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Information and Communication Technology, a Necessity to Adapt to Virtual Organizations (Case Study, Businesses in Korca Region)

By Sonela Stillo & Gentisa Furxhi
University "Fan S. Noli"

Abstract- The environment in which Albanian business activities are carried out has changed continuously, as a result of changing economic, political, socio-cultural and technological factors. Businesses, which have become increasingly globalized and interdependent, have begun to carry out all organizational activities in a virtual environment. Businesses are constantly reviewing their managerial practices, to adapt to the constantly increasing complexity of the business landscape in order to benefit from the unique competitive advantage, knowledge. Even the Albanian government itself considers information and communication technology as one of the highest priorities to achieve high living standards and economic growth. Based on the characteristics of Albanian business and considering the fact that firms must struggle for a confrontation between environmental conditions and organizational structures and even more so when environmental conditions impose conflicting requirements on the desired organizational structure, we offer suggestions to make our business as competitive as possible, by getting involved in virtual organizations.

Keywords: *business, virtual organization, network organization, information technology, internet.*

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Sonela Stillo [α] & Gentisa Furxhi [σ]

Abstract- The environment in which Albanian business activities are carried out has changed continuously, as a result of changing economic, political, socio-cultural and technological factors. Businesses, which have become increasingly globalized and interdependent, have begun to carry out all organizational activities in a virtual environment. Businesses are constantly reviewing their managerial practices, to adapt to the constantly increasing complexity of the business landscape in order to benefit from the unique competitive advantage, knowledge. Even the Albanian government itself considers information and communication technology as one of the highest priorities to achieve high living standards and economic growth. Based on the characteristics of Albanian business and considering the fact that firms must struggle for a confrontation between environmental conditions and organizational structures and even more so when environmental conditions impose conflicting requirements on the desired organizational structure, we offer suggestions to make our business as competitive as possible, by getting involved in virtual organizations. The increasing use of the Internet, networking and commitment to each other, the need for flexibility, the emergence of marketable products/services as a virtual product based on knowledge, the globalization of markets and resources, the change in competitive conditions have become inevitable for the creation of virtual organizations.

Today, when globalization and technology are playing a very important role in the integration of countries and economies and the improvement of people's lives across the globe, Albania recognizes Information and Communication Technology as a tool for social and economic development, regional cooperation and integration in Europe. Nowadays, the rapid advancement of technology has caused new organizational structures in companies. The focus of the research is to see the current state of the use of information technology in businesses in the Korca Region.

Keywords: business, virtual organization, network organization, information technology, internet.

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I. Introduction

Management and especially organizational structuring, have been part of ongoing debates and analyses by researchers and businesses. We increasingly see a tendency for organizations to move from bureaucratic forms of organization to more flexible and entrepreneurial structures. One of the reasons for this movement is for organizations to adapt to the constantly increasing complexity of business and to benefit from the unique competitive advantage, knowledge.

Today, business profitability increases from the effective use of financial, human and technological resources. It is emphasized that those firms that invest in human capital will be more difficult to defeat by competitors in the near and distant future. But the process of human resource management carries complexities, because unlike all types of resources, human assets are difficult to replace. Technological progress has made the achievements of organizations and individuals extend in the same way, which makes it possible to have a power or resource without the intervention of any centralized authority. These technological achievements allow organizations to become more centralized or decentralized, in accordance with their strategic orientation and emphasize the efficiency of the global business management process. However, centralization is still a preferred way of management, despite the increasing desire for decentralization of operations. In view of the competition, which is evident in the new business world, a new perception of the organization, its structuring and management in general emerges as a necessity. Often these perceptions are defined as paradigms.

Management theories that have studied and examined the "virtual organization Network" are not clear and have not provided more than a basic explanation about technological developments related to business opportunities, to make organizations more flexible in the global market.

In the same way, not very deep analyses have not drawn any conclusions about the management of "virtual organizations" and the key factors that play a major role in the success or potential failure of this fluid organizational structure. Despite its impact on organi-

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zations, it does not always guarantee optimal results for any organization or individual (Thuong, 2019).

Based on the characteristics of Albanian business and considering the fact that firms must fight for a confrontation between environmental conditions and organizational structures and even more so when environmental conditions impose conflicting requirements on the desired organizational structure, it is necessary to find mechanisms to make our business as competitive as possible, by engaging in virtual organizations.

II. Literature Review

a) The Evolution of Organizational Structure

Organizational structure plays a key role in how businesses function, influencing everything from decision-making processes to employee behavior. Traditionally, when talking about structures, the focus is on the hierarchical division of tasks and responsibilities in the organization, but modern perspectives expand this definition to include the regulation of activities, representation in decision-making and the structuring of legal entities (Albert, 2024).

P. Senge, "(1990) focused attention on the great importance of knowledge as a source of success. The role of knowledge is so critical that no organization can deny the importance of existing knowledge and the creation of new knowledge. His greatest contribution is the detailed treatment of the concepts of social systems theory and turned them in the opposite direction.

The organization as a social system is an information model, which connects everything in its capacity for self-design. The emphasis was now placed on organizational learning rather than individual learning. It was emphasized that organizations must learn to do different things in different ways. Here lies the difference between TQM and learning. Later, Hodgetts, Luthans and Lee, conceived of learning as the transformation of an organization, which focuses on the need for change. The "learning paradigm" suggested that power tendencies emerged in small firms because they learn relatively quickly (because large firms have to overcome bureaucratic obstacles).So gradually we see that we have moved from the traditional form of organization to new forms of organization. Elements of structure, such as chain of command, centralization, decentralization, formal authority, cooperation and coordination plans, fit together to form a complete structure.

In some organizations, the vertical hierarchical form is emphasized as the way to achieve control and coordination. In other organizations, decision-making is decentralized, there are cross-functional collaborations and workers are given great freedom to carry out their tasks as they see fit. The tendency to the shift from a horizontal structure to a vertical structure reflects the trend towards empowering employees, sharing information, and decentralizing decision-making, and at the forefront of this movement is the "learning organization" type of organization. There is no single model of what a "learning organization" looks like.

In traditional organizations, vertical structures predominate with fewer tasks. There is a tendency for collaboration, or managerial efforts for horizontal coordination, but information is communicated up and down the organizational hierarchy, jobs are limited, tasks are specialized, and employees have little say in how their jobs are performed. The culture is rigid and does not encourage risk-taking; change and decision-making are centralized. The inverse form of this approach is the "learning organization." A "learning organization" is an organization in which everyone is involved in identifying and solving problems, enabling the organization to continue on the path of change and improvement, that is, to enable its capacity to grow and achieve its goal. The "learning organization" tries to break down boundaries with other companies. It can use a combination of real (actual) members, alliances and partnerships, to apply new structuring innovations, to promote cooperation inside and outside the organization.

To identify needs and to solve problems, people must be aware of what is happening. They must understand the organization as a whole, of which they are a component part.

In the "learning organization", electronic communication is essential for sharing information. But this form of organization also supports the importance of receiving information from people face to face, emphasizing listening.

In traditional organizations, decisions are made in a hierarchy. In the "learning organization", people are closely connected to the problems, they are given authority and responsibility in making decisions. In traditional vertical organizations, ideas, knowledge, and expertise drive the corporation. In a learning organization, leaders influence all visions and directions, but they do not control or direct strategy. In contrast to a traditional organization, people are encouraged to try new things and to accept failure. Learning organizations have permeable boundaries and are often connected to other companies, allowing each organization to learn about new strategic directions and needs.

Culture is the foundation of a learning organization, and an adaptive culture means that people care about their stakeholder groups. In a learning organization, culture genuinely encourages equity, continuous improvement, and change. G. Morgan supported the idea that learning is maximized as well as flexibility in decentralized models of operations. He insisted that a decentralized network organization is the best design, resembling a "spider web." He considered such a thing to be a pure risk, but modern times require taking risks in order to bring about innovation.

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Organizations have long been treated as stable or resilient networks. The results of operating in this way vary widely. Some attribute them to fierce competition as the only way to adapt to volatile global consumer markets, as well as to new markets and technologies. Managers have prominently presented, even turning into myths, the advantages derived from networks and have often commented on the disadvantages of bureaucracy and command-control hierarchies. The greatest advantage of the network structure lies in competitiveness on a global scale, as well as the flexibility and challenges of the workforce.

The tendency to move towards such network structures comes as a result of the transition from an industrial society to an information society; from a national economy to a world economy; from centralization to decentralization; from hierarchy to networks., (J. Naisbitt, 2001). Network structures emphasize cooperation and interconnection, a strategy that is increasingly being adopted by global organizations that seek seamless integration in all operations (Ding et al., 2023). A network organization is a decentralized system that emphasizes communication and extensive mutual influence throughout its structure. In the context of a corporate merger, the development of such an organization can be assessed by analyzing changes in social dynamics using tools such as sociometric surveys (Ding el al., 2023). Papscott and Caston (2000) argued that hierarchical flow control and technological advantages favored the opening up of network organizations. Tab.1.

Table 1: From Closed Hierarchies to Open Network Organizations

	Closed hierarchy	Network organization
Structure	Hierarchical	Network
Field of activity	Internal, closed	External, open
Focus of resources	Capital	Human resources, information
State	Stable	Dynamic, changing
Direction	Managerial commands	Self-management
Basis of action	Control	Authorization for action
Basis of compensation	Position in hierarchy	Level of competence

The purpose of a network platform is to attract participating companies to work together, to facilitate the exchange of knowledge between them. The treatment of the web focuses on: technological platforms and increased returns. The technological standard reduces risk, as a need of companies, realized through strong investments in R&D, while increased returns create an independence between participants, by attracting more producers and consumers. J. B. Quinn explained the importance of software in strategic importance and explained why they enable network structures, and introduced the concept of strategic outsourcing: In markets with rapid change and technological change this strategy reduces risk, accelerates learning and shortens development cycles. He imagines the firm as a package of service activities, and that services, not manufacturing activities, provide the main source of value to customers. Taking this vision into account, bureaucracy was attempted to be destroyed. Bureaucracy itself developed in the period when manufacturing was the main platform for value addition. He suggested that "…there is no reason why organizations cannot become "infinitely flat" (infinitely flat) guided by a computer system. He investigated the transformation as a "spider web" organization, which is a non-hierarchical network, and emphasized that creative organizational forms depend on software.

The apotheosis appeared, when he proved that software was so pervasive, becoming the primary element in all aspects of innovation from basic research to product introduction (presentation) and software is a facilitator of organizational learning. (Quinn, Baruch. Zien, 1996).

The effectiveness of any organizational structure lies in its ability to adapt to evolving business environments, while addressing deficiencies. Organizations must balance structural frameworks with mechanisms that empower employees, foster collaboration, and align behaviors with strategic objectives (Nwizia & Okachi-okereke, 2020).

b) Virtual Organizations

The great advantages offered today by communication and information technology have led to the priority and emphasis being given to borderless organizations and virtual corporations. With the

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development of computer technologies, people can abstract from the real world and virtually feel as if they are in a virtual place. With virtual reality and computer technology, the place where we are is not important and we can walk to the shopping mall, do shopping; attend meetings, visit the museum or library, do research; talk to other users in different environments, see them and talk to them (Ataman, 2002: 400). It is a fact that today in our century organizations are becoming increasingly unstable, changeable and are in search of a new status, so they are part of the change. Organizations that resist change and fail to adapt to the changing business environment are generally considered to be resistant to progress (Cameron and Quinn, 2006, p. 1; Nydegger and Nydegger, 2010; Morrison-Smith and Ruiz, 2020; Cowling and Dvouletý, 2023; Yadav and Banerji, 2023). Driven by technological progress and globalization, the world is becoming increasingly interconnected, transcending time zones, regions, geography, and national boundaries (Abarca et al., 2020; Caputo et al., 2023; Pandey et al., 2024). Thus, the use of virtual teams has become a major trend within organizations (Kimura, 2024). These are networked organizations that use the latest technologies using a set of strategic alliances and business contracts, which keep operations alive and efficient without spending, or without the cost that the existence of all the supporting business functions would have. The virtual organization is essentially a traditional organization, but without its traditional physical boundaries (P. Christie & R. Levary, 1998), using the latest developments in information technology.

The term "virtual" means "physical inexistence, but the use of software" in the management literature identifies virtual organizations as an extreme form of outsourcing, or the opposition of Weber's bureaucracy.

Different organizations are distinguished from each other by the degree of virtuality applied. Today, many businesses are gaining competitive advantages by fostering global collaborations and reshaping their organizational activities by maximizing strength, addressing threats, and increasing speed as a result of digitalization (Duarte and Snyder, 2006; Horwitz et al., 2006; Olson and Olson, 2012). Given that the virtual organization can be treated as a combination of parts (people or organizations) geographically distributed and electronically connected, so that each contributes based on competencies and skills to achieve a common goal, we assert that this virtual organization allows each part to focus on those areas in which it possesses distinct competence. But not all organizations have this breadth of scope and application of virtuality. Some of them are in the earliest stage and are often limited to the creation of virtual teams. These teams are groups of employees set up by managers and, unlike other teams, function by breaking the boundaries of the organizational system in which we are accustomed to working before the use of modern information technology. These forms of organization allow the team to include individuals who are geographically distant from the center of the company. They can connect and communicate with each other on various work problems using the Internet or intranet.

The classics Davidow and Malone identified virtual organizations as a suitable organizational project that, through technology, replaces the control of information described in the bureaucracy and realizes communication between employees of each location, through electronic communication.

