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# The Role of Business Intelligence in Strategy Implementation in State-owned Enterprises

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# ABSTRACT

It is interesting to note that the trendy concept of business intelligence is now at the epicenter of strategic management, particularly after the outbreak of coronavirus worldwide. Therefore, this study aims to establish the role of business intelligence in strategy implementation in state-owned enterprises. This exploratory qualitative research recruited 15 managers of state-owned enterprises in Gweru for in-depth interviews. The data was analyzed using thematic analysis. The results reveal that business intelligence enables strategy implementation through real-time performance tracking and monitoring, promoting flexibility, data accuracy enhancement, data integration, and boosting customer satisfaction. It is recommended that the management scale up business intelligence technologies, implement training and development initiatives, incorporate business intelligence into strategic planning, and continuously improve business intelligence technologies. The empirical evidence from this study is of utmost importance to the management of state-owned enterprises, practitioners and policymakers.

*Keywords:* Business intelligence; Competitive advantage; Strategic management; Strategy implementation; COVID-19; State-owned enterprises.

## **1.0 Introduction**

It is interesting to note that the trendy concept of business intelligence is now at the epicenter of strategic management, especially after the outbreak of coronavirus across the

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globe. In this regard, the managers of both small and large companies were pressurized to embrace business intelligence technologies and tools given the implementation of lockdown measures with the purpose of containing the COVID-19 pandemic (Chaubey & Sahoo, 2021; Dwivedi *et al.*, 2020; Harris, Buckley, & Sharma, 2020; Remko, 2020). This is not surprising as we are in the Industrial Revolution (IR) 4.0 whereby advanced information technology is driving every aspect of business management. More interestingly, enterprises are now operating in a global economy where geographical boundaries are no longer a challenge since organizations can compete globally by adopting business intelligence technologies and methodologies. This suggests that the majority of the organizations are now taking advantage of the benefits of implementing business intelligence technologies and tools so as to sustain and survive in the current turbulent environment (Dwivedi *et al.*, 2020; Ranjan & Foropon, 2021; Pramanik *et al.*, 2020).

Despite the existence of criticisms related to the effectiveness of business intelligence in the context of its role and impact, the current challenging business environment characterized by the global economic crisis induced by the COVID-19 pandemic heightened the need to advance our understanding of the linkage between business intelligence and strategic management with respect to the public sector. It is worth mentioning that there is a sharp increase in the growth of the business intelligence industry (Chaubey & Sahoo, 2021; Queiroz et al., 2020; Zafary, 2020). The growth of the adoption of business intelligence technologies and tools is mainly attributed to the fact that both public and private organizations are now appreciating the importance and relevance of business intelligence when it comes to contemporary strategic management (Trieu, 2017). Moreover, the successful implementation of business intelligence can allow effective communication since the correct information can be received by the right people at the right time. This will go a long way in assisting managers, both public and private, in coming up with more relevant strategies after utilizing business intelligence technologies and tools. However, from a strategic management view, it is disturbing to note that about 90% of the organizations fail to successfully implement their respective strategies.

In light of the above information, it is necessary to critically scrutinise the interaction between business intelligence and strategic management, especially during and post-COVID-19 period. Business intelligence adds value to the organization if it is aligned with corporate strategies. Despite the necessity of business intelligence at a corporate level, it is shocking to observe that most state-owned enterprises in African countries are lagging behind when it comes to the adoption of business intelligence (Amoako, 2013). Moreover, little is known about the interaction between business

intelligence and strategy implementation in the public sector (Wowczko, 2016; Spano & Bello, 2016; Boselli *et al.*, 2011). To address this inadequacy, the researchers asked the question: what is the role of business intelligence in strategy implementation in the Zimbabwean state-owned enterprises?

This paper is structured as follows: The next section mainly focuses on the literature review concerning business intelligence and strategy implementation. Section 3 describes the research methodology for this study and then results and discussion are presented in Section 4. Section 5 covers the key implications of the study and Section 6 covers the areas for further research on business intelligence and strategy implementation.

