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The Role of Management Information Systems in Enhancing Decision-Making Processes in Small and Medium Enterprises (SMEs) in Texas

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Abstract

This study examines the influence of Management Information Systems (MIS) on decision making in Small and Medium Enterprises (SMEs) in Texas. Since SMEs form the backbone of the economy of the state, it is proposed to assess the extent to which MIS enhances operational efficiency, better decision-making and organizational performance. The research is qualitative in nature, and 10 interviews are conducted of SME owners, managers and IT officers to examine the MIS effects on decision making for different business functions like inventory, finance, and customer support. The article presents some of the benefits of MIS, such as better access to information, faster processing of projects, and optimization of operation. However, such obstacles as expensive implementation, technical ability absence, and employees' reluctance were also pointed out. The empirical results imply that despite MIS support to operational and tactical decision-making, its use in strategic decision-making in SMEs is constrained. The paper ends with some practical suggestions to the owners and managers of SMEs, which include investing in employee training, implementing MIS solutions that are based on cloud, and coupling of CRM systems. In addition, the study suggests some future research topics such as the obstacles of strategic MIS adoption, and, the role of the cloud computing on decision-making within SMEs.

Keywords: Management Information Systems, Decision-Making, Small and Medium Enterprises, SMEs, Texas, Operational Efficiency, Cloud-Based Solutions, CRM, Strategic Decision-Making.
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Chapter 1: Introduction

1.1 Research Background

Small and Medium Enterprises (SMEs) are commonly e recognized as major contributors to economic growth, innovation, and job creation throughout the United States. Their influence is particularly strong in Texas. There are more than 3.1 million small businesses in Texas, approximately 99.8% of all businesses in the state, and are responsible for employing 4.9 million of the state's 11 million private sector employees which represents approximately 44.5% of the state's private sector work force (U.S. Small Business Administration, 2024). These statistics reflect the economic importance of SMEs in preserving the state employment rate and establishing entrepreneurship (SBA, 2024).

Even though they apply their efforts, SMEs in Texas struggle thanks to their constraints to capital and human resources and the threats posed by big corporations and headcount. A 2024 report by Texas 2036 (Luhn, 2024) found in the state small businesses are concerned more and more with the effects of inflation, regulatory complexity, and digital transformation pressures. To stay ahead, many SMBs are looking to digital tools and systems that can improve productivity and help with more strategic decisioning.

This includes the Management Information System (MIS) to assist the policy and decision makers with timely, accurate, and appropriate) information. MIS combines the data throughout various functions of the organisation so that the managers are able to analyse trends, anticipate results and make fact-based decisions. The use of MIS is specially useful for small and medium-sized enterprises since it can be used to break the barriers such as the limited staff and resources (Laudon & Laudon, 2023). In today's ever-evolving business landscape, data that is seamlessly integrated in real-time can make all the difference to a small business that is looking to be innovative and flourish.

The findings of Alhyasat and Al-Dalahmeh (2022) highlight that SMEs adopting MIS tools can monitor performance measures, enhance the operational effectiveness, and make rapid responses to market requirements. In the Texas case, the digital infrastructure is becoming more robust, but holes persist – especially at smaller

companies in outlying regions (Texas Comptroller, 2023). Consequently, despite the potential advantages of MIS, the adoption of these systems varies a great deal depending upon the size of the firm, the industry in which it operates, and its access to technical knowledge.

Finally, MIS caters strategic to as well as operational decision-making. At a tactical level, it takes over day by day routine route management issues such as stock control and payroll, reducing potential for human errors as well as time (O'Brien & Marakas, 2022). All of this is helping strategically assess new business opportunities, while managing customer relationships and monitoring the competition. This double ability is especially important for Texas SMEs who are competing in the sectors of retail, construction, and professional services, which make up the majority of the small business ecosystem in the state (SBA, 2024).

Furthermore, the COVID-19 pandemic has hastened technology adoption among SMEs. Most businesses discovered that digital readiness (and therefore reliance) on MIS wasn't desirable, it was essential to survival. Whilst the pandemic is still on, 75% of small businesses that adopted digital tools during the pandemic found to have had a faster recovery and greater decision-making agility after the pandemic (McKinsey & Company, 2023). There is no reason to believe that trend will not continue in Texas, with its future economy even more intertwined with technology and digitization as we emerge from an economic downturn.

Barriers to MIS Despite the established advantages, obstacles to MIS utilization exist. Issues Frequently faced issues are high cost of implementation, technological skills required which may not be present among the employee's real changes to system and fear of cyber-crimes (Rahayu & Day, 2022). These difficulties are particularly acute for micro and small enterprises (MSEs) that are on low margins. Knowledge of how these PSI barriers are overcome by SMEs in Texas and what benefits SMEs realize from MIS is important to policy makers and small business support organizations that seek to build a more sustainable SME sector.

The economic significance of SMEs in Texas and the rapidly changing digital environment make it timely and imperative to explore how MIS support their decision-making. The intent of this study is to add to the knowledge base by exploring the perceptions of SME managers in Texas using qualitative inquiry. The results have the potential to contribute to improved MIS adoption plans and support mechanisms designed specifically for small businesses operating in the regions.

1.2 Research Aim

Purpose This research seeks to investigate the contributions and enrichment of decision-making processes in Texas SMEs through the use of MIS with the interests of SME managers and decision-makers in mind.

1.3 Research Objectives

To study the current penetration and adaption of Management Information System in with SMEs in Texas.

To investigate how the managers and the decision-makers of SMEs perceive the contribution of MIS to strategic and tactical decision-making.

To determine the advantages and disadvantages of MIS from their application and implementation in SMEs.

To explore whether MIS affects the speed, correctness and efficiency of decisions in the SME context.

To offer some ideas to SMEs in terms of how to enable the use of MIS to support the improvement of decision making.

1.4 Research Questions

How are MIS in practice within SMEs in Texas?

How do SME Owners/Managers view the contribution of MIS to strategic and operational decision making?

What are the advantages that are being encountered by SMEs by the use of MIS in their decision-making?

