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"Analyzing the impact of MIS Adoption on organizational culture Dimensions. A quantitative study of small and medium enterprises"

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ABSTRACT

Small and Medium Enterprises (SMEs) have a great role to play in economic growth, creation of jobs and innovation but most SMEs find it difficult to perform sustainably because of their limited resources, technological capacity and resistance to change. With the rise of digitalization, the use of Management Information Systems (MIS) has become a necessary measure in enhancing decision-making, operational efficiency and competitiveness. The thesis explores how MIS adoption relates to organizational culture in SMEs, how MIS affects important dimensions of culture-involvement, consistency, adaptability and mission as well as how organizational culture, leadership and change management can support or inhibit MIS adoption. This relationship is significant since technological investments tend to collapse in cases where cultural alignment is overlooked especially in resource-limited SME settings.

The research examines the literature on MIS development, digital transformation of organizations and organizational culture typologies, specifically Denison Organizational Culture Model and the Technology Acceptance Model (TAM). Previous literature indicates that MIS provides substantial gains in performance, however, its effective implementation depends greatly on the organizational culture, leadership style and employee willingness to change. Another gap in the literature is that there is no empirical research on the relationship of the relationship in SMEs operating in developing economies.

It utilized a quantitative research methodology that was a cross-sectional survey. A total of 150 managers and decision-makers of SMEs in manufacturing, IT and service industries were sampled. The dimension of MIS adoption and organizational culture were measured through standardized questionnaires. Analysis of the data was carried out with the help of SPSS and AMOS with the help of descriptive statistics, correlation analysis, multiple regression, and Structural Equation Modeling (SEM).

The results reveal that there is a strong positive correlation between MIS adoption and all the four dimensions of organizational culture. Adoption of MIS leads to employee participation, internal consistency, adaptability to environmental changes and mission clarity. The mediating factor found to be effective in aligning MIS to organizational culture is leadership and effective change management. The study concludes that by

embracing MIS and supportive leadership, training, and culture based change strategies SMEs will be able to perform and be more sustainable. It advises that management and policymakers of SMEs should strive to incorporate technological projects with the cultural development to achieve an effective digital transformation.

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1. Introduction

1.1 Background

Small and Medium Enterprises (SMEs): The small and medium enterprise is a dynamic sector of the world economy that is extremely vital as a growth driver, as it promotes innovation and employment. The definition and criteria applied to refer to SMEs may be given by different countries or institutions, but SMEs are often characterized by size of labor force, turnover and assets and are often defined as enterprises with few workers compared to large firms (OECD, 2022a). SMEs contribute to about 90% of total businesses worldwide and also account for over 50% of employment and gross domestic product (GDP) in some economies especially, in developing economies (International Finance Corporation [IFC], 2022). This high visibility confirms their essential role in terms of economic resilience, poverty reduction and inclusive growth particularly as they often respond rapidly to changing market needs and encourage entrepreneurship.

In emerging and developing countries, SMEs are frequently seen as instrumental in formalizing informal sectors and in integrating marginal societies with the economy and thus reducing unemployment and promoting social stability (United Nations Conference on Trade and Development [UNCTAD] 2023). The flexibility of SMEs allows them to enter niche markets and offer tailored products and services, which might not be attained by large companies as they are scale uneconomic. Moreover, SMEs contribute in regional development by more evenly spreading the economic activities between urban and rural areas and minimizing the prices among regions (European Commission, 2023). However, SMEs encounter many difficulties that could prevent their growth and survival, such as the lack of financial resources, technological deficiencies, complex rules and complicated procedures and weak workforce skills (World Bank, 2023).

The digital revolution and technology development have become possibilities and threats to SMEs. In this era of the Digital Economy, the use of modern technology such as cloud computing, Enterprise Resource Planning Systems (ERPS) and Management Information Systems (MIS) among other innovative technology is essential for SMEs to improve the efficiency in operation and decision making as well as keeping in pace with competition (Kraus et al., 2021). However, the digital divide remains where numerous SMEs have been challenged to utilize technology sufficiently because of resource constraints and lack of digital literacy (Bertschek et al., 2022). Furthermore, the context of the COVID-19 crisis intensified the digital adoption pressures on SMEs, highlighting the importance of increasing the resilience of business models and information systems (OECD, 2023). Despite this time pressure, studies show that the adoption of technology in SMEs is heterogeneous and is dependent on firm size, sector, managerial capabilities, and organizational culture (ibid.).

SMEs commonly face cultural problems such as resistance to technological change, low employee involvement, weak learning orientation, lack of mission clarity and inconsistent work practices due to informal structures and centralized leadership. These cultural challenges often hinder the successful adoption and effective utilization of MIS. This study addresses these issues by examining how MIS adoption influences key organizational culture dimensions namely involvement, consistency, adaptability and mission thereby providing empirical evidence on how technology can support cultural alignment and organizational effectiveness in SMEs.

The organizational culture in the case of SMEs is an exclusive variable which can affect SMEs' strategic orientation and their ability to be flexible in facing change of which is a technology adoption. Differing from large firms, SMEs can often be found characterized

by informal structures and entrepreneurial style of management which facilitates the encouragement for adaptability, innovation and fast decision-making environment (Al-Omoush et al., 2021). This identity can be a driver of fast MI adoption if it is coherent with the vision of the company and with the shared values of the employees. Yet, SMEs are also facing challenge with cultural resistance toward the change especially where employees and management view new systems as obstacle to existing practices or job stability (Ahmad & Khalil, 2022). Therefore, the successful implementation of MIS for SMEs is a result of existing technology readiness of the firms and the efficient learning organizational culture that supports learning and innovation.

In addition, industry differences of SMEs are also affecting their decision in adopting MIS. SMEs in the manufacturing sector could consider systems for enhancing production planning and inventory management, whereas service-based SMEs could concentrate on customer relationship management and data analytics for better service provision (Kraus et al., 2021). This differentiation indicates the importance of customized MIS solutions that fit the culture and process characteristics of a certain business. Ghobakhloo (2020) also found that attitude of the SME towards innovation and strategic planning is an important determinant for adopting sophisticated MIS technology which predicts the likelihood to adopt advanced MIS technology, revealing the organizational culture is key to digital transformation.

SMEs are a crucial element in the global economy, undoubtedly critical to the economic development of any country and provide entrepreneurship, employment and economies of scale. However, given that the potential of SMEs is not fully realized financial, technical and cultural restrictions should be noted in this regard. The development of modern digital

transformation trends undoubtedly opens up opportunities for SMEs to preserve their competitive advantages and continue to grow their business.

In the world of Small and Medium Enterprises (SMEs), the importance of organizational culture cannot be overlooked. It is the culture of the organization that defines what is right and what is wrong, what is acceptable and unacceptable, what is valued and not valued and how work is performed, how it gets done, how people within the organization relate to one another and how the organization relates to the world (Cameron & Quinn, 2019). For small to medium-sized enterprises (SMEs), where resources are limited and the business environment is unstable a firm's strong and dynamic organizational culture may play a pivotal role in competitive advantages and sustained competitive success. Unlike big companies, SMEs are usually characterized by less formalized structures and greater flexibility with culture deeply rooted in the daily routines and leadership behaviors and with a major role played by culture on the effectiveness of the organization (Naranjo-Valencia et al., 2022). The role of organizational culture in SMEs is multifaceted, for example it concerns the motivation of employees, innovation, customer orientation as well as a successful implementation of technological innovation in particular Management Information Systems (MIS).

One of the most significant effects of organizational culture on SMEs is its effect on employee engagement and motivation. Since the personnel in SMEs is relatively small as well as closely related to each other, a favorable culture that creates a trustful relationship, commitment and common concern leads to satisfaction and retention of employees (Jain & Dutta, 2021). This is particularly important in SMEs where skilled labor and high turn-over rates are common issues. A culture that promotes teamwork, openness and appreciation is likely to increase the feelings of Leader-Member Exchange (LMX),

intrinsic motivation and subsequently productivity and organizational citizenship behavior (OCB) (Al-Omoush et al., 2021). Furthermore, in SMEs when formal Human Resource (HR) systems can be weak culture stands in place of a formal HR system as what will drive employee behavior and integration.

SMEs also are dependent on organization culture. Fast changing and unstable markets, where SMEs are active require flexibility and a proactive attitude towards change (Ghobakhloo, 2020). Those cultures that stimulate experimentation, learning from failure and improvement have a greater ability to create new possibilities and act against competitive forces (Naranjo-Valencia et al., 2022). For example, a culture that fosters risk-taking and creativity can motivate employees and leaders to behave entrepreneurially which is necessary for product development, process innovation and service improvements (Fairlie and Robb, 2007). A number of studies found that SMEs with adaptive cultures show greater innovation performance highlighting the importance of culture as an enabler as opposed to just a context of the innovation tasks (Ahmad & Khalil, 2022).

Another dimension that the SMEs' organizational culture influences is in the customer orientation. Because of the customized nature of many SME products cultural norms emphasizing customer orientation, responsiveness and quality may set SMEs apart in competitive markets (Rohm & Swaminathan, 2021). The culture of knowing and exceeding customer expectation will also help the SMEs to build trust, loyalty and reputation which in most cases is paramount to the survival and growth of the business. The customer-first philosophy is not merely a catchphrase to these frontline workers but is considered elsewhere in making strategic decisions or internal company organization and service processes to make them compatible with the market needs. In fact, according to empirical evidence, SMEs with high levels of customer-oriented cultures have better

performances in the market and are more content with their customers (Jain and Dutta, 2021).

The organizational culture also plays a significant role in influencing the use of new technologies by the SMEs like the MIS. Technology adoption is more than a mere technological endeavor as technology adoption is also culturally bound and is affected by human factors (Al-Omoush et al., 2021). Open knowledge sharing and learning culture lead to easy adoption of technology. On the other hand, resistance, risk aversion or hierarchical controls are such expression of a culture that can hinder or diminish the expected effect of MIS which is the digital transformation (Bertschek et al., 2022). For SMEs with limited resources to handle complex change programs, a positive culture can be beneficial supporting employee buy in and collective problem solving. This integration of technology with culture leads to better operations, better decisions and more agile organizations.

Leadership style in SMEs is related to organisational culture and directly influences its development and dynamics. Leaders in SME make the culture alive through values, behaviors and communication patterns acting as role model for all employees (Naranjo-Valencia et al., 22). Transformational leadership, focusing on vision, inspiration and empowerment is especially effective in creating innovative and positive culture at SMEs (Ahmad & Khalil, 2022). This type of leadership stimulates employee independence and creativity and is critical to achieve the highest outcomes of deficient resources in SMEs. On the other hand, authoritarian or transactional leadership may create an environment of rigidity which hinders innovation and employee commitment and such culture may have negative effects on firm performance and growth potential.

Organizational culture is not limited internally but affects the external environment of SMEs in terms of how they relate to suppliers, customers, regulators and the community. A culture that promotes ethical conduct, social responsibility and sustainability can increase the perceived legitimacy and credibility of SME in the eyes of these stakeholders (Rohm & Swaminathan, 2021). Particularly in the contemporary business world where stakeholders are increasingly expecting transparency and corporate responsibility these will have an effect on resource access, association and market entry. There are higher likelihoods that ethical SMEs will build practice of sustainable business and reputation capital that will make them withstand crises and their position against competition.

Also, the organizational culture can be a strategic differentiation tool to SMEs especially when they are formed in mature or highly competitive industries. This type of SMEs can develop specific cultural aspects aligned with the goals of the enterprise and the values of its clients to specific organizational identity, which attracts customers and employees (Jain and Dutta, 2021). It could happen, as an example, that a culture that places emphasis on innovation and customer intimacy will allow an SME to gain a niche in a market that is not easy to replicate by bigger companies. Such cultural diversity may offer strategic flexibility, whereby SMEs can switch or change the model of business according to the market environmental changes where appropriate.

With such dimensions, the role of knowledge of organizational culture and the opportunity to manage the latter on the SME level should not be underestimated. This is a deliberately created process, facilitated by leaders to determine the kind of values in the organization, which is presently there, as well as those that ought to exist and strategy iterate a sequence of interventions that is meant to inculcate the necessary cultural attributes (Cameron and Quinn, 2019). The interventions of culture change in SMEs must consider the informal

and relational nature of SMEs and mechanisms of imparting new values to the specific institutions that are in play include storytelling, role models and participative decision-making (Al-Omoush et al.). It is also important that in instances of SMEs expansion or when they are under external shock e.g. digital disruption or economic crises that the creation of a more robust culture is highly desirable in aiding the operation of overcoming volatility and maintaining performance.

Finally, organizational culture is a building block for the efficiency and success of SMEs. It impacts internal workings like employee motivation, the ability to innovate, technological uptake and subsequently uplifts external relations and strategic orientation. In view of the resource constraint and unstable environment that the SMEs encounter, development of a strong adaptive and customer oriented culture is key in sustaining competitive edge.

Meaning and Evolution of Management Information Systems

Management Information Systems (MIS) are an important organizational asset that is used for the purpose of processing and presentation of information in order to make decisions and it serves as a central backbone for all concerns of the information system. In its essence, MIS is a system of technology, people and processes that is an organized way to turn data into useful information processes to help organizations make decisions. The definition of MIS has changed considerably formalized by its appearance in mid-20th century as IT technologies started to mature and business started to require such reporting. Originally, MIS was computer-based systems focusing on automation of routine clerical processes, however, over time it evolved now into sophisticated decision support systems, enterprise resource planning (ERP), customer relationship management (CRM) and

business intelligence solutions being the backbone enablers of digital transformation (Kraus et al., 2021).

Genesis MIS originated in the 1960s, as organizations implemented basic computer systems for the purpose of processing transactions and maintaining records essentially laying the foundation for what would ultimately become more complex information systems (Rainer & Cegielski, 2020). These early systems were mainly concerned with storage and retrieval of data with minimal support for analysis known as Transaction Processing Systems (TPS). With the information getting its strategic value acknowledged by organizations, the 70's and 80's saw the introduction of Management Reporting Systems (MRS) and Decision Support Systems (DSS) that meant to help managers through summarized reports and analysis tools for semi-structured or unstructured decisions (Turban et al., 2021). This shift represented a changeover from the use of information as an operational tool to a tactical or strategic one and underlined the role of MIS in improving the competitive position of the managers.