## 2.0 Literature Review

# 2.1 Conceptualization of business intelligence

There is no agreement among scholars on the meaning of business intelligence in the existing mainstream literature. According to Power (2007), business intelligence refers to a set of methods, tenets and concepts related to an improvement of the organizational decision-making process by employing fact-oriented supporting systems. Similarly, Alnoukari *et al.* (2012) described business intelligence as an approach toward management, development and dissemination of organizational information and knowledge in a manner that ensures the achievement of organizational goals.

At the heart of business intelligence is the provision of business foresight through the analysis of data from multiple sources (Sun & Wang, 2017; McMaster University, 2015). Business intelligence strategies and technologies are developed and implemented to improve or enhance evidence-based decisions. For instance, McMaster University implementation of what they called PeopleSoft, an enterprise-wide system for students that can be used to access pertinent universities fast and conveniently. The same idea can be implemented by the business community where business intelligence stakeholders' information can be processed and accessed. Based on the above definition, it can be deduced that business intelligence is based on the marriage between data mining and business knowledge with the aim to achieve sustainable business outcomes.

On the other hand, some scholars managed to take a holistic approach to defining the concept of business intelligence. In this regard, they described business intelligence as information technology tools, architectures, applications, databases, methodologies, systems and practices (Rouhani *et al.*, 2012). In this study, the

researchers are taking the above holistic definition of business intelligence. This is supported by the fact that the public sector has adopted all the above-mentioned components of business intelligence when it comes to the strategic decision-making process as well as strategy execution.

#### **2.2 Theoretical framework**

The Resource-Based View (RBV) supports this study on the role of business intelligence in strategy implementation. This theory is discussed below:

#### 2.2.1 Resource-based view

As mentioned above, the researchers adopted the RBV as a strategic management model that captures the essence of strategic resources in gaining a competitive advantage. This model was proposed by Barney (1991) in trying to understand the sources of sustainable edge in the market. It is in this context that strategic resource, be it tangible or intangible, is difficult to imitate, valuable, rare and not easily substituted (Zica et al., 2016; Ross et al., 1996). In this regard, Zica et al. (2016) documented that innovative organizations have unique strategic resources in form of hardware and software that allow the organizations to outsmart their competitors in the market. More interestingly, the Information Technology (IT) skills of the managers are widely regarded as valuable intangible resources that can allow an organization to gain a competitive edge (Mata, Fuerst, & Barney, 1995; Ross et al., 1996). With this information in mind, the researchers argued that business intelligence technologies, methodologies and practices are strategic resources of 21st-century stateowned enterprises that can ensure the realization of sustainable advantage in the market. This implies that the organizations can utilize business intelligence technologies when implementing strategies in such a way that the management can easily get reliable and evidence-based information as well as correct information in real-time.

#### 2.3 Business intelligence in the public sector

It is an open secret that the application of business intelligence technologies, systems, practices, methodologies, or systems are spasmodically used in a variety of fields including business, finance, marketing, telecommunications, law, medicine and engineering among other disciplines. The most popular use of business intelligence technology is exemplified by the use of Mobile Device Fraud Detection and Camera Recording Systems. According to Obeidat *et al.* (2016), present-day businesses are pursuing investments in business intelligence technologies and tools as a way of implementing successful strategies that give competitive advantages. Business

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intelligence gathers massive and diverse but useful information that is crucial for many aspects of the business including strategy implementation. Business intelligence is a term that is sometimes used in place of intelligence. Hence, the terms are used interchangeably but Obeidat *et al.* (2016) argues that the term competitive intelligence is more precisely an aspect of business intelligence and does not resemble all the aspects of business intelligence (Mudzana & Muharaj, 2017).