What are the difficulties or barriers that the SMEs encounter in MIS adoption and utilization?

How does efficiency and effectiveness of decision-making in SMEs get impacted by MIS?

Chapter 2: Literature Review

2.1 Introduction

REVIEW OF LITERATURE Management Information Systems in Small And Medium Enterprises Chapter 2 reviews literature on adoption and use of Management Information Systems (MIS) with specific reference to

Small and Medium Enterprises (SMEs) in the clip of the U.S. and Texas. It includes the important elements or MIS, its importance in SMEs as well as decision-making theories. The chapter also examines how technology contributes to decision making at SMEs and includes research on MIS utilization in TX SMEs. And the review of literature pinpoints the potential and difficulties and the research gaps, laying the ground work for this research.

2.2 Overview of Management Information Systems (MIS) and Their Components

The Management Information Systems (MIS) play a crucial role in today's organizations, and it is approached as a system in which information is used for sharing, monitoring and controlling various events in the organization. MIS helps organizations succeed by directing and controlling activities, connecting with customers and suppliers, and competing in the marketplace (Laudon & Laudon, 2020). According to O'Brien and Marakas (2011), the fundamental purpose of MIS is to enhance decision quality through timely delivery of appropriate and accurate information.

MIS includes five major components; hardware, software, data, people and process. The hardware is the tangible parts anything—the parts of the system you can touch and feel on the hardware side include the computer, printer, network devices, storage devices and servers (Stair & Reynolds, 2021). These are the computer hardware components that are used to implement an MIS and that support the MIS software. The proper choice and handling of hardware is key to make the system reliable and scalable.

The software is the collection of the applications and programs that are running on the hardware. These include system software (e.g., operating systems) and application software (e.g., database-management systems and enterprise-resource-planning software) that help process, store, and experience information (O'Brien & Marakas, 2011). According to Turban et al., 2018): "Software is the soul of the MIS… it moves data from one place to another, converts it from one medium to another, organizes it into patterns and communicates it to wherever it is needed."

Data is also an important element in MIS and serves as an input to the system in its raw form. Within an MIS, it is in the collection, processing and analysis of data that information is generated to assist in decision-making. Information may be from internal, such as transaction records, and external sources, such as market trends or competitor information (Stair & Reynolds, 2021). Data precision and data quality are the primary factors to take in order for the information to be useful and worthwhile.

Processes represent the means, policies, and rules that drive the MIS. Such are data entry processes, validation procedures and reporting scenarios that guarantee uniform and save operations of data (Laudon & Laudon, 2020). The Processes should be effective as they control the way in which the data is captured, stored and converted into information. Clear and efficient processes also reduce errors and help keep information safe and up to date.

Finally, people are one of the most important elements of a MIS. This encompasses users, IT people and decision-makers, who deal with the system. According to Turban et al., 2018), factors other than the technology itself, such as its integration with human resources, also determine the success of an MIS. Good instruction and getting the users fully trained on the system so that it is used to its potential are critical in driving maximum value from the system to meet the needs of the organization.

It is the interplay among these elements that allows MIS to work efficiently. The convergence of hardware, software, data, processes, and people is expected to result in better decision making as it will give managers the right information at the right time. Consequently, it leads to better strategic, tactical, and operational decisions that are critical for the survival of any organization (O'Brien and Marakas, 2011).

2.3 MIS in the Context of SMEs

In the global economy, Small and Medium Enterprises (SMEs) are a main driver of employment, innovation and economic growth (Kraus et al., 2020). But, these informatics organizations also have to overcome many obstacles – lack of resources, competition, and the urgency to keep up with fast market trends. Within this framework, establishing the use of Management Information Systems (MIS) can play an important role in enhancing operational efficiency, decision making and long-term sustainability.

In SMES, MIS provides managers with useful data for decision making from the data stored in the system. According to Ismail et al. (2018), SM Es implement MIS to improve productivity and simplify business operations. In small firms, MIS is used for operations that include accounting, inventory, logistics, and finance. Such systems provide the necessary tools for SMEs to operate more efficiently and to have better control of their business, thereby allowing them to better compete in the marketplace.

However, the utilization rate of MIS in SMEs is sometimes found to be below the level of large firms, though these could benefit the most from the use of MIS. This is mainly attributed to high cost of acquisition, unwanted technical knowhow and inadequate IT backbone (Chaudhry et al., 2021). As demonstrated in a report of a cross-sectional study by Yusuf et al. (2020), as SMEs become more convinced of how MIS can affect its operational efficiency and profitability, they are more interested to invest in an MIS. Secondly, the adoption of MIS is affected by SME¡¦s size, since SMEs of larger size are more capable of implementing complex systems that requires substantial initial investments and resources.

One of the main motivations for the role of SMEs in adopting MIS is the enhance of decision making. c Decision-making in SME Decision-making is typically centralized in most SMEs and the managers depend upon timely and accurate information to take daily and strategic decisions (Hossain & Quaddus, 2019). Real-time data and analytical tools available through the MIS enable managers to evaluate business performance, track KPIs, as well as make decisions. E.g., SMEs that adopt an inventory management system are able to monitor stock levels, predict customer demand, make sure the supply chain functions efficiently and effectively, leading to optimal cost control and satisfied customers (Sarker et al., 2021).

One further benefit of the adoption of MIS in SMEs is its impact on CRM. As SMEs pursue customer loyalty and maintain competitive advantage, MIS can help to personalizing marketing, products for and services for, customer segmentation and effective customer services (Sims & Reid, 2019). CRM applications allow SMEs to gather data on customers, study purchasing behavior and forecast customer behavior, improving customer relations and building long-lasting relationships.

The implementation of MIS in SMEs is, however, not easy. SMEs can experience problems when customizing software that is unsuitable for their needs, in particular when implementing off-the-shelf software solutions (Yusuf et al., 2020). Furthermore, the incorporation of MIS with currently functioning processes and systems may be difficult and time consuming. As Molla & Licker (2019) reports, implementing a MIS in SMEs is not necessarily about the technology itself, but involves staff training and support, and a strategic plan to link the new technology to the goals of the enterprise.

