is continuous. The independent variables in this study were identified as strategic alignment and management support while Business Intelligence (BI) was the dependant variable. Descriptive analysis, reliability, and analysis of variance (ANOVA) were also considered to address the research objectives of this study. The p-value test was used to give the statistical significance of the results and to measure the relationship between variables. In this study, p-value of 0.05 was considered as the borderline.

**Table 2: Survey response**

Total invitations	Total responses	Complete responses	Partial responses
302	108	99	9

#### 4.1. Measure of Central Tendency

The descriptive analysis in this section focuses on the central tendency measures. The central tendency measures were used to conduct analysis of the constructs involved in the study which are Business Intelligence (BI) utilisation, strategic alignment, and management support. As mentioned, a four-point Likert scale was used in this study and based on the principle that 2 (4/2) is the middle value of four-point scale, any mean score below 2 indicates that most respondents tend to either disagree or strongly disagree about the statements of the construct. All the mean scores above 2 indicate that most respondents tend to either agree or strongly agree with the statements of the construct.

#### 4.2. Strategic Alignment

The results in Table 3 illustrate that the majority of respondents tend to agree or strongly agree with the statements of strategic alignment between BI and organisation because the mean score is 3.14 which is above 2. When there's an alignment between BI and strategy, the organisation is put in a better position to adapt to the changing markets, improve its overall performance and able to achieve a competitive advantage (Alnoukari and Hanano, 2017).

#### 4.3. Management support

In Table 3, the mean score of 2.98 which is above 2 demonstrates that most respondents agreed or strongly agreed with the statements of management support. This means that there is support from management towards BI within the organisation. Management support is regarded as one of critical factors which contributes towards the success of BI in an organisation (Yeoh and Popovic, 2016).

#### 4.4. BI Utilisation

The mean score of BI utilisation is 3.07 and this is above 2 as shown in Table 3. The majority of the respondents agreed or strongly agreed with the statements indicating that BI is being utilised in the organisation. The utilisation of BI is usually enhanced when the user realises the benefits in their tasks (Gauzelin and Bentz, 2017).

#### 4.5. Normality Assessment

A normality test is used to assess whether the data was normally distributed amongst the respondents. The indicators used to measure this is the value of skewness and Kurtosis. Kline (2015) recommended that the indicators' skewness and kurtosis values should be below  $\pm 3$  and  $\pm 10$ , respectively. The results in Table 3 indicate that the assumption of univariate normality was met because the skewness and kurtosis values fall within recommended threshold for all the variables.

Before using the constructs to test the research objectives, it is important to first check the reliability of the constructs (Creswell, 2014). The reliability is the degree of internal consistency of a

**Table 3: Measure of central tendencies of constructs**

Items	Mean	Median	SD
Strategic alignment	3.14	3.00	0.46
Management support	2.98	3.00	0.51
BI utilisation	3.07	3.00	0.43

SD: Standard deviation

set of questions (items) related to a construct (Pallant, 2010). Reliability is commonly assessed through the Cronbach alpha which is expected to be above 0.7. Results in Tables 4 and 5 indicate that all the constructs considered in the study have an acceptable level of reliability as they have Cronbach alphas above 0.7.

#### 4.6. Multicollinearity Assessment

The multicollinearity test is conducted to ensure that the independent variables (strategic alignment and management support) are not highly correlated to each other. High correlation between independent variables suggests that these independent variables are identical or similar, yet they are presented in the conceptual model as separated entities. Multicollinearity assumption is commonly assessed through Tolerance and variance inflation factor (VIF) statistics.

The Tolerance statistic refers to the amount of variability in the independent variables that is not explained by other independent variables included in the conceptual model. The multicollinearity assumption is supported if the tolerance statistic is above 0.1 and the VIF statistic is  $< 10$ . The results in Table 6 indicate that independent variables, strategic alignment and management support, are not highly correlated and therefore independent of each other.

#### 4.7. Correlation Analysis

Correlation test was conducted to ascertain the relationships between the constructs (business alignment, management support and Business Intelligent utilisation). The significant of the relationship between variables is determined by the p value that is below 0.05. Meaning that all the variables with the  $p < 0.05$  have a significant relationship. For instance, the results in the table below show that there is a positive (0.744) and significant (0.000) relationship between strategic alignment and Business Intelligent utilisation, between management strategy and Business Intelligent utilisation (0.650. p. 0.000), and between management strategy and strategic alignment (0.745. p. 0.000).