In the context of the public sector, it is disturbing to note that most public institutions are lagging behind in terms of business intelligence (Wowczko, 2016; Wang, 2014). In fact, one out of five public organizations have already embraced business intelligence in Europe and the United States of America while two out of five private organizations have already embraced business intelligence (Servers, 2007). However, the outbreak of the COVID-19 pandemic pressurized the management of public organizations to embrace business intelligence technologies and systems. Notably, business intelligence allows public organizations to enhance service delivery. As a result, managers of public institutions appear to show interest in business intelligence in an attempt to enhance their performance (Abai *et al.* 2019). With the adoption of business intelligence, public institutions can reduce operating costs, enhance service delivery, improve decision-making processes, use dashboards and scorecards to measure performance, enhance data visualization, and improve data availability (Boselli *et al.* 2011).

More interestingly, business intelligence technologies, methodologies and systems are much needed as far as strategy implementation is concerned. Hence, successful strategy implementation needs business intelligence application. According to McMaster University (2015), business intelligence helps managers as strategists to make informed and relevant decisions. Managers do not just implement strategies without having analyzed the environment. Hence, business intelligence gathers all the relevant information that is needed by strategists to come up with a final institutional decision that helps to achieve organizational goals effectively and efficiently. Business intelligence technologies and systems are used as a basis for making informed decisions when implementing strategies. The modern-day world requires the management to make relevant strategic decisions with the aid of business intelligence technology before implementing any strategy. Strategists may come up with countless strategies or blueprints that could be implemented in a bid to achieve organizational objectives but the informed decisions on what strategy to implement or not can only be made through the effective utilization of business intelligence tools and technologies (McMaster University, 2015; Sun & Wang, 2017; Sun et al., 2018).

The implementation of strategies is one of the later stages in the strategic management process and this stage is based on the information gathered through business intelligence. Business intelligence should therefore give an organization a competitive advantage over rivals and competitors as the process of intelligence involves gathering, processing and interpreting data that is used as the basis for making strategic planning as well as implementation. In this regard, business intelligence gives an organization the platform to implement successful strategies based on the findings of the business intelligence research (Gaardboe & Svarre, 2018).

## 3.0 Challenges Faced in Adopting Business Intelligence

Despite the efforts by many organizations to incorporate business intelligence technology into the strategy execution process, a number of challenges seem to manifest, making it difficult for organizations, both public and private organizations, to fully and efficiently implement their strategies. Among the principal challenges are lack of information technology skills, lack of top management commitment, poor data quality, and user resistance to business intelligence adoption as discussed below:

#### 3.1 Lack of information technology skills

It is well-known that most organizations, especially in Africa, do not have the human resources that are well-vested with technological know-how. This state of affairs can hamper the successful adoption of business intelligence, particularly in most stateowned enterprises in Africa. This implies that there is a need to train employees so that they can have an appreciation of business intelligence tools, technologies and practices.

#### 3.2 Poor data quality

The quality of data collected is valuable when it comes to strategy implementation and decision making. Without accurate information or data, organizations cannot make informed decisions, especially in this technologically advanced world where change is constant and consumer preferences regularly change. Information is one of the most important components of business intelligence. The principal challenge for many businesses is to ensure that their sources of data are good and reliable before making conclusions which become the basis for decision making. Poor quality of data puts the firm at risk of making decisions based on information that is not reliable hence, some businesses implement the wrong strategies or implement the correct strategies in the wrong way. According to Mohamed (2020), firms must ensure that they have reliable and good quality data as well as excellent data warehouses so that decisions concerning strategy implementations are made based on accurate information.

### 3.3 Lack of top management commitment and support

The biggest challenge that can be faced by both public and private organizations is the poor top management commitment and support towards business intelligence. For every initiative to be successful, there is an urgent need for support from the top management team. The management must provide the necessary resources and rewards as well as lead by example so that the expected benefits of business intelligence can be reaped by the organization.

#### 3.4 User resistance to business intelligence adoption

Changes to the traditional ways of doing things are bound to face resistance. The introduction of business intelligence technologies can be accompanied by new ICT systems which can then face resistance. Organizations usually make the mistake of implementing new changes before introducing the changes to the staff or users within the organization hence, the people resist even if the new changes bring about less pressure on the workflow. According to Mohamed (2020), users of the new technology should be introduced to the new systems before the organization fully implements the changes. Users should feel empowered and not trapped by the new systems hence, the best way to go about it.