Virtual handling enables a company to create a collection of the best professional skills for a particular project. Some virtual organizations are very flexible and responsive. Like network organizations, virtual organizations can be global. The virtual form also enables companies to take advantage of world-class talent on a temporary basis without having to hire them full-time. Many professionals value personal time and autonomy over a stable job and income, so the virtual form gives them the opportunity to work on projects that are of particular interest to them. One of the main disadvantages is the lack of control. The boundaries of a virtual organization are weak and unclear. Top managers thus provide a strong definition of project goals to maintain focus groups, but also define new requirements for managers, who will constantly work with new people, new ideas, and new problems. Lipnack & Stamps define a virtual team as "a group of people interacting through independent tasks, guided by a common purpose," that "works across space, time, and organizational boundaries with lines empowered by networks of communication technology." We define a virtual organization as a geographically distributed organization whose members are linked by a common interest or long-term goal, and who communicate and coordinate their work through communication technology. In addition to technological adoption, they undertake initiatives to improve communication and motivation, via telephone and e-mail.

Communication is very important in the work of virtual teams, especially in defining goals and objectives that can be achieved. Many studies show that low quality of communication in virtual teams causes dissatisfaction among members. This situation is not healthy in the collaboration of virtual teams as it can cause failure in achieving their goals. Akkirman and Harris (2005) discuss that employees in a virtual workplace experienced lower levels of work stress, all related to the quality of communication. Normally, members who have poor communication skills are related to lower levels of commitment to their work. The problem will be compounded when they work together, because usually, employees who have a low level of communication and commitment to work will also have lower productivity. We know that low productivity will make employees not interested in their tasks.

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The convenience of information technology and the role of the organization in providing knowledge to virtual workers about the technology help all workers to become more effective and productive. Clear communication can also be achieved using the technology that is available today. However, the most important thing is that virtual workers should undergo training in the use of virtual technology.

A key feature of virtual organizations is the high degree of informal communication. Because of a lack of formal rules, procedures, and clear reporting of relationships and norms, even more informal communication is necessary. (Monge & Contractor, in press). Formal communication networks, imposed, or mandated, represent a legitimate authority of the organization, reflected in the organizational chart. They are also representative of the communication channels that facilitate the downward transmission of orders and the upward transmission of information (Monge & Contractor, in press; Weber, 1947).

In contrast, informal communication is personal and interactive, involving media such as face-to-face meetings and e-mail.

Research shows that formal interaction is useful for structured activities but is ineffective when the situation lacks certainty and structure (Kraut & Streeter, 1995). Software development has been considered largely as an unstructured and non-routine task (Kraut & Streeter, 1995) and therefore requires informal interaction and coordination (Van de Ven, Delbecq, & Koening, 1976).

Communication plays a very important role in building trust among all members. Technology alone is not enough to build trust. Moreover, trust is closely related to interpersonal relationships. Trust also helps improve communication and performance in virtual teams. Impersonal and abstract trust relationships, as well as personal trust relationships, exist because the work of virtual teams can be permanent or temporary. Pateli and Duncan (2004) explain that rapid trust can be strong and durable enough to survive the entire life of a temporary group, as it is based on the competent and reliable realization of clear roles and tasks assigned to members. In addition, personal trust exists in the work of permanent or long-term virtual teams.

However, the biggest challenge in trust issues is how to build rapid trust between members who come from different cultures. Businesses also make a conscious effort to catch up with changing times, and the adoption of Professional Training remains an integral part of the process in this digital age as it brings together diverse members from different countries and cultures, bringing diverse work experiences and unique strategic perspectives (Thuong, 2019; Gliksona and Erezb, 2020). Communication and trust are closely intertwined. The first words, whether verbal or written through technological media, will determine the level of trust that can be built between members. Members who have difficulty communicating, especially those who do not know how to use the right language during communication, will cause failure in building trust in the work of virtual teams.

c) *Technology and the Impact of Computers on Organizational Structuring*

The term technology refers to the way an organization transforms its inputs into outputs. An organization can have more than one technology in transforming its resources. In the last decade of the last century, the use of computers, not only in business but also among individual users, could no longer be considered a luxury item. A business organization today cannot conceive of effective work without the use of computers. Many organizations are currently also using management information systems based on sophisticated computer programs. The application of information systems reduces the need for direct physical control as well as frequent reporting of any problems to subordinates. Sophisticated information systems, based on the use of computers, allow management to be more oriented towards the practical application of an increasingly organic structure without weakening its control over operations and people's work.

It is understandable that many Albanian business firms have not reached the level of perfection necessary to apply sophisticated information systems for effective management, but even a relatively low level of computer use contains in itself the possibility of a more rational, less costly and more organically oriented organizational structure. Albanian businesses are mostly small, there are few medium-sized ones and very few large ones. Despite the bankruptcy of a large number of businesses, many others are strengthening their competitive positions in the market and gaining some stability in it. These established firms can face the challenge of exploring new, usually uncertain, opportunities while continuing to operate in their existing business. This confrontation becomes particularly critical when advanced technologies have new fields and new advanced industries, with a wide selection of new business opportunities in the existing market of firms.

Technological developments associated with the Internet are a good example of this phenomenon, which will become the focus of our arguments. While the Internet and the World – Wide – Web promise great opportunities, which have attracted these firms and certainly force them to explore, the reward of these enterprises is not immediately sufficient, so as to completely ignore existing businesses. Our firms are faced with the task of identifying new opportunities and at the same time continuing their current business.

In the current conditions of Albanian business, it is found that the environmental changes that have

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attracted attention include changes in consumer (client) demand, regulatory changes and changes in technology. Our attention is focused more on technological changes, which focus on the relationships between different types of innovations and the degree of difficulty of firms, which complement changes in organizational structures. As a firm grows, the demand for organization, involvement and leadership also increases. As a result, a firm must undergo major structural changes at periodic intervals. In this regard, when today the advantages brought by information technology are recognized, we see that computer equipment is no longer considered a luxury, but as a powerful tool for information, communication and progress. If we look a few years ago, not too long ago, the computer was considered a sophisticated device, which could be learned by people with special intellectual qualities. But in today's conditions it is seen as a necessity, it is enough to have the desire and will and it is a key that opens a new door for everyone. The use of the Internet has enabled the creation of an extraordinary power in strengthening and adapting the systems of the activities of firms, strengthening them towards the exploration of new opportunities and at the same time increasing the existing business. It is evident that both in the public and private sectors, computer technology has found its place. Despite the many shortcomings, in the primary sense of information technology, the need for computers and network connections is still clearly known and understood.

Private entities, being more sensitive to market changes and closer to the dynamics that the Albanian reality presents, support each event more quickly, part of which is the recognition and application of new forms of communication, considering it as a key to success. Some businesses, both sole proprietorships and joint ventures, have created their own databases, use the internet, communicate remotely via e-mail, thus creating an exchange of information, data, ease in maintaining documentation and issuing balance sheets. But these functions are limited when, due to financial opportunities, lack of specialized staff and the mentality of the owners, in small and medium-sized businesses, computers do not perform multiple functions, and even more so when their connection to the network is missing. Although the Albanian business structures exhibit a range of problems, a glimmer of hope is seen, as the desire to increase profits and become an active part of the global market is also shedding light on the concept, although new for multinational firms, of virtual organization.

It is too early to hope for the existence of such a form of organization in Albanian business, considering the problems addressed so far regarding the structure of Albanian business. But if we look at large businesses, in the banking system, travel agencies, etc. there are favorable parameters that create a path, albeit narrow, where businesses that want to be an active part of the global market can pass. Virtual structures, being typical structures of multinational companies and while Albanian business is characterized by the qualities addressed above, the treatment of virtual structuring is unclear.

III. Methodology

To conduct the study and investigate the situation of the use of information and communication technology, we focused on businesses operating in the Korca Region. In this Region, there are a total of 18,098 businesses, with a distribution of such businesses in the municipalities of the Korca Region Tab. 2.

Table 2: Businesses by sectors in Korca Region (Source. Author)

Sectors	Korce Municipality	Pogradec Municipality	Devoll Municipality	Kolonje Municipality
Manufacturing sector	44	154	69	42
Construction sector	185	41	14	8
Service sector	1587	651	171	103
Trade sector	260	134	56	10
Trade sector	1429	601	172	89

As can be seen, the dominant sector is the services sector, so the study focused on this sector.

The study was designed in a qualitative manner, focusing on the opinions, stories and experiences of employees in these sectors, using structured questionaires to collect data. For the study, the formula developed by Yamane (1967) was selected:

$$n = \frac{N}{1 + N(e)^2}$$

where:

n = required sample size;
e = margin of error;
N = population size.

The population, in this study, consists of 2512 businesses, the sample size results in 345 businesses.

IV. Study Results

The research focused on businesses in the manufacturing sector in the Korca Region. From the

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data analysis, we find that in 100% of cases, a great interest is shown in the use of electronic and virtual communication tools in all transactions. In 100% of businesses, the computer was considered the main tool for every operation. A serious deficiency is observed in the use of computers by employees aged 45-60 years. Due to the lack of qualification of this category of employees, it is found that in these businesses the computer is used by 3-6 people, but there is an improvement trend if we compare it with previous studies which showed that the computer was used by 2-5 employees. This figure is relatively low, but the data may be somewhat acceptable if we consider that the businesses are small, medium and very few large. But this indicator also highlights the need that our businesses have for effective training in terms of technological advancement and awareness of the workforce for individual and organizational qualitative progress. The improvement of the production process and the facilitation of operational, financial and other transactions highlight the need for information technology specialists, but reality shows that there is still much to be done in terms of raising awareness among businesses to understand the importance of their presence and finding motivational mechanisms for them. Only 15% of the businesses in the study have an IT specialist, while 20% of them declare that they do not need one.

The growing trend of the need for the internet is also reflected in the answers given by private businesses in the analysis. Specifically, 65% of them have a great need for the internet and 10% are confused and do not know whether they need it or not. As can be seen in figure 1, businesses use the internet most for business research, then for e-mail, entertainment and finally for online commerce.

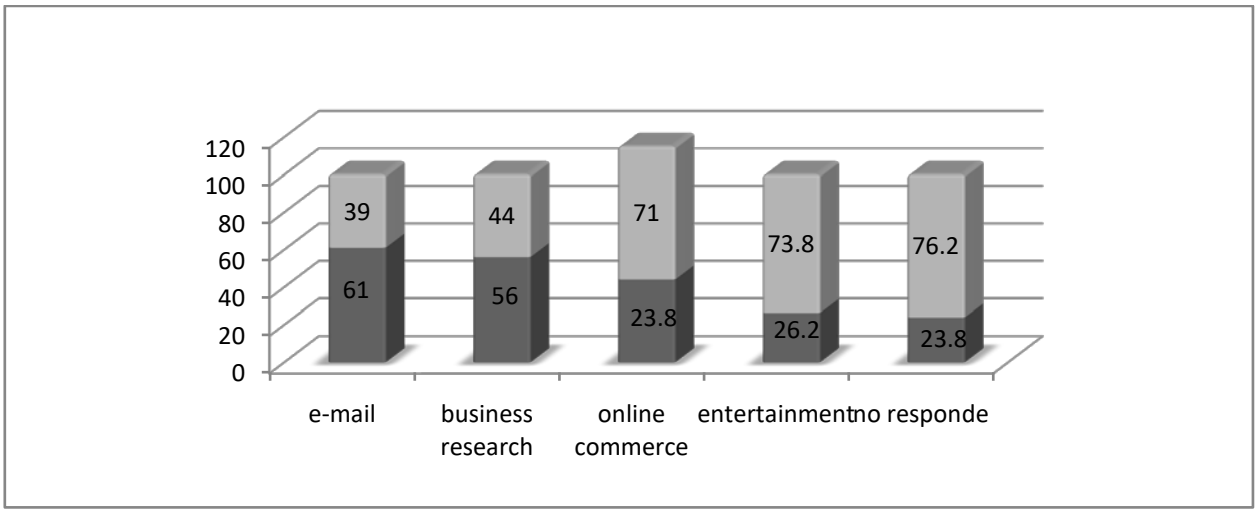


Figure 1: Internet usage

The technology used to create intranets has begun to be applied within companies and organizations to create intranets that allow people within an organization to exchange information. In our region, 32% of businesses have an intranet, 16% do not need one and a significant 16% of businesses do not know what an intranet is. Being aware of the importance of network connections, businesses also have their own website. As can be seen from figure 2, 28% of businesses have a website, 18% do not need one and 7% do not know about it. Although we would like a greater number of businesses with websites, we again see that there is a tendency to expand the scope of action and attempts at globalization.

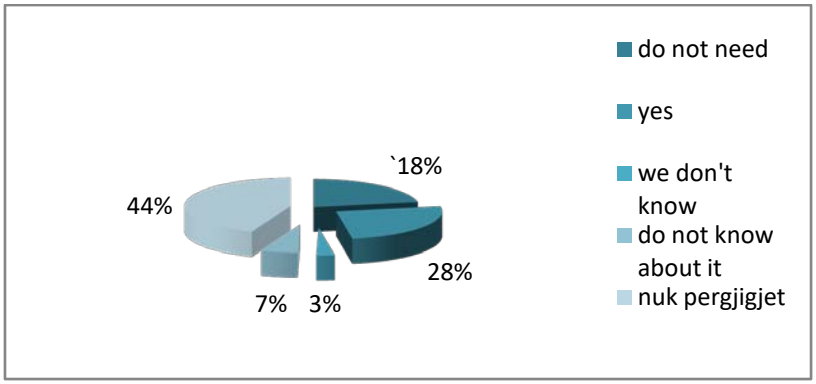


Figure 2: Websites from Businesses

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Businesses say they value the use of official government websites very much. 14% of them use these websites every day, while 15% use them once a week and 25%, once a month.

But is having a website, an indicator that shows the virtuality of the company, sufficient? This is a simple treatment, but it concludes in the fact that large businesses in Albania have started to operate through network systems, but although they should be congratulated for their attempts to get involved in virtuality, they are still far away.