**Table 4: Normality test assessment of variables**

Variables	Strategic alignment	Management support	BI utilisation
Skewness	0.070	0.049	0.407
Kurtosis	-0.158	-0.117	0.059

BI: Business intelligence

**Table 5: Reliability and validity of the scales**

Constructs	Number of items	Cronbach's alpha
Strategic alignment	9	0.864
Management support	8	0.895
BI utilisation	11	

BI: Business intelligence

**Table 6: Multi-collinearity test of constructs**

Constructs	Tolerance	VIF
Strategic alignment	0.444	2.251
Management support	0.444	2.251

VIF: Variance inflation factor

The correlation between constructs might be that they reflect the same theoretical construct.

**4.8. Evaluation of Conceptual Model**

The conceptual model in Figure 2 represents the relationship between strategic alignment and management support as independent variables with BI utilisation as a dependent variable. The purpose of this phase is to assess the significance of the amount of variance explained in the dependent variable, BI utilisation by the independent variables, strategic alignment, and management support. That is examining how much difference both independent variables has on the dependent variable. According to Table 7, the model explained 56.6% of the variance of BI utilisation. Table 7 further indicates that the amount of variance explained in the model is statistically significant to validate the model as the p is 0.000 ( $p < 0.05$ ).

When the organisation’s objectives are well defined and there’s a better understanding of the decision-making process from management, an environment which encourages the utilisation of BI is easily created (Hasan et al., 2016. p. 176).

**4.9. Predictive power of the independent variables**

The predictive power analysis is used to establish the predictive effect of independent variables (strategic alignment and management support) on dependant variable (BI utilisation). In Tables 8 and 9, two columns to assess the predictive effect of variables is the “Beta” and “p-value”. The Beta value indicates the direction and the strength of the relationship between independent

variables and dependant variable while the p-value estimates the significance of the predictive effect (Pallant, 2010). The significance of the relationship is measured through the p-value below 0.05.

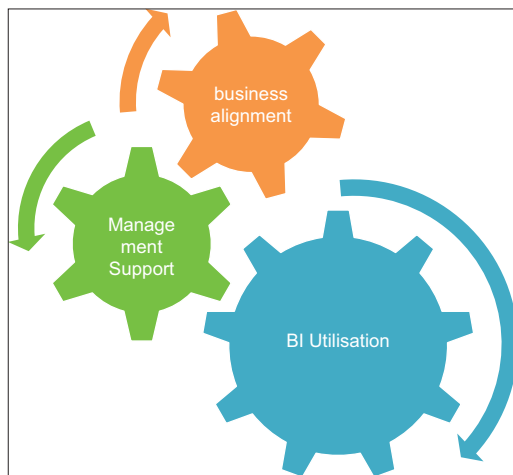
The first independent variable, strategic alignment, has a positive beta of  $B = 0.583$  and p-value of 0.000. This means that strategic alignment has a significance effect on BI utilisation because the p-value below 0.05. Therefore, the utilisation of BI is determined by strategic alignment within the organisation. Salmasi et al. (2016. p. 28) state that the strategic alignment between BI and business is important in influencing the utilisation of BI in an organisation.

Management support as another independent variable in this study has a positive value of 0.216 for beta and P-value of 0.026 as indicated in Table 10. The effect of management support on BI utilisation is significance because of the p value below 0.05. This means that BI utilisation in the organisation is determined by management support. Management support serves as one of the most studied factors which has an influence on the use of BI (Ain et al., 2019).

**5. DISCUSSION AND FINDINGS**

All constructs, business alignment and management support, BI utilisation, were tested individually and found to be key contributors to BI playing a significant role in assisting the organisation in achieving competitive edge. The data analysis revealed that the use of BI in the organisation is dependent on the employees realising the business alignment between BI and strategy. Management support was found to be a key role player in demonstrating leadership, commitment, and advocacy towards BI initiatives.

