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**Namusenga Kelvin Bwalya**  
School of Business,  
Information and  
Communication University,  
Lusaka, Zambia

**Kabubi M Marvin**  
Department of Social Research  
Information and  
Communications University  
and Zambia Research and  
Development Center  
Lusaka, Zambia

**Corresponding Author:**  
**Namusenga Kelvin Bwalya**  
School of Business,  
Information and  
Communication University,  
Lusaka, Zambia

## Analysing the effectiveness of business intelligence in facilitating SMES growth: A case study of Lusaka District

**Namusenga Kelvin Bwalya and Kabubi M Marvin**

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### Abstract

Small and Medium Sized Enterprises (SME) represent an extremely important aspect for an economy of a country, especially for the economies of developing countries including Zambia. Increasingly demanding market, process of globalization, advancement of information and telecommunication technology, and an increase in the negotiating power of certain stakeholders such as customers/clients, has caused the need for a better, faster and more efficient system of making day-to-day decisions, both on operational and strategic level.

Complexities in making effective and timely business decisions in highly competitive markets have driven many organizations to adopt data-driven, decision-making processes using Business Intelligence (BI) applications. Despite these applications being suited for use in most organizations regardless of size, only larger enterprises have reached a stage of maturity in BI use, while small and medium-sized enterprises (SMEs) still lag behind. Although there is a rich body of literature on information technology (IT) adoption and implementation, literature relating to BI adoption, especially in the SME context, remains limited. This study addressed the lack of a research framework for examining the current state of BI effectiveness in facilitating growth of SMEs in Lusaka district.

This study adopted the correlational research design because it gives one the chance to predict the depended variable and explain the links between variables. Correlation research is ideal to reflect contexts, deal with multiple variables and develop a complete pattern of relationships. The sample was systematic selected from publicly accessible lists obtained of Small and Medium Enterprise in Lusaka district. Empirical data was collected by using self-administered questionnaires and data analysis was based on 377 SMEs in Lusaka district.

This study employed closed and open ended semi-structured questionnaires for data collection purpose, and data analysis was done quantitatively and qualitatively using the Software Package for Statistical Science (SPSS) and STATA. The findings revealed interesting insights into an understanding of BI-effectiveness in SME's growth in Lusaka district. The results showed that revenue bases (profitability), improved customer segmentation and competitive advantage (identifying market trends and opportunities) account for BI Systems in facilitating SMEs growth in Lusaka district. Also, the analysis revealed that most SME's in Lusaka have reached a high level in terms of BI Systems implementation. This study contributes to enrich the Information Systems (IS) literature by identifying the contextual factors that organizations especially in southern Africa countries should focus on with their BI Systems implementation effort.

**Keywords:** SME's, effectiveness, growth, revenue base, technology adoption

### Introduction

In today's rapidly evolving business landscape, small and medium enterprises (SMEs) face numerous challenges. With increasing competition and ever-changing market dynamics, SMEs require efficient strategies to stay competitive and thrive. Business intelligence (BI) emerges as a powerful tool that can empower SMEs in the banking sector by providing valuable insights and facilitating informed decision-making.

This research aims to analyze the effectiveness of business intelligence in facilitating SMEs growth in Lusaka district. By delving into the impact of BI tools and strategies, this study seeks to uncover how SMEs can leverage BI to optimize their operations, enhance customer satisfaction, and drive sustainable growth.

In the context of SMEs growth, the utilization of BI holds significant promise for improving efficiency, reducing costs, and gaining a competitive edge.

By examining the current landscape of BI adoption among SMEs in Lusaka district, this study aims to identify key challenges and opportunities. Additionally, it will explore best practices and success factors for implementing BI solutions tailored to the unique needs and constraints of SMEs in Lusaka district.

Through comprehensive analysis and empirical research, this study seeks to provide valuable insights into the role of business intelligence in enhancing the performance and competitiveness of SMEs. By understanding the effectiveness of BI tools and strategies, stakeholders can make informed decisions to drive sustainable growth and success of SME's.

### Statement of the problem

Small and Medium Enterprises (SMEs) play a vital role in contributing to economic growth and job creation. However, SMEs often face challenges such as limited resources, competition, and rapidly changing market conditions. Business intelligence (BI) has emerged as a promising solution to help SMEs address these challenges by providing valuable insights for decision-making. Despite its potential, there is a lack of understanding about the effectiveness and adoption of BI among SMEs in Lusaka district. Therefore, this research aims to analyze the effectiveness of BI in facilitating SMEs growth in Lusaka district, addressing the

gap in knowledge and providing valuable insights for practitioners and policymakers.

### General objectives

The general objective of this study was Analyzing the effectiveness of business intelligence in facilitating SMEs growth: A case study of Lusaka district.

### Specific Objectives

1. To analyse the effectiveness of business intelligence in facilitating SMEs growth by promoting revenue base through profitability.
2. To explore the effectiveness of business intelligence in facilitating SMEs growth through customer segmentation.
3. To examine the effectiveness of business intelligence in facilitating SMEs growth through promoting competitive advantage by identifying market trends and opportunities.

### Conceptual Framework

The conceptual model of this study is proposed based on the review of relevant literature. The underpinning theories of the conceptual model are the Theory of Planned Behavior (TPB). As the importance of business intelligence rises, the researchers' attention grows considerably in this area and they try to unveil the motivation of business intelligence with different models.

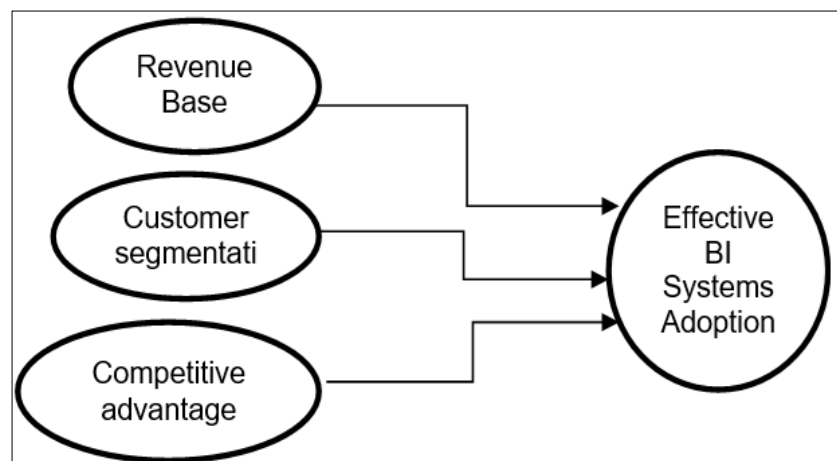


Fig 5.3: This conceptual model was adapted from (Owusu, 2017) <sup>[37]</sup>

### Literature Review

Tatić, Kasim *et al.* (2018) in their study entitled the use of business intelligence (bi) in Small and Medium-Sized Enterprises (SMEs) in Bosnia and Herzegovina. A total of 2500 questionnaires were distributed by e-mail to the respondents who were employees of SME companies in BiH. The research also confirms that SME companies in BiH recognize the role and importance of BI, but there is a significant number of barriers and obstacles that hinder the implementation of BI system.