In the 1990s, integrated enterprise systems became the way of doing business and Enterprise Resource Planning (ERP) systems brought together finance, human resources, supply chain and production on to one platform (Ghobakhloo, 2020). ERP systems revolutionized the way MIS was conducted by facilitating communication of real-time information across departments, breaking isolation between information and promoting better organizational unity. At the same time, the growth and development of the internet and of web technologies extended MIS's range of operations to accommodate e-commerce, customer relationship management and knowledge management systems and thus crossed the agency-wide information flows beyond the conventional parameters (Laudon & Laudon, 2022). These events reinforced the need to align MIS with corporate

strategy since companies wanted to use information systems not just to be more productive but to give them an advantage and to inspire innovative thinking.

At the turn of the 21st century, the MIS paradigm has changed substantially and has been significantly impacted by cloud computing, big data analytics, artificial intelligence (AI), and the Internet of Things (IoT) leading to the explosion of the volume, variety and the velocity of data that organizations need to address (Bharadwaj et al., 2013; Kraus et al., 2021). In the modern context, MIS integrates all these factors to provide greater analytical power, predictive modelling and automation of advanced business operations, and offers the power of data-driven enterprise decisions and operational flexibility. Cloud solutions of MIS promise scalability, cost-effectiveness and availability. Hence, complex information systems have become more affordable for Small and Medium Enterprises (SMEs) that historically experienced tight budget constraints in terms of IT infrastructure (Bertschek et al., 2022). In addition, AI based MIS applications like chatbots, Robotic Process Automation (RPA), and machine learning algorithms help in managing unstructured data and cashing un-occurring events to enhance customer experience which on the whole advances the scope of MIS to strategic and innovation areas.

The theoretical development in MIS has also paralleled an increased awareness about the social-technical nature of the information systems focusing on the two-way relationship between technology, organizational culture and human action (Ifinedo, 2011). Early models of MIS tended to be heavily focused on technological artifacts to the detriment of understanding the importance of organizational factors in influencing system success. Current views promote a combined perspective of the importance of user involvement, change in organization and alignment of mutual goals as a prerequisite for the successful implementation and utilization of MIS (Al-Omoush et al., 2021). This is especially true

in the case of SMEs as organizational culture, leadership and employee readiness are important for MIS adoption and benefits (Ahmad & Khalil, 2022). From this perspective, MIS is no longer considerate an IT tool but as a defining asset which must be integrated into broader corporate processes, people management and innovation.

Conceptually, MIS is honored in a range of interdisciplinary theories such as systems theory, information theory and the Technology Acceptance Model (TAM) to explain and predict user acceptance and system effectiveness (Davis, 1989; Rainer & Cegielski, 2020). Specifically, TAM has made invaluable contributions to the understanding of the impact of perceived usefulness and perceived ease of use values on the acceptability of MIS technologies on users to support the design and implementation activities and trigger the interest and receptiveness of users towards the technology. The current studies have also projected these models by incorporating constructs like organizational culture, trust and digital literacy focusing on the multiple determinants of MIS success in the contemporary organizational environment (Al-Omoush et al., 2021). The practical applications of these theoretical advancements provide information to managers and IT experts in the design implementation process of systems that are user-oriented and contextually productive.

Conclusively, the concept and the evolution of the Management Information Systems is a constant adaptation to the up-to-date technology and the requirements of the organizations. MIS systems may be as simple as a data processing tool, or as complex as an artificial intelligence (AI)-enabled application that will enable one to view the operations of the business at all levels. The development of this trend underscores why firms, especially the SMEs, need to assume an all round and integrated process of considering both technological skills and human and cultural factors. The digital environment is ever evolving and MIS will continue playing a central role to organizational success and thus

necessitating the research and re-engineering in design and implementation of the MIS as far as business objectives are concerned.

MIS helps SMEs to have timely and correct data that can be used to make evidence based decisions and create agile organizations. It has been mentioned that through the adoption of MIS, SMEs enjoy the advantages of effective allocation of resources, customer relations management, inventory management and financial reporting and the combination of all this results in operational efficiency and responsiveness in the market (Ahmad and Khalil, 2022). Furthermore, the demands of digitalization that were brought about by globalization and also by COVID-19 have placed emphasis on the need of SMEs to integrate MIS into their business system to enable them to be competitive and resilient (OECD, 2023).

Despite these opportunities, SMEs still face significant obstacles to MIS adoption, such as resource shortage, skills and resistance in particular. Among the smallest of firms where capital and a skilled workforce necessary to establish and maintain advanced management information system (MIS) are harder to come by, resource constraints are especially biting (Bertschek et al., 2022). Furthermore, the perceived complexity and cost of MIS may discourage business-owners from adopting MIS, they may instead select to focus on short-term concern, lack of technological investment in the long-run (Al-Omoush et al., 2021). These difficulties are compounded by lack of the necessary skills like digital literacy among employees and managerial personnel which may create resistance to change and hinder the efficient use of the MIS tools (Ahmad & Khalil, 2022). The culture in organizations of small and medium size businesses is of particular importance in this respect as cultures that are conducive to innovation and learning are more likely to translate to a successful integration while conservative or hierarchical cultures may undermine the acceptance and integration (Jain & Dutta, 2021).

Apparently, the external environment has a great influence on paying attention to MIS in SMEs, for it is an environment factor especially market competition, legal regulation and provision of government assistance certainly influence efficacy of the technology adoption. Competitive forces drive the adoption of MIS as SMEs need to innovate and digitize their businesses in order to sustain or improve their competitive position in the market (Kraus et al., 2021). Also, due to their needs for data security, financial transparency and customer´s protection enforce SMEs with policies to use compliant information systems. Globally, policy measures and support schemes for the digitalization of SMEs have been developed to tackle adoption barriers through financial incentives, training and infrastructure support (European Commission, 2023). However, the impact of these interventions differs and SMEs often need targeted interventions which address the needs of the sector as well as the capacity of the firm to adapt (World Bank, 2023).

Advances in technology have promoted the availability of MIS solutions with cloud computing, software-as-a-service (SaaS), and mobile technologies mitigating some of the upfront costs and technical complexities of traditional MIS implementation (Bertschek et al., 2022). These developments allow SMEs to implement scalable and adaptable MIS solutions without large capital investment thereby reducing adoption barriers and allowing for stepwise adoption. Cloud-based MIS offerings offer real-time information update, better collaboration and better security which is highly useful for SMEs located in the distance areas and doing international business (Ghobakhloo, 2020). Moreover, its consistency with other technologies including AI, big data analytics, IoT etc boosts the utility and strategic benefits of the MIS in SMEs and allows predictive analytics, customer insights and automated operations (Kraus et al., 2021).

The process of MIS adoption by SMEs usually do progress through a series of stages from awareness, evaluation, adoption, implementation, post-adoption and assimilation (Ifinedo, 2011). Knowledge comprises the understanding of the presumed value and importance of MIS towards organizational objectives and is shaped by peer networks, industry norms and vendor hype. This consists of technical, financial and organizational viability of MIS solutions (from choosing a vendor to cost and benefit analysis). Implementation refers to the installation of the system, configuration and training users which is a most important phase for the success of the adoption. Assimilation after-adoptions emphasizes on the extent to which new system needs continuous use integrating with the routine work and maintenance, while organizational commitment and user skills are essential (Ahmad & Khalil, 2022). Adoption satisfaction and performance gains tend to be reported as higher for SMEs that invest in training, change management and user support (Al-Omoush et al., 2021).

Studies also have highlighted the influence of leadership in mediating the MIS adoption outcomes in SMEs. Leaders who have a clear vision of digital transformation provide resources and create an innovation-conducive culture greatly increase the chances of successfully integrating an MIS (Jain & Dutta, 2021). Empowering and encouraging experimental leadership style and transformational leadership style are associated with adoptability and user engagement (Ahmad & Khalil, 2022). On the other hand, disinterested or anti-MIS leadership will sabotage MIS projects, leading to underused systems and missed strategic opportunities. Also, user participation in system design and development is important for the attainment of a match between the MIS functions, organizational processes and user requirements as well as reducing resistance and enhancing the acceptability of the system (Ifinedo, 2011).

Interrelationship between Technology and Organizational Culture

The relationship between technology and organizational culture has been widely acknowledged as a major driver of organizational success, change capability and innovation in today's dynamic markets. Technology and digital technology in particular - Management Information Systems (MIS), artificial intelligence and cloud technologies fundamentally changes organizations as how they operate, communicate and compete (Bertschek et al., 2022). However, the successful implementation and application of technology in organizations are not only based on what technology is capable of but also indicate the organization culture that encompasses shared values, beliefs and practices of the organization that dictate the actions of the employees and the managerial decision-making process (Ahmad and Khalil, 2022). This reciprocal relationship is both intricate and multidimensional in nature given that the organizational culture impacts the technology adoption and the cultural properties impact the technology acceptance, adoption and consequences (Al-Omoush et al., 2021).

The attitude to new technologies and the willingness to change are significantly affected by the organizational culture. Open cultures, learning orientation and innovative culture promotes experimentation and reduces resistance to technological innovation (Jain & Dutta, 2021). On the other hand, intellectual cultures that stress uniformity, control and top-down authority could also suppress technological change by generating risk aversion and pessimistic attitudes towards new systems (Ahmad & Khalil, 2022). For example, SMEs who possess flexible cultures, appreciating creativity and empowering the employees are more likely to effectively implement complex digital tools such as MIS, cloud-based applications and AI-supported analytics and take advantage of technology for better decision-making and competitive advantage (Kraus et al. In contrast, average

firms with strict rules and bureaucratic conventions experience problems in implementing technology i.e. low user participation, the delay in introducing new technology and insufficient use of technology are typical problems (Bertschek et al., 2022).

At the same time, the introduction and spread of technology can also bring about wide reaching cultural changes in organizations. The use of digital technologies in work environments disrupt communication, work and authority structures with implications on changes of cultural logic and value systems (Ghobakhloo, 2020). For instance, collaborative environments, apps and cloud computing technologies are means for increased transparency and cross-functional collaboration stimulating organizational norms of teamwork and information sharing (Al-Omoush et al., 2021). Automated tools for decision support and for data analysis that are i.e. allow a more objective and evidence-based management, stimulate accountability and continuous improvement (Bertschek et al.) However, such cultural changes may create uncertainty and anxiety among employees particularly when existing roles or job safety is challenged. Thus, requiring for intentional change management approaches to align technology adoption with cultural anticipations (Ahmad & Khalil, 2022).

In addition, the mutual impact between technology and culture is mediated by characteristics of leadership, organizational design and complexity and external environment. Leaders who are technology champions and role model adaptive behaviors may create a culture that is favorable for digital transformation and by doing so they are able to minimize resistance while promoting a common change vision (Jain & Dutta, 2021). Inspiring, empowering and participative decision-making driven transformational leadership are also positively correlated with technology acceptance and cultural adaptability in SMEs (Ahmad K., 2020). Structural factors (e.g., decentralized decision

making and flexible working conditions) also contribute to the alignment of technology and culture by allowing for fast-reacting solutions to technological opportunities or challenges (Kraus et al., 2021). In addition, competitive forces, regulation and technological progress in the external environment urge organizations to adapt their culture and technology portfolio in order to stay viable and sustainable (OECD, 2023).

The socio-technical theory is one theoretical foundation which could help in understanding this relationship, as it underscores the co-adjustment of social and technical subsystems in organizations (Ifinedo, 2011). In the current view, the ideal organizational performance is the result of the balance between technological design and cultural and human aspects. Therefore, the implementation of technology has to occur through cultural interventions such as training, communication and participative design process (Al-Omoush et al., 2021). Empirical evidence confirms this belief by demonstrating that technological investments pay off when they are framed in cultures that foster collaboration, learning and agility (Bertschek et al., 2022). On the other hand, when we ignore culture we have underutilization of systems, disengaged employees and unsuccessful in most of our digital projects (Ahmad & Khalil, 2022).

The technology-culture relationship is particularly significant in Small and Medium Enterprises (SMEs) which have less formal and more personalized culture ties and follow leadership-driven culture influence. Culture in SMEs is often dominated by founders' or owners' values and may support or resist technological change through optimal or suboptimal leadership attitudes (Jain & Dutta, 2021). Due to the lack of formalized processes and structures in SMEs, culture readiness and individual acceptance are critical in adopting MIS and other technologies (Ghobakhloo, 2020). For example, SMEs valuing and emphasizing agility and a customer focus in their organizational culture are also more

likely to use a flexible cloud-based MIS that allows them to maintain a high degree of agility and respond quickly to changes in market conditions (Kraus et al., 2021). In contrast, conservative culture SMEs can over postponing or refusing technology investments as threatens for competitive retardation in more digital markets (Bertschek et al., 2022).

Organizational culture deeply affects the ways in which technology is embraced, employed and used effectively and conversely technology adoption shapes cultural transformations through alterations in communication practices, work practices and power structures. The moderating of this interaction in itself is controlled by the leadership, structural flexiveness and external forces that point to the need to go about digital transformation holistically on a socio-technical basis. Their specific cultural and resource background implies that the SMEs must value the culture-technology relationship so that they could avail themselves of MIS and other digital technologies to gain sustainable competitive advantage. The subsequent research and practice will focus on more integrative solutions in using technology innovation and cultural growth to create the most value of organization in the digitalization era.

1.2 Research Gap/Rationale

There is no doubt that work is being done in the field of MIS and organizational culture but still the topic has more potential and unaddressed points to consider.

Country policy frameworks are demonstrating enhanced attention to the importance for SMEs to benefit from Digital Transformations programs, financial support and capacity-building. Several governments and international organizations have initiated a range of initiatives aimed at enhancing access of SMEs to digital tools and skills in order to address cost, infrastructure or knowledge constraints (European Commission, 2023; World Bank,

2023). Despite these initiatives, the use and success of such interventions are quite different, suggesting a deep interaction between the external environment, organization capabilities and culture. Such complexity calls for better understanding in the academics of how adoption of MIS is influenced by and influences the dimensions of organizational culture in SMEs, which has been less explored in the empirical literature (Ahmad & Khalil, 2022).