It is too early to hope for the existence of such a form of organization in Albanian business, taking into account the problems addressed so far regarding the structure of Albanian business. But if we look at large businesses, in the banking system, travel agencies, etc. There are favorable parameters that create a path, albeit narrow, that businesses that want to be an active part of the global market can take. Virtual structuring, being typical structures of multinational companies and while Albanian business is characterized by the qualities discussed above, the treatment of virtual structuring is unclear.

V. Conclusions

The need to emphasize organizational learning, rather than individual learning, has led to the necessity for organizations to learn to do different things in different ways. It is precisely this fact that shows the difference between total quality management and the "learning organization". In addition, learning is conceived as a transformative process for organizations, which focuses on the need for change. This change is realized because it is favored by open information and the gradual break from traditional forms of organization, through the decentralization of decision-making and the application of participatory strategies.

Despite the risk that accompanies modern times and the tendencies to move from industrial societies to information societies, from national economies to world economies, from centralization to decentralization and with the aim of bringing about innovations, it is insisted that a decentralized network organization is the best project. Globalization and the need to create a collection of the best professional skills, require the application of virtual structures. Virtuality is considered as a pure opposition to Weber's bureaucracy. Defining the virtual organization as a geographically distributed organization whose members are linked by a long-term interest and goal and where communication and coordination of work is carried out by information technology, we again say that due to the lack of formal rules, procedures and clear reporting of relationships and norms, we again say that the key feature of virtual organizations is the high degree of informal communication.

Organizations function within a context of diverse possibilities and moreover, the concept that continuity has strength, brings a significant dilemma in today's organizational structuring, this is because the structural implications of any continuity cannot be the same.

Based on the experience of developed countries and if we also analyze the trends of organizational structuring in our businesses, we see that the tendency of transition to decentralized systems of public institutions and private activity is gradually crystallizing.

A good indicator of the structural form and trends for decentralization is also the participation of individuals in decision-making. If we think about the debate that is taking place today, to answer the question of whether participation exists or not, we say that despite all the difficulties that have appeared, it is still gaining ground.

Based on the conclusions drawn and the features of the organization and structuring of our businesses, the creation of new, almost independent units can be suggested, to discover new opportunities. A primary role in the economy of the Korca Region is played by trade and in this context we have the opportunity to suggest that firms can create hybrid structures, through the combination of existing and new initiatives. Businesses must struggle for a match between environmental conditions and organizational structures. Organizational structures can change – not to adjust to the specifics of the environment, because such a match may be impossible, but to guide the organizational research process. The Internet should be seen as an opportunity to create an extraordinary power in empowering and adapting the systems of activities of firms, empowering them to explore new opportunities and at the same time to grow the existing business. In a virtual organization, high (low), the routine of organizational tasks coupled with a high (low) degree of hierarchy, centralization and hierarchical levels will be associated with great network performance. This type of structuring, to bring the right effectiveness, must rely on qualified human resources in the fields of information and communication technology and businesses must find the right methods for rewarding and motivating them. We believe that the investigation of the main criteria in improving the management of virtual organizations as well as the design of a new architecture for members in a collaborative environment should be a continuation of our research in this field of study.

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Artificial Intelligence and Tax Governance: Toward Responsible Digital Fiscal Administration in a Southern African Country

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Abstract- This study examines the transformative role of Artificial Intelligence (AI) in modernising tax administration and enhancing fiscal governance in emerging economies, with an empirical focus on Country in the Southern African region. It explores how AI-driven digital fiscal administration is reshaping the tax landscape through automation, predictive analytics, and data-driven decision-making.

Using a qualitative and exploratory design, the research integrates a systematic literature review with comparative case studies from Brazil and Singapore to contextualise international lessons for developing economies. The findings reveal that AI can substantially improve operational efficiency, predictive auditing, and transparency in tax collection processes, highlighting its transformative potential within fiscal institutions. These findings directly inform the development of the proposed AI-Driven Tax Governance Framework, which connects technological innovation with institutional, legal, and citizen-centric dimensions of responsible AI adoption.

Keywords: *artificial intelligence, digital fiscal governance, tax modernization, emerging economies, southern, fiscal transparency.*

GJMBR-A Classification: *LCC Code: HJ2351.4*



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The study addresses a critical knowledge gap regarding the integration of AI with governance, ethics, and institutional readiness in tax systems of emerging economies. It contributes to advancing digital public finance scholarship and offers practical guidance for policymakers seeking to modernise tax systems through transparent, accountable, and data-driven governance.

Keywords: artificial intelligence, digital fiscal governance, tax modernization, emerging economies, southern, fiscal transparency.

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I. Introduction

Artificial Intelligence (AI) has become one of the most transformative forces of the twenty-first century, profoundly reshaping how governments, businesses, and citizens interact within an increasingly data-driven economy. Within public finance - and particularly in taxation - AI is emerging as a strategic catalyst for efficiency, transparency, and risk management. In this paper, AI in taxation refers to the use of machine learning, natural language processing, and data analytics tools to enhance tax compliance, revenue forecasting, and administrative decision-making. Likewise, AI-driven fiscal governance denotes the integration of intelligent systems into public financial management processes to promote accountability and evidence-based policymaking.

Around the world, tax administrations are adopting AI-based tools - from machine-learning algorithms for fraud detection to predictive analytics for revenue forecasting - to automate processes and strengthen institutional capacity. This paradigm shift marks a new phase in the digital transformation of fiscal governance, where information technology becomes inseparable from policy execution and institutional accountability. As a pillar of economic stability and social development, taxation relies on effective resource mobilization and equitable enforcement of tax obligations.

Yet, traditional tax systems continue to face deep-rooted structural challenges: complex legislation, procedural inefficiencies, data fragmentation, and evasion schemes that exploit manual oversight loopholes. Given these persistent inefficiencies, technology-driven reform becomes not merely desirable but imperative. In this context, AI offers unprecedented capabilities to process vast volumes of tax data, identify behavioural patterns, and generate actionable insights in real time. As recent studies indicate (Gao et al., 2020; OECD, 2023; European Parliament, 2021), AI applications in taxation can significantly reduce administrative burdens, strengthen compliance monitoring, and expand analytical capacity within revenue authorities. However, most prior research has concentrated on technical efficiency, leaving governance integration and

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ethical dimensions unde-rexplored - particularly in emerging economies.

The adoption of AI, however, is not without risks. The opacity of algorithmic decision-making, bias in automated assessments, and growing concerns over privacy and data protection introduce novel ethical and legal dilemmas. For instance, OECD (2023) reports that algorithmic misclassification in pilot AI audit systems can reach up to 10% of cases, while the European Parliament (2021) warns that insufficient human oversight can compromise taxpayer rights. Moreover, unequal access to digital infrastructure and limited AI literacy exacerbate disparities between advanced and developing economies. Responsible integration therefore demands a holistic approach - balancing innovation with regulatory oversight, efficiency with fairness, and automation with human judgment.

Against this backdrop, this article seeks to answer the central research question: *How can artificial intelligence transform tax administration and fiscal governance while safeguarding transparency, account-ability, and equity?* The study critically analyses the opportunities, risks, and governance implications of AI-driven tax systems, emphasizing their impact on efficiency, compliance, and ethical standards. Through a systematic review of 40 academic and technical sources published between 2019 and 2024- selected to capture the post-pandemic acceleration of digital fiscal reforms- complemented by comparative case studies, the paper identifies best practices, persistent challenges, and emerging policy directions that can guide sustainable digital fiscal transformation.

Methodologically, the research adopts a qualitative and exploratory design, grounded in a systematic literature review and informed by cross-national experiences including Brazil's AI-based revenue forecasting model, Singapore's "Ask Jamie" virtual assistant, and São Paulo's real-time fiscal analytics. This approach aligns with Creswell's (2014) framework for qualitative inquiry, ensuring analytical rigor and reproducibility.

The contribution of this paper is threefold. First, it systematizes current knowledge about AI applications in taxation, bridging theoretical and operational perspectives. Second, it examines the governance and regulatory issues surrounding data use, algorithmic transparency, and accountability mechanisms. Third, it proposes the AI-Driven Tax Governance Framework, which integrates technological efficiency, ethical compliance, and institutional transparency as the pillars of sustainable digital transformation in tax administration.

The paper is structured as follows: Section 2 discusses the theoretical background, outlining the evolution of AI in public finance, ethical challenges, and the balance between opportunities and risks. Section 3 details the methodological approach and data collection procedures. Section 4 presents the results and discussion, including international cases and the proposed governance framework. Finally, Section 5 concludes with practical recommendations and directions for future research.

II. Literature Review

This section reviews the main theoretical and empirical contributions on the integration of Artificial Intelligence (AI) in public finance and tax administration. It provides a conceptual basis for understanding how AI technologies are reshaping fiscal management, improving compliance, and challenging traditional governance models. The literature also highlights emerging ethical, legal, and institutional concerns associated with automation in taxation. Accordingly, the review is structured into three key dimensions: the role of AI in public finance and tax systems, the ethical and governance challenges it introduces, and the opportunities and risks involved in balancing innovation with accountability.

a) *Artificial Intelligence in Public Finance and Tax Administration*

Artificial Intelligence (AI) has become one of the defining technologies of the Fourth Industrial Revolution, transforming decision-making and service delivery across sectors including health, finance, and taxation. According to Oliveira (2022), AI systems reproduce human cognitive functions-learning, reasoning, and adaptation-allowing governments to process and interpret vast amounts of information in real time. Machine-learning algorithms can detect regularities in large-scale tax data and generate predictive risk scores that accelerate and improve audit selection.

Within tax administration, AI is implemented mainly through machine learning (ML) and artificial neural networks (ANNs) capable of analysing taxpayer data to identify anomalies, hidden relationships, or potential evasion patterns. As Ippolito et al. (2020) highlight that ML improves audit accuracy, while Rodrigues and Gouveia (2020) explain that continuous feedback enables self-learning models that refine their detection capacity over time. Zilveti (2019) adds that AI not only automates mechanical tasks but also changes the logic of fiscal management: administrations can anticipate behavioural, design predictive-compliance programs, and strengthen risk prevention.

Empirical initiatives demonstrate this paradigm shift. The Brazilian Federal Revenue Service has implemented neural-network models for revenue forecasting and anomaly detection, improving audit precision and compliance monitoring (Ippolito et al., 2020); The United Kingdom's Connect System, operated by Her Majesty's Revenue and Customs (HMRC), cross-references banking, property, and digital-transaction data to flag inconsistencies (OECD,

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2023; HMRC, 2021), while Singapore's "*Ask Jamie*" virtual assistant employs natural-language processing to provide 24-hour taxpayer support (Guevara, 2019). OECD (2023) recognises these as leading examples of data-driven fiscal intelligence in action. However, as Almeida (2021) warns, AI must operate within the interpretive boundaries of tax law, since automated reasoning cannot replace legal judgment or contextual analysis.

b) Ethical, Legal, and Governance Challenges of AI in Taxation

The integration of AI into tax systems raises significant ethical, legal, and governance concerns. De Sousa and De Siqueira (2020) argue that translating dynamic and often ambiguous tax norms into algorithmic rules remains one of the main technical obstacles. Frequent legislative changes require constant model updating, and incomplete datasets limit algorithmic accuracy (Engelmannet al., 2020). Lietz (2021) further alerts that bias in training data may produce discriminatory outcomes and undermine the principle of equal treatment among taxpayers.

From a legal perspective, Engelmann et al. (2020) and the European Parliament (2021) stress that *black-box algorithms* threaten due process when their decision logic cannot be explained or audited. They recommend mandatory algorithmic explainability, independent review mechanisms, and a *human-in-the-loop* approach (OECD, 2023). Compliance with data-protection frameworks including the General Data Protection Regulation (GDPR) and the African Union Convention on Cybersecurity and Data Protection is crucial to safeguard privacy and accountability.

Ethical issues also extend to the purpose and limits of automation. Alves (2022) argues that AI in tax administration must serve the public good, prevent abuse of power, and ensure that decisions remain transparent and contestable. Rossi and Torzilli (2019) link ethical AI governance to the principles of justice and equity in public policy. Cybersecurity represents another critical risk dimension, as tax databases contain highly sensitive fiscal information susceptible to breaches and manipulation (OECD, 2022; IMF, 2024). The OECD (2022) further recommends strengthening digital-sovereignty mechanisms and developing national AI ethics frameworks to guarantee trust in automated decision-making.

De Sousa and De Siqueira (2020) emphasise that taxpayer acceptance of AI depends on transparency and education. Without public understanding of how algorithms operate, resistance and litigation may increase. Accordingly, OECD (2023) and Alves (2022) stress that AI governance in taxation must combine *technical safeguards* (reliable data and cybersecurity), *legal adaptability* (clear liability rules and appeal procedures), and *institutional oversight* (human review and ethical committees) to ensure accountability and public trust.

c) Opportunities and Risks: Balancing Innovation and Accountability

AI offers unprecedented opportunities for improving tax efficiency, accuracy, and governance. Ippolito et al. (2020) and Baccarin et al. (2019) show that machine-learning applications reduce operational costs and enhance the speed and quality of tax audits. Zhou et al. (2019) and Wang et al. (2021) demonstrate that automation lightens administrative burden and ensures fairer competition by standardising decision criteria. At the governance level, Manikandan and Maheswaran (2019) argue that AI can increase transparency and curb corruption, while Munir and Setiawan (2020) highlight its role in promoting compliance and deterring fraud.