Furthermore, the research by Acheampong Owusu (2017) <sup>[37]</sup> who's main aim was to empirically evaluate the impacts of adopting BI systems on organizational performance of SME's. A conceptual model was developed using the balanced scorecard. The results indicate that BI Systems indeed have a positive significant effect on the learning and

growth, internal process and customer performances of the SME's.

Additionally, research by Waranpong Boonsiritomachai (2014) entitled Enablers affecting the adoption of Business Intelligence: A study of Thai small and medium-sized enterprises further suggest that Complexities in making effective and timely business decisions in highly competitive markets have driven many organizations to adopt data-driven, decision-making processes using Business Intelligence (BI) applications.

A study conducted by Lautenbach, Johnston and Adeniran-Ogundipe (2017) <sup>[1]</sup> investigated factors that influence implementation and use of business intelligence and analytics in South African organizations. The study findings revealed that data-grounded decision making that promotes analytics and BI use improves on firm performance. Their focus was on business intelligence and analytics use

whereas the current studies focus was on business intelligence capabilities and performance which made the two studies completely different.

A study on the effects of business intelligence, organization learning and innovation on the performance of small and medium scale enterprises (SMEs) in south-west Nigeria by Ajibike John Oluwasegun. The study therefore concluded that firm performance could be boosted by the integration of business intelligence, organizational learning and innovation. Hence, it is suggested that Nigerian small and medium scale businesses that are yet to incorporate business intelligence-driven innovation into any part of their production and delivery processes should make a quick effort to do so.

According to Nalumino Ilubala from the University of Zambia on a research entitled an evaluation of the factors that affect Small and Medium Enterprises (SMEs) digital services industry in facilitating economic development in Zambia? Small and Medium Enterprises have over the years played a role in the economic growth of many countries. ARDL model results indicated a strong relationship between the variables SMEs growth and economic development. Other findings of the study are that SMEs in Zambia face difficulties in accessing loans due to high interest rates and collateral requirements.

### **To analyses the effectiveness of business intelligence in facilitating SMEs growth by promoting revenue base through profitability**

SME's are undergoing a transformation as a result of technological advancements. SME'S now face increased competition, evolving client needs, and the requirement for stringent control and risk management in a very dynamic market. Simultaneously, technology has enabled the development of sophisticated business intelligence tools. There are technologies that the SME's can employ to exploit consumer data in order to gain insights that can result in more intelligent management practices and business decisions. To that end, there are several ways that SME's are leveraging Business Intelligence (BI) technologies to increase profitability, mitigate risk, and gain a competitive edge. Business intelligence enables SME's to react to changing economic conditions in both normal and tumultuous economic times.

Globally, Business Intelligence (BI) methods and technologies help SME's gain a better understanding of their operations, their clients, and their prospects. Additionally, BI can pave the way for efficiency by highlighting areas ripe for cost-cutting initiatives, new business opportunities, and more. Business intelligence helps users to integrate numerous and dissimilar system sets in order to present dynamic data visualization dashboards that would not be capable of communicating across platforms in the absence of business intelligence. SME's cannot afford to simply add workers in order to increase income. They must always look for ways to improve the efficiency of their present employees. SME's can utilize business intelligence tools to examine operational operations in order to help minimize ongoing expenses and/or maximize available resources and expertise. SME's can identify methods to improve and enhance the customer experience at the point-of-contact by assessing the performance of branch workers who engage with the customer base. Banks employ business intelligence technologies to monitor customer, product, and branch

profitability. SME's are increasing profitability and tracking improvement through effective pricing strategies and efficient business operations. Additionally, business intelligence technologies are utilized for predictive analytics to determine which customers may be interested in acquiring which goods, when, and how (in-person, over the web, or direct mail). Additionally, business intelligence systems can be used to analyses developments outside SME's in order to develop alternative investment plans. Investors can acquire particular insight into sentiment and build trade signals by analysing data from social media. Through the use of analytics and business intelligence technologies, entirely new categories of investing are developing. SME's must be as lean and efficient as possible in today's ultra-competitive industry. By analysing operational processes with business intelligence tools, banks can decrease ongoing costs and maximize available resources and knowledge. Organisations can identify methods to improve and enhance the customer experience at the point of contact by assessing the performance of customer-facing staff such as sales representatives.

### **To explore the effectiveness of business intelligence in facilitating SME's growth through improved customer segmentation**

**Introduction** In today's competitive business landscape, the ability to understand customers and anticipate their needs is critical for success. This is especially true for Small and Medium Sized Enterprises (SMEs), which often face stiff competition and limited resources. Business Intelligence (BI) tools have emerged as vital assets for SMEs seeking to enhance their customer insights by transforming raw data into actionable information. By leveraging BI, businesses can better understand customer behavior, preferences, and trends, thereby improving their Customer Relationship Management (CRM) and personalizing marketing efforts. This literature review explores the role of BI in enhancing customer insights, focusing on how BI facilitates customer segmentation, personalization, and customer experience management.

### **The Role of Business Intelligence in Customer segmentation**

Business Intelligence (BI) refers to the technologies, processes, and tools used to gather, store, analyze, and visualize data to support decision-making. In the context of customer insights, BI helps businesses collect data from various customer touch points (e.g., online transactions, social media interactions, in-store behavior) and convert it into valuable information. This information allows businesses to understand their customers more deeply, segment their customer base, and personalize their offerings to meet specific customer needs.

### **Competitive Advantage through Customer segmentation.**

In a competitive business environment, the ability to leverage customer insights can provide SMEs with a significant advantage. BI systems offer a wealth of information that enables businesses to understand not only their own customers but also market trends and competitor behavior. By identifying emerging customer needs and market opportunities, SMEs can develop new products or

services that cater to unmet demand, thereby gaining a first-mover advantage.

### **To examine the effectiveness of business intelligence in facilitating SME's growth by promoting competitive advantage through identifying market trends and opportunities**

In the present competitive business environment, everything changes, but the only thing which remains constant is the phenomenon of change. Rapid changes in technology in different industries and, consequently, shortening products and services life cycle, and the intensity of competition are the most effective factors that result in an increase in the Gaining Competitive advantage. The organisations with more innovation that allow them to reach better performance will succeed more against changing environments (Montes *et al.*, 2004) [49]. It is not surprising that presently innovation is regarded as the key factor in organization's sustainable competition (Chen *et al.*, 2015) [50]. Hence, many authors consider innovation as the basis of the present competitive economy. Several specialists engaged in the field of innovation argue that only those organisations that focus on innovation by creating competitive advantage can live long (Skalen *et al.*, 2014) [51].