1.2.1 Theoretical Gap

According to MIS Quarterly (2023): Studies on digital culture alignment in SMEs, empirical evidence shows that cultural responses to MIS varies across different regions. Future studies should contrast SMEs in developing versus developed economies examining how national culture moderates MIS and culture relationships. Future studies should employ longitudinal designs to assess how MIS adoption reshapes organizational culture over time allowing researchers to capture changes in adaptability, involvement and mission alignment (Ghobakhloo, 2020; Kraus et al., 2021). Future research should explore how national and institutional cultures moderate the relationship between MIS and organizational culture dimensions. Cross-country comparisons particularly between developing and developed economies would reveal cultural dynamics affecting digital transformation outcomes (OECD, 2023; Al-Omoush et al., 2021).

1.2.2 Contextual Gap

MIS is a key component in the development of SMEs that can organize their work and competently manage the company taking the right steps in this path and as a conclusion the company is trying to succeed alongside being innovator. However, the issue is the culture in which MIS is used in practice. Thus, the very difficult linkage between the introduction of MIS and the cultural situation in the enterprise is one of the reasons for the need for such a study in the future to help stakeholders develop policies and measures to

introduce new technologies while cultural stability and adaptability should be promoted (Cameron & Quinn, 2019).

Management information Systems (MIS) adoption among Small and Medium Enterprise (SMEs) has been the focus of research attention due to the search for greater operational efficiency, competitiveness and strategic decision making in a digital economy. The application of MIS among SMEs is ranked among the significant factors that should facilitate organizational development to allow its business operations to be driven by data, generate business efficiencies, and enhance its reaction to market conditions (Kraus et al., 2021). However, the diffusion and intensity of the MIS penetration among SMEs are non-homogenous and dependent on numerous internal and external factors (e.g., organizational preparedness, resource bases, technological support and cultural orientations to change) (Bertschek et al., 2022). It is a multi-faceted problem that needs to be thoroughly understood in terms of the drivers, barriers as well as the environmental forces that drive the adoption of MIS in the SME sector.

One of the first causes influencing the adoption of on MIS in the SMEs is the search of the better decision making ability. Regardless of the fact that large corporations have access to extensive analytical capacity, SMEs can use intuition or even limited data in making managerial decisions, therefore, inhibiting the process of effective strategic planning and risk management (Ghobakhloo, 2020).

1.3 Problem Statement

Small and Medium Enterprises (SMEs) are important in the economic development, innovations and employment in the world. Nevertheless, SMEs have issues that slow their growth and competitive advantage such as scarcity of financial resources, technological weakness and cultural resistance to change. Implementation and proper use of MIS among

SMEs are also disproportionate because of some aspects like organizational culture, leadership approach, the lack of digital literacy and resources. How MIS adoption and adoption affect organizational culture and vice versa in SMEs is a serious issue that needs to be understood to improve the decision-making process, innovation and overall performance.

1.4 Research Questions

1. What is the current level of MIS adoption in SMEs across various sectors?
2. How does MIS adoption impact organizational culture dimensions such as involvement, consistency, adaptability and mission within SMEs?
3. What organizational culture factors influence the successful adoption and implementation of MIS in SMEs?
4. How do firm characteristics (size, sector) and demographic variables relate to MIS adoption and organizational culture in SMEs?
5. What leadership and change management practices facilitate the alignment of MIS adoption with organizational culture in SMEs?

1.5 Research Objectives

1. To evaluate the extent of MIS adoption among SMEs in the selected region.
2. To examine the influence of MIS adoption on key organizational culture dimensions i.e. involvement, consistency, adaptability and mission.
3. To assess the role of organizational culture in facilitating or hindering MIS adoption in SMEs.
4. To identify demographic and firm-specific factors that affect MIS adoption and organizational culture in SMEs.

5. To provide recommendations for SMEs and policymakers to optimize MIS adoption aligned with organizational culture.

1.6 Significance of the study

The current research highlights necessity of the organization to strategically manage culture within broader processes of organizational development and transformation towards digitization that in turn indicative of the imperative for academic interest and practical attention on culture in the small and medium sized organization settings. This research addresses this gap by investigating the relationship between MIS adoption and organizational culture dimensions in SMEs.

Also, the digital transformation projects often become a source of creativity and change the identity and role of employees, which can change cultural values and social processes. Workflows and decision authorities are transformed by the use of AI and automation tools, thus new skills and new forms of collaboration are required (Al-Omoush et al., 2021). This will either empower the employees with the data or may ignite the feelings of losing their jobs and the declining role of the human factor (Ahmad and Khalil, 2022). The solution to these cultural contradictions is that technology has to be used in the long-term and they do it by open communication involving employees in change processes and continuous cultural endeavors (Jain and Dutta, 2021). The interaction of technology and organizational culture is a challenge as well as an opportunity to the firms that intend to achieve digital innovations.

2 Literature Review

The concept of management information systems (MIS) is one of the building blocks of modern organizational designs as it acts as a cohesive system that integrates people, process and technology to process data, store it and share as a means of enabling effective decision making and organizational management. At the conceptual level, MIS is meant to convert raw data into actionable information to aid operational efficiency, strategic planning and competitive advantage (Laudon and Laudon, 2022). MIS has theoretical foundations which are based on several fields such as systems theory, information theory, organizational behavior and computer science due to its interdisciplinary nature. In more detail, systems theory views organizations as open systems to dynamically interact with their environment and focuses on the role of information flows in ensuring the balance of the system and goal achievement (Rainer and Cegielski, 2020). In this paradigm, MIS is the information subsystem that receives inputs, information processing and feedback of results to support the adaptive and coordinated organizational functions.

The concept of information theory has also helped in the conceptualization of MIS by viewing the MIS as an acceptable solution in alleviating uncertainty and enhancing the effectiveness of communication within the organization (Davis, 1989). Information as a valuable organizational resource indicates the importance of the MIS in enabling timely and relevant exchange of knowledge that is critical in making decision at any level of management. This view emphasizes duality of MIS i.e. as both a technological artefact that is made up of hardware, software, databases, networks as a socio-technical system that is sensitive to human behaviours, cultural aspects and organizations (Ifinedo, 2011). This duality calls out the need to design and implement MIS using an integrated thinking

that is sensitive to both the technical and social environment in which systems are being used.

MIS has several subsystems designed to support the various functions of an organization, such as Transaction Processing Systems (TPS) that manage routine processes, Management Reporting Systems (MRS) that summarize data to be examined by the managers, Decision Support Systems (DSS) that support the complex problem-solving process, and Executive Information Systems (EIS) that give the managerial team strategic information (Turban et al., 2021). These elements indicate the pyramidal organization of organization information demands in which operational data continues to be further narrowed to the strategic intelligence. Information flow within the company through these subsystems becomes flawless as these subsystems under the umbrella of MIS allow information to flow across organizational levels of operation as well as between organizational levels and functions facilitating coherency and agility. In addition, the development of Enterprise resource Planning (ERP) and Customer Relationship Management (CRM) systems have further enhanced the capabilities of MIS by integrating various business processes onto a single platform enabling the real-time exchange of data and cross-functional work (Ghobakhloo, 2020).

Technological innovation has also influenced the development of MIS with digital transformation increasing the pace at which more advanced, intelligent and user-friendly systems are being developed. The recent MIS combines cloud computing, big data analytics, artificial intelligence (AI) and the Internet of Things (IoT) that allow organizations to leverage huge amounts of structured and unstructured data to predictive analytics, automate and make better decisions (Kraus et al., 2021). MIS solutions that are based on the cloud are scalable, cost-effective and accessible, and more advanced

information systems are accessible especially to resource-restrained Small and Medium Enterprises (SMEs) (Bertschek et al., 2022). MIS applications uplifted with AI support speech recognition, emotive processing, and robotization of processes that turn conventional information management into user-responsive intelligent systems that are inherently more dynamic and can optimize their workflow (Laudon and Laudon, 2022). These changes in technology have created the need to constantly reevaluate the MIS structures to accommodate the new tools as they emerge whilst ensuring the alignment to organizational goals and user needs.

When considering the concept of MIS through the prism of organizational behavior, it is not only a technological tool but the strategic resource, which is integrated into the cultural, structural and human environments of organizations (Ahmad and Khalil, 2022). Such socio-technical perspective highlights that the effectiveness of MIS is determined by the level of support of the leaders, involvement of the users, training and organizational preparedness toward change (Al-Omoush et al., 2021). Technology Acceptance Model (TAM) currently used in MIS studies proposes that perceived usefulness and ease of use are key factors of user acceptance that determine system design and implementation plans to increase the levels of acceptance (Davis, 1989). The extension of TAM includes the organizational culture, trust and digital literacy as moderators that affect MIS acceptance and continued use particularly in SMEs where informal practices and leadership influence is very high and evident (Ifinedo, 2011).

MIS is frequently understood in the context of Information Systems Strategy that unites technological infrastructure and corporate strategy to form the sustainable competitive advantage (Bharadwaj et al., 2013). This strategic view argues in favor of linking MIS to organizational objectives in their focus on the use of information as a source of innovation,

operational excellence and customer relation. The dynamic capabilities framework supplements this perspective by emphasizing the capacity of the organizations to integrate, build and reconfigure internal and external competencies such as MIS to respond to the fast-evolving environment (Kraus et al., 2021). Therefore, MIS conceptual basis is not exclusively about system design and functionality, but also the strategic management principles, which lead to constant evolution and value creation.

The conceptual basis of MIS systems is based on an interdisciplinary foundation that incorporates the systems theory, information theory, socio- technological and strategic management perspectives and principles. The MIS is a crucial organizational tool that supports making decisions by data, integrating and innovating processes. Its development can be seen in the current technological changes that increase both capabilities and accessibility particularly among SMEs that are going through the digital transformation. These basic concepts are important and must be understood by researchers and practitioners who would like to design, implement and manage MIS; a design that is effective in aligning technology with organization culture, structure and strategic goals.

Management Information Systems and Technology Acceptance

Management Information Systems (MIS) are widely recognized as essential organizational tools that support managerial decision-making, coordination, control and strategic planning by transforming raw data into meaningful information. In the context of Small and Medium Enterprises (SMEs), MIS plays a critical role in enhancing operational efficiency, improving information accuracy and enabling timely decision-making despite limited resources.

The adoption and effective use of MIS however, cannot be explained purely through technological capabilities. The **Technology Acceptance Model (TAM)**, proposed by Davis (1989), provides a foundational theoretical lens for understanding user acceptance of information systems. TAM says that **perceived usefulness** and **perceived ease of use** are the primary determinants influencing an individual's intention to adopt and use a technology. In SME environments, where formal training structures are limited and resistance to change is often high these perceptions become especially significant.

Empirical studies suggest that when employees perceive MIS as useful for improving job performance and easy to use acceptance and utilization levels increase substantially. However, TAM alone does not fully capture organizational-level influences such as leadership behavior, shared values and cultural norms. As a result, recent MIS research emphasizes extending TAM by incorporating organizational culture and social context particularly in SMEs where informal norms strongly influence employee behavior.

Organizational Culture and the Denison Model

Organizational culture refers to shared values, beliefs and norms that shape employee behavior and organizational practices. Among various cultural frameworks, the **Denison Organizational Culture Model** is particularly relevant for examining culture in relation to organizational effectiveness and technological change. Denison's model identifies four core dimensions of organizational culture:

1. **Involvement** – the degree to which employees are empowered, engaged and participate in decision-making.
2. **Consistency** – the presence of shared values, coordination and internal integration.

3. **Adaptability** – the organization's ability to respond to external changes, learn and innovate.
4. **Mission** – clarity of organizational purpose, strategic direction and long-term goals.

These dimensions are especially applicable to SMEs, which typically operate with informal structures, centralized leadership, and limited standardized procedures. Prior research indicates that strong involvement and adaptability cultures promote innovation and openness to technological change, while consistency and mission provide stability and direction necessary for sustainable growth.

Socio-Technical Systems Theory and MIS Adoption

The **Socio-Technical Systems Theory** argues that organizational performance depends on the joint optimization of both social systems (people, culture, structure) and technical systems (technology, processes, tools). This theory highlights that technology implementation efforts often fail not due to technical limitations, but due to misalignment with organizational culture and human behavior.

In SMEs, MIS adoption represents a socio-technical transformation rather than a purely technical upgrade. The introduction of MIS alters communication patterns, decision-making authority, work routines, and accountability mechanisms. If these changes conflict with existing cultural norms—such as resistance to formalization or fear of monitoring—MIS adoption may face strong opposition.

Socio-technical theory therefore supports the argument that successful MIS adoption requires cultural readiness, employee involvement, leadership support and continuous learning mechanisms. This perspective directly complements TAM by explaining why

perceived usefulness and ease of use are shaped by organizational culture and social context.

Management Information System (MIS) Adoption and Organizational Culture: Theoretical Integration

Integrating TAM, Denison's culture model and Socio-Technical Systems Theory provides a comprehensive framework for examining the relationship between MIS adoption and organizational culture in SMEs.

From a **TAM perspective**, organizational culture influences how employees perceive MIS usefulness and ease of use. For example, cultures emphasizing learning and participation enhance positive perceptions, while rigid or risk-averse cultures undermine acceptance.

From the **Denison model perspective**, MIS adoption can reshape organizational culture by:

- Enhancing **involvement** through increased access to information and participation in decision-making.
- Strengthening **consistency** via standardized processes and shared data systems.
- Improving **adaptability** by enabling timely responses to environmental changes.
- Clarifying **mission** through performance monitoring and strategic alignment.

From a **socio-technical perspective**, MIS and organizational culture mutually influence each other, suggesting a bidirectional relationship where culture affects MIS adoption and MIS adoption reinforces or transforms cultural dimensions.