**Figure 2:** The conceptual model



**Table 7: Results of correlation analysis**

Correlation	Items	BI	Strategic alignment	Management strategy
Pearson correlation	Business intelligent			
	Strategic alignment	0.744	1.000	
	Management strategy	0.650	0.745	1.000
Significant (one-tailed)	Business intelligent			
	Strategic alignment	0.000		
	Management strategy	0.000	0.000	

BI: Business intelligence

**Table 8: Model evaluation**

Model summary <sup>b</sup>				
Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	SE of the estimate
1	0.758 <sup>a</sup>	0.574	0.566	0.28561

<sup>a</sup>Predictors: (Constant), management support, strategic alignment, <sup>b</sup>Dependent variable: BI utilization. SE: Standard error, BI: Business intelligence

**Table 9: Model validation**

ANOVA <sup>a</sup>					
Model 1	Sum of squares	df	Mean square	F	P
Regression	11.425	2	5.713	70.031	0.000 <sup>b</sup>
Residual	8.484	104	0.082		
Total	19.909	106			

<sup>a</sup>Dependent variable: Business intelligent utilization, <sup>b</sup>Predictors: Management support, strategic alignment. ANOVA: Analysis of variance

**Table 10: Predictive power of the independent variables**

Model 1	Standardized coefficients $\beta$	t	P
Constant		4.234	0.000
Strategic alignment	0.583	6.066	0.000
Management support	0.216	2.252	0.026

<sup>a</sup>Dependent variable: BI utilization. BI: Business intelligence

This is supported in a study by Ain et al. (2019) that the benefits of BI are better realisation within the organisation when there's a well-defined vision and goals, BI and business strategy alignment, management support and the organisation culture are in harmony. The components together allow organisation flexibility and to realise benefits of BI which leads to overall improvement of the organisation performance and attaining competitive advantage (Olszak, 2016). It all comes down to the decisions taken by business users within the organisation based on the information available to craft the strategies, enable efficient business process and exploit opportunities to create a competitive advantage with aid of BI (Gauzelin and Bentz, 2017; Thamir and Poulis, 2015).

### **5.1. Managerial Implication to Findings**

The current market environment calls for organisations to re-evaluate how they compete and conduct business. The findings from this study reveal that when an organisation is aware of which levers to pull to capitalise on BI capabilities, BI has the potential to become the key ingredient in gaining a competitive advantage in the asset-based financial organisation.

#### *5.1.1. The effect of strategy alignment between organisation and BI*

The findings pointed out that BI plays a crucial role as an input into the strategic plans and processes which guide the organisation's objectives. These plans touch on different business units which contribute to a competitive advantage in the organisation (Gauzelin and Bentz, 2017). According to the results, BI serves as a facilitator which allows the organisation to be flexible in order to adapt to the changing environment. It is capable of having an influence on all levels of management and across functional areas, providing insights on the interconnection of these business units and an opportunity to leverage off each other to create synergy.

The responses showed that there is an alignment of strategy between BI and business in the organisation. This strategy alignment is one the important element in order to realise the benefits of BI in an organisation (Olszak, 2016. p. 113). This is in line with a study conducted by Villamarin-Garcia and Diaz-Pinzon (2017) of the key success factors of BI and out of the thirteen identified factors, business linking, states that business driven BI must meet the organisation's needs to realise the benefits was at number four.

#### *5.1.2. The extent to which BI is supported by management in the organisation*

In the study, it was indicated that management has an important role to play in encouraging and influencing the utilisation of BI within the organisation. In their roles as guardians and stewards of the strategy, management recognised the function BI plays and agreed that it has a positive impact in enhancing the decision-making abilities. As supported by (Kulkarni et al., 2017), top management can plant seeds which encourage decision making process supported by insights from BI.

It was evident from the findings when most of the respondents agreed that management act as an advocate for BI. The support from management extended to across all job levels, functional

areas, and length of service in the organisation. Management supported and encouraged the utilisation of BI by providing guidelines and supporting BI initiatives. The support was also demonstrated by availing of resources which enabled the utilisation of BI to be easier and accessible. By so doing, it created an environment which users were able to take the right steps to ensure the success of the organisation (Kulkarni et al., 2017). Villamarin-Garcia and Diaz-Pinzon (2017) state that the support from top management also assists in clearing challenges and possess a significant influence on how employees behave.

#### *5.1.3. The extent to which BI is utilised in the organisation*

The utilisation or adoption of any system within organisations is usually related to how beneficial it is to the users (Hasan et al., 2016). The respondents displayed a set of skills required to utilise BI in their tasks and indicated that the acquisition of these skills is supported within the organisation. BI is accessible to the users and enables them to complete their tasks quicker and with ease. Therefore, the improvement in productivity from respondents may lead to an improvement in organisational performance (Peters et al., 2016).