Innovation helps organisations overcome the turbulence and uncertainty of external environments, and a key driver of organisations long-term success, especially in the dynamic and competitive markets, is innovation. To survive in the changing and uncertain environment, organisations must be able to adapt to increasing complexity as well as rapid and ever-increasing changes. In such situations, organisations with high capacity to innovate will be able to respond to environmental challenges faster and to exploit new products and market opportunities better than non-innovative organisations.

According to Porter (1990) [52], the main challenge for companies is to "achieve competitive advantage through acts of innovation" (p. 75). Based on Hill *et al.* (2015) [21], one of the sources of creating competitive advantage is innovation. Innovation can be assumed as the most important parameter of competitive advantage, as it ensures long-term competitiveness (Jiménez-Jiménez *et al.*, 2008). Doing things differently and using new technologies is necessary to achieve competitive advantage (Brem *et al.*, 2016) [53].

Nowadays, all firms strive to stay profitable and overtake their competitors in the competition, but they face different internal and external challenges. In an external environment, they face the opportunities and threats incurred by growing domestic and global competition, more informed customers, higher expectations and rapid technological advances. Internally, they encounter more pressure; they have to reduce the costs to raise the efficiency and promote effectiveness through the improved deliverance of customer services and creating more customer value simultaneously. As a result of these challenges, companies are finding it difficult to compete with and stay ahead of the competitors for a long time (Bobbitt, 2004; Sandberg and Abrahamsson, 2011) [54, 5].

Moreover, changes in customers' expectations put firms under pressure and pose significant challenges ahead. Efficient resource allocation, improved competency and ability and gaining sustainable competitive advantage allow firms to provide better products and services compared with

other rivals. Taking the successful firms into consideration, we learn that most of them have capabilities that make them able to compete in the present fluctuating markets. A firm can have benefits such as lower costs, more flexibility, more effective management, etc., in comparison to the competitors and achieve success in the market using these benefits (Ma, 2000) [56]. The firms that have achieved a sustainable competitive advantage can create customers more value and are able to gain a superior position in the market (Jap, 2001) [57]. Barney (1991) [58] suggests that firms need to implement strategies that provide productivity and performance efficiency through meeting customers' needs to gain competitive advantage. Porter (2008) [48] argues that once the organization's service or product delivers the same benefits to customers as rivals, but at a lower cost or deliver benefits exceed those of competing products, a competitive advantage exists. We have to consider that the main basis of a firm's success is accomplishing a sustainable competitive advantage. In fact, understanding what resources and what trends in firms lead to competitive advantage is a core topic in marketing strategy (Varadarajan, 1999; Kaplan and Norton, 2008) [59, 60]. SME's can gain a competitive advantage by putting their data to use. It is also possible to bring together data from diverse applications using business intelligence tools, creating a single source of information that can be used by everyone.

### **Literature gap**

Despite the growing importance of business intelligence in SME's, there is a lack of comprehensive research on its effectiveness in facilitating the growths of small and medium-sized enterprises specifically on revenue base, improved customer segmentation and competitive advantage. Majority of studies have failed to consider the contextual factors influencing BI adoption and effectiveness in SMEs, growth.

There is need for more nuanced and comprehensive frameworks to evaluate the effectiveness of BI in facilitating SME's growth.

### **Research Methods**

This study will adopt the correlational research design because it gives one the chance to predict the depended variable and explain the links between variables. Correlation research is ideal to reflect contexts, deal with multiple variables and develop a complete pattern of relationships. Prior studies have also used correlational research designs to examine the relationship (Mwiya *et al.* 2019) [61]. The variables of this study are measured on a five-point Likert scale that ranges from strongly disagree 1 to strongly agree 5.

### **Target population**

In this study the target population refers to the group of interest in the investigation, namely the sample population of SMEs in Lusaka district. However, as this was extremely large, it would lead to unmanageable complexity and be unacceptably costly (Neuman 2006) [62]. Therefore, in order to avoid these obstacles, the target population for this study was limited to 377 SMEs in Lusaka district.

### **Sampling Methods**

In this study, the researcher will use systematic sampling.



Systemic Sampling will be used as it is a probabilistic sampling method ideal for parametric tests of multiple regressions to be used and that convenience sampling might be biased.

**Sample Size determination**

The population size of people in SME’s is not known, but to increase the generality of the research findings to a larger population we use the Raosoft online calculator. Raosoft recommends a population of 20,000. Given this population, the sample size will be 377 at a 95% confidence level with a margin of error of 5%.

**Data collection methods**

This study used a questionnaire survey based on a sample of the population of interest to fulfil its research aims. In this process, a comprehensive research framework was developed to empirically examine the effectiveness of BI in facilitating SMEs growth through primary data collected from 377 SMEs in Lusaka district. As the whole population of SMEs is a large group of interest, the sampling consideration has been crucial in achieving accurate conclusions. The data for this study was gathered through the use of primary and secondary data sources.

To gather primary data from respondents for this study, self-administered questionnaires and structured interviews was

conducted. Both primary and secondary sources of information were used to compile the necessary data for this investigation. The questionnaires will be distributed to business operators or owners for first-hand information for processing towards answering the research questions/objectives.

The secondary data was obtained from reviewing journals and literature relevant to the subject matter of this research. Newspaper source and official policy documents of government of Zambia with relevance to the subject will also consulted. The electronic search Site: [www.google.com](http://www.google.com) was employed extensively for up-to-date materials on the topic.

**Data Analysis**

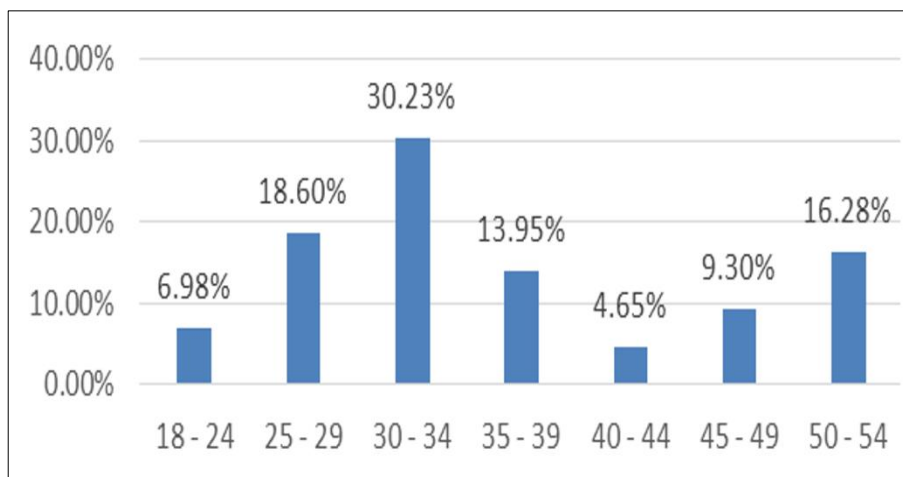
According to Davenport (2007), data analysis is the process of evaluating, cleansing, manipulating, and modeling data to find useful information, draw conclusions, and aid decision-making. Microsoft Excel and STATA were used to process the data and show it in tables and figures.