Practical evidence confirms these benefits. The City of São Paulo implemented an AI-driven audit platform in 2019 capable of real-time anomaly detection, thereby reducing inspection time and increasing accuracy. Singapore's "Ask Jamie" project likewise improved taxpayer service efficiency (Guevara, 2019). OECD (2023) identifies similar adoptions in Estonia and the United Kingdom, where AI supports predictive risk analysis and compliance management.

Yet, these advantages coexist with significant risks. The European Parliament (2021) warns that unexplained algorithmic decisions may violate citizens' rights and erode public trust. Excessive automation may weaken human judgment (Munir & Setiawan, 2020) and reinforce biases embedded in training data (Lietz, 2021). To address this, Gao et al. (2020) propose a multi-layered governance framework comprising three dimensions:

1. Technological Safeguards - Robust cybersecurity and data-protection mechanisms;
2. Legal Safeguards - Transparent, auditable, and explainable algorithms;
3. Institutional Safeguards - Continuous human oversight and independent ethical review.

When these elements operate together, AI becomes not only a tool for innovation but also a vehicle for accountability and public trust in digital fiscal governance.

The Literature Demonstrates that AI in Tax Administration Embodies a Dual Dynamic: It enhances efficiency and compliance while introducing ethical and governance risks that demand robust oversight. Balancing these forces is central to building responsible, transparent, and innovative tax systems. The following section describes the methodological approach adopted to synthesise and analyse this evidence.

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III. Methodology

This section presents the methodological approach adopted in the study. It describes the overall research design, data sources, analytical procedures, and ethical principles observed throughout the investigation. The methodology was structured to ensure clarity, consistency, and credibility, providing a solid foundation for the interpretation of results and for achieving the objectives of this research.

a) Research Design

This study adopts a qualitative and exploratory design, grounded in a systematic literature review (SLR) and supported by comparative international case studies. The objective is to identify, compare, and synthesise existing research and institutional experiences on the application of Artificial Intelligence (AI) in tax administration between 2019 and 2024. The methodological framework follows Creswell's (2014) principles for qualitative inquiry and Kitchenham´s (2021) guidelines for systematic literature reviews, emphasising analytical rigour, transparency, and interpretative depth.

Given the emergent and rapidly evolving nature of AI in taxation, this design allows for a holistic understanding of the phenomenon by integrating conceptual, legal, ethical, and operational perspectives. The chosen 2019–2024 timeframe corresponds to a period of accelerated digital transformation in public finance, driven by post-pandemic reforms and intensified AI experimentation within fiscal institutions.

b) Data Sources and Selection Criteria

Following Kitchenham (2021) and Tranfield et al. (2003), data were collected from peer-reviewed journals, institutional reports, and official policy documents focusing on AI in public finance. Searches were conducted in Scopus, Web of Science, Science Direct, Springer Link, and Google Scholar, using descriptors including *"artificial intelligence"*, *"machine learning"*, *"digital taxation"*, *"public finance"*, *"governance"*, and *"ethics"*.

Documents were Included If they:

1. They were published between 2019 and 2024;
2. Focused on AI applications, governance, or ethics in taxation or fiscal management;
3. Provided conceptual, empirical, or policy-oriented evidence; and
4. They were available in English or Portuguese.

Consistent with Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) principles for systematic reviews (Page et al., 2021), all sources underwent three screening phases: (i) title and abstract review; (ii) full-text assessment for relevance and quality; and (iii) validation of authenticity and citation traceability. Publications that lacked methodological transparency or were duplicative of other studies were excluded. A total of 40 documents met the inclusion criteria: Twenty-eight (28) journal articles (70%), eight (8) institutional reports (20%), and four (4) conference papers or book chapters (10%).

To strengthen contextual validity, three illustrative case studies were also reviewed - Brazil's predictive analytics model for revenue forecasting, Singapore's *"Ask Jamie"* virtual assistant, and São Paulo's municipal AI audit system, These cases were selected based on three criteria: (i) -recognition as best practices by the OECD (2023) and the European Commission (2021); (ii) diversity of governance models (federal, city-level, and hybrid systems); and (iii) geographic and institutional relevance for emerging economies..

c) Data Analysis Procedures

Data extraction was conducted systematically using a matrix template that recorded author, year, focus area, and key findings for each source. The extracted material was then analysed following Bardin's (2016) thematic content-analysis framework, combining deductive and inductive coding.

Initially, the analysis employed a deductive framework derived from prior studies (OECD, 2023; European Parliament, 2021) encompassing three macro-themes: technological efficiency, ethical–legal compliance, and governance accountability. In a second stage, inductive coding identified emergent categories including algorithmic bias, data sovereignty, and transparency mechanisms.

A triangulation strategy (Creswell & Poth, 2018) was applied to compare evidence across document types, ensuring internal validity. Qualitative matrix mapping supported pattern detection and cross-case synthesis, focusing on identifying both enabling and constraining factors of AI implementation in tax administration.

d) Ethical Considerations

Given the non-interventional nature of the research, formal ethics approval was not required. The study complies with the Code of Ethics and Conduct in Research of the University of Coimbra (2021), aligned with international standards of academic integrity and ethical research practice (Resnik, 2018; European Commission, 2021).

All reviewed materials originated from open-access or publicly available sources, and full attribution was provided for every cited work. Because the study does not involve human participants or confidential datasets, it presents no direct ethical risks. Nevertheless, privacy, fairness, and accountability were carefully addressed following OECD (2022) recommendations for AI-related research. Ethical reflection on AI-particularly concerning bias and governance responsibility- was integrated into the analysis,

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reinforcing the study's normative commitment to responsible innovation and socially beneficial technology use.

By grounding its procedures in recognised qualitative-research standards and international ethical frameworks, this methodology ensures analytical rigour, reproducibility, and normative responsibility. It thus provides a robust foundation for the presentation and interpretation of findings in the following section.

IV. Results and Discussion

This section presents and interprets the main findings obtained from the systematic literature review and the comparative analysis of selected international experiences. The results are discussed in light of the theoretical framework established in the previous chapters, highlighting key patterns, opportunities, and governance challenges related to the adoption of AI in tax administration.

a) Overview of Findings

The systematic review revealed three dominant trends in current research and practice.

1. *Expansion of AI in Public Finance Ecosystems:* With governments adopting predictive and automation tools to improve efficiency and compliance.
2. *Emergence of Ethical, Legal, and Governance Concerns:* Including transparency, accountability, and data protection.
3. *Increasing Emphasis on Hybrid Models:* Where AI complements but does not replace human oversight in tax decisions.

Across the forty reviewed sources, 78% reported measurable improvements in administrative efficiency and audit quality after AI implementation. However, 65% also noted persistent ethical and legal challenges, especially in data privacy, algorithmic bias, and explainability of automated decisions. These findings confirm that AI integration in tax systems produces dual impacts: enhancing operational capacity while demanding robust governance mechanisms to safeguard fairness and legitimacy.

b) Comparative Analysis of International Experiences

1. *Brazilian Federal Revenue Service, Brazil*

The Brazilian Federal Revenue Service (RFB) has implemented AI-based predictive analytics for tax collection and fraud detection since 2018. According to Dornelas et al. (2022), the adoption of neural networks has improved revenue forecasting accuracy by 22% and reduced audit-processing time by 35%. However, challenges persist in data integration between federal and state systems, as highlighted by Oliveira (2022). Governance mechanisms are still adapting to ensure interoperability and data security in a federated environment.

2. *Singapore*

Singapore's *Ask Jamie* initiative, launched by the Government Technology Agency (GovTech), exemplifies the use of AI to enhance citizen engagement. Through natural language processing, the system responds to thousands of taxpayer queries daily, achieving a 90% satisfaction rate (Guevara, 2019). The project demonstrates how AI can improve accessibility and service quality while maintaining compliance with privacy and data-protection laws. Singapore's governance model ensures continuous human monitoring, algorithmic audits, and transparency in automated communication.

3. *São Paulo Municipal Secretariat of Finance, Brazil*

At the subnational level, the São Paulo Municipal Secretariat of Finance adopted an AI-driven audit platform in 2019 capable of real-time anomaly detection. The system analyses digital invoices and financial transactions, reducing manual inspection workload by 40% and increasing detection of tax irregularities by 28%. These results reflect the operational potential of AI in local governments but also highlight limitations related to digital literacy among staff and the cost of system maintenance.

4. *Comparative Synthesis*

All three cases illustrate that AI significantly improves efficiency, transparency, and predictive capacity. Yet, they also confirm that technological advancement must be accompanied by adequate institutional governance. Singapore demonstrates best practices in ethical supervision, while RFB and São Paulo Municipal Secretariat of Finance show substantial progress but continue to face challenges in harmonizing legal frameworks and data governance.

c) Thematic Discussion and Interpretation

The results reaffirm the arguments advanced in the literature (Zilveti, 2019; OECD, 2023) that AI in taxation represents a strategic shift toward evidence-based fiscal governance. The technology's impact extends beyond automation, enabling more intelligent resource allocation, enhanced fraud detection, and improved citizen interaction.

However, the findings also corroborate concerns identified by De Sousa and De Siqueira (2020) and Lietz (2021):

- *Ethical and Legal Risks:* Persist when algorithmic decision-making lacks transparency or accountability mechanisms.
- *Institutional Readiness:* Remains uneven, with varying degrees of technological capacity and regulatory maturity among countries.
- *Data Governance and Cybersecurity:* Remain critical priorities for sustaining trust in AI systems.

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In comparative terms, the results indicate that success in AI adoption depends on four interrelated factors:

1. *Quality and interoperability of fiscal data infrastructures;*
2. *Legal frameworks ensuring privacy and algorithmic transparency;*
3. *Institutional capacity for AI supervision and continuous improvement;*
4. *Ethical accountability embedded in administrative culture.*

These findings suggest that the mere introduction of technology does not guarantee digital transformation. Instead, effective AI integration requires governance mechanisms capable of balancing innovation, compliance, and citizen trust.

d) Conceptual Model: The AI-Driven Tax Governance Framework

Drawing on the findings and comparative evidence, derived from the literature review and international case analysis, this study proposes the AI-Driven Tax Governance Framework, as shown in table 1. A conceptual model outlining how AI can be responsibly integrated into tax administration. The framework consists of four interconnected dimensions:

Table 1: The AI-Driven Tax Governance Framework

Dimension	Description	Key Expected Outcomes
Technological Infrastructure	Adoption of secure, interoperable, and data-driven systems capable of predictive analytics.	Increased efficiency and real-time risk detection.
Legal and Ethical Compliance	Alignment of AI practices with legal norms, data protection, and algorithmic transparency principles.	Fairness, accountability, and public legitimacy.
Institutional Capacity	Development of digital competencies, training, and oversight mechanisms.	Improved decision quality and adaptive governance.
Citizen-Centric Governance	Inclusion of feedback channels, explainability, and public awareness of AI tools.	Strengthened trust, transparency, and inclusiveness.

Source: Adapted by the author (2025).

This conceptual model outlines how AI can be responsibly embedded in tax systems and it integrates technological, legal, and ethical perspectives and reflects the balanced approach recommended by the OECD (2023) and the European Parliament (2021) for sustainable digital transformation in public finance.

The findings confirm that AI has the potential to redefine fiscal governance by enhancing transparency, efficiency, and predictive control. However, these gains can only be sustained through robust ethical and legal safeguards, continuous institutional adaptation, and citizen engagement. The proposed AI-Driven Tax Governance Framework offers a holistic reference for governments seeking to modernise their tax systems while ensuring accountability and public trust.

V. Conclusions and Recommendations

a) Conclusions

This study examined how Artificial Intelligence (AI) is reshaping the landscape of tax administration and fiscal governance, drawing upon an extensive literature review and comparative case analysis. The findings demonstrate that AI represents both a transformative opportunity and a governance challenge for modern public finance systems.

At the conceptual level, AI enables automation of complex fiscal processes, enhances predictive auditing, and strengthens data-driven decision-making. Countries including *Brazil, Singapore, and Estonia* exemplify how AI can improve efficiency, reduce fraud, and foster transparency in tax administration. However, successful adoption depends on *institutional maturity, ethical safeguards, and legal adaptability* - factors repeatedly highlighted across the literature and confirmed by comparative experiences.

Key Conclusions Include:

1. *Technological Innovation:* Alone is insufficient; it must be supported by clear governance structures and ethical accountability mechanisms.
2. *Data Quality and Interoperability:* Remain decisive for AI's effectiveness in risk detection and fiscal forecasting.
3. *Legal and Ethical Frameworks:* Are necessary to ensure algorithmic transparency, fairness, and protection of taxpayer rights.
4. *Institutional Capacity Building:* Including staff training, technical infrastructure, and human oversight - is essential to sustain long-term impact.
5. *Citizen Trust:* Is the cornerstone of digital transformation in taxation; without transparency and explainability, technological gains may be undermined by public resistance. This finding aligns with evidence from Singapore´s "Ask Jamie" initiative and OECD (2023), which highlight public transparency as key to citizen compliance.

The proposed *AI-Driven Tax Governance Framework* offers an integrative model to guide the

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responsible adoption of AI in tax systems, combining technological efficiency with ethical and institutional oversight. This framework is particularly relevant for emerging economies, where modernization public finance must align innovation with social accountability and effective data governance.

b) Recommendations

Based on the findings and conceptual synthesis, several recommendations are proposed:

1. *For Policymakers and Governments*

- Establish *national AI governance strategies for public finance* that define ethical, legal, and technical standards.
- Integrate *data protection and cybersecurity laws* with fiscal-administration reforms to ensure privacy and prevent misuse of taxpayer information.
- Promote *regional cooperation* (e.g., through the African Tax Administration Forum - ATAF) to share experiences and best practices in digital taxation.
- Encourage *investment in infrastructure and interoperability*, including cloud-based systems and standardised fiscal data exchange protocols.