Despite the existence of criticisms related to the effectiveness of business intelligence in the context of its role and impact, the current challenging business environment characterized by the global economic crisis induced by the COVID-19 pandemic heightened the need to advance our understanding of the linkage between business intelligence and strategic management with respect to the public sector in developing countries. However, the interaction between business intelligence and strategy implementation has been neglected in mainstream literature. To address this inadequacy, the researchers asked the question: what is the role of business intelligence in strategy implementation in the Zimbabwean state-owned enterprises?

#### 4.0 Research Methodology

The purpose of this research is to provide an exploratory inquiry into the role of business intelligence in strategy implementation in state-owned enterprises. The exploratory research design supported this study. Consistent with the exploratory

research design, this study aimed at collecting data from 25 managers from two stateowned enterprises in Gweru. These key informants were purposively selected as they have in-depth knowledge of business intelligence in their respective organizations.

Notably, in-depth interviews were used as research instruments that allow the respondents to give their business intelligence experiences. The key informants were purposively selected because of their wealth of experience in business intelligence by virtue of their relevant strategic positions within the organizations. In this regard, they were interviewed in their natural environment so as to ensure the credibility and reliability of the data collected (Creswell, 2014). Key informants from both organizations had over 10 years of experience in strategy implementation and business intelligence application.

The interviews were conducted during a time that was considered to be convenient for both the researchers and the respondents hence, some interviews were conducted during lunchtime while other interviews were conducted at the residential homes of the respondents without the interference of other office work needed to be done by the officeholders as strategic managers. Notably, Søilen (2017) also supports the use of interviews in qualitative research as the most relevant and appropriate research instrument that produces in-depth information about the phenomenon under consideration.

It is worth mentioning that data saturation was reached at the 15<sup>th</sup> key informant although the study was targeting 25 key informants. Data saturation plays a central role in qualitative study especially when interviews are conducted (Creswell, 2014). Notably, thematic analysis is the most appropriate and relevant data analysis technique that produces accurate results in qualitative research and where interviews are used as research instruments (Braun & Clarke, 2012).

## 5.0 Results and Discussions

From the thematic analysis, five key themes related to the role of business intelligence in strategy implementation in state-owned enterprises emerged. Generally, empirical evidence from the research confirms that state-owned enterprises are under considerable pressure due to technological advancements in other countries. Moreover, the COVID-19 pandemic increased the public sector's propensity to embrace business intelligence technologies. Nonetheless, reluctance by some strategic level managers of public institutions to harness business intelligence technologies resulted in the implementation of outdated systems and strategies that are no longer viable for business.

Specifically, the five specific themes that emerged from this qualitative study are discussed below:

#### 5.1 Real-time performance tracking and monitoring

It was observed that business intelligence was playing an enabling role in strategy implementation through efficient performance tracking and monitoring. The key informants highlighted that the introduction of business intelligence through the "digital migration" mantra allowed the state-owned enterprises to automate their systems and methodologies in a manner that promotes efficient performance tracking and monitoring when implementing strategies as compared to the traditional way of doing business. In this respect, some key informants mentioned:

"This organization has reached greater heights of revenue collection on a yearly basis since the introduction of business intelligence technologies. Since the introduction of The Automatic Number Plate Recognition Cameras revenue collection has been made easy with compliance increasing beyond the expected levels. Most if not all vehicles passing through the tollgates have no option but to comply with ZINARA compliance expectations and there is no way they can evade paying toll fees when the dues are already captured on every transaction". R5

"With the automation of our systems, it is now very easy for us to track the effectiveness of our strategy of revenue collection since real-time information is always available for management. For your own information, with this aspect of advancement of technology, we can easily visualize the collected data on our dashboards and then as a result I can monitor performance 24/7" R9