2.4 Decision-making Theories and Types

Decision making is one of the main activities in organizations that consists of choosing one particular course of action over others in order to reach a desired end, which is the evitar; desired objectives. In a business context, decision-making theories provide managers with principles to follow when making decisions which are congruent with organization mission. Organizations use several decision-making theories to formulate and enhance their decision making practices. Among these are rational decision making, bounded rationality, and intuitive decision making; all of which can be transferred to different levels of organisational decision making (Simon, 2017; March & Simon, 2018).

Rational Theory of Decision Making This theory is based on the presumption that decision makers are perfectly rational, fully aware of the consequences of certain actions, entirely objective, rational and narrow-minded. According to this, decision makers must diagnose a problem, search for possible options, examine these alternatives according to decision rules and criteria, and choose the alternative that maximizes utility for the organization. Though this model is an ideal and is often not practical to achieve, it is still a basic theory in the decision-making literature, especially at strategic levels, where long-term goals are determined and resources are allocated.

According to Bounded Rationality Theory of Herbert Simon (1979), decision-makers are constrained from making perfectly rational decision due to the restriction of time, information and cognitive processing capability. In fact, decision-makers often employ heuristics or simplified procedures to seek a “good enough” answer rather than an optimal one. This theory is particularly salient in dynamic context such as small and medium size enterprises (SMEs) whereby managers have to make decisions based on assumptions and limited information and under pressure of time (March & Simon, 2018).

Intuitive Decision-Making Theory holds that some decisions are made using gut feelings, experience and intuition, rather than a structured process or formal analysis. In the context of fast-changing and uncertain circumstances, managers sometimes have to trust their 'gut feel' and make decisions fast when the information available is either insufficient or ambiguous (Mintzberg, 2019). This kind of decision making happens at the operational/tactical levels all of the time because you have to be making decisions quickly.

There are usually three levels of decision making in the organization: strategic, tactical, and operational. At each level, we look at the organization from a different perspective of what it tries to achieve and how it operates, and

each of these implications can be addressed by different decision making approaches and different types of decisions.

Strategic Decision-Making represents the long-run decisions made by the highest level of management and which affects the direction of the enterprise. These decisions are often about large investments, allocation of resources and establishing wide organisation goals (Johnson et al. Strategies are usually high-risk decisions that often involve uncertainty and that have long-range consequences. Given, for example, that a company decides to penetrate a new market or invests in a new product line, both strategic decision-making is needed. Strategic choices, as Drucker (2017), suggests are generally based on long-term visions, analysis of industry trend, market situation, and competitors activities.

Tactical Decision-Making is concerned with the decisions that derive from strategic objectives to specific actions. They are usually high-level, made by middle-management and are based on short and medium-term targets (Drucker, 2017). Tactical decisions is the determination of how resources are to be used to produce the desired strategic goals set by upper management. Such decisions could relate to planning for marketing campaigns, production schedules, or manpower scheduling. Gain-of-function tasks must balance strategic purpose with tactical constraint, and they frequently involve intricate planning and coordination.

Operational Decision-Making: is the short-term, day-to-day process of decisions made by middle and lower-level managers, relative to the operation of the organization. Decisions of this kind are engaged in the ordinary course of business, and are driven by efficiency considerations, cost containment and near-term objectives (Mintzberg, 2019). Operational decisions could be such things as; when staff should work, how much inventory to hold, or how to resolve customer complaints. Operational decisions are frequently less complex but impact the organization's performance substantially.

2.5 Role of Technology in Decision-Making

Technology is an integral part of today's decision-making ecology at different levels of an organization. The explosive development of digital technologies and systems now enables executives to leverage enormous volumes of real-time data and analytic power to facilitate faster and more insightful decision-making. The use of computers and software applications such as Management Information Systems, Business Intelligence and data analytic software applications have significantly affected the field of decision making, whereby businesses no longer make decisions based on gut feeling but on real-time data (Laudon & Laudon, 2020).

Data accumulation, storage and analysis The most recognisable of tech's contributions to decision-making, data can now be stored and analysed in ways that were unfeasible in the past. Big Data and advanced data processing tools have enabled an organization developing insights into its consumers and market trends and operational performance (Chen et al., 2021). According to Turban et al. (2020), Business Intelligence (BI) tools enable businesses to collect data and carry out data-prescription for generating reports in support of strategic decision-making process. These solutions offered visualizations, dashboards, and comprehensive reports that can help executives and managers understand complex data patterns and make wise decisions. Consequently, entities are no longer basing decisions on intuition, but choosing data-informed strategies instead.

Specifically, technology supports decision-making in real time, a key element for such dynamic industries. Cloud computing allows, as an example, decision makers, to have access to information at any place and time, whereby the most recent information can support the decision-making process. As Agarwal & Dhar (2019) has concluded, the growing adoption of cloud-based models in various organizations has minimised the information to decision turnaround time (the time taken to act on the learning) capturing newly-gathered data. Real-time analysis and reporting capabilities mean that managers can respond immediately to changes in the market or in-house, helping to make the business more nimble and competitive.

In addition, decisions are becoming more and more dependent on artificial intelligence (AI) and machine learning (ML). AI and ML have the ability to process data that is so large or intricate that it is beyond human ability to make sense of patterns. In many realms—not just predicting the stock market or playing chess—these technologies could improve decision-making: from predicting financial-market trends, to making it easier to substitute labor for capital in routine decisions like inventory management or consumer targeting (Brynjolfsson & McAfee, 2017). Indeed, AI-based decision support systems are already used to support recommendations that increase decision-making accuracy. For example, predictive analytics in the form of AI recommendation consequences – adopted by e-commerce sites, such as Amazon – enable businesses to individualize customer experiences and suggest product choices based on data (Chaffey, 2020).

Predictive analytics: a complementary technology predicts future trends by examining historical data to make a better decision. This is particularly relevant in financial planning, risk management and optimizing the supply chain. A recent study by Sharma & Gupta (2020) argues that predictive analytics enable organizations to forecast customer demand, evaluate risks, and predict future occurrences that can drive proactive decision-making. Through prediction models, businesses could also reduce uncertainties and make more predictable decisions around which resources to allocate, what investment strategies to take, and the region in which to expand the most.