2. *For Tax Administrations*

- Adopt *AI systems incrementally*, prioritising pilot projects that allow risk assessment and stakeholder feedback before full deployment.
- Create *multidisciplinary governance units* combining IT, legal, and audit professionals to oversee algorithmic systems.
- Develop continuous *capacity-building programs* to equip staff with digital and ethical competencies necessary for AI oversight.
- Implement *transparency dashboards* to communicate AI-generated results and maintain citizen trust in automated fiscal operations.

3. *For Academic and Technical Research*

- Expand empirical research on *AI ethics, bias mitigation, and fairness in public decision-making*, particularly in fiscal contexts.
- Develop *quantitative models* to measure AI's real impact on revenue efficiency, compliance levels, and administrative costs.
- Conduct *comparative studies* across African and Lusophone countries to identify contextual barriers and scalability factors in AI adoption.
- Encourage interdisciplinary collaboration between *communication sciences, economics, and data analytics* to strengthen public understanding of AI in governance.

c) Limitations of the Study

While this research provides a structured conceptual and analytical framework, several limitations should be acknowledged. The analysis is based *on 40 documents and three international case studies* although diverse, may not capture all regional variations in fiscal digitalization. Moreover, the *qualitative and exploratory design* prioritizes interpretative depth over statistical generalization. Future quantitative validation could therefore enhance the robustness of the proposed framework.

d) Future Research Directions

Building on this Foundation, Future Research should Aim to:

- Empirically test the AI-Driven Tax Governance Framework across diverse administrative contexts.
- Investigate AI bias detection and mitigation mechanisms within fiscal algorithms.
- Explore the interaction between digital communication, transparency, and taxpayer behaviour in AI-based systems.
- Conduct longitudinal studies to evaluate how AI adoption evolves in relation to institutional capacity and regulatory adaptation.

e) Final Reflection

The digital transformation of tax administration represents not merely a technological upgrade but a structural evolution in the way states manage, regulate, and communicate with citizens. AI has the potential to make tax systems more efficient, transparent, and inclusive, yet its implementation must remain guided by the principles of responsibility, fairness, and accountability.

For countries including Mozambique, where fiscal modernisation is closely tied to national development goals, adopting AI requires a phased, institutionally anchored approach: one that aligns innovation with ethical governance and citizen empowerment. Only through such balance can digital technologies truly contribute to sustainable, transparent, and trustworthy fiscal systems.

AI offers an unparalleled opportunity to modernise tax systems, but its long-term success depends on sound governance, institutional capacity, and ethical responsibility. The AI-Driven Tax Governance Framework model provides a foundation for guiding that transition, ensuring that the future of digital taxation is both intelligent and just.

Conflict of Interest and Funding Declaration

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Why Cultural Intelligence Determines the Success of Sustainable Leadership: An Analysis with Recommended Actions for Companies

By Dr. René Rüth

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Cultural intelligence is a crucial key competence for promoting and improving sustainable leadership, as the majority of companies today operate in transnational value chains and increasingly have a culturally diverse personnel structure.

This paper analyses cultural intelligence in the context of sustainable leadership and provides a comprehensive assessment of the synergies and benefits of integrating cultural intelligence into leadership.

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Why Cultural Intelligence Determines the Success of Sustainable Leadership: An Analysis with Recommended Actions for Companies

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Abstract- In an increasingly complex and globalised business world, the relevance of responsible and sustainable leadership is growing. This development is justified not only by public- and political environmental considerations, but also by a management point of view with regard to economic robustness, long-term viability and social perspectives. Legal requirements, such as the obligation to report on corporate social responsibility or the "Supply Chain Duty of Care Act", are increasing the pressure on companies and reinforcing the need for a transformation in leadership.

Cultural intelligence is a crucial key competence for promoting and improving sustainable leadership, as the majority of companies today operate in transnational value chains and increasingly have a culturally diverse personnel structure.

This paper analyses cultural intelligence in the context of sustainable leadership and provides a comprehensive assessment of the synergies and benefits of integrating cultural intelligence into leadership. This analysis focusses on economic and social aspects. Finally, concrete recommendations for action for companies to implement cultural intelligence in a sustainable leadership culture are presented.

The article emphasises the need to consider not only economic perspectives in leadership, but also amplifies social and ethical perspectives in connection with an inter-culturally intelligent ability and awareness to act in order to increase leadership success within and outside the company.

I. Introduction

In an era of increasingly globalized business world, characterised by dynamism and complexity, the concept of sustainable leadership is becoming absolutely important. This paradigm shift is driven not only by the growing awareness of environmental issues, political debates and initiatives, but also by economic considerations with regard to organisational stability, economic robustness and long-term business success. The growing pressure from legal requirements and societal expectations is further reinforcing this development (Bendell et al. 2017; Tideman et al 2013).

Cultural intelligence (CQ) is a key aspect for promoting and improving sustainable leadership. CQ is a concept that makes leadership behaviour demonstrably measurable in a culturally unfamiliar context. CQ can also be operationalised in such a way that this essential competence can be learned and developed (Rockstuhl et al. 2011; van Dyne et al. 2012).

This paper is dedicated to the concept of sustainable leadership as well as to a comprehensive assessment of CQ and its integration into the context of sustainable leadership. Not only ecological, but also social and partly economic aspects are taken into account in order to create a holistic understanding.

Firstly the paper reviews the basics of sustainable leadership in order to shed light on definitions and characteristics and to explain the significance of this leadership philosophy for companies, the environment, the economy and society. The concept of CQ is then analysed in more detail by highlighting its relevance and impact in global business environments. Based on this, an analysis of how cultural intelligence can support sustainable leadership and what synergies exist between CQ and the principles of sustainable leadership will be performed.

Secondly, the integration of CQ into the Sustainable Leadership approach will be evaluated. In addition, the selected advantages of CQ in the context of sustainable leadership are analysed. Finally, practice-orientated recommendations for action for companies are presented.

Overall, the article emphasises the increasing need for management and leaders to consider not only economic goals but also social responsibility in connection with a deep intercultural understanding in the future. In an ever-changing global business environment, the findings presented provide a sound rationale for creating a sustainable and inclusive leadership culture.

II. Sustainable Leadership

Sustainable leadership represents a paradigm shift in the way managers perceive their responsibilities and manage organisations. The definitional categorysation of sustainable leadership is multifaceted and subject to constant change as the demands on leadership change in a dynamic business environment (Gerard et al. 2017). The subsequent section presents various definitions of sustainable leadership in chronological order and identifies common core elements, principles and methods.

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According to Peter Senge (1990), sustainable leadership strives to create organisations that are not only successful in the short term, but also implement sustainable long term practices. Senge emphasises the importance of continuous learning and adaptability in order to meet the challenges of a constantly changing environment. Elkington (1997) integrates ecological, economic and social dimensions into his definition of sustainable leadership. He sees managers as key players who can achieve a positive impact on the environment, economy and society through their decisions. The triple bottom line - people, planet, profit - is at the centre of his approach. Avolio et al. (2004) focus on the personal responsibility of managers. They define sustainable leadership as a process in which managers empower their employees to achieve long-term goals by fostering a culture of trust, innovation and ethical decision making. Bass and Riggio (2006) highlight the need to integrate ethical principles in their definition. Sustainable leadership goes beyond short-term organisational goals and strives to develop ethically responsible leaders who promote long-term positive change. Marquardt (2011) draws attention to the development of leaders with regard to sustainable practices. Sustainable leadership is seen as an evolutionary process that requires continuous development and emphasises the ethical and social competencies of leaders in addition to their professional skills. Kouzes and Posner (2012) see sustainable leadership as a process of continuous adaptation and development. They emphasize the importance of leaders who can adapt to changing circumstances in order to ensure long-term organisational effectiveness. Tideman et al. (2013) see sustainable leadership as an integrative approach that permeates different levels of the organisation. The definition accentuates the active involvement of managers in creating a corporate culture that strives for economic success on the one hand and promotes social responsibility and environmental awareness on the other. Bendell et al. (2017) focus on the integration of personal development and organisational transformation. For them, sustainable leadership means that managers not only focus on their own development, but also have a positive impact on the development of the organisation and its members.

Following these diverse definitions, six central characteristics of sustainable leadership have crystallised, which can be seen in the following table.

Table 1: Characteristics of Sustainable Leadership

Long-term orientation	• Planning and decisions are orientated towards long-term goals
	• Focus on sustainable success over several periods of time
Holistic thinking	• Consideration of ecological, economic and social dimensions
	• Integration of aspects such as environmental impact, economic efficiency and social responsibility
Ethics and values	• Clear ethical principles guide decisions. • Promoting a corporate culture based on integrity and values
Social responsibility	• Active participation in social issues and questions of justice
	• Integration of socially responsible practices models into business
Continuous process	• Adaptation to changing circumstances
	• Sustainable development requires continuous further development
Promotion of innovation	• Encouraging creative thinking and innovative solutions
	• Creating an environment that enables continuous improvement and optimisation

(Source: own illustration)

To summarise, sustainable leadership combines long-term orientation, holistic thinking and comprehensive responsibility for the environment, economy and society. It requires continuous learning processes, personal development of managers and the integration of ethical principles into decision-making. In addition, Sustainable Leadership strives for a balanced, value-based and at the same time innovative development of organisations.

III. Success Factor Cultural Intelligence (CQ)

Over 60% of German companies organise their value chain, for example, by sourcing in the Far East, producing in neighbouring countries, exporting goods, outsourcing or increasingly recruiting talent across national borders (Federal Statistical Office 2022). For companies, the question arises as to how collaboration can be as successful as possible in an international

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context. Against this backdrop, the importance of cross-cultural management of employees with different value structures, belief systems and traditions is growing.

In this context, CQ is becoming increasingly relevant. CQ can predict the success of leaders in an intercultural environment. Its predictive accuracy has been developed since 2003 and has been proven by numerous studies with tens of thousands of participants (Ang et al. 2015). In addition, CQ improves understanding of the critical skills that enable people to operate successfully in intercultural situations and can be used to identify organisational and personnel deficits, provide targeted training for managers and employees and adapt organisational processes (Ng et al. 2012).

a) Cultural Intelligence can be Measured and Trained

In a broader sense, CQ describes an individual's ability to act effectively and efficiently in intercultural situations. According to Earley and Ang (2003), CQ is defined as a form of intelligence that enables individuals to adapt to different cultural contexts, understand cultural differences and interact successfully with people from different cultural backgrounds.

CQ's ability to measure and train intercultural attitudes as much as sensitivities and to predict individual intercultural success is based on a multi-dimensional approach to intelligence. CQ postulates that although talent is partly determined by social and genetic conditions, it can be specifically improved through training and education (Rockstuhl et al. 2011).

The CQ concept is based on the assumptions of Sternberg (2009). According to his model of Triarchic Intelligence, intelligence is three-dimensional (analytical, creative and practical intelligence) and comprises the closely interlinked processes of analysis, experience and adaptation (Sternberg 2009). Accordingly, a person is not only successfully intelligent because they can pass 'good' intelligence tests, but above all because they act with great success in real life. The special thing about real life is that a person is confronted with complex and almost unpredictable environments in which analysing and adapting to the environmental conditions are just as important as the skilful manipulation of settings.

For CQ, the three dimensions of Sternberg's (2009) approach have been adapted and simplified in some ways to suit the purpose of intercultural business success. They do not cover the comprehensive horizon that Sternberg (2009) wanted to examine with his three dimensions, but can be measured more accurately. The four dimensions of CQ are also more suitable when it comes to their application in real business processes. The definition on which these dimensions are based states that CQ is the "ability to function effectively in intercultural contexts" (Ang et al. 2015: 274). As simple as this definition may sound, it contains some profound features that need to be explained further. The term 'functioning' implies that CQ is focussed on practical purposes. In line with the complex intelligence models proposed by Sternberg (2009), CQ assesses not only potential but also actual success.

Functioning in a new environment indicates the practical ability to adapt well to new cultures. The environment of new cultures is included in the term 'intercultural contexts'. What is particularly important is that the CQ not only explains likely behaviour in completely new cultures, but in any situation where cultural differences are noticeable. Therefore, it also helps to understand why certain people are more successful in communicating and interacting with people of different religion or social class within a national country, organisation or team (van Dyne et al. 2012). The four dimensions include (1) cognitive, (2) metacognitive, (3) motivational and (4) behavioural skills (Bird & Stevens 2018).

Thomas and Inkson (2009) use the same four dimensions, but connote them as follows: (1) cultural knowledge, (2) cultural awareness, (3) cultural motivation and (4) cultural skills. Cultural knowledge refers to the understanding of cultural concepts, traditions and practices. Cultural motivation refers to the willingness to overcome intercultural challenges. Cultural awareness refers to the ability to reflect on one's own and the culture of others. Finally, cultural skills relate to the actual translation of knowledge and motivation into effective action in culturally mixed contexts.

b) Advantages of CQ in Global Business Environments

The practical relevance of CQ in global business environments is undisputed. The advantages of CQ are manifold and described below for both internal and external corporate contexts.

1. *Promotion of an Inclusive Organisational Culture*

The development of an inclusive organisational culture is supported by CQ. Livermore (2016) articulates that CQ helps to value diversity and create a positive environment for employees from different cultural backgrounds.

2. *Contribution to Conflict Resolution and a Cooperative Corporate Culture*

The ability of CQ to resolve conflicts and promote a cooperative corporate culture is affirmed by Gudykunst and Kim (2003). They show how CQ can improve communication and resolve conflicts through intercultural sensitivity. Ott and Michailova (2018) also emphasise that a high level of cultural intelligence helps to minimise misunderstandings and strengthen interpersonal relationships.