**Findings and Results**

**Background characteristics of the respondents**

**Age Range of Respondents**

**Presentation of results on background characteristics of the respondents**



**Fig 1: Age Distribution**

**Age Distribution:** The majority of respondents (30.23%) were in the age range of 30-34 years, 18.60% were between 25-29 years, 16.28% were between 50-54 years, 13.95%

were between 35-39 years, 9.30% were between 45-49 years, 6.98% were between 18-24 years, and 4.65% were between 40-44 years.

**Table 1: Gender Distribution**

		Frequency	Percent
Valid	Male	132	76.7
	Female	40	23.3
	Total	172	100.0

**Gender Distribution:** The gender distribution shows a male predominance (76.7%) but with a significant representation of females (23.3%). This balanced gender participation is positive, indicating inclusive participation in the business sector.

have higher education qualifications, with 49% having at least a diploma/vocational while 46% had indicated bachelor degree level of education, and 4.60% indicated other. This suggests that the workforce is well-educated, which could positively influence the effectiveness of business intelligence practices within these SME’s.

**Education Levels:** A substantial portion of respondents

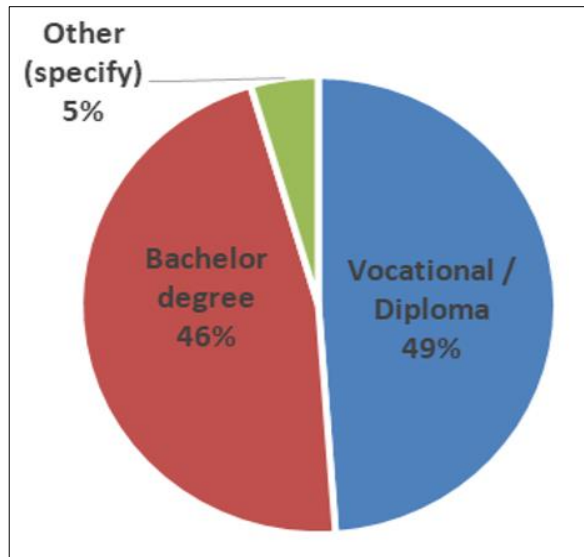


Fig 2: Highest Level of Education

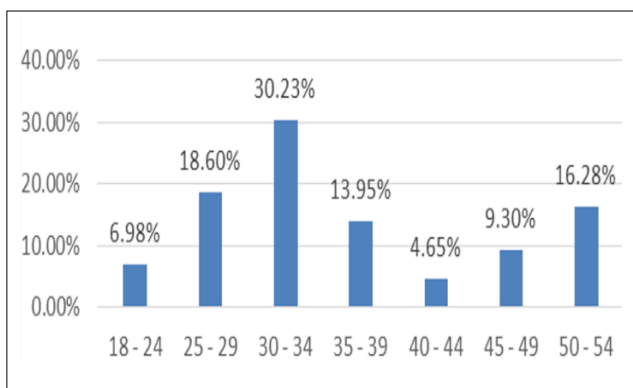


Fig 3: Role in the Business

Owners and employees make up 80% of the respondents, with managers accounting for 15% while consultants are accounting for 5%. This diversity in roles provides a comprehensive view of the business operations and management from different perspectives within the organization.

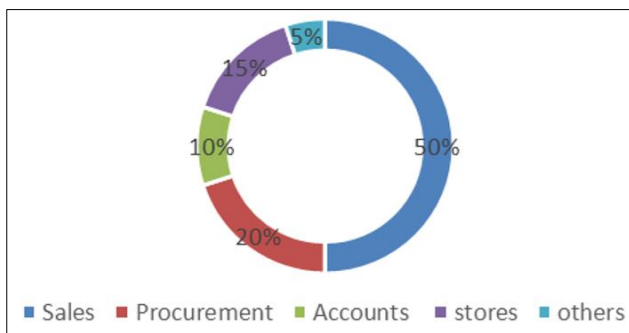


Fig 4: Workforce in some departments.

The survey results on the departments in these SME's show diverse division of labour among businesses. A significant

portion, 50%, reviews that most workers in SME's businesses works in sales department indicating a proactive approach to increase sales and revenue which in turn increase profits for the business. 20% of respondents, are found in procurement department also demonstrate a structured approach, ensuring that material and other needed things are in place all times. 15% of the work forces are in stores department while 10% are found in accounts suggesting the control of finances in the business. The other 5% represents other departments like transport, HR, maintenance etc.

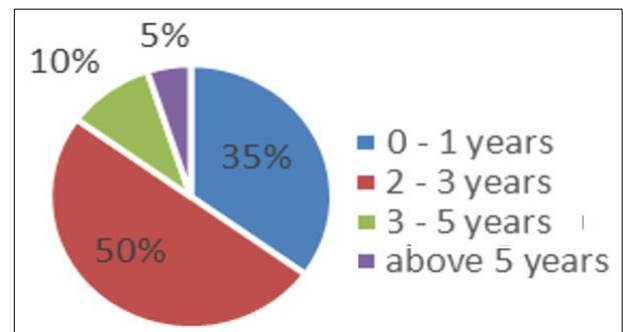
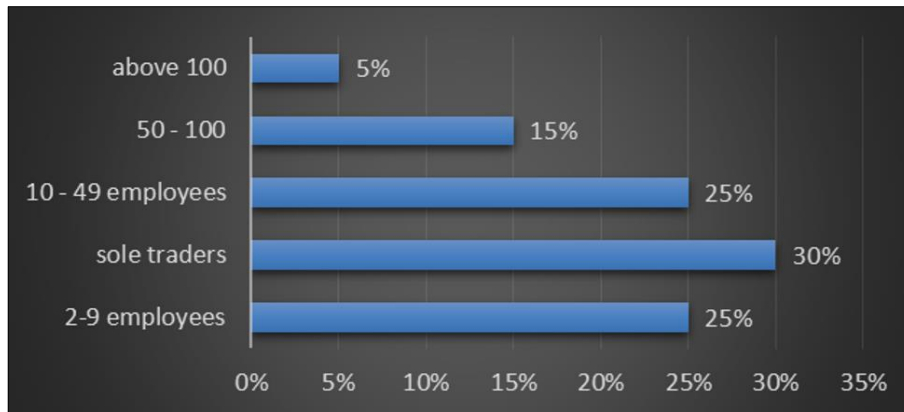