Technology is also a significant factor for collaborative decision support. Cloud-native applications and collaboration apps, such as Microsoft Teams and Slack and Zoom, have changed the way people work together and how they make decisions. Such systems facilitate real-time interactions and data exchange, as well as feedback, among the participants, enabling more collaborative and integrated decision-making (Olson & Olson, 2020). This is particularly important in the SMEs as decisions must be teamwork based and interdepartmentally. SMEs can use tech to open up communication within the organization and make certain that decisions are made based on input from different parts of the SME.

However, technology in decision-making also comes with its downsides. Data Quality Another significant challenge is the quality and integrity of the information on which decisions are based. As noted by Westerman et al. (2020) However, incorrect decisions could be made following low quality data, and this could negatively impact an organisation. Organizations need to trust that their data is accurate, consistent and reliable before they make decisions based upon it. Furthermore, if technology facilitates decision-making, it also requires informed people who know how to use, interpret and exploit them (Gable et al., 2021). Training and technical assistance programs are therefore needed if decision–makers are to make effective use of these technologies.

2.6 MIS Adoption in SMEs in the U.S. or Texas

There have been numerous researches during the last decade on the adoption of the Management Information Systems (MIS) in Small and Medium Enterprises (SMEs) in the us. Scholars have investigated factors affecting the adoption of MIS, the barriers to adoption of MIS by SMEs, and technologies impact on decision-making in organizations. Within the U.S., SMEs play a vital role in the economy, representing more than 99 per cent of all businesses as well as a substantial portion of employment (U.S. Small Business Administration, 2021). But, the utilization level of MIS for decision making by SMEs in the U.S. is an issue, especially with the pace at which technology changes and the competitive nature of the business environment.

Koutsou-Wehling and Hall (2020) analyze the barriers and benefits of adopting MIS in U.S. SMEs. The authors argue that although SMEs are aware of the opportunities to improve operational management and decision making through MIS, many SMEs confront obstacles, such as lack of funds, lack of expertise, and resistance to change. Their results points to the fact that despite the adoption level is pretty low for small firms in regards to MIS as compared to larger entities, yet the approach has an effect of improvement for the business process, customer relationship management and overall decision-making (KoutsouWehling & Hall, 2020). The authors claim the adoption barriers should be overcome by U.S. SMEs with the help of the government and technology vendors.

The other side is noted in a research conducted by Choudhury and Shil (2021) concerning cloud based MIS and SMEs in Texas. The research findings signify cloud computing as an emerging technology, now a cost-effective substitute to traditional MIS for SMEs, particularly in Texas, where small businesses are increasingly leveraging cloud services to automate their businesses. " The study highlights the flexibility and scalability of cloud solutions that in practice mean that SMEs can access powerful decision-making computersystems, without facing the high initial costs of on-premise MIS. Findings: The study reveals that Texas SMEs that use cloud based MIS experience improved decision-making times, and increase in customer interactions and facilitate better inventory management. But the report finds that issues such as data security fears and inadequate training remain critical obstacles to companies taking advantage of cloud-based technology.

Unlike the technological view, a more organizational study by Tessema et al. (2022) studies the effects of organizational culture on the adoption of MIS in SMEs. They concluded that the implementation response to GCE/MIS integration cannot be isolated on the basis of the system technical qualities, but that differs significantly according to which type of orgni-.....zational "culture" is employed, including the support of the management for the technolo- gies, the employees psychological attitude towards it and their readiness to change. According to their result, SMEs with a culture that values innovation and learning continuously have better at implementing and realizing MIS adoption. This perspective is of particular interest to SMEs in Texas for which entrepreneurial traits are vital to the growth and success of small businesses (Tessema et al., 2022). Yet, the writers add that innovation-savvy among rural-based SMEs can find themselves struggling to develop

the kind of culture where people are willing to go for technologies simply because of restricted access to training and expertise.

Critique and Comparison of Viewpoints

The studies included confirm that there are both opportunities and challenges for SMEs in their use of MIS. Koutsou-Wehling and Hall (2020) also highlight financial and technical challenges, while Choudhury and Shil (2021) propose that cloud-based solutions could be a viable solution. But, though cloud-assisted MIS is cost-effective, themethods proposed by Tessema et al. (2022) stress the relevance of organizational culture to the implementation process; an element that is frequently ignored in those works that only concentrate on the technology of the MIS. The divergence of the two studiesvisibily points out the fact that tech-nology and organizational culture are two crucial factors of MIS adoption, but their interaction in use and also what includes this interaction is intertwinedoeuced complicated and culture-spentfic.

Furthermore, Koutsou-Wehling and Hall (2020) might be criticized for examining only old style on-premise MIS but here one has to keep in mind that contemporary corporations are more than a little interested in cloud based MIS. On the other end of the continuum, Choudhury and Shil (2021) emphasize the technical perspective of cloud-based solutions and might underestimate the organizational challenges with respect to implementation and use. Tessema et al. (2022), Incorporating valuable information on how organizational culture could support SMEs, do not discuss the actual technological tools that could support the SMEs on their decisions.

2.7 Research Gaps

12) There are still several voids in the literature concerning MIS adoption in SMEs, especially in the Texas context. First, few studies have investigated the combination of cloud-based MIS with the traditional IS and its effect on decision-making at all levels of the organizational hierarchy in SMEs. Also, despite the proliferation of cloud-based solutions, little is known about how they are related to on-premise systems in supporting decision-making and providing competitive advantages in SMEs.

Also, further studies are required to investigate the impact of external factors such as government policies, industry specific requirements, and the local ecosystem on MIS adoption of Texas SMEs. Because of the wide range within the SME sector, regional and sectoral variations may also be a significant factor in the adoption and use of MIS as an effective tool for businesses, that has hitherto to been insufficiently researched.