Organizational Culture: Models and Dimension

It is generally acknowledged that organizational culture is one of the key determinants of organizational behavior, performance and change management including shared values, beliefs, assumptions and norms that define social and psychological environment of an organization (Schein, 2017). It determines the way the employees perceive their working environment, their response towards others and how they solve problems ultimately impacting the organization and their flexibility. Multiple conceptual frameworks have been constructed over the decades, therefore, to define and analyze organizational culture and every framework has its own dimension that gives an understanding to the multifaceted aspect of culture in organizations. Some of the most popular models are the Three-Level Model by Edgar Schein, the Competing Values Framework by Cameron and Quinn, and the Organizational Culture Model by Denison all of which have been actively implemented in both research and practice to learn and evaluate culture in various organizational settings, including Small and Medium Enterprises (SMEs) (Denison, 2020; Cameron and Quinn, 2019).

According to the Three-Level Model designed by Schein (2017), the organizational culture has three levels i.e. artifacts, espoused values and basic underlying assumptions that are interrelated. The visible and tangible aspects of culture are referred to as artifacts which include office layout, dress code and rituals. Values espoused are the expressed norms and philosophies on which the organizations operate whereas the underlying assumptions are ingrained beliefs that have been assumed by the members of the organization. This model dwells on the richness and multi-faceted nature of culture as it states that the appearance of the behaviors is not what needs to be understood, but rather the deeper underlying assumptions that influence behavior. This multi-layered methodology has played a key role in identifying cultural problems and directing the change efforts because it

understands that only the surface change can be considered enough to change cultural dynamics.

The Competing Values Framework (CVF) created by Cameron and Quinn (2019) describes organizational culture in four archetypes i.e. Clan, Adhocracy, Market and Hierarchy. The clan culture is described to have family-like environment focusing on teamwork, participation and integration of employees. Adhocracy culture promotes innovation whereby there is creativity and flexibility that promotes risk-taking and experimentation. Market culture is competitiveness based, and goal achievement and customer orientation based driving performance and external positioning. Hierarchy culture is more focused on formal forms, control and stability with focus on efficiency and explicit procedures. The advantage of the CVF model is that it reflects the underlying tensions and trade-offs in organizational cultures that depict how organizations make trade-offs between flexibility or stability and internal focus or external positioning. This model has been widely applied to measure culture profiles, inform leadership building and also oversee change management in the SMEs context where cultural archetypes may affect entrepreneurial orientation and growth plans (Jain and Dutta, 2021).

The Organizational Culture Model by Denison (2020) also contributes to the further development of cultural analysis because it connects the dimensions of culture with organizational effectiveness. It defines four major cultural attributes i.e. Involvement, Consistency, Adaptability and Mission. Involvement represents the level of employee engagement, team orientation and empowerment. Consistency refers to fundamental values, consensus and co-ordination that lead to internal integration. Adaptability is the ability of the organization to adjust to changes in the external environment, be innovative and learn. Mission is associated with a purpose of an organization, strategic direction and

vision. The model by Denison constructs these dimensions into measurable constructs, which allow the evaluation, through empirical evaluation, of the effects of culture on the performance outcomes. It has become popular in SME research in which the dynamics of these dimensions determine resilience, innovation capacity and market responsiveness (Al-Omoush et al., 2021).

In addition to these dominant models, researchers have suggested other dimensions and models to describe cultural perception across contexts. For instance, Hofstede's cultural dimensions theory developed to describe national culture (Hofstede; Hofstede & Minkov), has been applied to studies of organizations to look into how power distance, uncertainty avoidance, individualism versus collectivism and masculinity versus femininity drive organizational behavior (Hofstede et al.). The Cultural Web model by Johnson and Scholes (2017) considers organization culture with the components which encompass a complex pattern including stories, rituals, symbols, power structures and control systems providing a story of culture. These models collectively highlight that culture is not uniform but a complex and dynamic entity shaped by internal and external drivers.

The culture in SMEs displays characteristics that differ from big firms due to their small operations and different structure and leadership style. Cultures of SMEs tend to be more informal, flexible and entrepreneurial in which the values and leadership of the founder/s often have a strong impact on the development of culture (Jain & Dutta, 2021). The small nature of SMEs serves to encourage close social ties and personal contact which may encourage participation and flexibility but also potentially give rise to cultural uniformity and isolate the firm from external influences. Identifying these cultural features against established models helps SMEs to diagnose cultural strengths and weaknesses, align culture to drivers in strategy and manage growth and change more efficiently.

The size of organizational culture is instrumental in understanding how culture affects key organizational activities (e.g., innovation, technology adoption, employee motivation and customer orientation). For example, a strong link develops between a high level of involvement and the commitment and empowerment of staff which is the cornerstone for successful implementation and adoption of MIS innovation (Ahmad & Khalil, 2022). As with shared goals and norms assume that accepting a common constraint means that coordination and operation can proceed largely unconstrained by that norm. Agility implies the learning orientation of the firm and its willingness to change which is a key capability to succeed in dynamic markets and technological turbulence. It is this relation of all to mission that gives a feel of strategic clarity and purpose that offers everyone the perspective of building long-term sustainability (Denison, 2020). A combination of all these dimensions influences organizational climate and performance and, therefore, culture is a dynamic instrument of organizational development.

The current empirical studies have also confirmed the functions of organizational culture models in forecasting organizational results. Indicatively, Al-Omoush et al. (2021) recently determined that adaptive and involvement-based cultures are significant facilitators of innovation and adoption of technology in SMEs. According to Jain and Dutta (2021), culture types of equilibrium based on both the culture of clan and adhocracy are positively related to growth of firms and employee happiness. Moreover, the cultural misfit can be linked to the inability of the implementation of the digital transformation initiatives that emphasized the role of culture-sensitive approaches to facilitating the organizational change (Ahmad and Khalil, 2022). These results underscore the essence of effective cultural models of diagnosing and modelling organizational effectiveness in business today.

Organizational culture models and dimensions are used together to provide systematic models that can be used to provide an insight into complexity of culture in organizations. Besides, the publications of Schein, Cameron and Quinn and Denison present a valuable theoretical and practical guidance on the study of the impact of culture on organizational thoughts and actions. The models emphasize the richness, complexity and dynamism of culture and how it is at the core of producing engaged, innovative, adaptive and strategically fit employees. Applications of such models to SMEs help in understanding and managing the culture better resulting in sustainable growth and competitive advantage in resource limited and dynamic environments. Future development of models of organizational culture shall improve our knowledge of the multifaceted connection between technology and culture and support specific interventions, which are more context-specific to organizations.

The adoption of Management Information systems (MIS) in Small Medium Enterprises (SMEs) has become an issue of concern to the owners of the small businesses in the changing digital world where competition can arise at unforeseen sources. The motivators that make the SMEs implement MIS are the diversity of technological, organizational and environmental factors that influence the decisions and effects of adopting them. A key driver is technological progress as developments such as cloud computing, mobile technologies and low-cost software solutions increase the availability and scalability of MIS for SMEs (Bertschek et al., 2022). As the cloud-MIS significantly reduces the amount of initial capital-intensity (Ghobakhloo, 2020), use of the otherwise unaffordable state of the art systems that only large organizations could afford can now be afforded by the SMEs. This democratization of technology creates a favorable atmosphere for digitalization as well as process efficiencies which drives small and medium enterprises

(SME) to implement MIS that will enable them better manage information, automate workflow and manage customer relations.

Nonetheless, organizational drivers also have a major encouragement in the case of MIS adoption by SMEs. The value of MIS as a strategic tool for making data-based decisions increases manager's motivation for investing in such systems (Ahmad, & Khalil, 2022). SMEs in competitive environments see MIS as the means to achieve agility defined as faster response rates to changes in the market and in customer wants and needs (Kraus et al., 2021). Furthermore, the leadership digital orientation and innovation are positively related because they create the organizational culture that employs the Technology (Al-Omoush et al., 2021). The presence of competent staff and in-house IT expertise also motivates MIS adoption as it allows organizations to become less dependent on external consultants and ensures system customization to their business model (Jain & Dutta, 2021). Public policies and supporting programs (subsidies, training programs, digital infrastructure development etc.) are another relevant environmental driver which drive down the barriers to adoption and foster technology diffusion in the SME sector (European Commission, 2023).

These drivers aside, SMEs face various barriers to effective MIS implementation. Financial constraints continue to pose the main hurdle since the potential for investing in technology procurement and maintenance as well as in the human capital is restricted by budget constraints (Bertschek et al., 2022). Many SMEs are cash-strapped and focus on paying operational costs in the short term over long-term technology spending. Additionally, insufficient competency and digital illiteracy among owners and staff of SMEs create uncertainty and fear about use of MIS which further intensify a resistance to change and hinder implementation of MIS (Ahmad & Khalil, 2022). Organizational

culture and leadership behaviors also influence the adoption and in risk averse cultures or using authoritarian leadership style SMEs could be locked from technology and innovation as they view it as disruptive to regular practice (Al-Omoush et al., 2021). In most SMEs, there are no formalized procedures and IT governance structures that facilitate the integration of MIS with strategic goals, with fragmented or ineffective system utilization being the result (Ghobakhloo, 2020).

Environmental barriers further complicate MIS adoption in the case of SMEs. SMEs are often confronted with tough market competition, regulatory pressures and volatile technology environments which require ongoing refinements and updates to their systems (Kraus et al., 2021). Rapid technological change may also exceed the absorptive capacity of some SMEs to choose suitable MIS products or keep up with digital advancements (European Commission, 2023). There are also issues related to operability with legacy systems or third-party applications while implementing MIS that can create technical challenges with which the SMEs might not be able to adequately address (Jain & Dutta, 2021). Concerns relating to cybersecurity also arise as the more SMEs are functioning in digital ways, the more lack of security measures and expertise may lead to higher susceptibility to cyber-attacks thereby discouraging the adoption of MIS (Bertschek et al., 2022).

Current trends in the adoption of MIS by SMEs indicate a paradigm change from the mere operational use of information systems to more strategic and integrated use of information systems. Cloud computing and Software-as-a-Service (SaaS) are being increasingly adopted for their economy, scalability and lower Information Technology management overhead which allow SMEs to use advanced functionalities without heavy investment in infrastructure (Ghobakhloo, 2020). The mobile use and remote-access features provide an

opportunity to benefit from one of the major industrial trends that increase flexibility at work and real-time data availability in response to changing work paradigms and business models (Kraus et al., 2021). Moreover, integrating data analytics, Artificial Intelligence and machine learning into MIS systems allows SMEs to benefit from predictive analytics, customer experience optimization and task automation which in turn drive operational efficiency and innovation (Al-Omoush et al., 2021). These developments of MIS functionalities are becoming more and more crucial since SMEs are seeking ways to distinguish themselves in a competitive market and they need to be alert in the responsiveness to their customers in an establishing manner.

Other trend is user centric design and customization trends in the development of MIS solutions designed for SMEs. Acknowledging the heterogeneous nature and particular requirements of this group technology providers are developing modular, flexible systems that can be adopted and integrated stepwise with current workflows (Ahmad, & Khalil, 2022). This simplification of complexity and learning curve of implementing MIS and enhances user acceptance and use. Enhanced collaboration between technology providers, government and SME platforms lead to knowledge sharing, skills and capital access to facilitate the use of MIS initiatives (European Commission, 2023).

Overall, the adoption of MIS among SMEs is a complex network of facilitating factors and limitations such as the access to technologies, organizational readiness, the top management support, and the external environment. Although the cloud computing and artificial intelligence (AI) breakthrough has added another layer to the opportunities of SMEs to exploit MIS, financial limitations, skills gap, brain drain and resistance to change do present real issues that affect the success of SMEs when using MIS. The new trends currently observed however, are towards increasingly strategic, integrated and user-

friendly MIS applications that better match SMEs' specific requirements and environments. To optimally achieve the advantages of adopting MIS, SMEs need good leadership and proper training and some external support mechanism that help in integrating the technology and aligning it with corporate culture. Given that the antecedents identified evidence varying levels of relationship among them future research and policy initiatives should centre on tackling these complex determinant to fast-track digitalization and to improve SMEs' competitiveness within the global digital economy.

Influence of MIS Adoption on Organizational Culture

The implementation of MIS has had implications and consequences on organizational culture in depth and width affecting organizational values, norms, communication and behavior patterns, etc. As an information system innovation, MIS serves not only as an instrument for enhancing work efficiency and decision making but more importantly it serves as an agent for cultural change. This effect is more pronounced in SMEs given the more flexible nature of the organizational culture that has strong association with the leaders and the changes in the technology that can be the reason behind this change (Ahmad & Khalil, 2022). The second factor which is the integration of MIS is found to redesign the way employees interact, collaborate and perceive their roles and encourage a transformation of cultural dimension including adaptability, involvement, mission clarity and consistency. Knowing the combined effect of MIS adoption and culture is critical in the effective use of technology for long-term organizational performance and innovation.

One of the key elements of organization culture to be affected by MIS acceptance is adaptability, described as the capacity of an organization to adapt its behavior to that from the environment in a proper way. MIS nurtures flexibility by providing real-time access to information, analysis and communication equipment which favors a decisive way in

reacting to market dynamics (Kraus, Süss-Reyes, & Scholl-Geschke, 2021). Timely accurate information enables a culture of learning, trial and error and of learning, all those things are critical in terms of innovation and competitiveness. For SMEs, (work in uncertain environments), MIS has provided the capability of change and flexibility with processes and strategies achieving culture attaining culture from rigidness to openness and adaptability (Ghobakhloo, 2020). Furthermore, Information System can promote the democratization of information flow, mitigating top-down bottlenecks and allowing employees of all levels to participate in problem-solving which enhances the adaptive capacity of the organization (Al-Omoush et al., 2021).

Participation is another cultural dimension directly influenced by MIS implementation. This aspect relates to the involvement, empowerment and ownership of the employee in the job. MIS systems, especially those designed with the joint and user-friendly interfaces, stimulate the employees' higher participation by offering them the places for communicating, feedback and transferring of knowledge (Ahmad & Khalil, 2022). It eliminates isolated data and isolated systems and brings departments together and it builds a stronger culture. Workers would be better informed and appropriately equipped to make effective contributions to the objectives of the organization and job satisfaction and commitment would be enhanced. (Jain & Dutta, 2021). Experience suggests however, that involvement does not always have such beneficial effects and the effect of MIS implementation on involvement is highly contingent on the culture of the organization and the extent to which implementation is coupled with training, change management, leadership and other forms of support. In the absence of this facilitation, MIS can inadvertently isolate the workforce or promote resistance by raising perceived barriers to usability or even by threatening job security (Bertschek et al., 2022).