3. *Promotion of Ethics and Social Responsibility*

The promotion of ethics and social responsibility through CQ is highlighted by Bird and Stevens (2018). They show how CQ can contribute to

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ethical leadership by helping leaders understand the social impact of their decisions.

4. *Strengthening Employee Satisfaction*

The strengthening of employee satisfaction through CQ is key to success according to Livermore (2016). CQ enables managers to create a positive working environment that respects the needs and values of all employees.

5. *Effective Development of International Business Relationships*

Research by Ang et al. (2007) shows that managers with high cultural intelligence are more effective at leading global teams and building international business relationships. The effectiveness of CQ in building international relationships is also emphasised by Rockstuhl et al. (2011). They stress the role of CQ in overcoming cultural differences and promoting successful cross-border collaboration.

6. *Risk Reduction in International Business Transactions*

The role of CQ in reducing risk in international business deals is also articulated by Livermore (2016). CQ empowers executives to understand cultural nuances and better assess potential risks.

7. *Improvement of Customer Relationships*

The improvement of customer relationships through CQ is emphasised by Thomas and Inkson (2009). They show how CQ equips managers with the ability to respond to cultural preferences and thus increase customer trust and satisfaction.

8. *Successful M&A Integration*

Ang et al. (2007) link the successful integration of a company in the context of mergers with CQ. CQ plays a crucial role in bridging cultural differences between merging companies and thus ensuring a smooth merger process.

IV. The Link between CQ and Sustainable Leadership

The integration of CQ in the context of sustainable leadership offers a valuable opportunity to make global and at the same time sustainable corporate management more successful. This chapter discusses the link between CQ and sustainable leadership, highlighting both the direct support provided by CQ and the synergies between CQ and sustainable leadership.

As outlined above, CQ promotes an inclusive organisational culture, which is an essential foundation for sustainable leadership. Research by Livermore (2016) emphasises that leaders with a high level of CQ are more capable of leading diverse teams and creating an inclusive environment. This helps to ensure the inclusion of different perspectives and, by extension, CQ as a key support factor for sustainable leadership in global organisations. CQ permits (enables) leaders to manage cultural diversity more effectively and operate more successfully in international contexts. Cultural knowledge plays a decisive role in this. Managers with a sound understanding of different cultures are able to make better decisions that take social and socio-cultural aspects into account in addition to the economic perspective. This strengthens acceptance and trust among suppliers, customers and business partners in distant countries (Bird & Stevens 2018).

The synergies between CQ and sustainable leadership are manifold and range from promoting corporate social responsibility to global collaboration. Managers and leaders who have both strong CQ and sustainable leadership principles are better placed to lead intercultural teams and to build and maintain international business relationships (Paiuc 2021).

The Essential Synergies are Discussed below:

1. *Cultural Diversity, Inclusion and Social Responsibility*

One of the key synergies between CQ and Sustainable Leadership is the promotion of cultural diversity and inclusion. CQ enables leaders to create an organisational culture that respects diversity and fosters an inclusive environment, which in turn contributes to more socially and ethically oriented behaviours and business practices (Livermore 2016). Ang et al. (2007) also point out that an inclusive organisational culture increases employee satisfaction.

Another advantage of this integrated approach lies in the promotion of ethics and social responsibility. Managers with a high level of CQ not only consider economic goals, but also have a deeper understanding of cultural values and the social impact of business decisions on the company and the relevant stakeholders (Brislin et al. 2006).

2. *Intercultural Communication and Conflict Resolution*

CQ promotes effective intercultural communication and contributes to conflict resolution. This is particularly relevant for sustainable leadership, as open and respectful communication is a basic prerequisite for developing sustainable and ethically responsible ways of working (Awan et al. 2018).

3. *Promotion of Ethical Decision-Making, Employee Motivation and Loyalty*

The CQ supports the development of ethical decision-making processes by helping managers to understand cultural values and norms. This ability to orientate ethically is a key feature of sustainable leadership (Awan et al. 2018). Managers who possess CQ are thus better able to take individual needs and cultural differences into account, which leads to increased employee satisfaction (Rockstuhl et al., 2011). This in turn not only contributes to a positive corporate culture, but also promotes loyalty between employees. Sustainable leadership based on the principles of CQ thus creates an environment in which employees enjoy

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working, are more productive and make a lasting contribution to the company's success.

4. *Promoting Innovation through Cultural Diversity*

The consideration of cultural diversity, supported by the CQ, contributes to an innovative corporate culture. Sustainable leadership benefits from this by promoting sustainable and environmentally friendly innovations (Rockstuhl et al. 2011). CQ contributes significantly to increasing the innovative capacity and adaptability of organisations. Research findings by Wang and Goh (2020) emphasise that leaders with a high CQ are better able to generate innovative ideas from different cultural perspectives. This not only promotes creativity within the team, but also enables faster adaptation to changing global markets. The ability to synchronise with different cultural influences thus becomes a competitive advantage, which has a positive impact on the sustainable success of the organisation.

5. *Long-Term Relationships and Social Responsibility*

The application of CQ in all areas of a company not only facilitates internal operations, but also makes a significant contribution to improving market development and international cooperation. Managers and employees with a high level of CQ can respond better to the cultural preferences, expectations and local business practices of new business partners. This leads to more effective market development in new regions and consequently strengthens customer relationships and loyalty, as customers feel better understood (Thomas &Inkson, 2009). This aspect in particular emphasises the basic idea of sustainable leadership with regard to economically sustainable business management.

6. *Adaptability to Different Business Environments*

CQ enables increased adaptability to different cultural business environments, for example when entering the market in China or India. Sensitivity and flexibility are of great importance here, particularly with regard to adapting business practices to different social contexts and legal requirements (Livermore, 2016). A high degree of consideration is required when initiating business in distant markets with significant cultural differences.

7. *International Cooperation, Risk Reduction and Crisis Management*

The ability to operate effectively in a global context is crucial for both CQ and sustainable leadership. CQ enables managers to build and maintain more successful business relationships, which in turn supports economic success (Rockstuhl et al., 2011). Managers who are able to understand cultural contexts can also identify potential conflicts and risks at an early stage and respond proactively. This helps to protect the company from potential damage and strengthen its resilience to external challenges (Gudykunst & Kim, 2003; Solomon & Steyn, 2017).

8. *Promotion of Social Responsibility in Supplier Relationships and Production Processes*

Observing cultural and sustainable responsibility in supplier relationships is another important aspect. Managers and executives will increasingly ensure that suppliers are treated fairly and that ethical standards are adhered to. This directly complies with the German Supply Chain Duty of Care Act (LkSG), promotes responsible supplier management and thus strengthens the positive image of the company (Gudykunst& Kim 2003; Rausch-Phan & Siegfried 2022). The same applies to the organisation of transnational production and work processes. Ethically responsible production practices and working methods that respect social and cultural standards are proactively taken into account (Brislin et al. 2006). In addition, recognition and respect for global environmental standards are promoted. CQ enables managers to understand cultural differences in environmental approaches and to develop more sustainable practices, e.g. with suppliers or producers, that take the local context into account (Thomas & Inkson, 2009).

9. *Successful Merger & Acquisition Integration and International Consolidation*

CQ also plays a crucial role in the context of mergers and acquisitions (M&A) and international mergers. Managers with CQ can better manage the cultural differences between the organisations involved, enabling smooth integration and a successful transition. This leads to effective utilisation of synergies and long-term M&A success (Osland 2018).

10. *Strengthening Global Reputation and Brand Management*

A final point is the strengthening of global reputation and brand management. Bhagat (2017) shows in a research article that organisations whose managers have a strong CQ are better able to adapt their messages to different cultural contexts. This not only promotes brand acceptance in different regions, but also contributes to the company being perceived as globally orientated. A positive global reputation is not only crucial for branding, but also for the long-term development of companies (Gupta et al. 2008).

V. Recommendations for Companies

The previous elaborations illustrate the great importance of cultural intelligence for successful sustainable leadership in an international context.

The integration of CQ into sustainable leadership must be understood as a process and requires a systematic approach. By formulating guidelines and principles, companies can create suitable framework conditions to gradually dovetail the two concepts of CQ and sustainable leadership and

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specifically promote a leadership culture with high cultural intelligence (Solomon & Steyn 2017; Wang & Goh 2020).

Creating such a culture requires a comprehensive transformation of organisational values and practices. Companies must promote an inclusive organisational culture that views diversity and cultural sensitivity as fundamental elements of leadership. This can be achieved through targeted measures such as mentoring programmes or diversity initiatives (Dover et al. 2020; Puritty et al. 2017).

Furthermore, employees, executives and managers alike must be sensitised to the high benefits of CQ and trained accordingly. With this in mind, CQ-based training programmes can be introduced to prepare staff for cultural challenges and strengthen their skills in intercultural communication and collaboration. Regular training programmes can ensure that CQ skills are deepened and continuously improved (Bhagat 2017; Rockstuhl et al., 2011).

It is important to consider the specific requirements of the company and the industry in order to design suitable training programmes and training measures. The programmes can include interactive workshops, case studies, simulation-based training and intercultural awareness units. Particular attention should be paid to the practical applicability of the acquired knowledge in day-to-day management practice (Awan et al. 2018; Lenartowicz et al., 2014). Furthermore, the diverseness of learning styles, experiences and cultural diversity requires the possibility of flexible and individualised training opportunities. This can be achieved, for example, through the provision of self-learning modules, personalised coaching or peer-to-peer learning approaches (Ferreira-Lopes & Rompay-Bartels 2019).

The success of the CQ training programmes and the transformation of the leadership culture should be evaluated on the basis of measurable objectives. Companies can measure progress using various performance indicators such as intercultural team performance, successful international business deals or employee satisfaction. By integrating control mechanisms, companies can ensure that the activities and measures are having the desired effect. This also enables companies to adapt flexibly to the dynamic business environment and thus secure their long-term competitiveness (Thomas & Inkson 2009; Wang & Goh 2020).

VI. Conclusion and Outlook

Sustainable management goes far beyond ecological perspectives. Rather, it encompasses the responsible and targeted interaction between companies and their relevant stakeholders in the context of constantly changing economic activity.

The detailed assessment of the synergies and benefits of CQ within the framework of sustainable leadership underpins the relevance of this key competence for companies. It asserts that CQ is not merely a helpful addition, but an indispensable support for sustainable leadership.

The promotion of an inclusive organisational culture, greater ethical and social responsibility in decision-making and the development of effective international business relationships illustrate the positive effects of CQ at various levels of management. The additional benefits, such as the improvement of customer relationships, the opportunity to reduce risk and the successful organisation of the corporate value chain, demonstrate the far-reaching positive effects.

CQ can be learned. This key realisation offers companies the opportunity to systematically and sustainably embed CQ in the corporate culture, the management concept and the operational activities themselves. The creation of an integrative and sustainable culture as well as the training and development of managers, executives and employees are decisive steps on the way to inter-culturally sensitive and long-term successful corporate management. Companies that heed these recommendations will not only reap the economic benefits, but will also fulfil their social responsibility and make a valuable contribution to a more sustainable global business environment.

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Digital Revolution in the Kurdistan Region: Challenges and Opportunities

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Abstract- The Kurdistan Region in Iraq (KRI) stands at a pivotal moment, where digital transformation has the potential to reshape governance, the healthcare sector, education, and local governments, while driving economic growth. Recent actions by the Kurdistan Regional Government (KRG), such as the Digital Transformation Strategy and the Prime Minister's commitment to e-governance and smart cities, demonstrate a political will to harness information and communication technologies (ICT) for sustainable development. However, institutional divisions, cultural differences, skills gaps, infrastructural and technological limitations, ecosystem challenges, and societal readiness pose significant challenges. Based on recent scholarship on smart cities, higher education, and public sector reforms, along with policy announcements and regional analyses, this paper critically examines the challenges and prospects of Kurdistan's digital revolution, drawing on current research, policy documents, and regional case studies. The research concludes that successful digital transformation requires an integrated framework that combines institutional leadership, citizen engagement, international cooperation, and investment in infrastructure.

Keywords: *digital transformation, e-government, reform of the public sector, information and communication technologies, smart governance, sustainable develop-ment, kurdistan regional government.*

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I. Introduction

The digital shift is becoming increasingly recognized for enhancing governance, generating new ideas, and driving economic and social growth. Digitalization, the digital revolution, and transformation have all become increasingly popular concepts in recent years (Jadertrierveiler et al., 2019). Intelligent cities, e-government, and digital educational systems are examples of how information technology can change the world (Hamamurad et al., 2022). Why discuss digitization right now? It has been more than five decades since information technology (IT) and IT research were first developed. Briefly, electronic data manipulation, personal computers, communication technologies, the World Wide Web, and social media are among the most significant developments in the history of IT. This development began in the mid-20th Century. Innovations, including big data, artificial intelligence (AI), and biocomputing, validate terms such as digitalization along with digital transformation by signalling the emergence of a new era in information technology (Downes & Nunes, 2013) (Syed et al., 2021) .

Furthermore, digitalization, which relates to information processing, influences all human activities, as anything can be converted into information. It is prevalent, affecting almost every sector, and is significantly altering the economy and modern society (Brunetti et al., 2020). Organisations are increasingly investing in innovative digital technology, seeking novel business methodologies, and transforming their operational practices (Balta et al., 2024; El Samra et al., 2024; Gradillas & Thomas, 2025; Regnerova et al., 2021). Conversely, digitisation affects individuals' daily lives, both personally and professionally. Individuals acquire knowledge via social media, utilize intelligent devices in the workplace, exchange information using tablets or smartphones, and employ integrated, collaborative, and real-time mobility systems (Asif & Gouqing, 2024; Benavides et al., 2023; Farrington & Alizadeh, 2017; Giering & Kirchner, 2025).