Finally, few studies have explored the long-term influence of MIS adoption on the decision-making of SMEs. However, the majority of such studies focus on the short-term, such as increased operational efficiency, and have provided little evidence of the effect of MIS on strategic decision-making over time, especially the ability of a business to survive and grow in the longer term.

This research intends to contribute in these gaps by studying the antecedents for the adoption of MIS in Texas SMEs and examines the comparative efficacy of cloud-based MIS over traditional ones along with the influence of organization's culture and external environment. Besides, the long-term effects of MIS on all managerial decision-making levels will be studied.

2.8 Summary of this Chapter

This chapter gave an overview of MIS and its significance in SMEs, specifically on the decision making. It reviewed several researches on MIS adoption in SMEs and discussed technological and organisational factors which affect in the implementation. The chapter highlighted the advantages and hurdles among SMEs in applying MIS, with a focus on U.S. and Texas. Lastly, unanswered research questions emerged, especially considering the long-term influence of MIS on decision-making process, which present work seeks to cover.

Chapter 3: Research Methodology

3.1 Introduction

Research Methodology This chapter presents the research methods used to examine the impact of Management Information Systems (MIS) on decision making by soft drinks Marketers in SMEs in texas. Qualitative methodology based on an interpretivist philosophy supporting a deductive logic have been used in this research. Information has been gathered by semi-structured interviews with SME owners, managers, and IT staff. The justification for the methods used, the sampling methods, the data collection instruments, and ethical issues are also addressed.

3.2 Research Method

This research utilizes qualitative analysis methods to investigate the ways in which Management Information Systems (MIS) improve decision-making processes in Texas Small and Medium Enterprises (SME's). Qualitative research in realizing human experiences, motives and understandings within naturalistic contexts is especially noteworthy (Creswell & Poth, 2018). This method is congruent with our research intent to understand thoroughly the subjective world of SME stakeholder-users in real-life decision making situations in relation to MIS.

3.3 Research Philosophy

It is due to this insight that the research subscribes to the interpretivist research philosophy which assumes that reality is socially constructed and meaning emerges from what individual ascribe to experiences (Saunders, Lewis & Thornhill, 2019). Interpretivism appreciates context-centric information and encourages the researcher to engage actively with participants to realise tas extras mobil how they view the role played by MIS in their businesses.

3.4 Research Approach

The research methodology is deductive where existing theories and literature on MIS and decision-making are used and tested (Carlsson, 1998) to develop a framework for an industry specific intervention in Texas-based SMEs. As Bryman (2016) claims, a deductive approach provides researchers with the possibility to generate the hypotheses or questions from theoretical perspectives and then collect data to test or contest these postulations. While deduction is often seen as relevant solely for quantitative research, even in qualitative research it has legitimacy when theories inform the design and analysis (Silverman, 2021).

This study lends itself to a qualitative design as the researcher can collect rich and in-depth data, not attainable through quantitative analysis alone. Semi-structured interviews were performed for primary data gathering, particularly. Semi-structured interviews allow a balance of directive questioning and unguided responses which permits the researcher to develop a depth of understanding of emerging issues, yet preserve comparability across interviews (Gill et al., 2008).

3.5 Data Collection

The target population consists of owners/mangers and IT executives of SMEs in the state of Texas. The first group is narrowly defined and would probably play an active part in MIS decisions and may provide some pragmatic viewpoints on how such systems impact on strategic, tactical and operational decisions. Ten of the attendees ought to be from the Texas SME sector. Sampling strategy Purposeful sampling of participants with the relevant expertise and experience. According to Etikan, Musa, and Alkassim (2016) purposive sampling is suitable when researcher want detailed information from the participants with some specific knowledge.

Interviews have been held on digital platforms, including Zoom and Microsoft Teams meeting, according to the availability of the participants. The interviews will be audio-recorded followed by transcription for analysis; duration of each interview is expected to be 30–45 min.

3.6 Data Analysis

Analysis Once the data are collected, thematic analysis was performed as the data analysis method to identify, analyze, and report themes or patterns in qualitative data that highlighted explanation and description of phenomenon (Braun & Clarke,2006). This process includes, becoming familiar with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and, reporting. The contents of the data collected are interpreted using a relatively loose, but still rigorous, method, which enables more detailed analyses of complex and abstract data, pertinent to the study's research goals. The use of this method will provide rich, in-depth, context-specific findings of how SMEs interpret, develop a relationship with, and use MIS in their decision- making processes in Texas— thereby addressing a significant void in the literature.

3.7 Ethical Considerations

Integrity is key in qualitative research, especially in studies with human participants. This research follows the ethical principles of the University of Sunderland and broader ethical standards outlined by e.g the British Educational research association (BERA, 2018) and the American Psychological Association (APA, 2020). Ethical permission will be sought from the affiliated university ethical committee before the commencement of the study.

Written informed consent will be obtained from all subjects prior to participation in the interviews. Participants will be given a clear explanation of what the study intends to achieve, their rights, the voluntary nature of the participation, and how the data will be used. Informed consent will be available electronically or as a hard-copy,

and it depends on interview mode. From Diener and Crandall (1978): Informed Consent, a guarantee that all parties involved know what they are in for and are not being tricked or forced to participate.

Anonymity and confidentiality will be maintained throughout the research. All identifiable elements, such as names, organisations and contact details will be deleted or replaced with fictitious names to preserve participant anonymity. Data will be kept securely, password protected devices and cloud storage in line with General Data Protection Regulation (GDPR) and Data Protection Act 2018 (ICO, 2019). Raw data will only be accessible by the researcher and supervisor.

Participants will be informed that they have the right to leave the study at any moment, without needing to justify themselves, nor will this have any negative impact on them. This parallels the principle of respect for autonomy and persons (Beauchamp & Childress, 2013).

Minimising harm is also another important ethical principle in qualitative research. The design of the study guarantees that participants would not be exposed to any physical, psychological or professional harm. Interview questions will be minimally intrusive and designed to be respectful of the participant's time, and comfort. If participants feel any discomfort, they may pause or drop-out from the interview.