The information provided from BI which assists with the decision-making process is reliable and of quality enabling business users to make better informed decisions. Although most of the respondents agreed that information is available on time, some mentioned that at times, information gets delayed, and this might have a negative impact on the turnaround time for decision making process. Eidizadeh et al., (2017. p. 260) found in their study that the availability of relevant, timely and quality information helps managers to understand the consumers' needs and thus applying this information to contribute to the success of the organisation. The majority (90.7%) of the respondents revealed that their tasks are dependent on receiving accurate information from BI.

## **6. RECOMMENDATIONS**

### **6.1. The Availability of Information on Time**

The study found that some of the respondents said that the information is not available on time. BI architecture starts from the extraction of data from different sources, passes through different stages and processes of transformation prior to the information being consumed by the end-users for different purposes. The organisation will have to do an impact analysis to determine the consequences of information not being available on time to the end-users and a root cause analysis to identify problematic areas so that this can be resolved. This could be the deciding factor on gaining or losing a customer. The amount of time to make decisions is getting shorter and therefore organisations require accurate data on time to assist in decision making process (Villamarín-García and Díaz-Pinzón, 2017).

### **6.2. Harnessing the Organisational Resources and Capabilities**

Over 80% of the respondents have been with the organisation for more than five years and over 75% have been using BI for six years or more. The organisation should recognise this as an advantage and asset to use as part of the building blocks in



gaining a competitive advantage. The tenured employees are already familiar with the culture, policies and guidelines of the organisations which makes it easier for them to carry through the strategy. They are also able to provide valuable input in terms of identifying gaps and problem-solving methods because they are accustomed with the business operations.

Thompson et al. (2018, p. 88-89) refer to human assets and intellectual capital as one of the key resources to give an organisation a competitive advantage over its competitors. The human assets and intellectual capital comprise of the skills, talents, and the knowledge as a result of cumulative learning. The know-how of managers in taking stock of resources and capabilities is crucial for the success of the organisation. In a study by Villamarin-Garcia and Diaz-Pinzon (2017), people and human talent came number two for the key success factors of BI which enable the organisation to gain a competitive advantage.

### 6.3. Collective Collaboration

All levels of management from technical, business and supporting areas need to be involved in BI related initiatives so that there's an alignment across business units. Salmasi et al. (2016, p. 18) stated that one of the reasons organisations experience BI failure is the lack of participation and representatives from the business side. The strategic plans of an organisation guide and direct the objectives and actions for each business area which form part of a whole.

This creates a golden thread and activities that are interconnected to form the strongest link which can lead to an improvement in overall organisational performance and competitive advantage. The strategy details on a functional area level provide the plan on initiatives which support the organisation's strategy (Thompson et al., 2018) and the fit amongst activities "locks out imitators by creating a chain that is as strong as its strongest link" (Porter, 1996). It is therefore imperative that the organisation ensures that the business units do not operate in silos.

### 6.4. Single Version of the Truth

Although various business units might define certain metrics in relation to their specific unit, the overall measures of an organisation should be clear and understood by all stakeholders in the same manner. This is important also because the stakeholders are then encouraged to speak the same language when it comes to reporting, definitions, and key performance indicators from an organisation's perspective. Due to the increasing amount of data available in the organisations, some business units might fall into a trap of creating reports within business units without proper tools or processes which will raise the risk of data misinterpretation (Bozic and Dimovski, 2019, p. 93).

Management can assist by ensuring that proper policies are implemented, and governance is followed on data and information used in the decision-making process (Kulkarni et al., 2017). A single version of the truth should therefore be encouraged, and this includes vetting of various sources of reports to avoid duplication of effort and contradictory information.

## 7. CONCLUDING REMARKS

The study found that the alignment of BI with strategy within an organisation makes it possible for the organisation to reap the benefits of BI which led to better decision making. BI was found to be useful in assisting respondents to perform and complete their tasks quicker and with ease. All stakeholders across business functions must partake in BI initiatives and the support from management has had a positive impact in the utilisation of BI and in order to derive business value from BI. The overall results of these components working in synergy have a positive impact on organisational performance and in gaining competitive advantage.

In conclusion, the conceptual framework tested in the study comprised of three constructs: strategy alignment, management support and BI utilisation as contributing components in making it a differentiator in gaining a competitive advantage. The researcher is satisfied that the research problem has been adequately investigated with answers to the research questions and objectives were achieved.

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