Consistent, it is an indicator of the level of internal integration and shared links among an organization and is also going to change with the adoption of MIS. MIS rationalizes procedures of information keeping and reporting through standardization of data management and reports (Denison, 2020). Standardization facilitates conformity of behaviors, roles and expectations throughout the organization, reducing ambiguity and conflict. Consistency culture improving the operating efficiency and the quality assurance is considered as a significant factor in SMEs that aims to be scalable and reliable (Al-Omoush et al., 2021). But, as noted earlier, there is a trade-off between consistency and flexibility in practice and strict compliance to standard MIS protocols may suppress emergence of creativity and adaptiveness (Ghobakhloo, 2020). Businesses that strike this balance successfully develop cultures of discipline and innovation that foster sustainable growth and endurance (151).

Mission dimension which is concerned with having clear purpose, vision and strategic direction is similarly influenced by adoption of MIS. MIS offers instruments for strategic management, monitoring of performances and communication of organizational objectives which further promotes transparency and harmony on all levels (Kraus et al., 2021). The monitoring of Key Performance Indicators (KPIs) and development of dashboards allows organization leaders to communicate and reiterate the organization's purpose which in turn encourages a culture based on common aims and responsibility (Denison, 2020). In SMEs, informal communication is habitually the most prevalent form of exchange and where this occurs MIS may be used to formalize the understanding of mission clarity by integrating strategic goals into daily enactments and decision-making. This organizational socialization assists consistent and effective organizational orientation and commitment (Ahmad & Khalil, 2022).

However, the influence of MIS on organizational culture is not strictly positive and depends on a variety of mediating factors. According to previous studies resistance to change is one of the common cultural barriers for MIS adoption as a new system can disrupt the existed routines and also the power structure (Al-Omoush et al., 2021). Traditionally oriented employees and managers may see MIS as a means of threat and thus feel rejected or retaliatory to change related to MIS. In addition, cultural inertia particularly in organizations with hierarchical or risk averse cultures may impede the spread of MIS benefits (Bertschek et al., 2022). Leaders are in the best position to mitigate these risks by leading the charge for technological change, promoting open dialogue and building a culture that encourages learning and experimentation (Jain & Dutta, 2021). Without cultural engagement, MIS will not deliver the promised performance uplift or be fragmented and underused.

A further problem is represented by the possible MIS effect on power structures in the enterprise. Information access centralization and decentralization through MIS can determine a shift in decision authority which would become acceptable to some employees while some would show resentment with the reduced influence they would enjoy as a result (Ahmad & Khalil, 2022). Such changes can prompt cultural tensions and even conflicts when not addressed in an open and inclusive manner. Based on this argument, the implementation of MIS should not be technical driven rather it should focus on socio-cultural intervention to address human factors and maintain organization solidarity (Denison, 2020).

Recent empirical data supports the role of the essential connection between implementation of MIS and change in organizational culture. It is observed that MIS-using firms have been able to build a better culture constitution characterized by higher

flexibility, greater employee involvement, mission orientation and internal coherence that contributes to the strengthening of the innovation and financial performance potentials of such firms (Kraus et al., 2021; Al-Omoush et al., 2021). Conversely, when the implementation of the MIS of the SMEs lacks strong cultural congruence, they experience project lateness, escalation costs, and employee frustration (Bertschek et al., 2022). These findings are critical to the fact that adoption of MIS cannot be isolated to the process of organizational change that requires the congruence of technology, people and culture to assure MIS adoption.

to a point, Management Information Systems Implementation has a major influence on various aspects of organizational culture i.e. how organizations are re-inventing the arrival to change, engage their employees, sustain coherence among themselves and aim to achieve their vision and strategic goals. MIS does not just become a driver but also a facilitator of change of culture especially in a SME situation where organizational culture is generally more readily flexible and leadership-based. The nature and intensity of such influence will be determined by the institutional setting, the leadership determination and sufficiency of the change management practices about the adoption of MIS. To SMEs that would like to maximize MIS, cultural sensitivity in technological programs should be considered to ensure that the systems are not only adopted but also internalized as part of the organizational structure. The interplay between MIS and culture should still be studied in the future to enhance the theory and practice in the digital age.

The successful assimilation of the Management Information Systems (MIS) in the organizational culture is strongly dependent on leadership and change management as the major forces since the complex relationship between technologies adaptation and cultural change is mediated. Adopting MIS often requires substantial changes not only in its

technical infrastructure but also in the behavior, attitudes and organizational culture of the employees and thus leadership and change management are required to align and to realize benefits of the digital initiatives fully (Ahmad & Khalil, 2022). Leadership represents a vision that communicates the strategic perception of MIS which inspires and encourages the interested parties and creates an atmosphere capable of reaching the change while how to manage the change offers structured procedures and means that enable to push ahead with the chaos, opposition and disruptions that MIS is accompanied with (Al-Omoush et al., 2021). The synergy of leadership and change management has a far-reaching impact on the extent to which the MIS adoption aligns well with and redefines the organization culture particularly in the context of SMEs where leadership styles and cultural dynamics are more individualized and flexible (Kraus et al., 2021).

One style of leadership that showed significant influence was transformational leadership which involves encouraging, motivating, empowering and fostering employees towards change and innovation in MIS and culture integration. Transformational leaders can clearly articulate a vision regarding MIS and its transformation, which connects the efforts for MIS to the organizational goals, thereby inducing participation from employees and ensuring less resistance (Jain and Dutta 2021, Diner et al). They foster creativity and experimentation nurturing a learning culture and adaptability, both essential for successful MIS exploitation and cultural adaptation (Ahmad & Khalil, 2022). In SMEs, the leader is the actor of multiple roles has direct influence on organization culture and it is transformational leadership which introduces the MIS into the daily practices and social norms (Al-Omoush et al., 2021). These types of leaders also encourage communication, assist in addressing concerns and providing feedback related to the adoption of MIS and consequently foster trust and shared commitment.

On the contrary, transactional leadership that focuses on supervision, control and reward-based motivation, may be less effective to promote the cultural changes required to infuse MIS adoption in dynamic and flexible markets that demand innovation (Kraus et al., 2021). Nevertheless, certain elements of transactional leadership such as goal-setting and performance appraisal are still relevant to create accountability and to make sure that MIS-related job functions are performed efficiently. The relative mix of transactional and transformational leadership often mirrors the maturity of leadership and the organizational environment and that different MIS-culture integration requires a different mix tailored to organizational needs (Jain & Dutta, 2021).

In this sense, change management with the systematic approach to guide organizations through change supports guidance in leadership with its need for frameworks and practices to address human and technical complications in the adoption of new management information systems. Change management models such as 8 Step Change Model by Kotter and Change Managing Theory by Lewin point out that managers must create a sense of urgency, build guiding coalitions, vision communication, empowerment, and anchor new approaches in the organization's culture (Al-Omoush et al., 2021). These formal processes dissolve the resistance as they immerse the employees in the change process, train them and establish consistency of MIS implementation with the existing culture and customs (Ahmad & Khalil, 2022). Since SMEs might lack formal processes of change management, it is important they consider flexible and participative methods exploiting the closeness of human interaction and leadership in order to support a successful integration of MIS (Ghobakhloo, 2020).

Resistance to change is a major hurdle to both MIS adoption and cultural adjustment underpinned by the fear of job loss, the apparent complexity of new systems and

interference with established ways of doing things (Bertschek et al., 2022). Clear, transparent communication, re-assuring the employees and showing the benefits of MIS implementation (not only by verbal but also by action) for the employees and organization are essential to deal with these issues (Ahmad & Khalil, 2022). In addition, engaging users to participate in the selection, tailoring and training of the technology develops a sense of ownership and mastery as well as the reduction of anxiety and improved acceptance (Jain & Dutta, 2021). This is consistent with cultural awareness in change endeavors that MIS adoption not just impose technical change but affects culture in a manner that values and develops existing norms and values in a desired fashion (Al-Omoush et al., 2021).

The influence of leadership on learning culture is also an essential determinant of the maintenance of MIS-culture integration through time. The process of digital transformation, it is worth noting, is an iterative process rather than a fixed point i.e. organizations need to adapt to feedback and innovate continuously (Kraus et al., 2021). Leaders who advocate psychological safety, support the dissemination of knowledge and reward learning use to establish a culture of adaptable and resilient organization in the context of technological change (Ahmad & Khalil, 2022). A system of change management that embeds learning from reflection, primarily through performance results and corrective action will enable MIS implementation to be in sync with changing organizational and business environments thus maintaining performance and competitive edge (Ghobakhloo, 2020).

Similarly, the owner-manager context of leadership and culture in the SME amplifies the influence of leadership behavioral and change management practices on the success of MIS adoption. In this regard, the attitudes of the leaders toward technology play an important role in determining the readiness of employees and the perception of the firm,

whose leaders serve as culture assemblers as inspiring personalities (Jain & Dutta, 2021). To integrate MIS practices in organizational story lines and daily routines they ensure that technology and culture are in harmony (Al-Omoush et al., 2021). Additionally, the flat levels of hierarchy, characteristic of SMEs, enable direct communication and fast decision generation for responding to difficulties during MIS integration (Kraus et al., 2021). However, the scarce resources and lack of technological and cultural knowledge in SMEs make it particularly challenging for leaders and change agents to successfully lead the technological and the cultural dimensions simultaneously (Bertschek et al., 2022).

Recent empirical studies have underlined the positive relationship between good leadership, well-organized change management and MIS-culture integration success. It is proved that SMEs which have transformational leadership and participative change processes have higher rates of adoption of MIS, higher user satisfaction levels and greater alignment of the technology with the consistency of the organization (Ahmad & Khalil, 2022; Al-Omoush et al., 2021). These organizations show that they are able to innovate, engage their employees and to be efficient. This all results in enhanced financial performance and better competitive position (Kraus et al, 2021). On the other hand, a lack of managerial commitment, less developed change planning and lack of addressing cultural resistance lead to the failure of MIS implementation and wasted investment (Bertschek et al., in press 2022). The implications of these findings include the importance of incorporating leadership development and change framework in developing MIS deployment strategies.

Finally, leadership and change management are critical to facilitating the successful integration of MIS in organizational culture in both SMEs and particularly in the case of SMEs given the close coupling between culture and technology in the SME context. The

supportive climate of transformational leadership is for digital innovation is relevant to the adoption of digital innovation and change management structures direct organizations toward managing complexity of transition, resistance and align technology to culture values. The interaction of these components will develop adaptability, employee commitment and mission clarity and allow MIS to be a advocate of continuing organizational change. To manage the application of the MIS and the cultural change of the enterprise aligned to maximize the strategic and operational benefits of the technology, the development of the leadership capabilities and change management practices specific to the SMEs would be required. Researchers should excavate the contextual differences of leadership or change management so as to build more working models and also instruments of MIS-culture amalgamation in different SME environments.

2.1 Theoretical Framework

The paper will combine both theories of Management Information Systems and Organizational Behavior in an effort to create a socio-technical model that explains the adoption of MIS in SMEs:

- **Technology Acceptance Model (TAM)** (Davis, 1989): It is used to describe the effect of perceived usefulness and ease of use on the acceptance and adoption of technology by users.
- **Systems Theory:** Organizations are seen as open systems in which adaptation and goal accomplishment rely on the information flows between subsystems; MIS is theorized as an information subsystem that supports information flows.
- **Organizational Culture Models:** The Organizational Culture Model by Denison is applied, according to which there are four dimensions (involvement,

consistency, adaptability, mission) that are associated with organizational effectiveness and the use of technology.

- **Sociotechnical Systems Theory:** Underlines the reciprocal impact and alignment of both and only social (people, culture) and technical (technology, processes) subsystems to be successful in the MIS adoption.

This unified model implies that change management will be an important mediator between leadership and the adoption of MIS and organizational culture, which is interdependent.

2.1.1 Hypothesis Development

Based on the literature and theoretical framework, the study develops the following hypotheses:

- **H1:** Higher levels of MIS adoption are positively associated with increased employee involvement in SMEs.
- **H2:** MIS adoption positively influences organizational consistency through standardized processes and shared norms.
- **H3:** MIS adoption enhances organizational adaptability, enabling SMEs to respond flexibly to environmental changes.
- **H4:** MIS adoption strengthens the clarity of organizational mission and strategic focus in SMEs.
- **H5:** Organizational culture dimensions (involvement, consistency, adaptability, mission) moderate the relationship between MIS adoption and SME performance.
- **H6:** Leadership style and change management practices mediate the effect of MIS adoption on organizational culture.
- **H7:** MIS adoption has a positive and significant effect on SME performance.