The southern part of Kurdistan, known as the Kurdistan Regional Government (KRG), must employ these tactics because of its expanding population, political challenges, and constrained resources. The state's strategic effort to modernize public services, enhance administrative effectiveness, and promote economic growth by simplifying business operations and attracting investment is driving digital transformation in the Kurdistan Region. The objectives are to deliver user-friendly, secure, and universally accessible digital government services, facilitate public engagement with the government across many platforms, and establish Kurdistan as the premier GovTech authority in the Middle East (Hamamurad & Jusoh, 2025; KRG, 2025).

The Kurdistan Government (KRG) has officially committed to prioritizing digital transformation as a key strategic goal (KRG, 2022). The Deputy Prime Minister of the Kurdistan Region, Qubad Talabani, stated that implementing reforms and optimizing services are crucial actions to enhance investment and commercial interest in the region (Rudaw, 2022). On the other hand, In September 2024, Prime Minister Masrour Barzani stated that the region is "on the path to digital transformation," emphasizing efforts in smart cities, biometric systems, and integrated e-government services (GOV.KRD, 2024). The launch of the Digital Transformation Strategy (DXS) underscores the govern-

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ment's commitment to modernizing public services, upgrading ICT infrastructure, and safeguarding data (gov.krd/dxs/,2024). Despite these promising initiatives, their successful implementation remains challenged by deep-seated structural and institutional issues (UNDP, 2023).

Digital transformation has become a vital component of global development, transforming the way governments, educational institutions, and economies operate. To enhance transparency, efficiency, and civic engagement, many countries have developed smart cities, e-government systems, and digital educational platforms. The Kurdistan Region Government of Iraq (KRG) needs to adopt these measures; they are essential. Digitalisation can help address ongoing problems, including population growth, reliance on oil revenues, political fragmentation, and inadequate infrastructure. The KRG has launched several initiatives to address this, including the Digital Transformation Strategy, biometric identity systems, and pilot innovative services.

Despite these efforts, research on Kurdistan's digital transformation remains scarce, with existing studies being scattered and of limited usefulness. Current investigations focus on innovative city frameworks, digitalization in higher education, and governance changes; however, there is a lack of thorough analysis of the core challenges and prospects. Additionally, ideas from other transition economies are still being extensively studied, suggesting that policymakers lack sufficient data to adapt global best practices to Kurdistan's unique social and political environment.

This essay examines digital transformation in Kurdistan, utilizing research, strategies, and case studies to evaluate initiatives, identify obstacles such as infrastructure and socio-political issues, and explore the role of ICT in enhancing governance, education, and economic growth. It aims to develop a framework for long-term sustainability, combining academic insights and local efforts to analyze the regional landscape.

II. Literature Review

a) Strategic Perspectives and Public Sector Efforts

The Kurdistan Regional Government (KRG) has recognized digital transformation as a crucial strategic priority. The Digital Transformation Mission Statement emphasizes the aim of establishing a citizen-centric digital ecosystem that provides efficient public services and integrated platforms (KRG, 2022). Prime Minister Masrour Barzani has consistently emphasized the political commitment to this reform, particularly at the HITEX 2024 conference, where he highlighted advancements in banking, e-government, and the implementation of digital identity systems (K. Furthermore, the Middle East Research Institute (MERI) highlights the importance of aligning digital policies with broader governance reforms, cautioning that without simultaneous institutional changes, the transformation may risk becoming fragmented (MERI, 2023).

b) Digital Identity and E-Governance Systems

The introduction of the KRD Pass in 2023 represented a significant advancement in the digital governance of Kurdistan. In February 2025, the Kurdistan Regional Government (KRG) introduced a centralized Digital Identity-Based Payroll Management System (PMS), marking a significant advancement in the region's digital governance efforts. The biometric ID system combines payroll, e-services, and financial transactions, facilitating secure interactions between citizens and the government. Adoption has grown swiftly, resulting in millions of IDs being issued and collaborations established with Infosys and Telstra (IDTechWire, 2025; Lu-Hai Liang, 2025). Academic research highlights that these identity infrastructures are crucial for facilitating e-governance ecosystems, yet they necessitate robust regulatory and cybersecurity frameworks to protect data (Figueroa et al., 2025; Jordanoski, 2025; Singh et al., 2025).

c) Digitalization of the Judiciary and Legal System

The judiciary's digital transformation in Kurdistan began in 2014. An examination of the Sulaimaniyah e-Court system reveals that digitization has enhanced transparency and efficiency; however, it is constrained by the absence of e-signatures, interloperability issues, and inadequate legal frameworks (Ahmed et al., 2020). This illustrates the necessity for legislative modernization as a requirement for the expansion of digital government systems.

d) Education and Human Capital

Kurdistan's universities are progressively participating in the digital agenda. The Cihan University Symposium on Digital Innovation emphasized the importance of higher education in enhancing capacity and fostering international collaboration (CUE, 2023). Concurrent initiatives, exemplified by the Digital School Project, which has engaged 100,000 children in Iraqi Kurdistan, demonstrate the introduction of digital literacy at the foundational levels of education (Digital School, 2024). International assessments, such as the OECD's PISA benchmarking, emphasize the need to integrate digital skills into curricula to prepare young people for a tech-driven economy (OECD, 2025).

e) Economic and Developmental Perspectives

The Atlantic Council emphasizes that Kurdistan's digital transformation is intrinsically linked to economic diversification, particularly given its reliance on oil and gas exports. Digital innovation is regarded as a reform in governance and a catalyst for entrepreneurship and jobs (Atlantic Council, 2023). The World Bank's Mashreq 2.0 report aligns with regional

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strategies for inclusive growth, asserting that digitalization can enhance labour participation and regional integration (World Bank, 2018). Moreover, USAID's economic development evaluation of the Kurdistan Region identifies ICT and digital public services as essential facilitators of sustained growth (USAID, 2008).

f) Regional and Comparative Perspectives

The digital evolution of Kurdistan parallels that of other changing nations. Albania's digital transition underscores the significance of institutional cooperation, anti-corruption measures, and public trust (Dea Sinoimeri, 2025; ENNHRI, 2023; Eralda Xhafka et al., 2025). Estonia and New Zealand's e-government systems are often used as benchmarks in comparative studies (Jensen, 2020).

g) Obstacles Recognized in Research and Media

Recent scholarly and media assessments consistently highlight several institutional, structural, and socio-political obstacles that hinder digital transformation in the Kurdistan Region. Ongoing infrastructure deficiencies, such as inconsistent broadband connections and poor electricity provision, persistently impede equal access to digital services, especially in rural and isolated regions (Balisane, 2025). The lack of adequate legal and regulatory frameworks- such as enforceable e-signature, data protection, and cybersecurity laws-further limits the institutionalization and scalability of digital governance (Ahmed et al., 2020). Disjointed and isolated projects within government departments diminish efficiency and hinder interoperability, thereby thwarting the creation of a cohesive digital ecosystem (Journal & Vol, 2025). Furthermore, economic and political volatility, intensified by reliance on the oil market and persistent conflicts between Baghdad and Erbil, undermines policy continuity and diminishes investment confidence in digital changes (Basnews, 2025). Ultimately, pervasive public scepticism about data security and privacy erodes citizen faith in e-services, presenting a significant obstacle to the enduring adoption and viability of digital transformation programs (KAPITA, 2023).

III. Obstacles to Digital Transformation in Kurdistan

The digital transformation in Kurdistan encounters various problems related to infrastructure, institutional capacity, governance, and public trust. Disparities in access to the internet and energy, especially in rural regions, perpetuate a significant digital gap across socio-economic and geographic boundaries (Atlantic Council, 2023; Balisane, 2025). The lack of interoperability among government systems, including courts that lack e-signature capabilities or shared data infrastructures, coupled with inadequate legal frameworks and the absence of standardized digital service standards, constrains scaling and integration. Shortages in human capital exacerbate these challenges, as inadequately trained ICT staff, reluctance to organizational change, and limited digital literacy among civil servants and civilians hinder adoption (Othman et al., 2025; Навзад Абдулла, 2021). Moreover, public scepticism over data security, privacy, and confidence in electronic services jeopardizes the inclusion of vulnerable populations, such as children and individuals in distant regions (Farag Bedewy, 2024; Simpson et al., 2021; UNDP, 1385). Fiscal instability, stemming from oil market volatility and political disputes over autonomy, hinders reliable funding for digital initiatives. Meanwhile, disjointed programs and inadequate interdepartmental coordination often result in redundancy and inefficiency.

IV. Opportunities and Catalysts

Notwithstanding these challenges, Kurdistan has considerable prospects and impetus for progressing its digital transformation strategy. Strategic political measures, such as the Digital Transformation Strategy (DXS) and the Kurdistan Regional Digital Pass (KRD Pass), (IDTechWire, 2025) demonstrate a robust governmental commitment to comprehensive digital reform (KRG, 2022, 2025; MERI, 2023). With around two million users, Kurdistan leads the region in digital governance by extensively using digital ID systems (Lu-Hai Liang, 2025). E-Court and digital health successes have shown significant gains in transparency, access, and service (Ahmed et al., 2020). Additionally, the growing focus on digital skills enhances job prospects, encourages startups, and helps diversify the economy, particularly in the tech and new business sectors (Bapir et al., 2024). Cooperation internationally and the adoption of global best practices, such as Estonia's e-judiciary and New Zealand's digital governance, can help build capacity, innovate, and sustainably develop institutions.

V. Proposed Multidimensional Framework

To achieve sustainable and inclusive digital transformation, Kurdistan must implement a multidimensional framework that encompasses infrastructure, governance, human capabilities, and citizen involvement. Initially, infrastructure and inclusion initiatives must enhance broadband accessibility, ensure reliable electricity, and establish public access points in underserved areas. Secondly, integrated governance and legal reform must standardize e-service frameworks, formalize the legality of digital identification and electronic signatures, and enhance regulations regarding data privacy and cybersecurity. Third, the development of human capital must emphasize ICT

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training for civil personnel, digital literacy initiatives for the general public, and effective change management strategies. Cross-sector interoperability is essential, as it links e-court, e-health, and payroll systems via a centralized digital infrastructure. Public trust must be bolstered through awareness initiatives, transparent service design, and the safeguarding of digital rights, particularly for marginalized populations. Ultimately, aligning with overarching economic diversification objectives- promoting startups, e-commerce, and IT employment- coupled with comprehensive monitoring and evaluation systems, will ensure that Kurdistan's digital transformation is equitable, efficient, and sustainable in the long term.

VI. Conclusion

The digital transformation of the Kurdistan Region signifies a vital avenue for administrative modernization, inclusive development, and sustained economic resilience. This study illustrates that, notwithstanding encouraging attempts such as the Digital Transformation Strategy, biometric identity systems, and e-court platforms, advancement is hindered by infrastructure deficiencies, fragmented governance, inadequate legislative frameworks, and limited human capacity. These obstacles underscore the need for a unified and evidence-based reform initiative. This research contributes to the sparse academic discussion on digitalization in transitional zones by incorporating ideas from global digital governance models and contextualizing them within the socio-political reality of Kurdistan. It presents a comprehensive framework that highlights infrastructure development, regulatory enhancements, capacity building, interoperability, and public trust. Policymakers must prioritize digital inclusiveness, implement comprehensive cybersecurity and privacy legislation, and establish effective monitoring measures to ensure accountability and sustainability. Future research should empirically investigate the socio-economic effects of digital projects in Kurdistan, evaluate user adoption trends, and analyze intersectoral connections between digital governance and public service efficacy. A robust and citizen-focused digital ecosystem will ultimately rely on a sustained governmental commitment, interagency cooperation, and strategic alliances with international organizations.

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The Impact of Budgetary Control on Financial Performance: Evidence from SMEs in Ghana

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Abstract- Small and medium-scale enterprises (SMEs) are important players in Ghana's economic growth but are often prone to financial volatility due to ineffective financial management systems. The study investigates the influence of budgeting control practices on financial performance of SMEs, guided by agency and goal-setting theories. Drawing on a cross-sectional survey of 200 SMEs, four dimensions of budgetary control formal budgets, review frequency, participative budgeting, and variance analysis were examined. Findings show that formal budgets, regular review, and participative budgeting significantly influence financial performance, while variance analysis doesn't significantly influence financial performance. Managerial capacity and firm size mediate the relationships. The research concludes that effective budgetary control increases profitability and sustainability and recommends capacity building and flexible budgeting models to improve SME financial management in Ghana.

Keywords: *budgetary control, financial performance, SMEs, ghana, formal budgets, participative budgeting, variance analysis.*

GJMBR-A Classification: *LCC Code: HF 5381–5430*



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The Impact of Budgetary Control on Financial Performance: Evidence from SMEs in Ghana

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Abstract- Small and medium-scale enterprises (SMEs) are important players in Ghana's economic growth but are often prone to financial volatility due to ineffective financial management systems. The study investigates the influence of budgeting control practices on financial performance of SMEs, guided by agency and goal-setting theories. Drawing on a cross-sectional survey of 200 SMEs, four dimensions of budgetary control formal budgets, review frequency, participative budgeting, and variance analysis were examined. Findings show that formal budgets, regular review, and participative budgeting significantly influence financial performance, while variance analysis doesn't significantly influence financial performance. Managerial capacity and firm size mediate the relationships. The research concludes that effective budgetary control increases profitability and sustainability and recommends capacity building and flexible budgeting models to improve SME financial management in Ghana.

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I. Introduction

SMEs are globally recognized to be the backbone of developing economies, contributing to innovation, job creation, and income generation. In Ghana, they represent over 85% of businesses, contribute around 70% to GDP, and employ most of the workforce (Abor & Quartey, 2010; Ackah & Vuvor, 2021). Despite this contribution, the majority of them have poor financial management, poor managerial skills, and lack of internal controls (Boakye, 2022; Nyarko & Oppong, 2023), thereby recording high failure rates.