The research will also promote transparency, preventing the fabrication or falsification of data. All competing interests will be declared and the results will be reported truthfully and fairly, taking both positive and negative findings into account.

Through integrating these ethical principals into the design of the study, high moral ethical standards are upheld, and the dignity, privacy, and safety of all subjects are respected.

3.8 Summary of this Chapter

In conclusion, this chapter establishes a solid foundation for the research methodology by explaining why a qualitative, interpretivist, and deductive approach is appropriate. Semi-structured interviews allow for contextual, in-depth understanding of MIS decision-making to be explored. Ethical issues such as ethics approval, informed consent, confidentiality and withdrawal are well considered to maintain the integrity and ethics of the study.

Chapter 4: Data Collection and Analysis

4.1 Introduction

The results of the semi-structured interviews, which were carried out with ten participants who work in SMEs across the state of Texas as owners, managers, and IT workers, are presented in this chapter. Data were analyzed thematically according to Braun and Clarke's (2006) six-step procedure. Themes were constructed through recurrent patterns and shared viewpoints in the interviews. Responses of the Participants are anonymous and numbered (e.g., P1, P2, etc.)

4.2.1MIS in Decisionmakingin SMEs

Most responded that MIS are very essential in assisting decision making in their organizations at different levels. Management decisions – marketing in new markets, investments in new technologies, and so forth – are frequently grounded on MIS tool generated reports. Also, MIS helps at the tactical level of management for making tactical decisions like marketing strategy and operational decisions like daily inventory position or staff scheduling.

Participant 1 described, "We utilise MIS primarily for financial reporting and customer trend analysis, it is very useful for long run planning." " (Participant 4)"MIS dashboard are steering for our weekly sales meetings and decisions in restocking. Participants 2, 6, and 9 commented that MIS is majorly leveraged in departments such as operations, sales, and finance, but as digital adoption is deepening, the usage of MIS is fanning its wing across the organization.

What we learned from this analysis is what Texas small businesses are increasingly adopting MIS to relate data to their business needs. However, MIS utilization does not reach uniform levels in daily decisions and its use may be based upon managerial cognizance and technical facilities.

4.3 Advantages of MIS on Decision Making

It was expressed by all participants that MIS greatly improves organisational efficiency and quality of decision making. People said it made them more accurate, faster at making decisions and less prone to human error. It also put your KPIs in front of you faster, which helps with the old adage of, "In God we trust, all others must

bring data" or measure.(Almost) Instant KPI GratificationIt also put your KPIs in front of you faster, which helps with the old adage of, "In God we trust, all others must bring data" … or measure.

Participant 3 said, "We can report faster and act on it faster— we couldn't do without MIS as you'd just be guessing!" Participant 7 was also quoted as saying, "It's a bit like a compass—it helps steer you away from making decisions in the dark." Participant 2, 5, and 10 also articulated how MIS promoted interaction between departments by building a common source of business data truth.

Some attendees correlated MIS with improved customer service results, not just operational efficiency. By providing information regarding customer behavior and preferences, MIS enabled firms to respond more reactively. These results extend the literature on the strategic role of MIS in improving both internal processes and external adaptability.

4.4 Challenges and Drawbacks of MIS Adoption

However, the adoption and utilisation of MIS was not without problems, despite the advantages. The high cost of purchasing and servicing MIS tools was mentioned by a number of respondents as a significant barrier, especially for small businesses with tighter budgets. Others pointed to resistance from workers who were not digitally fluent or were afraid of being fired.

(6) It was more than a year before we had everybody trained and comfortable—before that, people were hesitant to even use the system Say, for us, it was a year before we had everybody feeling comfortable to use the system. For example, as Participant 8 noted, "We are still having problems connecting to our inventory system to the point-of-sale program—its not working very easily". P05 and P09, in addition, paid attention on the inconsistency of data and how it had to be customised in an expensive or complicated way.

These results highlight an important point: despite being transformational, the transition to successful MIS is fraught with technical, financial, and human resource challenges. Skill-building and transition management becomes critical in the interim.

4.5 Drivers of MIS adoption

Respondents identified multiple internal and external elements that led their organizations to introduce MIS. Within they were driven by sense the scalability and data transparency and operation control issues were also common drivers. Outwardly, the digital transformation caused by the COVID-19 pandemic and competitive forces pressured a lot of the SMEs to adopt MIS.

"Our competitors took their businesses online, so we digitized," said Participant 2. "Spreadsheets were no more enough for us as we were growing—MIS became essential," observed participant 10. Participants 1, 3 and 6 also discussed the importance of leadership support and availability of low-cost vendor support in facilitating successful adoption.

It clearly emerges that MIS uptake is a strategic imperative, but it is also a market-led response. But the companies that worked with it proactively (not reactively) appear to have had more success.

4.6 MIS and the level of employee engagement

A recurring theme in the interviews was the effect that MIS had on employee morale and productivity. Not a primary focus of their research, but they found that systems that streamlined processes led to happier employees. But the staff were often nervous about the early stages of implementation.

Now that reports are automated, our staff can concentrate on creativity rather than administrative duties," said Participant 7. Conversely, Participant 8 cautioned, "staff were initially wary of it replacing jobs, trust needed to be built in the system". However, as P3 and P6 noted, early staff involvement in the planning and implementation of the MIS was important, in reducing opposition and enhancing ownership.

This theme relates to the human aspect of the introduction of technology. Involving staff will lead not only to increased use of systems, but reinforcement of the strategic role MIS can play by increasing the contribution of staff.

4.7 MIS Implementation Gaps and Its Desirable Improvements

Participants were further invited to think about what their current MIS lacked and what embellishment they longed for. A common problem was the lack of connections between systems, often resulting in silos of information and duplications of efforts. Analytics and mobile access were listed as a couple of cons by some users above.

"Our system doesn't talk to our e-commerce platform — that causes a delay," said participant 5. One added "The analytics dashboard is way too simple – we need predictions not just charts." A few additional participants (Participants 2, 7, 10 etc.) expressed the need for cloud based approaches which can accommodate flexibly, scale and can be customised to the SME context.