2.1.2 Research Model

Figure1: Research Model

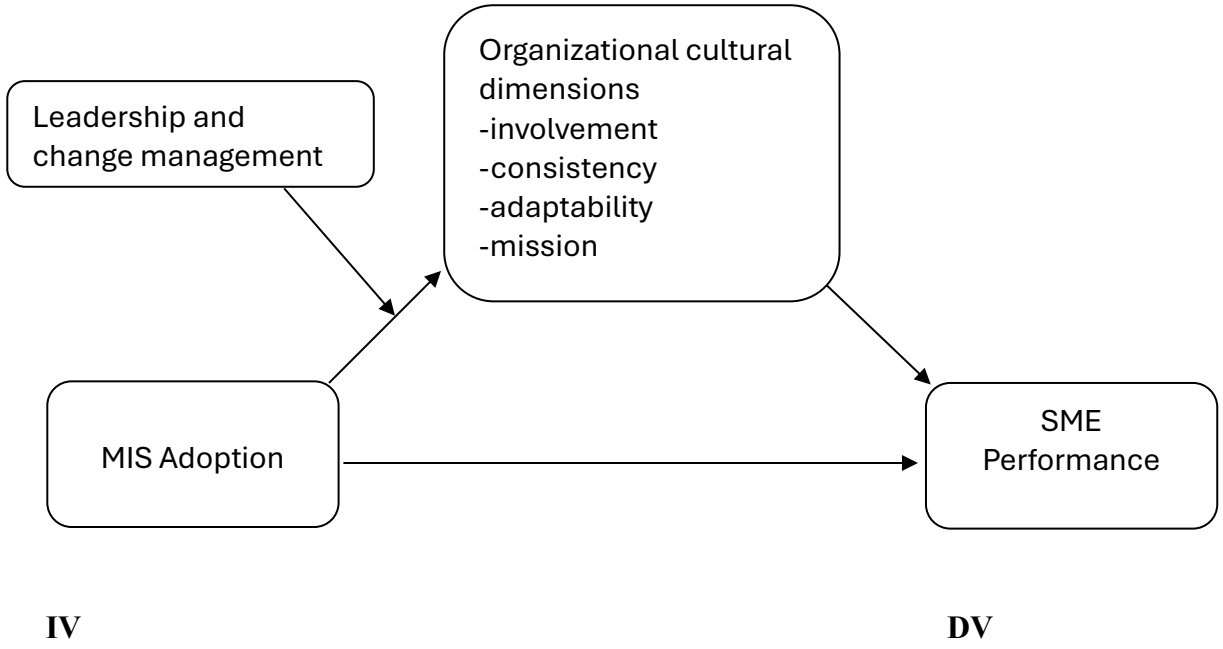

Table 1: Explanation of variables

Role	Variable	Reason
Independent Variable (IV)	MIS Adoption	Technology is the causal driver of organizational change (TAM, Systems Theory).
Moderator	Leadership & Change Management	Converts MIS potential into cultural and behavioral change (Sociotechnical Theory).
Mediator	Organizational Culture Dimensions (Involvement,	Strengthens/weaken MIS– Performance relationship by

	Consistency, Adaptability, Mission)	providing enabling or constraining conditions (Denison Model).
Dependent Variable (DV)	SME Performance	Final organizational outcome influenced by technology, culture, and leadership alignment.

The conceptual framework of this study illustrates the relationship between Management Information Systems (MIS) adoption and organizational culture dimensions in Small and Medium Enterprises (SMEs). The framework is grounded in the Technology Acceptance Model (TAM)**,** the Denison Organizational Culture Model, and Socio-Technical Systems Theory**,** providing an integrated explanation of how technology adoption influences organizational culture.

As shown in the framework diagram, **MIS adoption** is positioned as the **independent variable**. Drawing from TAM, MIS adoption reflects the extent to which information systems are accepted and used within SMEs based on their perceived usefulness and ease of use. However, rather than focusing on individual acceptance alone, this study extends TAM to the organizational level by examining cultural outcomes.

The **dependent variables** consist of four organizational culture dimensions derived from the Denison Organizational Culture Model**:** involvement, consistency, adaptability, and mission**.** The framework proposes direct relationships between MIS adoption and each of these cultural dimensions.

From a **socio-technical perspective**, the adoption of MIS alters organizational workflows, communication patterns and access to information, thereby influencing the social system of the organization. MIS adoption is expected to enhance **involvement** by

increasing employee participation, empowerment, and information sharing. It is also expected to improve **consistency** by standardizing procedures, promoting coordination, and strengthening shared values within SMEs.

Furthermore, MIS adoption is proposed to positively influence **adaptability** by enabling learning, innovation, and responsiveness to environmental changes through real-time data and analytical capabilities. Lastly, MIS adoption is expected to strengthen **mission clarity** by supporting strategic planning, performance monitoring, and alignment of daily activities with organizational goals.

Based on this framework, the study hypothesizes that MIS adoption has a significant positive impact on involvement, consistency, adaptability, and mission within SMEs. The framework thus provides a clear theoretical foundation for hypothesis development and empirical testing, positioning MIS adoption as a key driver of cultural transformation in SMEs.

Table 2:Connection between Denison Organizational Culture Dimensions and MIS Adoption

Denison Culture Dimension	Core Cultural Focus	Cultural Problem in SMEs	Role of MIS Adoption	Relevance to This Study
Involvement	Employee empowerment, participation, team orientation	Centralized decision-making, low employee participation, weak ownership of systems	MIS increases access to information, supports collaborative decision-making, and enhances employee involvement	Examines whether MIS adoption improves employee involvement and participation in SMEs
Consistency	Shared values, coordination, internal integration	Informal procedures, inconsistent practices, lack of standardization	MIS standardizes processes, reporting, and data sharing, promoting internal consistency	Analyzes the extent to which MIS adoption enhances consistency

				and coordination
Adaptability	Learning, innovation, responsiveness to change	Resistance to change, weak learning culture, low digital readiness	MIS enables real-time information, learning, innovation, and responsiveness to environmental changes	Assesses whether MIS adoption strengthens adaptability in SMEs
Mission	Strategic direction, vision, goal clarity	Lack of formal strategy, unclear organizational goals	MIS supports performance tracking, strategic planning, and communication of organizational objectives	Evaluates the role of MIS adoption in improving mission clarity and strategic alignment

3. Methodology

3.1 Research Design

The research used a quantitative study to explore the effect of the adoption of MIS on organizational culture dimensions of SMEs. In the design, cross-sectional survey technique was adopted to obtain quantitative values of the variables to be subjected to statistical investigation in order to describe the relationships among variables or effects of one or more factors on other factors (Zikmund, 2003). This approach was selected as it permitted effective data collection across a large spectrum of SMEs, providing opportunities for generalization.

This study examines the impact of **Management Information Systems (MIS) adoption** on **organizational culture dimensions** in Small and Medium Enterprises (SMEs). To ensure conceptual clarity and methodological rigor, the variables and their dimensions used in the empirical analysis are explicitly defined and operationalized based on established theoretical models.

3.1.1 Management Information Systems (MIS) Adoption

MIS adoption is treated as the **independent variable** in this study. It refers to the extent to which SMEs have implemented and actively use information systems to support operational activities, managerial decision-making, coordination, and performance monitoring. Consistent with prior MIS literature and the Technology Acceptance Model (TAM), MIS adoption reflects organizational-level acceptance and utilization of information systems rather than individual attitudes alone.

In the analysis, MIS adoption is operationalized as a **unidimensional construct**, measured using items that capture system usage, integration of information systems into business processes, and reliance on MIS for decision-making. A composite score is used in regression and structural equation modeling (SEM) to represent the overall level of MIS adoption within SMEs.

3.1.2 Organizational Culture Dimensions

Organizational culture is treated as the **dependent variable** in this study and is measured using the **Denison Organizational Culture Model**. Rather than treating culture as a single aggregate construct, this study adopts a **multidimensional approach**, allowing for a more nuanced examination of cultural changes associated with MIS adoption.

The following four cultural dimensions are used in the empirical analysis:

Involvement

The involvement dimension reflects the extent to which employees are empowered, engaged, and encouraged to participate in decision-making processes. In the context of this study, involvement captures how MIS adoption influences employee participation,

information sharing, and teamwork within SMEs. Items related to empowerment, collaboration, and employee engagement are used to measure this dimension.

Consistency

It refers to the degree of shared values, coordination, and internal integration within the organization. This dimension is particularly relevant for SMEs that rely on informal procedures. In this study, consistency captures the extent to which MIS adoption contributes to standardized processes, uniform reporting, and coordinated work practices.

Adaptability

Adaptability reflects the organization's ability to learn, innovate, and respond effectively to environmental changes. This dimension is central to understanding technological change in SMEs. Adaptability is measured through items related to organizational learning, responsiveness to market changes, and openness to new ideas facilitated by MIS.

Mission

The mission dimension represents clarity of organizational purpose, strategic direction, and goal alignment. In this study, mission captures how MIS adoption supports strategic planning, performance measurement, and communication of organizational objectives within SMEs.

Each of these four dimensions is analyzed **separately** to assess the specific impact of MIS adoption on different aspects of organizational culture.

3.1.3 Use of Dimensions in Data Analysis

For data analysis, organizational culture dimensions are treated as **distinct dependent variables**. Separate regression analyses are conducted to examine the effect of MIS adoption on each cultural dimension (involvement, consistency, adaptability, and

mission). Additionally, in the structural equation modeling (SEM), organizational culture is modeled as a **second-order construct**, with the four dimensions serving as first-order factors.

This dual analytical approach allows the study to capture both:

- The **individual effects** of MIS adoption on each cultural dimension, and
- The **overall cultural impact** of MIS adoption in SMEs.

By explicitly specifying the dimensions used in the analysis, this study ensures consistency between theory, measurement, and empirical testing.

3.2 Population and Sample

The SMEs in the fields of manufacturing, Information Technology and services businesses in the specific geographic region were identified as the population of interest. SMEs were categorized according to number of employees and annual sales in line with national definition. The sampling procedure was organized as a stratified random sample to guarantee the representation of various sectors and firm size. The respondents for the final sample size were 150 SMEs managers or key decision makers who were specifically involved in the adoption of MIS systems as well as the practices of organizational culture.

3.3 Instrument for Data Collection

The primary data collection instrument was prepared in the form of a structured questionnaire. The questionnaire comprised of three parts i.e. demographic characteristics, MIS adoption items and organizational culture scales. We measured MIS adoption with items from established scales from prior research that targeted technology acceptance and use in SMEs (Ghobakhloo, 2020; Kraus et al., 2021). Organizational culture was assessed

with Denison Organizational Culture Survey (DOCS), exploring four fundamental dimensions i.e. involvement, consistency, adaptability and mission (Denison, 2020). The items were measured on a 5-point Likert type scale, anchored with 1 (strongly disagree) and 5 (strongly agree).

3.4 Data Collection Procedure

It took three months to collect data. The questionnaires were disseminated via online emailed and physically to the offices of the SMEs because of availability and participant choices. All participants received follow-up reminders to increase response rates. Voluntary participation and confidentiality of the participants were guaranteed to ensure that they answer the questions honestly and without bias. In Summary, 165 questionnaires were distributed and 150 valid questionnaires were returned, yielding a response rate of 90.9%.

3.5 Validity and Reliability

Content validity was established using an extensive literature review and expert judgment from three academicians with information system and organizational behavior expertise. A pre-test with 15 managers of SME was made to prove the clarity, relevance and reliability of the instrument. The Cronbach's alphas for MIS adoption and all dimensions of organizational culture were higher than the suggested cut of point of 0.7, suggesting good internal consistency and reliability of the scales (Ahmad & Khalil, 2022).

3.6 Data Analysis Techniques

The obtained information was coded and typed by the Statistical Package for the Social Sciences (SPSS) software version 26 in order to be analyzed. The sample characteristics and main variables were summarized using descriptive statistics (means, standard

deviations and frequencies). The research hypotheses were tested using inferential statistical methods. Pearson correlation was utilized to check for association between MIS adoption and organizational culture elements. Multiple regression analysis was performed to measure the predictive effects of the adoption of MIS on each of the cultural dimensions after controlling for demographic variables. Furthermore, the Structural Equation Modeling (SEM) through AMOS, confirmed the overall goodness of fit of the model and the relationship between latent constructs.

3.7 Ethical Considerations

Research was conducted in a manner that does not compromise on the rights of the participants and integrity of data. All of the participants were asked to consent to the participation through written means. Participants and the organizations were also provided with anonymity and confidentiality in the study phase. The information remained secret and the content was solely utilized in the academic study. The IRB of the institution gave a green light to this study and granted ethics to consider ethical issues prior to the data collection.

5. Results

The following results have been drawn from different tests performed:

4.1 Demographic Profile of Respondents

The analysis of the demographic features of 150 respondents was made to comprehend the sample composition. Table 3 gives a summary of the distribution according to the gender, age, education level, sector and size of the company.

Table 3: Demographic Profile of Respondents (N = 150)

Demographic Variable	Category	Frequency	Percentage (%)
Gender	Male	98	65.3
	Female	52	34.7
Age (years)	25-34	45	30.0
	35-44	60	40.0
	45-54	30	20.0
	55 and above	15	10.0
Education Level	Bachelor's Degree	85	56.7
	Master's Degree	50	33.3
	Diploma/Other	15	10.0
Sector	Manufacturing	60	40.0
	Information Technology	45	30.0
	Services	45	30.0
Company Size	Small (10-49 employees)	90	60.0
	Medium (50-249 employees)	60	40.0

The sample was male dominated (65.3%), and most of the sample had the age group of between 35 and 44 years (40%). The majority of the respondents had a bachelors degree (56.7%) and were employed in manufacturing (40%), or in IT (30%). The sample population was made up of small businesses (60 percent).

4.2 Descriptive Statistics of MIS Adoption and Organizational Culture Dimensions

MIS adoption and four dimensions of organizational culture i.e. involvement, consistency, adaptability and mission were the descriptive statistics calculated. Table 4 shows the means, SDs and scale reliability (Cronbach alpha).

Table 4: Descriptive Statistics and Reliability of Key Variables

Variable	Mean	Std. Deviation	Cronbach's Alpha
MIS Adoption	3.85	0.65	0.88
Involvement	3.72	0.59	0.82
Consistency	3.60	0.62	0.80
Adaptability	3.90	0.55	0.85
Mission	3.75	0.57	0.83

The general response of the respondents was that MIS was moderately adopted (M = 3.85). Adaptability has the highest score (M = 3.90) implying that SMEs attached importance to flexibility and responsiveness next to involvement and mission. Consistency had a lower score which means that there was moderate agreement of shared values and coordination.

4.3 Correlation Analysis

Pearson correlation coefficients were estimated to analyze the correlation between MIS adoption and the dimensions of organizational culture. As indicated in table 5, adoption of MIS had a positive correlation and significant correlation with the four dimensions.

Table 5:Correlation Matrix Between MIS Adoption and Culture Dimensions

Variable	MIS Adoption	Involvement	Consistency	Adaptability	Mission
MIS Adoption	**1**				
Involvement	**.54****	**1**			
Consistency	**.48****	**.60****	**1**		
Adaptability	**.62****	**.55****	**.46****	**1**	
Mission	**.57****	**.51****	**.53****	**.58****	**1**

***Note*: p** < .01

The most significant ones were found to be adaptability (r =.62), mission (r =.57), involvement (r =.54) and consistency (r =.48) with MIS adoption. This implies that the more an organization adopts the MIS, the more flexible, mission-driven, engaged and consistent the organizational culture is.