Fig 5: number of years worked in different departments

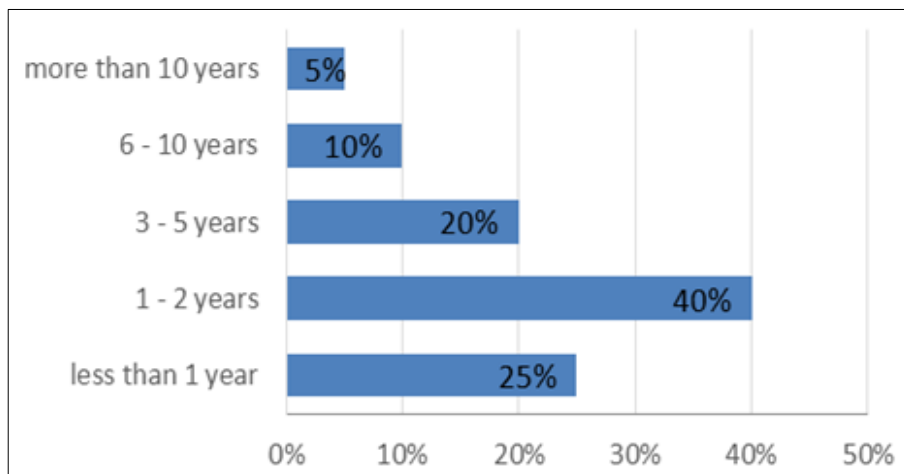
**Length of Involvement:** Most respondents have been involved in SME's businesses for the period between 2-3years (50%). This indicates moderately experienced individuals in managing these SME's business. 35% of respondents have worked in SME's less than 1 year. 10% of respondents have worked in SME's between 3-5 years which indicates high experience individuals. Only 5% of respondents have above 5 years work experience. This indicates a mix of both relatively new entrants and moderately experienced individuals, which can bring fresh perspectives as well as some level of expertise to the business.



**Fig 6:** Number of employees in your business

The survey results indicate a varied level of Number of employees in some SME’s business in Lusaka district with 35% of respondents reporting that they are sole traders managing their business alone. 25% of SME’s in Lusaka district have employees between 10-49 and 29 employees.

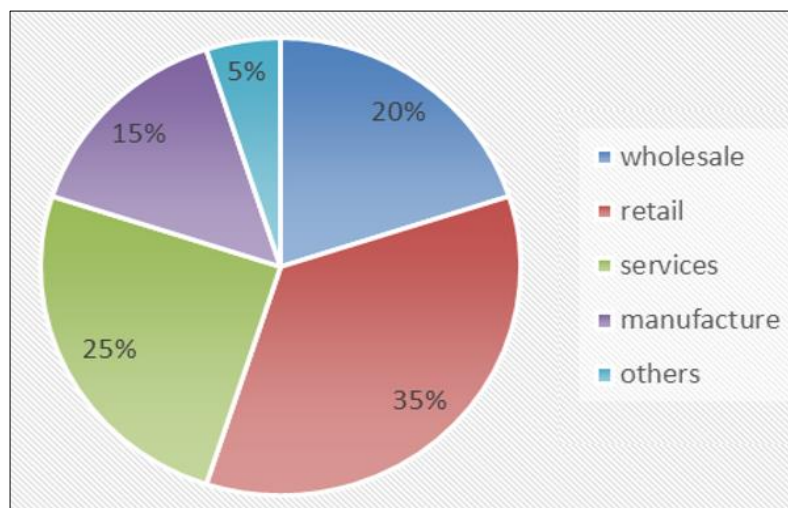
15% have employees between 50-100 and only 5% have above 100 employees. This high level of employees’ engagement suggests a strong awareness of division of labour in some SME’s in Lusaka district.



**Fig 7:** Number of years in existence

According to survey responses, 40% of SME’s businesses in Lusaka district have been in existence for more than 1 year indicating the implementation and use of business intelligence. Additionally, 20% of SME’s businesses have been in existence for more than 3-5 years showing growth and survival. However, 25% of respondents express that the

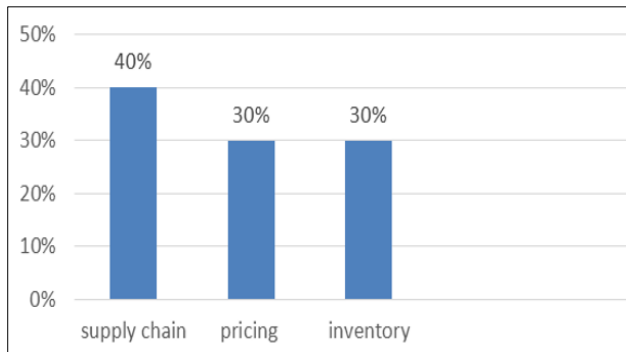
business has been in existence in less than a year indicating the need for adoption of business intelligence for growth. Meanwhile, 10% have existed for more than 5 years. A smaller portion, 5%, has existed for more than 10 years highlighting growth and survival due to implementation of business intelligence.



**Fig 8:** Primary business activities

The surveyed results on the primary business activities of SME's in Lusaka district revealed a diverse range of activities. A majority of respondents (35%) of the SME's are in retail business while 20% are in wholesale business. 25% of SME's are in services industry while 15% are in manufacturing. 5% indicated other businesses like maintenance, transport etc.

**Objective 1, Effectiveness of business intelligence in facilitating SME'S growth through revenue base-optimizing profitability**



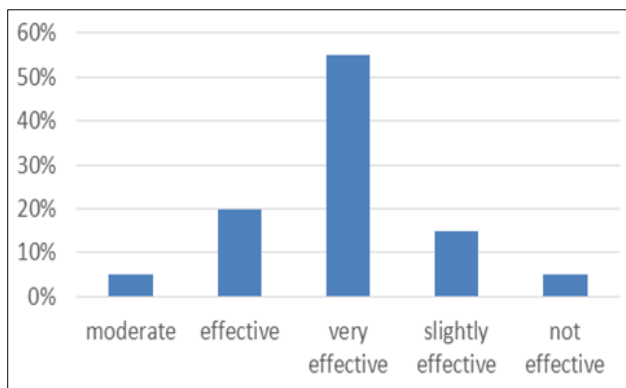
**Fig 9:** Areas that use BI tools the most for revenue growth optimization.

Most respondents stated that business intelligence tools are most used by (40%) in supply chain then 30% in pricing and the other 30% in inventory management. This indicates that revenue growth is most generated through high supply chain.