These changes are indicative of a research gap and opportunity: although MIS tools are quite common, they often are not very relatively advanced in terms of analytics, customization, and interconnections—particularly in the case of SMEs.

4.8 Future Expressions of MIS Use in SMEs

There was a general consensus among respondents that MIS would rapidly become a significant issue for their competitiveness in the next few years. They predicted that the next generation of MIS platforms would include its own AI and predictive analytics, as well as more sophisticated decision support.

"Before long, MIS won't merely help make decisions—it'll make them," Participant 1 forecast. "We are next investigating the AI-driven MIS," added Participant 4. Participants 3, 6 and 8 stressed the fact that MIS will need to be developed and upgraded constantly in order to adapt to market circumstances and customer´s needs.

The prevailing attitude of enthusiasm by the respondents for the potential impact of MIS is consistent with a wider theme of programming the small to medium sized business sector for digitization. But it also underscores the necessity for continuous innovation, vendor support and UX-driven design.

4.9 Summary of this Chapter

This chapter reported the results after conducting ten semi-structured interviews with SME owners, managers, IT staff in Texas. Thematic analysis showed that MIS are necessary for better decision making at the strategic, tactical and operational level. Participants emphasized a number of advantages of MIS--greater efficacy, ability to make early decision, and ease of access to real time data. But there were also issues and barriers raised including: cost of implementation, staff resistance and system integration. The significance of internal demand for scale and market demand were crucial in the adoption of MIS. In addition, participants focused on better integration, predictive analytics, and more user-friendly interfaces. The chapter concludes by illustrating how although MIS is lauded for its influence on business performance, a number of SMEs do encounter constraints which restrict its exploitation, thus indicating future avenues for research and system development.

Chapter 5: Discussion

This chapter provides an in-depth interpretation of the research results with reference to both the interview data recorded in an interview template and theories discussed in the literature review. It also examines the impact of Management Information Systems (MIS) on decision-making in Small and Medium Enterprises (SMEs) in Texas, and focuses on the significant decision categories affected by MIS.

The results are in accordance with Herbert Simon's decision-making model (1977), which represents decision behavior as a three-stage process: intelligence, design, and choice. MIS, according to participants, is highly relevant particularly in the intelligence phase where timely data gathering and analysis is essential. Through automating and simplifying data handling, MIS solutions enable faster troubleshooting of problems, or capitalize on a new opportunity. For instance, as Participant 1 mentioned "Real-time data has helped make decisions at an accelerated rate—especially when our day-to-day operations are immediately challenged." This demonstrates the role of MIS in facilitating rapid decision making based on the use of data, an imperative in the highly competitive SME landscape.

A common context of MIS systems cited was for operational and tactical decision support. Specifically, it was discovered that inventory management, customer service, finance, and human resources were the major winners when MIS were invested in. Small to medium-scale business, for example, have cut the need of human resources and errors in accounting by automating their inventory. Participant 7 recalled, "Due to our MIS that keeps the automatic record of sales and stock now our stock management has become very precise and economical. Also, the capacity of MISs to share information across various lines of business has facilitated better coordination and departments, esp., finance and customer service, are now better able to communicate with one another. This result is in line with Laudon and Laudon (2021) who argue that MIS leads to crossfunctional integration, which increases the efficiency of operations and helps small and medium enterprises (SME) to take informed tactical decisions.

The study also revealed that MIS had a positive impact on financial decision making. Some respondents mentioned that the financial information, including cash flow statements and profit margins, had become more

available and reliable, leading to enhanced budgeting and forecasting. This result is consistent with Turban et al. (2018), MIS is one technique that brings about improved financial management through timely and accurate financial reports. Participants 3, 5 and 10, in particular, stated that access to real-time financial data contributed to enhance business forecasting, which supported businesses to plan and budget more efficiently.

But even though the incredible benefits on operational and tactical decision making, the research highlighted constraints regarding the strategical use of MIS. Even tough small and medium enterprises increasingly use MIS in order to coordinate operational business, still there seems to be a lack in the strategic employment of MIS. The studies imply that many of SMEs do not actively use MIS in long-term decision-making?:?steps like entering into a new market or creating a new product. Like Ifinedo (2011) and Maroufkhani et al. (2020) as still many SMEs regards MIS as a means of operational efficiency with a limited value in strategic insight. Additionally, the same feeling was expressed by participant 4 “Although MIS facilitates daily decision making, we rather depend on intuition as well as past experience when forecasting the future”.

Furthermore, from the data analysis, several barriers to the effective utilization of MIS by SMEs for better decision making emerged. Expense was the largest obstacle to MIS implementation. A number of respondents, particularly in smaller firms, reported that the costs of implementing and maintaining MIS were major issues. Participant 2 said, "The set-up cost for an MIS system is considerable, and we find it difficult to justify the cost given the size of the business." This result corroborates the claims made by Thong (1999) and Maroufkhani et al. (2020) who claim that businesses may not have access to financial capital to enable holistic implementation of MIS.

Technical knowledge was identified as another critical challenge, in addition to cost that was eventually institutionalized to data protection. A lot of SMEs had no IT skills internally to monitor and tune MIS. “The system itself is valuable, but we don’t have enough people who are technically skilled to take full advantage of it,” as Participant 8 noted. This further underscores the role of the training of employees and external technical assistance, as shown by Chen and colleagues. (2012) also discovered that SMEs may fail to gain the maximum value from MIS due to technical knowledge deficiency.

Employee resistance to new technology was one of the limitations expressed in the study. The new MIS systems are being developed by companies but the skill levels of some employees already feel left behind when it comes to new work processes. As Participant 5 expressed, “Some of our staff are old school, and when we try to introduce new systems there's none compliance”. This finding is in line with that of Ifinedo (2011) that resistance to change was one of the major impediment hindering the effective adoption of MIS by SMEs.