"I can share with you that the traditional way of assessing performance was so cumbersome. However, the current digital migration approach that was implemented in my organization allows me to access sales reports in real-time. This gives me an opportunity to monitor how efficient are we in enhancing service delivery." R11

As indicated by some of the interview responses presented above which clearly confirmed that strategists appreciated the relevance and significance of business intelligence technologies, methodologies and practices in strategy implementation. It is noticeable that the key informants appreciated the importance of business intelligence, especially when implementing revenue collection strategies in state-owned enterprises. Moreover, one of the key informants (R11) went further to highlight that business intelligence assists the organization in augmenting service delivery in state-owned enterprises. This is in support of Boselli *et al.*, (2011) who demonstrated that the adoption of business intelligence in public institutions can enhance service delivery,

improve decision-making processes through the use of dashboards and scorecards to measure performance, enhance data visualization, and improve data availability (Boselli *et al.*, 2011).

## 5.2 Promoting flexibility in strategy implementation

It has been noted that the key informants appreciated the relevance of business intelligence in state-owned enterprises in the sense that business intelligence promotes flexibility in strategy implementation. In this regard, 97% of respondents confirmed the relevance of business intelligence technology in fostering strategy implementation flexibility. Notably, rigidity in strategy implementation is a threat to organizations' success because it is widely known that inflexibility can lead to the implementation of outdated strategies that are no longer relevant to the constantly changing environment. The following quotes were mentioned by the key informants in relation to the aspect of flexibility:

"Business intelligence technology is needed at all stages of the strategic management process. Information supplied through business intelligence technologies is used to make quick remedial action that is needed especially during the implementation stage so that firms do not stick to the outdated strategies that may no longer be relevant". R2

"The major benefit of incorporating business intelligence into strategy implementation is linked to flexibility. In other words, without pertinent business intelligence technologies and practices, it is difficult to easily adjust performance indicators and prices as well as integrate information in real-time." R4

"As you may know, agility is a core aspect when implementing strategies in a chaotic environment. This is the reason why many public institutions are now embracing business intelligence technologies so that they become flexible and learning organizations." R8

The above evidence shows that business intelligence improves flexibility when implementing strategies, especially in a chaotic environment. This is in line with the view of Gauzelina & Bentza (2017) who underscored that business intelligence provides current and relevant information that is needed for a quick decision-making process at a strategic level. This suggests that the majority of the organization are now taking advantage of the benefits of implementing business intelligence so as to sustain and survive in the current turbulent environment (Ranjan & Foropon, 2021; Pramanik *et al.*, 2020).

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## 5.3 Data accuracy enhancement

It emerged that the key informants were of the opinion that business intelligence was enhancing data accuracy during the strategy implementation stage when it comes to state-owned enterprises. The majority of the key informants expressed that business intelligence technologies pave way for the minimization of errors since the scanning tools reduced data capturing errors. This was confirmed by 95% of the key informants who expressed that business intelligence technology ensures data accuracy and precision during the strategy implementation stage. The following are some of the quotes from key informants with respect to data accuracy enhancement:

"Analysis of past trends helps to predict possible future demand forecasts and possible future changes in tastes and preferences of customers so that preparations can be done on time. More so, the use of technology helps to eliminate or minimize human errors when it comes to the computations of revenue generated and toll fees to be honored." R1

"The digital migration was a good initiative in my organization. We were used to taking more time to check for data capturing errors but nowadays that is not the case. We just use scanning devices to input data into the system. By doing this, the organization is minimizing human errors and also improving efficiency." R1

Enhancement of data accuracy has emerged as the significant role of business intelligence in strategy implementation in state-owned enterprises. This empirical evidence corroborates the view of Mohamed (2020) who highlighted that firms must apply business intelligence to ensure that they have reliable and good quality data as well as excellent data warehouses so that decisions concerning strategy implementations are made based on accurate information. Poleto *et al.*, (2015) also confirmed that business intelligence technology plays a vital role in ensuring operational efficiency.