**Table 2:** BI tools improved your SME's ability

Ability	Description
Optimize pricing strategies	Effective
Manage inventory levels	Very effective
Enhance revenue growth	Effective

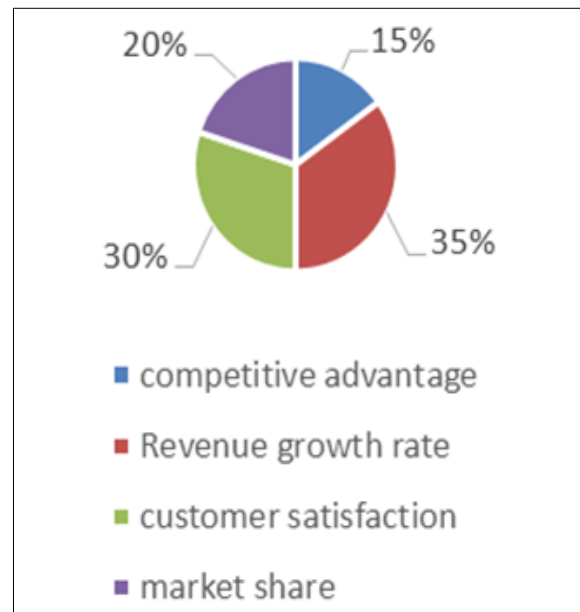
From these results, it can be inferred that a significant portion of respondents perceive that business intelligence tools have an effective impact on the ability to optimise pricing strategies and in enhancing revenue growth. BI tools are also very effective in managing inventory of SME's in Lusaka district hence facilitating growth f SME's.



**Fig 10:** effectiveness of BI in supporting SME's revenue growth

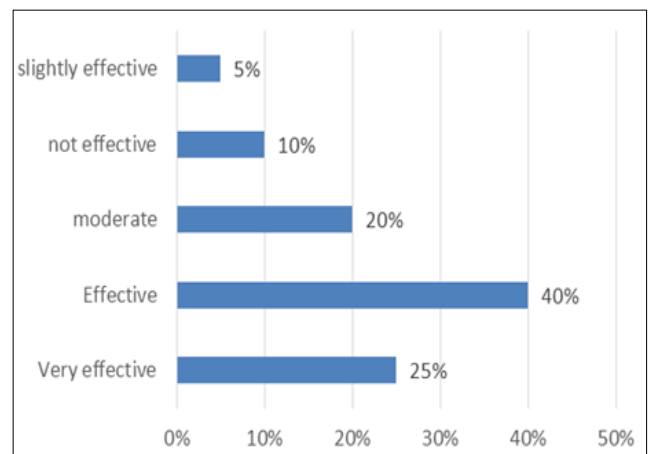
The largest group of respondents (55%) rated very effective on BI in supporting SME's revenue growth. This indicates that business intelligence is very effective in facilitating

SME's growth in Lusaka district. While 20% participants rated effective and 15% slightly effective. Equal proportions of respondents (5%) rated moderate and not effective.



**Fig 11:** Matrices used to measure BI effectiveness in revenue growth

The results highlight a diverse range of Matrix levels for measuring BI effectiveness in revenue growth among respondents. A small proactive group of 15% uses competitive advantage as a measure for business intelligence effectiveness in revenue growth. The majority of 35% revenue growth rate and 30% customer satisfaction. A significant of 20% use market share.

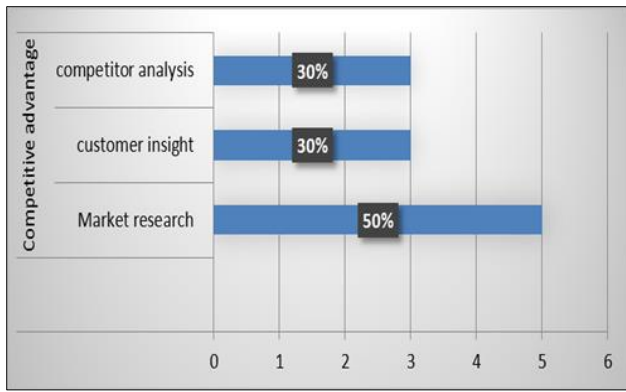


**Fig 12:** BI tools to enabled develop targeted financial product and services

According to survey responses, 25% of SME's rates business intelligence as very effective in enabling them to develop targeted financial product and services, indicating a strong alignment on the effectiveness BI in facilitating SME's growth in Lusaka district.

Additionally, 40% rated effective and 20% moderate. However, 10% of respondents expressed not effective and a smaller portion, 5%, rate 5% slightly effective. To enhance effectiveness, SME's should expand their BI tools and strategies integrating robust monitoring and evaluation mechanisms.



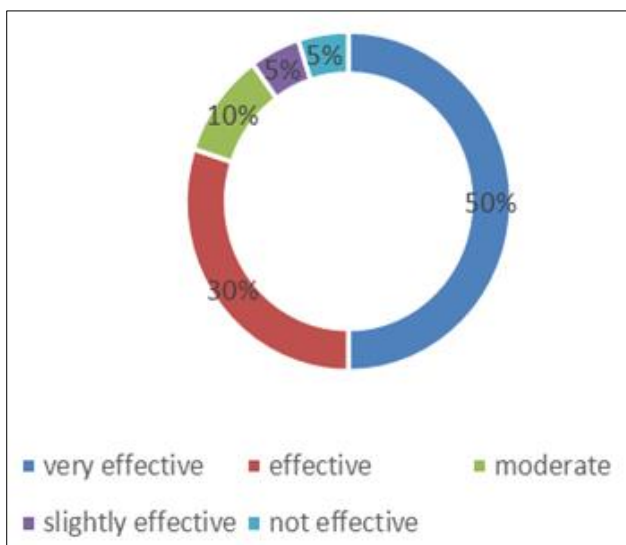


**Fig 13:** SME's profitability

The study findings revealed in figure 3 showed that SME's profitability is increased by 50% through market research, 30% by customer segmentation and 30% by competitor analysis.

The majority of the respondents were from SMEs with up to 50 employees (46%), 33% of them were from SMEs with 51 to 150 employees, 10% of them were from SMEs with 151 to 300 employees (10%), while 12% of them were from SMEs with over 300 employees

**Objective 2, to explore the effectiveness of business intelligence in facilitating SMEs growth through customer segmentation.**



**Fig 14:** frequency use of BI tools for customer segmentation

According to survey findings, 50% of respondents rated very effective on the frequency use BI tools for customer segmentation. Additionally, 30% of respondents rated effective on the frequency use BI tools for customer segmentation. However, a notable 10% of SME's respondents rated moderate and 5% rated slightly effective on the frequency use BI tools for customer segmentation. Similarly, 5% of respondents rated not effective. To enhance business intelligence effectiveness, SME's could benefit from increasing the frequency of customer segmentation, implementing more agile financial planning processes, and leveraging real-time data to inform decision-making. These strategies can foster greater financial resilience and operational flexibility, contributing to sustained growth and competitiveness of SME's in of Lusaka.