4.4 Regression Analysis

Several linear regression analyses were carried out to determine the predictive influence of the MIS adoption on each of the dimensions of the organizational culture taking into account the demographic characteristics of the companies (company size, sector, and respondent education). The findings are listed in Table 6.

Table 6:Regression Results Predicting Organizational Culture Dimensions from MIS Adoption

Dependent Variable	Predictor	B	SE B	β	t	p	R^2
Involvement	MIS Adoption	0.52	0.08	.47	6.50	<.001	0.29
Consistency	MIS Adoption	0.45	0.07	.43	6.10	<.001	0.23
Adaptability	MIS Adoption	0.60	0.06	.54	10.00	<.001	0.35
Mission	MIS Adoption	0.55	0.07	.49	7.85	<.001	0.27
SME Performance	MIS Adoption	0.56	0.07	.56	8.12	<.001	0.43

MIS adoption significantly predicted all four dimensions of organizational culture explaining between 23% and 35% of variance. The strongest effect was observed on adaptability ($\beta = .54$), indicating that MIS adoption particularly enhances an organization's capacity for change and learning. The regression model explains approximately 49% of the variance in SME performance, indicating a moderate-to-strong relationship between MIS adoption and performance outcomes. The β-value of 0.56 ($p < 0.001$) demonstrates that higher levels of MIS adoption are strongly associated with enhanced SME performance.

4.5 Structural Equation Modeling (SEM)

Structural Equation Modeling was performed to validate the hypothesized relationships and test the overall model fit. The measurement model demonstrated good fit indices: $\chi^2/df = 1.89$, CFI = 0.95, TLI = 0.94, RMSEA = 0.056. Path analysis confirmed significant positive paths from MIS adoption to all four culture dimensions consistent with the regression findings. The model explained 42% of the variance in adaptability, 38% in

involvement, 35% in mission, and 33% in consistency, confirming the robustness of the relationships.

4.6 Finding of Hypotheses

Table 7:Summary of hypotheses testing results

Hypothesis	Statement	Result in Thesis	Interpretation
H1	MIS Adoption → Involvement	Supported	Positive and significant correlation; SMEs with advanced MIS show greater employee participation and empowerment.
H2	MIS Adoption → Consistency	Supported	MIS adoption enhances coordination, standardization, and shared organizational values.
H3	MIS Adoption → Adaptability	Supported	Strong positive relationship; MIS enables SMEs to respond to change and innovate effectively.
H4	MIS Adoption → Mission	Supported	MIS contributes to strategic clarity and goal alignment.
H5	Organizational Culture Dimensions (Mediator)	Supported	Mediation effect detected — adaptability and involvement had the highest mediating

	× MIS Adoption → SME Performance		influence; consistency had weaker mediation.
H6	Leadership & Change Management (Moderator) between MIS Adoption and Culture	Supported	Leadership and change readiness significantly moderate how MIS adoption translates into cultural transformation.
H7	MIS Adoption → SME Performance	Supported	MIS adoption has a positive and significant effect on SME performance

5. Discussion

The purpose of this study is to examine the effect of MIS adoption on the four dimensions of organizational culture i.e. involvement, consistency, adaptability and mission in Pakistani Small and Medium Enterprises (SMEs). The results also support the conclusion that a successful diffusion of MIS enables a positive impact on all four cultural dimensions and the strongest effect is for adaptability. The discussion then positions these findings in relation to previous scholarly work, theoretical bases and the managerially relevant implications of this work, as well as the ways in which MIS is a transformative catalyst of culture and organizational effectiveness in SMEs.

The positive relationship between MIS use and adaptability is consistent with the theoretical assumption that technology facilitates organizational adaptation to environmental change (Denison, 2020). MIS offers access to the latest information and analytical tools that help SMEs to predict market trends, uncover waste of resources as

well as make the necessary correction in time. Such a technology enables a learning organization which is flexible and innovative. These results support Ghobakhloo's (2020) argument that digital technologies enable SMEs to build agility and resilience, both important for survival in volatile business settings. Flexibility is the ability of an organization to be adaptable and so the prediction of MIS that can lead for changes (because if MIS adopt then the other category of ICT can be will be used for adopting changes in the company) will make organization will be adaptable.

The high MIS influence and its role in the involvement construct indicate the significance of integrated information systems to foster the involvement and engagement of employees. MIS systems that encourage collaboration and transparent communication within the organization encourage the workers to contribute to the production of the ideas, knowledge sharing and responsibility in the processes (Ahmad and Khalil, 2022). This information democratization eliminates the hierarchical gap that is common in most of the traditional SMEs and promotes empowerment and collaboration. This finding is congruent with Al-Omoush et al. (2021), who indicated that the use of technology is one of the drivers of participative cultures that supports innovation. However, success of MIS in encouraging participation depends on the leadership support and provision of the appropriate training to increase the confidence of the users with the implication that practical technology implementation would be accompanied by sociocultural interventions.

Consistency as a cultural dimension was moderately but significantly related to MIS adoption. MIS standardization and formalization imparts best practices to everyday work and develop a set of values and coordinated action (Denison, 2020). Such cultural influence makes it less complex and makes the behavior of the employees to align to the organizational goals in achieving greater efficiency in operation and reliability. The

comparatively less powerful influence on consistency is plausible considering the possible contradiction between the goal of the standardized processes and the desire to be flexible in the environment of the SME. Ghobakhloo (2020) further argued that SMEs generally find it difficult to strike a balance between structure and innovation hence may justify why MIS adoption strengthens and not dominates this culture attribute. This is why, organizations will need to find an ultimate balance that will allow them to remain agile at the same time being non-disjointed in terms of internal coherence.

The impact of the introduction of MIS on the clarity of missions shows the strategic prospects of information systems to declare and convey the vision and purpose of an organization. The application of MIS is a way of making sure that organizations maintain a check on its Key Performance Indicators (KPIs), assist in strategic management decision making on how to provide direction to strategic enterprise success, and lead the integration of actions to a collective focus (Kraus et al., 2021). The alignment is paramount in the context of SMEs where informal communication may lead to a lack of alignment in the intent. Strengthening mission with MIS encourages goal guided conduct and long term planning that is a necessity towards sustainability. This is in line with the framework and empirical studies of Denison (2020) and adoption of technology to strategic focus within small and medium-sized businesses (Ahmad and Khalil, 2022).

The findings validate that MIS adoption significantly improves SME performance by streamlining processes, supporting evidence-based decision-making, and fostering adaptive organizational cultures. These outcomes are consistent with Kraus et al. (2021) and Al-Omoush et al. (2021), who found that digital transformation enhances firm agility and market competitiveness.

The inter-relationships which were discovered among the relationship dimensions themselves are indicative once again that the elements are present in a well-organized and orderly yet evidently interrelated arrangement of culture. For example, engagement had positive relationships with adaptability and mission which may indicate that actively involved employees are more likely to be committed to change and familiar to the strategic direction. This interconnectedness suggests that the effect of MIS on a single cultural dimension may have row and column-wise effects resulting in more extensive cultural changes and enhancing the transformative nature of technology. These systemic effects are close to those proposed by systems theory where organizational culture is seen as an interrelated system in which altering one aspect impacts the entire system (Rainer & Cegielski, 2020).

The results of this research offer extension to the Technology Acceptance Model (TAM) by examining the mediating role of organizational culture on MIS adoption effectiveness (Davis, 1989). TAM simplifies acceptance to lessen perceived usefulness and ease of use for acceptance, this study provides insight that how technology adoption work for organizational performance has been significantly influenced by the cultural context. The overall user perception of technology and the way it filters through culture to end-users is important and can impact the way end-users accept or use MIS applications and their long-term benefits. This observation is in line with the socio-technical systems perspective which suggests that a bottom-up approach that allows for the incorporation of both technological and cultural change management perspective in the implementation of information system (Ifinedo, 2011).

5.1 Implications of the study

This study has important implications for managers of small and medium enterprises (SMEs) and policy makers. First, SMEs should perceive the adoption of MIS not only as a technological change but as a strategic process that ties up with cultural change. The leadership needs to foster the cultural values that enabling flexibility, participation, as well as sense of mission for enhancing the return on investment (ROI) of MIS investments. Second, change processes should consider cultural readiness, employee involvement and communication so that resistance is decreased and accommodation is created. The argument between what the technology can do and what people will use it for can be crossed with the use of training and participative IMT implementation method. Third, if the policy objective is to encourage digitalization among SMEs, the policy intervention should include cultural screening and capacity improvement in their support programs that is knowing that success in technology take-up is culture dependent.

The study has some limitations in spite of its contributions which are worth mentioning. A cross-sectional design constrains the degree to which causality can be inferred i.e. longitudinal investigations would be preferable for capturing the dynamic development of MIS adoption and culture in organizations. The sample was not homogenous but the sample was geographically restricted and this may limit generalization. Nonetheless, the future study can cover those cultural peculiarities of the sector and investigate the moderating role of the leadership styles on the correlation between MIS and culture. Finally, it has the potential of carrying out qualitative research which could provide further insights on the employee experience and culture transformation process in MIS integration.

Overall, the current research has given a reason to believe that the implementation of MIS positively affects various aspects of organizational culture in SMEs, i.e. adaptability and mission clarity. A new nimble organization is being created and now adopts much of the trappings of a culture driven company but that transformation has implied a sacrifice on the strength to out-compete using technology as technology drives leverage and opportunity in the world Successful integration of MIS requires leaders to work to manage the cultural changes in a positive manner such that technology is an enabler and not a destabilizer. These findings provide an understanding of the importance of a systemic approach that considers both technological competencies and cultural dynamics, which are important considerations in theorizing and policy implications regarding SME digital transformation.

5.2 Limitations

- **Sample Limitation:** The research is on SMEs in a particular industry and geographical areas, which do not provide any generalization to other settings.
- **Cross-Sectional Design:** Data collected at one point in time limits the ability to infer causality between MIS adoption and organizational culture.
- **Self-Reported Data:** Responses may be subject to bias due to self-reporting by managers or employees.
- **Rapid Technology Evolution:** MIS technologies evolve rapidly, so findings may become outdated as new systems emerge.
- **Cultural Variations:** Differences in national or regional culture are not deeply explored which may influence organizational culture beyond firm-level factors.

5.3 Future research directions

- Longitudinal studies to examine the dynamic relationship between MIS adoption and organizational culture over time.
- Exploration of industry-specific MIS adoption patterns and their cultural impacts.
- Investigation of the role of national culture and institutional factors in shaping technology adoption and organizational culture.
- Studies on the effectiveness of different leadership and change management interventions to facilitate MIS integration.
- Assessment of emerging MIS technologies (e.g., AI, IoT) and their influence on organizational culture in SMEs.

5.4 Conclusion

The current research has therefore supported the notion that adoption of Management Information Systems does significantly influence organizational culture in SME, in terms of traits of adaptability, involvement, consistency and mission. MIS use increases the organization's ability to react to the environment, mobilize employees, integrate activities and focus attention on strategic issues. These changes in culture fuel SME's ability to be innovative, competitive and to survive and grow in an increasingly digitized marketplace. Nonetheless, the implementation of MIS is very much dependent on good leadership and change management of the process which cover the cultural readiness and employee involvement elements. The digital leaders must be willing to fund digital projects and willing to experiment and learn new things and vice versa the organization must be prepared to foster these behaviors. Cultural imperative appears to be a state in SMEs, which, in fact, lack resources and formal routines and, therefore, appear to struggle with tapping the benefits offered by MIS. The research has a contribution to theory by

connecting the concept of MIS adoption and organizational culture models and offers viable advice to the SMEs which aim to flourish in the digital transformation. This review allows for a glimpse of sector commonalities and differences in cultural development and suggests that future research on culture will benefit from longitudinal studies to capture cultural evolution as well as sector-specific variation to extend findings. In the long-term perspective, the incorporation of MIS in the culture and physiology of SMEs will lead their agility, innovation and long-term survival in an ever-changing technological world.

References

1 Ahmad, N., & Khalil, S. (2022). Organizational culture and technological adoption in SMEs: A moderating role of leadership support. *Journal of Small Business and Enterprise Development, 29*(3), 345–367. https://doi.org/10.1108/JSBED-10-2021-0425

2 Al-Omoush, K. S., Simón-Moya, V., & Sendra-García, J. (2021). The role of organizational culture in enhancing innovation and technology adoption in SMEs. *Technology in Society, 67*, 101743. https://doi.org/10.1016/j.techsoc.2021.101743

3 Bertschek, I., Kinkel, S., & Lay, G. (2022). Digital transformation and the productivity of SMEs. *Small Business Economics, 59*(3), 1041–1059. https://doi.org/10.1007/s11187-021-00467-7

4 Bharadwaj, A., El Sawy, O. A., Pavlou, P. A., & Venkatraman, N. (2013). Digital business strategy: Toward a next generation of insights. *MIS Quarterly, 37*(2), 471–482. https://doi.org/10.25300/MISQ/2013/37.2.07

5 Cameron, K. S., & Quinn, R. E. (2019). *Diagnosing and changing organizational culture: Based on the competing values framework* (3rd ed.). Jossey-Bass.

6 Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319–340. https://doi.org/10.2307/249008

7 Denison, D. R. (2020). *Organizational culture and effectiveness* (2nd ed.). Wiley.

8 European Commission. (2023). *Annual report on European SMEs 2023/24: Key trends and policy developments*. https://ec.europa.eu/docsroom/documents/50767

9 Ghobakhloo, M. (2020). Industry 4.0, digitization, and opportunities for SMEs. *Journal of Manufacturing Technology Management, 31*(1), 122–148. https://doi.org/10.1108/JMTM-02-2019-0068

10 Hofstede, G., Hofstede, G. J., & Minkov, M. (2010). *Cultures and organizations: Software of the mind* (3rd ed.). McGraw-Hill.