# 5.4 Data integration

Data integration emerged as a key aspect of business intelligence in ensuring effective strategy implementation in state-owned enterprises. It is within this context that most of the key informants expressed their confidence in business intelligence as indicated by some of the quotes below:

"Business intelligence allows integration of data with other line ministries as you know that this organization is owned by the government. It is now easy to access some databases of public institutions that can aid our decision-making process." R4

"The digitalization of our systems ensures synchronization of departmental information. This addresses the previous problem of organizational silos since all information is available just by a click of the button." R7

Based on the above quotes, it is evident that the key informants expressed the significance of business intelligence when implementing business strategy. At implementation, data availability is a key aspect that can promote constant monitoring of the effectiveness of the strategy by which the management can assess whether the strategy is achieving the intended results. This is in line with the view of Sun *et al.* (2018) and Sun & Wang (2017) who suggested that the implementation of business intelligence technologies allows the management to easily access information from various functional areas of the organization.

## 5.5 Boosting customer satisfaction

The key informants highlighted that business intelligence plays a significant role in the sense that it boosts customer satisfaction. The majority of the key informants expressed that their organizations were previously known for poor customer satisfaction before the adoption of information technologies. Some key informants mentioned:

"It is public knowledge that my organization was facing challenges in delivering good customer service as validated by some long queues. However, in this digital era, long queues are things of the past as we are now offering our services online. Hence, our clients are very happy." R4

"I understand that the government is starting to realize the importance of digitalization technologies because we are now receiving very few customer complaints. This is very important especially when dealing with digital natives of the 21<sup>st</sup> century." R12

The above quotes reveal how the key informants expressed the significance of business intelligence in terms of customer satisfaction. This implies that the bottom line of adopting business intelligence technologies is to improve customer experience that can lead to customer satisfaction. This supports the view of Mohamed (2020) who documented that business intelligence enhances customer service delivery.

# **6.0 Recommendations**

• Scaling-up of business intelligence technologies: The management of state-owned enterprises is recommended to scale up the adoption of business intelligence technologies. Strategic leaders should ensure that there is a conducive environment for the effective adoption of business intelligence whereby issues pertaining to

quality assurance procedures, software and security planning as well as business intelligence governance are considered.

- **Training and development:** The evidence from this study pointed to the fact that business intelligence is of utmost importance. Therefore, it is recommended that the management of state-owned enterprises should be implementing training and development related to the use of business intelligence technologies.
- **Incorporating business intelligence technologies into strategic planning:** Strategies implemented are formulated during the elementary stages of the strategic management process. It is, therefore, imperative to include the business intelligence technologies available from the beginning of the strategic planning stage so as to ensure that the implementation of strategies becomes easy since the business intelligence technologies will be compatible with the strategies to be implemented.
- Continuous improvement of business intelligence technologies: Although the relevance of business intelligence technologies is applauded in state-owned enterprises just like elsewhere in the private or the public sector, continuous improvement in the technology packages is needed to improve accuracy, speed and flexibility. For instance, the use of the HD Camera continues to be upgraded whereas the present-day cellphones are replacing the traditional cameramen.

## 6.1 Areas for future studies

This study only focused on the public sector which pave way for future research to focus on a comparative study on the role of business intelligence in strategy implementation between the private and public sectors. Moreover, researchers and practitioners interested in business intelligence could investigate the challenges faced by organizations when implementing business intelligence technologies in state-owned enterprises.

# 7.0 Conclusion

This study focuses on the role of business intelligence in strategy implementation in state-owned enterprises. Therefore, it adds value to the continuous debate on the significance of business intelligence, since this study focuses on the neglected area of the public sector. It has been revealed that business intelligence technologies and tools play an enabling role in strategy implementation through realtime performance tracking and monitoring, promoting flexibility, data accuracy enhancement, data integration, and boosting customer satisfaction. It is recommended

that the management scale up business intelligence technologies, implement training and development initiatives, incorporate business intelligence into strategic planning, and continuously improve business intelligence technologies. It is, therefore, concluded that business intelligence technologies and tools play an enabling role in strategy implementation.

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