**Table 3:** Customer insight area that uses BI tools the most

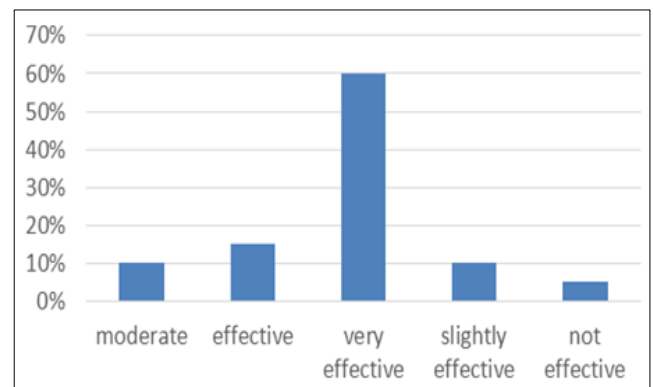
Areas	Percentage
Customer segmentation	40%
behavior analysis	30%
preference analysis	20% (14)
Others	10% (11)

From the findings, 40% of respondents uses BI tools the most in Customer segmentation significant hurdle in predicting and managing customers effectively, 30% of customer insight is applied by behavior analysis and noted by 20% of business intelligence tools used in preference analysis. Another 10% is for others.

**Table 4:** BI tools improved your SME's ability

Ability	Description
Understand customer need	Effective
Identify customer opportunities	Very effective
Enhance customer relationships	Effective
Develop targeted market campaign	Moderate

From these results, it can be inferred that a significant portion of respondents perceive that business intelligence tools have an effective impact on the ability to Understand customer need and Enhance customer relationships. BI tools are also very effective in Identify customer opportunities of SME's in Lusaka district hence facilitating growth for SME's. Furthermore, BI tools are moderate in Developing targeted market campaign for SME's in Lusaka.



**Fig 15:** Effectiveness of BI in supporting customer segmentation

The largest group of respondents (60%) rated very effective on BI in supporting SME's revenue growth. This indicates that business intelligence is very effective in facilitating SME's growth in Lusaka district. While 15% participants rated effective and equal proportions of respondents 10% slightly effective and moderate. (5%) rated not effective. This clearly shows that business intelligence tools are very effective in supporting customer segmentation.

**Table 5:** Customer Segmentation

Market research	Percentage 50 (%)	Sample Size 172
Customer insights	30%	172
Competitor analysis	20%	172

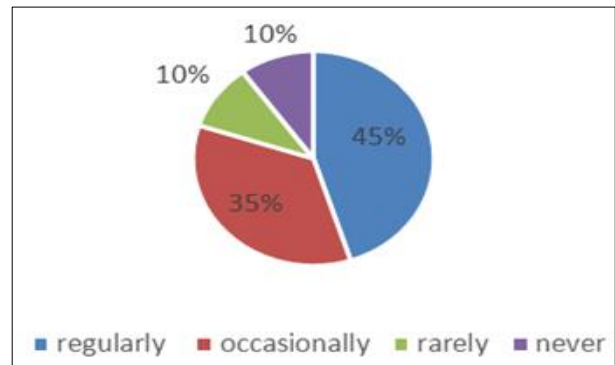
Table 2 results indicate that among respondents in Lusaka, 50% of business intelligence tools help to improve customer segmentation through market research, 30% of business intelligence tools improve customer segmentation by customer insight and another 20% by competitor analysis.

The research results in this segment lead to a logical conclusion that the respondents are unsure if their companies have the correct information or whether they have sufficient amount of data, on the basis of which the decisions are typically made. We can also conclude that a significant number of the respondents believe that in the course of their business processes, employees do not carry out the re-entry of data, suggesting that most SMEs have information systems that use one or more consolidated databases.

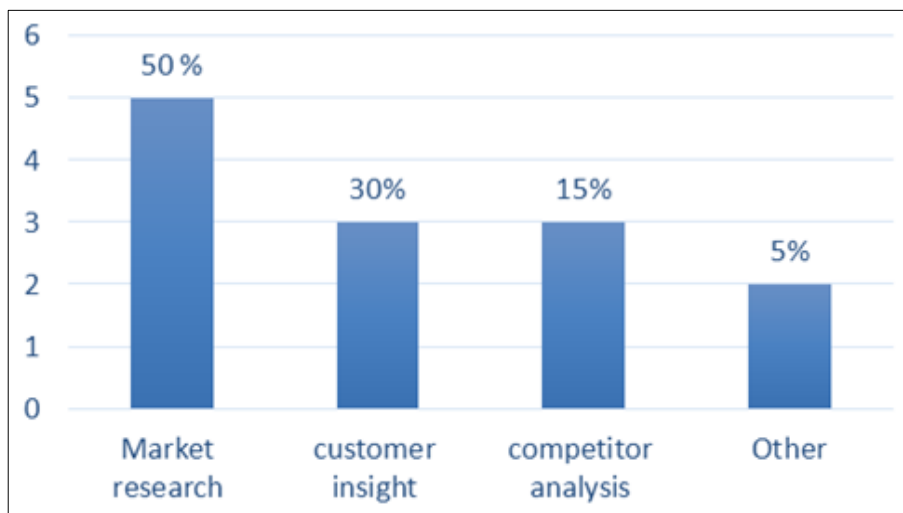
**Objective 3, to examine the effectiveness of business intelligence in facilitating SMEs growth through promoting competitive advantage by identifying market trends and opportunities.**

According to the research results, it is evident SMEs genuinely need BI as a reporting system for analyzing business performance. Furthermore, the research results clearly indicate there is a certain discrepancy between the indicators available to managers and employees, creating confusion about the factual situation in the company. Only an adequate BI system that employs accurate, reliable, and timely data has the ability to generate reports and KPIs indicating the real state of business in SME's.

The results highlight a diverse range of frequency use of BI tools for market trends analysis. A large proactive group of 45% regularly uses BI tools for market trends analysis, the majority of 35% occasionally and 10% rarely do so, and a significant minority of 10% never engages BI tools for market trends analysis in Lusaka. To enhance the overall BI capabilities in Lusaka, it would be beneficial to increase awareness of the importance of BI education, improve access to training programs, and address any barriers preventing more frequent adopting of business intelligence.



**Fig 16:** Frequent use of BI tools for market trends analysis



**Fig 17:** Market trends analysis area that uses BI tools the most

From these results, it can be inferred that a significant portion of respondents (50%) indicated that SME's uses BI tools the most through market research, 30% by customer segmentation, 15% Competitor analysis and 5% others.

On the basis of the results presented in the previous graph, it can be concluded that the majority of SMEs have the basic prerequisites for implementing BI system, meaning that they could use databases of one or more information systems

they have at present. Additionally, 30% of SMEs with "Other" information systems relate to a certain type of simple ERP solution primarily intended for accounting. About 50% of the respondents believe their company is constantly improving the information systems, which is one of the basic prerequisites for efficient business operations under the conditions of modern economy.