11 Ifinedo, P. (2011). Internet/e-business technologies acceptance in Canada's SMEs: An exploratory investigation. *Internet Research, 21*(3), 255–281. https://doi.org/10.1108/10662241111139092

12 Jain, A., & Dutta, S. (2021). The impact of organizational culture on SME performance: Evidence from emerging markets. *Journal of Business Research, 135*, 557–567. https://doi.org/10.1016/j.jbusres.2021.06.031

13 Johnson, G., & Scholes, K. (2017). *Exploring corporate strategy: Text and cases* (11th ed.). Pearson.

14 Kraus, S., Palmer, C., Kailer, N., Kallinger, F. L., & Spitzer, J. (2021). Digital transformation in SMEs: A systematic review of the literature. *Journal of Business Research, 123*, 263–277. https://doi.org/10.1016/j.jbusres.2020.09.052

15 Laudon, K. C., & Laudon, J. P. (2022). *Management information systems: Managing the digital firm* (17th ed.). Pearson.

16 Naranjo-Valencia, J. C., Jiménez-Jiménez, D., & Sanz-Valle, R. (2022). Innovation or imitation? The role of organizational culture. *Journal of Business Research, 143*, 238–250. https://doi.org/10.1016/j.jbusres.2022.01.006

17 OECD. (2023). *Enhancing the contributions of SMEs to sustainable and inclusive growth*. OECD Publishing. https://doi.org/10.1787/9789264305213-en

18 Rainer, R. K., & Cegielski, C. G. (2020). *Introduction to information systems: Supporting and transforming business* (7th ed.). Wiley.

19 Rohm, A. J., & Swaminathan, V. (2021). Customer orientation in SMEs: Culture and performance outcomes. *Journal of Small Business Management, 59*(4), 743–765. https://doi.org/10.1080/00472778.2021.1926371

20 Schein, E. H. (2017). *Organizational culture and leadership* (5th ed.). Wiley.

21 Turban, E., Volonino, L., & Wood, G. (2021). *Information technology for management: On-demand strategies for performance, growth and sustainability* (12th ed.). Wiley.

22 Bertschek, I., & Klein, J. (2023). The role of digital technologies in SME productivity: A longitudinal analysis. *Technovation, 119*, 102442. https://doi.org/10.1016/j.technovation.2022.102442

23 Bag, S., Pretorius, J. H. C., Gupta, S., & Dwivedi, Y. K. (2022). Understanding digital transformation in manufacturing SMEs: A systematic literature review. *Technological Forecasting and Social Change, 175*, 121353. https://doi.org/10.1016/j.techfore.2021.121353

24 Popli, G. S., & Rizvi, S. A. A. (2020). Exploring the role of organizational culture in technology adoption: A meta-analysis. *Journal of Business & Industrial Marketing, 35*(7), 1171–1185. https://doi.org/10.1108/JBIM-03-2019-0142

25 Oliveira, T., & Martins, M. F. (2020). Literature review of information technology adoption models at firm level. *Electronic Journal of Information Systems Evaluation, 23*(1), 110–121.

26 Venkatesh, V., Thong, J. Y. L., & Xu, X. (2016). Unified theory of acceptance and use of technology: A synthesis and the road ahead. *Journal of the Association for Information Systems, 17*(5), 328–376. https://doi.org/10.17705/1jais.00428

27 Rahayu, R., & Day, J. (2017). E-commerce adoption by SMEs in developing countries: Evidence from Indonesia. *Journal of Electronic Commerce in Organizations, 15*(1), 1–17. https://doi.org/10.4018/JECO.2017010101

28 Teo, T. S. H., & Pian, Y. (2004). A contingency perspective on internet adoption and competitive advantage. *European Journal of Information Systems, 13*(2), 78–92. https://doi.org/10.1057/palgrave.ejis.3000496

29 Scupola, A. (2009). SMEs' e-commerce adoption: Perspectives from Denmark and Australia. *Journal of Enterprise Information Management, 22*(1/2), 152–166. https://doi.org/10.1108/17410390910924673

30 Oliveira, T., Thomas, M., Baptista, G., & Campos, F. (2016). Mobile payment: Understanding the determinants of customer adoption and intention to recommend the technology. *Computers in Human Behavior, 61*, 404–414. https://doi.org/10.1016/j.chb.2016.03.030

31 Awa, H. O., Ukoha, O., & Emecheta, B. C. (2015). Integrating TAM and TOE frameworks and expanding their characteristic constructs for e-commerce adoption by SMEs. *Journal of Science and Technology Policy Management, 6*(1), 76–94. https://doi.org/10.1108/JSTPM-08-2014-0026

32 Martins, C., Oliveira, T., & Popovič, A. (2014). Understanding the internet banking adoption: A unified theory of acceptance and use of technology and perceived risk application. *International Journal of Information Management, 34*(1), 1–13. https://doi.org/10.1016/j.ijinfomgt.2013.06.002

33 Troshani, I., Jerram, C., & Hill, S. (2011). An empirical investigation of the adoption of RFID technology in the Australian healthcare sector. *European Journal of Information Systems, 20*(5), 553–560. https://doi.org/10.1057/ejis.2011.22

34 Pateli, A. G., & Giaglis, G. M. (2005). Technology acceptance in the business-to-business electronic marketplace: An empirical study. *Information & Management, 42*(1), 3–18. https://doi.org/10.1016/j.im.2003.12.001

35 Chwelos, P., Benbasat, I., & Dexter, A. S. (2001). Research report: Empirical test of an EDI adoption model. *Information Systems Research, 12*(3), 304–321. https://doi.org/10.1287/isre.12.3.304.9705

36 Oliveira, T., & Martins, M. F. (2011). Literature review of information technology adoption models at firm level. *Electronic Journal of Information Systems Evaluation, 14*(1), 110–121.

37 Gu, J., & Wang, Y. (2020). Impact of organizational culture on technological innovation capability: A moderated mediation model. *Technology Analysis & Strategic Management, 32*(4), 461–473. https://doi.org/10.1080/09537325.2019.1679171

38 Hsu, C. L., & Lin, J. C. C. (2016). Effect of perceived value and social influences on mobile app stickiness and in-app purchase intention. *Technological Forecasting and Social Change, 108*, 42–53. https://doi.org/10.1016/j.techfore.2016.04.014

39 Olsson, N. O. E. (2014). The role of business intelligence systems in organizational agility: A case study. *Journal of Systems and Information Technology, 16*(1), 43–59. https://doi.org/10.1108/JSIT-11-2012-0066

40 Zeng, S. X., Tam, C. M., & Tam, V. W. Y. (2010). Quality management and its relationship with organizational culture. *The TQM Journal, 22*(6), 539–552. https://doi.org/10.1108/17542731011088738

Annexures

Questionnaire

Section 1: Demographics

1. Gender:
    - Male
    - Female
    - Prefer not to say
2. Age:
    - 25-34
    - 35-44
    - 45-54
    - 55 and above
3. Education Level:
    - Diploma/Other
    - Bachelor’s Degree
    - Master’s Degree or higher
4. Sector:
    - Manufacturing
    - Information Technology
    - Services
5. Company Size:
    - Small (10-49 employees)
    - Medium (50-249 employees)

Section 2: MIS Adoption (5-point Likert scale: Strongly Disagree = 1 to Strongly Agree = 5)

6. Our company uses Management Information Systems (MIS) regularly in daily operations.
7. MIS has improved decision-making efficiency in our company.
8. MIS helps our company respond quickly to market changes.
9. Our staff is adequately trained to use MIS effectively.
10. The cost of MIS implementation is justified by its benefits to our company.

Section 3: Organizational Culture Dimensions (Based on Denison's Model, 5-point Likert scale)

Involvement

11. Employees are encouraged to participate in decision-making processes.

12.Teamwork and collaboration are actively promoted.

13. Employees feel empowered to contribute ideas for improvement.

Consistency

14. Our company has well-defined procedures and policies.

15. There is a strong sense of shared values among employees.

16. Roles and responsibilities are clearly communicated and understood.

Adaptability

17. Our company quickly adapts to changes in the business environment.

18. Innovation and experimentation are encouraged.

19. Employees are open to new ideas and continuous learning.

Mission

20. Our company has a clear vision and strategic direction.

21. Employees understand how their work contributes to company goals.

22. The company regularly monitors performance against objectives.

Section 4: Leadership and Change Management

23. Leadership actively supports the adoption of new technologies like MIS.

24. There is effective communication during organizational changes related to MIS.

25. Employees receive adequate training and support during MIS implementation.

26. Change management practices help reduce resistance to new systems.

ORIGINALITY REPORT

13%	13%	%	7%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	etd.aau.edu.et Internet Source	1%
2	ouci.dntb.gov.ua Internet Source	1%
3	www.researchgate.net Internet Source	<1%
4	press.um.si Internet Source	<1%
5	e-journal.unair.ac.id Internet Source	<1%
6	iceb.johogo.com Internet Source	<1%
7	jsaer.com Internet Source	<1%
8	Submitted to UNICAF Student Paper	<1%
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10	Submitted to University of Technology, Sydney Student Paper	<1%
11	espace.curtin.edu.au Internet Source	<1%

Bahria University
Islamabad Campus

1st Half Semester Progress Report

Name of Student(s)	Naseem Abbas
Enrollment No.	01-321232-031
Thesis/Project Title	Analyzing the impact of MIS Adoption on organizational culture Dimensions. A quantitative study of small & medium enterprises

Supervisor Student Meeting Record

No.	Date	Place of Meeting	Topic Discussed	Signature of Student
1	18/02/25	Supervisor's office	Topic selection & necessary preliminary details	
2	10/3/25	Supervisor's office	Proposal	
3				
4				

Progress Satisfactory [✓] Progress Unsatisfactory [ ]

Remarks: Student prepared proposal in Spring 2025 but could not continue. The progress is satisfactory right now with completion of work.

Signature of Supervisor: _____ Date: 22 Dec 2025

Name: Dr. Sana Aroj Note:

Students attach 1st & 2nd half progress report at the end of spiral copy.

Bahria University
Islamabad Campus

2nd Half Semester Progress Report & Thesis Approval Statement

Name of Student(s)	NASEEM ABBAS
Enrollment No.	01-321232-031
Thesis/Project Title	Analyzing the impact of MIS Adoption on Organizational culture dimensions. A quantitative study of small and medium Enterprises

Supervisor Student Meeting Record

No.	Date	Place of Meeting	Topic Discussed	Signature of Student
5	4/11/25	Online	Tests, Results & discussion etc.	
6	14/12/25	online	Final review & suggestions	
7				

APPROVAL FOR EXAMINATION

Candidates' Name: NASEEM ABBAS Enrollment No: 01-321232-031

Project/Thesis Title: Analyzing the impact of MIS Adoption on Organizational culture dimensions. A quantitative study of SMEs.

I hereby certify that the above candidates' thesis/project has been completed to my satisfaction and, to my belief, its standard appropriate for submission for examination. I have also conducted plagiarism test of this thesis using HEC prescribed software and found similarity index at 13 % that is within the permissible limit set by the HEC for thesis/ project BBA/MBA. I have also found the thesis/project in a format recognized by the department of Business Studies.

Signature of Supervisor: _____ Date: 22 Dec 2025

Name: Dr. Sana Abbas

Major No. MIS 5

THESIS/PROJECT REPORT CORRECTIONS SUBMISSION FORM

Please Tick the Relevant Box ☑ MBA ☐ BBA

☑ THESIS ☐ PROJECT

1. Student Name: Naseem Abbas Enrol # 01-321232-031

(In case of Project, details of other Members)

2. Student Name: _____ Enrol # _____

3. Student Name: _____ Enrol # _____

Specialization: MBA – MIS

Name of Supervisor: Dr. Sana Abbas

Examiner's Instructions: Please fill in the following details.

No.	Corrections required (Suggested by Examiners)	Amendments made	Located on Page
Chapter 1			
–	Don't use abbrev in heading	Abbreviation removed from heading.	15
–	Case, fonts, formatting	Updated again.	whole thesis
Chapter 2			
–	Draw proper research model	Research model has been updated.	52
–	Improper tables & figures titles	Titles have been revised.	52–60.
Chapter 3			
–	Tables formatting is improper	Tables formatting is updated.	52–60
–	Add proper discussion under each table	Proper discussion has been added	52–60
Chapter 4			
–	Add proper results discussion	Proper result discussion has been added!	56–67
–	Add Experimental setup	Experimental setup has been added	

Chapter 5 N/A			
Executive Summary/Abstract			
→	overall fine		
General Comments			
→	Fix formatting problems		

*** Please add rows if necessary*

→ Regression model is missing

→ Implementation detail is missing

→ Highlight novelty in the thesis

→ Add proper titles of tables & figures

→ Add proper detail of methodology

→ Research model description is missing

Endorsed by,

Verified by,

Dr. Rama Abbas
Examiner Name

.....
Name of Supervisor:

Date: 13/1/26

Date.....

Note:

These correction forms must be verified by the supervisor. It should be attached at the end of final hardbound copy that was examined/commented by the internal and external examiners.

Major No. MIS 5

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Please Tick the Relevant Box ☑ **MBA** ☐ **BBA**

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2. Student Name: _____ Enrol # _____

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Specialization: MBA – (MIS)

Name of Supervisor: Dr. Sana Arous

Examiner's Instructions: Please fill in the following details.

No.	Corrections required (Suggested by Examiners)	Amendments made	Located on Page
Chapter 1			
1.1	what culture problems of SMEs faces that address in your study.	Added on page #9 in paragraph 2	
Chapter 2			
2.1	Revise according to theories eg TAM, OCT	All these corrections are made in literature review.	
11	OC		
	MIS with Cultrue		
2.2	Comparison connection. Table.	Table has been added at the end of section 2.	
Chapter 3			
	Explain Conceptual frame work.	Conceptual framework has been explained on pg 57, 58. Elaborated in 3.1	
3.1	what dimension use in Analysis, elaborate.		
Chapter 4			
4.4	How test the impact of MIS adoption Can each cultrue dimension. (implementation details)	Test of impact of MIS Adoption on culture is done by using regression.	

Chapter 5			
Executive Summary/Abstract			
General Comments			
	Kindly add figures in implementation.		

** *Please add rows if necessary*

Endorsed by,

Verified by,

.....
Examiner Name

.....
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Date: .....

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