Nevertheless, the advantages of MIS were apparent. The research verified that the utilization of MIS improved speed of operations, decision-making accuracy, and operational efficiency. By automating simple activities, MIS help to make room for employees to do things that are more strategic. Responding to his own question, Student 6 noted, “MIS has helped reduced the amount of time we spend on manual activities and faster, better decision-making.” This is consistent with the conclusion by Laudon and Laudon (2021) which maintained that automation minimizes human mistakes and adds to efficiency in operation.

The study concludes that although MIS is a powerful tool aiding the tactical and operational decision-making in SMEs, there exist significant challenges for SMEs to use MIS strategically. Cost, SME reluctance to adopt and resistance among employees are the constraints that should be addressed to ensure small businesses derive full advantage of MIS. As suggested byChen et al. (2012) suggested that focused training and support and more user-friendly, low-cost MIS packages might enable the SMEs to leverage their IS. Researchers should further investigate how SMEs can link between their operational and strategic MIS use and shape MIS systems as instruments for effectiveness and efficiency, as well as enablers for long-term developments in business and innovation.

Chapter 6: Conclusion and Recommendations

6.1 Conclusion

The purpose of this study was to investigate the intention of Small and Medium Enterprises in Texas of Management Information System (MIS) used for decision making purposes. The results indicated that MIS are effective managerial tools and its use in different business departments like inventory management, finance, and customer service supported to increase the operational efficiency, accuracy and speed of decision-making. The application of MIS systems helped in the decision-making process of the respondents, as all of them could take a more rational and quicker decision at the operating and tactical levels. But the use of MIS for strategic management is still rare. Respondents reported that MIS were essential for day-to-day decisions making, but they did not always use their MIS to their full capacity for long-term planning and competitive strategy (Chen et

al., 2012). Moreover, the obstacles of high cost of implementation, limited technical skills and employees' unwillingness were detected to be among the critical constraint impeding the utilisation and implementation of MIS across many SMEs.

The research has achieved its purpose by investigating the role of MIS in decision making process, assessing the effect of MIS on the SMEs in the state of Texas, identifying the barriers to the adoption of MIS, and recommending ways to improve MIS use. First, the findings verified that MIS is critical for the decision-making with it enhancing efficiency, accuracy and velocity of information for tactical decisions including inventory management and finance"` (Laudon & Laudon, 2021). Second, and in contrast Massa's (2007) findings, this study's findings indicated that despite the enormous advantages, MIS in the SME environment in Texas are only accessible for operational purposes and only in a few organizations did these systems support strategic decision-making (Stair & Reynolds, 2013). Third, it found a number of barriers to MIS to have been equally significant factors of MIS adoption, including financial resources, lack of IT professionals, and employee resistance, findings that were also reported in previous research (Thong, 1999). Finally, the study offered specific actionable advice for SMEs faced with these challenges, such as ensuring employees are well trained, implementing cloud-based solutions, and integrating CRM systems.

6.2 Recommendations

From the results of this study the following suggestions are offered to small and medium enterprises (SMEs) owners and managers in Texas in order to improve the use of MIS for decision-making:

Investment in Labour Training and Development: SMEs should invest in regular training programmes that will build the capacity of their employees so that MIS could work more effectively and efficiently to support decision. This would allow to address technical implementation-related issues and to facilitate employees in the effective use of MIS tools (Ifinedo, 2011).

I**mplement Cloud-Based MIS Applications:** SMEs ought to adopt cloud-based MIS applications which provide elastically scalable, flexible use, low implementation costs. The use of cloud facilitates the access to MIS by SMEs at low cost meausre to boast operational efficiency as well as robust decision making (Maroufkhani et al., 2020).

Integrate Customer Relationship Management (CRM) Systems: The integration of CRM with the current MIS could help SMEs to improve customer service and to maintain contacts, as well as enhance interactions between the customer and its provider (Chen, Ching, & Chang, 2012). This will allow SMEs to more effectively weigh customer service and marketing activities.

Build a Technology-Acceptance Climate: SME managers will need to develop an organizational climate that minimises resistance among employees to the introduction of new technology. Open discussion about the advantages of MIS, employee involvement in decision-making; and introducing incentive systems for successful MIS implementation will surmount opposition (Simon, 1977).

Intensify MIS Use for Strategic Decisions: MIS is frequently used for operational and tactical decisions, however, the contribution that MIS could make to strategic decision making should be investigated. SME owner/managers should explore how MIS can be used as a tool to support strategic futures thinking and competitive advantage pursuit. The use of predictive analytics along with business intelligence tools could support data-driven strategies decision-making in MIS (Laudon & Laudon, 2021).

Solve Financial Barriers for the Adoption of MIS: SMEs need to seek out ways to afford MIS adoption including cost effective alternatives (eg, open source or cloud based) that could reduce the financial pressure. Furthermore, there are government or private sector grants that is available for SMEs to assist them with their digital transformation initiative (Turban et al., 2018).

Reinforce Cybersecurity: As SMEs begin to embrace advanced MIS, securing robust cybersecurity is critical. Managers in SMEs should invest in availing robust security schemes and information protection schemes and socialize the employees atkinson, 2018, Chugh, 2016, Maroufkhani et al., 2020, Nagesh and Sujatha, 2020(Aavez-bordiwala-and-isak-vacawala, 2015) with the best ways and methodologies of secure the information.

Implementing these suggestions can help SMEs in Texas harness the entire benefits of MIS in decision-making, growth and general business success.

6.3 Future Research Scope

Although the present study provides important findings, it also identifies directions for future research. Future studies could explore the obstacles to the strategic choice of MIS in SMEs. Examining the reasons why MIS utilization tends to be concentrated at the operational and tactical level, rather than similar support for strategic decision making, may reveal potential organizational or technological factors (Turban et al., 2018). Another topic for future research is the examination of how the adoption of cloud-based MIS will influence SMEs, such as decision-making effectiveness and cost reduction (Maroufkhani et al., 2020). Second, grasping the dynamics of employee resistance to new technologies in SMEs is important, and future research can discuss how to handle organisational transformation and to elevate employee acceptance of MIS systems. Finally, finding more industry-based research would help to reveal how MIS affects decision-making differently among industries such as manufacturing, retailing, or SMES based on services (Thong, 1999).

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