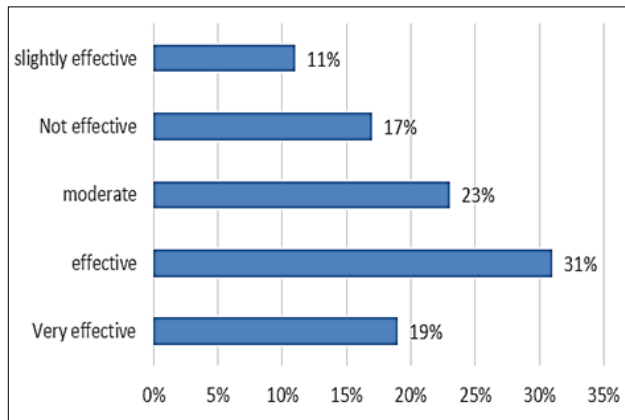
**Table 6:** BI tools improved your SME's ability

Ability	Description
Identify market trends	Effective
Analyse market opportunities	Very effective
Enhance decision marking	Effective
Develop strategies to capitalize on market trends	moderate

From these results, it can be inferred that a significant portion of respondents perceive that business intelligence tools have an effective impact on the ability to Identify market trends and Enhance decision marking. BI tools are

also very effective in Analyse market opportunities of SME's in Lusaka district hence facilitating growth for SME's. Furthermore, BI tools are moderate in developing

strategies to capitalize on market trends campaign for SME's in Lusaka.



**Fig 18:** Effectiveness of BI in supporting SME's competitive advantage through market trend analysis

The confidence levels among SME's reflect a varied spectrum, as indicated by the surveyed findings. A notable 19% express being very effective of the effectiveness of BI in supporting SME's competitive advantage through market

trend analysis. Additionally, 31% feel it's effective in supporting SME's competitive advantage through market trend analysis indicating a majority. Conversely, 23% were moderate, meanwhile, 17% admit to not effective, signaling a need for further support or education in BI practices to bolster decision-making capabilities. A smaller group, comprising 11%, feels slightly effective. Addressing these varying levels requires strategies such as ongoing education, mentorship, and leveraging financial tools and expertise to empower decision-makers across all levels of confidence. Strengthening BI literacy and providing robust support mechanisms can ultimately enhance confidence, enabling businesses to navigate uncertainties and capitalize on opportunities with greater assurance and effectiveness. The surveyed results on the effectiveness of Business Intelligence in facilitating SME's growth through Revenue Base (Optimizing profitability) reveal a diverse range of perceptions. A majority of respondents (100%) rate shows that BI has a higher effect on the growth of SME's through revenue growth generated through market research, customer segmentation and competitor analysis in Lusaka district. Thus, the null hypothesis is accepted. This highlights stability and growth of SME's through application of business intelligence.

**Table 7:** How to measure the success of business intelligence in SME's growth

Measurement Method	Percentage	Details
Profitability	30% (21)	Reviewing profit margins and overall profitability to assess budget effectiveness.
Budget Variance Analysis	25% (18)	Comparing actual expenses to budgeted amounts to identify deviations and make adjustments.
Cash Flow Stability	20% (14)	Ensuring consistent and positive cash flow to meet operational needs and investments.
Achievement of Financial Goals	15% (11)	Evaluating the extent to which financial goals and targets are met through budgeting.
Cost Control Efficiency	10% (7)	Monitoring the ability to manage and reduce costs effectively within budget constraints.

**Conclusion**

Business intelligence enables products and services to reach large masses in a scalable way. Hence, both academicians and practitioners show great interest in theorizing and understanding the adoption of business intelligence. For this purpose, factors having impacts on adoption business intelligence and are investigated within the scope of the study. Our literature review shows that the most influential factors, revenue base, improved Customer segmentation and competitive advantage.

The effective implementation of Business Intelligence (BI) tools is essential for organizations aiming to enhance revenue base, improve customer segmentations and gain competitive advantages in today's dynamic business environment. The findings highlight several key areas where BI proves beneficial, including optimizing pricing strategies, inventory management, and supply chain efficiency. By leveraging real-time data analysis and predictive analytics, organizations can adjust their pricing in response to market demands and competitor actions, leading to maximized revenue. Moreover, BI facilitates better inventory control by enabling accurate forecasting, thereby reducing holding costs and improving turnover rates. In supply chain management, enhanced visibility through BI ensures timely deliveries and operational efficiency, further contributing to revenue growth.

Customer segmentation derived from BI is crucial for tailoring products and services to meet the evolving needs of consumers. By analyzing data from multiple touch points, organizations can identify patterns in customer behavior, which helps improve satisfaction and loyalty. The emphasis

on customer-centric strategies ultimately enhances competitiveness and market positioning.

However, the successful adoption of BI is not without challenges. Issues related to data quality and integration, high implementation costs, resistance to change, and the complexity of BI tools can hinder effective utilization. Additionally, organizations must address data security and privacy concerns, particularly as they handle sensitive information. Scalability also poses a significant challenge, as businesses must ensure their BI systems can grow alongside their expanding data needs.

To maximize the benefits of BI, organizations must adopt a strategic approach that addresses these challenges. This includes investing in robust data management practices, ensuring the integration of data from various sources, and fostering a culture of data-driven decision-making. By addressing the obstacles to BI implementation, organizations can fully leverage the insights gained from their data analytics efforts, ultimately leading to sustained revenue growth, improved risk management, and a stronger competitive advantage in their respective markets.

The integration of BI into organizational processes represents a transformative opportunity. When implemented effectively, BI not only enhances operational efficiency but also drives strategic initiatives that align with market demands and customer expectations.

**Recommendations**

- Increased Adoption of BI Tools Among SMEs:** SMEs in the banking sector should expand their use of BI tools to areas beyond just revenue growth and risk

- management, such as fraud detection and customer relationship management.
2. **Training and Capacity Building:** For BI to be effective, SMEs should invest in the continuous training of their employees to fully utilize the tools. This could be achieved through partnerships with training institutions that specialize in BI software.
  3. **Integration with Other Technologies:** SMEs should look into integrating BI tools with other existing technologies such as Customer Relationship Management (CRM) and Enterprise Resource Planning (ERP) systems.
  4. **Addressing Barriers to Implementation:** The study revealed that cost and complexity are major barriers to BI adoption by SMEs. Stakeholders, including software vendors, should develop more affordable and user-friendly BI tools tailored to the needs and capacities of SMEs in the banking sector.
  5. **Continuous Monitoring and Evaluation:** SMEs should establish clear metrics to evaluate the effectiveness of their BI systems. These include revenue growth rate, customer satisfaction levels, and risk mitigation performance.

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