Budgetary control periodic preparation, implementation, and updating of budgets enhances planning, responsibility, and performance (Drury, 2018). It provides a vital tool for survival and growth for resource-constrained SMEs (Kpodo & Agyapong, 2020; Danso & Mensah, 2022). While previous studies in Ghana (Amoako, 2013; Susuawu, 2020) revealed that budgeting raises performance, they do not consider it as one construct, ignoring some aspects such as participation, review frequency, and variance analysis.

At the international level, prior studies suggest that participative budgeting enhances commitment and goal congruence (Shields & Shields, 1998; Hansen & Van der Stede, 2004), while frequent review and variance analysis improves responsiveness in uncertain environments (Otley, 1999; Ahmad, 2019). However, these practices have not been properly explored in Ghana's SMEs whose management capacity and structural informality differ from their larger counterparts. This study therefore investigates how various aspects of budgetary control influence SME performance in Ghana and identifies contextual factors firm size, managerial competence, and sector that influence their effectiveness.

a) Problem Statement

Despite their central role in the Ghanaian economy, SMEs suffer from long-term financial instability and short life spans linked with poor financial control and ineffective management control systems (Amoako, 2013; Boakye, 2022). Though budgeting has been recognized as a key performance driver (Drury, 2018), there is little empirical Ghanaian research. Existing studies (e.g., Susuawu, 2020) confirm the positive association between budgeting and performance but do not investigate its composing dimensions. Consequently, there is no knowledge concerning which of the four budgeting practices formal budgets, reviews, participation, or variance analysis are most effective in influencing profitability, liquidity, and sustainability. Closing this gap is critical in building managerial ability and crafting targeted policies that boost SME financial resilience.

b) Research Objectives

The study aims to examine the effect of budgetary control on the financial performance of SMEs in Ghana. Specifically, it aims at:

1. Determine the effect of formal budgets on financial performance.
2. Determine if review frequency affects performance budget.
3. Explore the effect of participative budgeting on SME financial outcomes.
4. Describe the role of variance analysis in improving performance.
5. Discuss how firm size, managerial capacity, and industry moderate these impacts.

c) Research Questions

1. What is the impact of formal budgeting on SME financial performance?

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2. How is the frequency of budget reviews related to performance?
3. What is the effect of participative budgeting on SME financial outcomes?
4. How does variance analysis impact levels of performance?
5. Do firm size, managerial capacity, and industry moderate these effects?

d) Significance of the Study

This study is both theoretically and practically contributory. It advances empirical knowledge in the disaggregated aspects of budgetary control and how they affect SME performance in developing economies. It informs SME managers about profit maximization and financial prudence through budgeting practices. Policymakers and support institutions can apply the findings in the design of capacity-development programs and financial literacy programs that promote SME sustainability. The research ultimately warrants Ghana's economic development agenda by addressing managerial deficiencies that hamper SME growth, competitiveness, and survivability.

e) Paper Structure

The paper has a literature review and theoretical frameworks in Section Two, explanation of methodology in Section Three, results presentation and analysis in Section Four, and findings discussion, conclusions, and recommendations in Section Five.

II. Literature Review and Theoretical Framework

a) Conceptualizing Budgetary Control

Budgetary control is a routine process by which organizations set budgets, measure actual performance against targets, and take remedial steps to come back on track in terms of strategic goals (Drury, 2018). It functions as a resource planning tool for allocation and an efficiency monitoring and decision-making mechanism for control (Otley, 1999).

Key Factors Influencing Performance are:

1. *Formal Budgets:* Documenting a budget imparts discipline, reduces uncertainty, and focuses expenditure (Ahmad, 2019).
2. *Review Frequency:* Regular reviews allow early deviation detection and promote adaptability in changing environments (Van der Stede, 2001).
3. *Participative Budgeting:* Involving employees in budget creation enhances ownership, motivation, and goal congruence (Shields & Shields, 1998).
4. *Variance Analysis:* Actual vs. planned performance comparison detects inefficiencies and directs appropriate corrective actions on time (Hope & Fraser, 2003).
5. *Budget Flexibility:* Flexibility supports responsiveness to environmental change, builds resilience, and reduces exposure to risk (Libby & Lindsay, 2010).

For finance and competition-constrained Ghanaian SMEs, these factors combined underpin financial prudence, adaptability, and sustainable performance.

b) Empirical Evidence: African and Global Perspectives

1. *Ghana*

There is evidence that budgetary control is positively related to the performance of SMEs. Susuawu (2020) found that budget practices explained 42.7% of performance variance, and Amoako (2013) reported that firms using formal accounting and budgeting systems were more profitable and stable. Nevertheless, few studies have focused on what specific elements of budgets contribute the most to performance.

2. *East Africa*

Results are homogeneous across the region. Kemunto (2022) indicated that participatory budgeting and reporting of variances improved finance performance in Kenyan microfinance institutions, and Nyakundi & Nyamita (2019) indicated corresponding effects for SACCOs.

3. *Fragile States (Somalia)*

Despite weak institutions, Ali, Hassan, and Kadir (2023) found that formal monitoring and planning significantly improved SME stability and performance.

4. *Global Context*

Global evidence confirms such patterns. Uwuigbe et al. (2019) noted higher accountability and financial performance in Nigerian SMEs that employed participatory budgeting. Hansen & Van der Stede (2004) reported enhanced performance where firms examined budgets on a regular basis, and Zhou et al. (2022) reported diminished budgetary slack where formal arrangements existed for planning and evaluation.

Generally, evidence exists that suggests budgetary control improves performance but varies based on firm size, management skill, and environmental uncertainty.

c) Theoretical Perspectives

Budgetary control and financial performance can be linked to one another through some complementary theories:

1. *Agency Theory (Jensen & Meckling, 1976; Eisenhardt, 1989):* Mechanisms of budgeting such as formal written documentation, reporting of variances, and frequent examination minimize information asymmetry, connect managers' behavior to owners' interests, and enhance accountability.
2. *Resource-Based View (Barney, 1991; Peteraf, 1993):* Budgeting is an important, scarce, and imitable internal resource that enhances efficiency and

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competitiveness, particularly for cash-hungry SMEs (Amoako, 2013).

3. *Contingency Theory (Otley, 1980; Chenhall, 2003):* Budgeting impact varies with context factors such as firm size, environment, and technology. There is no optimal way; effectiveness is context-dependent.
4. *Goal-Setting Theory (Locke & Latham, 1990):* Budgets introduce clear, challenging targets that improve performance, especially where workers participate in their development, thereby improving goal commitment and reducing slack.

These theories explain how budgetary control operates as both a monitoring tool (Agency Theory) and an internal resource (RBV), and how its effects depend on circumstances (Contingency Theory) and motivation (Goal-Setting Theory).

d) Hypotheses Development

Based on the literature and theory, the study hypothesizes:

- *H1:* Formal budgets are positively related to the financial performance of SMEs.
- *H2:* Budget review on a regular basis is positively related to financial performance.
- *H3:* Greater management and employee participation in budgeting enhances financial performance.
- *H4:* Enhanced variance analysis is positively related to financial performance.
- *H5:* The above relationships are mediated by firm size, managerial ability, and industry type.

e) Conceptual Framework

The proposed conceptual model illustrates that budgeting control practices- review frequency, formal budgeting, participative budgeting, and variance analysis- are expected to have positive relationships with SME financial performance. These are subject to contextual factors such as firm size, managerial ability, and industry features, which affect the extent to which budgeting practices are translated into performance results.

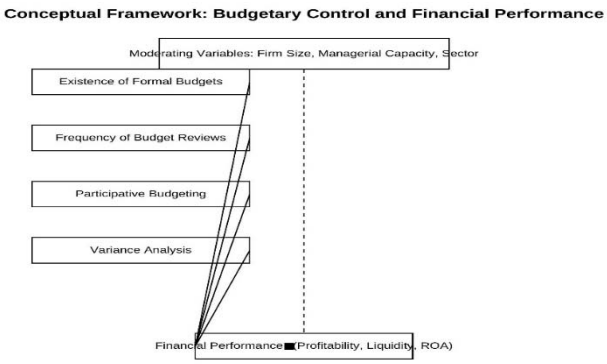


Figure 1

The diagram illustrates the relationship between important budgetary control practices formal budgets, review period, participative budgeting, and variance analysis, and their supposed positive relationship with SME financial performance. Firm size, managerial ability, and nature of the business sector influencing the effectiveness of budgetary practices with different contexts moderate these relationships between these practices and financial performance.

III. Research Methodology

a) Research Design

The study employed a quantitative cross-sectional design using structured questionnaires to explore the relationships between key budgetary control practices- formal budgets, review frequency, participative budgeting, and variance analysis- and financial performance measures (profitability, ROA, and liquidity). The design captures associations at a point in time and thus suitable for testing relationships without suggesting causality. Financial figures were validated against firm records and endogeneity tests were performed to enhance reliability.

b) Population, Sample, and Data Collection

1. *Population*

Targeted population were Ghana's registered SMEs, according to the Ghana Statistical Service and NBSSI, as companies with 6–99 workers in manufacturing, services, trade, and agro-processing.

2. *Sampling*

A Multi-Stage Sampling Strategy was used:

1. Stratified sampling by region (southern, central, northern Ghana).
2. Random selection of firms from databases such as the Registrar General's Department and AGI.

Sample Size: At least 384 SMEs were required through Cochran's (1977) formula (5% margin of error, 95% confidence level). For non-response reasons, 450 firms

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were contacted. Owner–managers or senior financial officers were interviewed.

Data Collection: Data were gathered using internet and personal interviews, with assistance from enumerators for low financial literacy respondents. Ethical approval and informed consent were obtained, and non-response bias was checked by comparing early and late respondents (n = 30 each).

c) Variables and Measurement

Dependent Variable – Financial Performance:

Measured using both objective and perceptual measures:

- RXA = Net profit/Total assets
- NPM = Net income/Sales
- Current assets/Current liabilities = Liquidity Ratio

Econometric Model and Estimation Strategy

Model Specification:

$$[FP_i = \\beta_0 + \\beta_1FB_i + \\beta_2RF_i + \\beta_3PB_i + \\beta_4VA_i + \\beta_5CV_i + \varepsilon_i]$$

Interaction terms (e.g., FB × firm size, PB × managerial capability) included to test for moderating effects.

Endogeneity Considerations: Reverse causation addressed using.

1. Lagged performance where applicable.
2. Instrumental variables (IVs) such as managerial training and firm age.
3. Robust heteroscedasticity standard errors.
4. IVs and lagged data constraints were identified.

d) Reliability and Validity

- *Construct Validity:* Based on established scales (Shields & Shields, 1998; Drury, 2018), enhanced through pilot testing of 20 SMEs.
- *Reliability:* Cronbach's alpha≥ 0.70 confirmed internal consistency.
- *Content Validity:* SME and accounting scholars vetted.
- *External Validity:* Guaranteed through sectoral and regional coverage.
- *Statistical Validity:* Established using VIF (<10), and normality and homoscedasticity tests also confirmed model assumptions.

IV. Results and Discussion

a) Introduction

384 out of 450 valid responses from the surveyed SMEs in Ghana (85.3% response rate) were used in this study. Results comprise firm characteristics, budgeting practices, financial performance, moderating variables, and regression findings. Based on both qualitative and quantitative data, the analysis provides a general picture of the impact of budget control on SME performance in Ghana.

- Perceived performance (5-point Likert scale).

If required, factor analysis was used to determine a composite index.

Independent Variables – Budgetary Control Dimensions:

1. *Formal Budget:* 0 = None, 1 = Informal, 2 = Formal documented.
2. *Review Frequency:* 1 = Annual to 5 = Weekly.
3. *Participative Budgeting:* Shields & Shields (1998) Likert-scale items.
4. *Variance Analysis:* Frequency and corrective action rated on Likert scales.
5. *Control Variables:* Firm size, managerial ability (education, training, experience), industry, age of firm.

b) Firm Characteristics

The study presents a growing and formalizing SME sector in Ghana. Most firms (65%) were founded from 2010 to 2020, suggesting recent expansion. Services (34%) and manufacturing (28%) industries are dominant, and trade (25%) and agro-processing (10%) less frequent. About 42% of firms are small, and 40% medium-sized, providing more evidence of formalization than against national standards. Ownership is mostly sole proprietorships (46%), of which 34% are registered as limited liability companies. Finally, 55% of the respondents were owner-managers, pointing out their central role in financial decision-making. In total, Ghana's SME environment is increasing, becoming more organized, and better managed by managerial ability and formal organization.

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Budgetary Control Practices Practice	Categories	% of Firms
Existence of Budgets	Formal written	54
	Informal/unwritten	22
	None	10
Review Frequency	Monthly	28
	Quarterly	25
	Semi-annual	18
	Annual	12
	Only when deviations occur	10
Variance Analysis	Monthly	30
	Quarterly	25
	Annually	18
	Never	12

Figure 2

c) *Budgetary Controls Practices*

Participatory budgeting in SMEs was moderately high with communication (3.9) and forecast accuracy (4.0) being high. Formal written budgets are used in around 54%, informal in 22%, and none in 10%, which indicates resource and capacity limitations. Budget reviews are conducted monthly (28%), quarterly (25%), or less frequently in smaller enterprises, mirroring low monitoring. More formal reviews are followed by manufacturing and large services enterprises, compared to trade and agro-processing SMEs. Whereas variance analysis is common, 12% disregard it and experience gaps in performance. Budgeting typically reflects average participation and communication, reflecting openness but variable involvement on the part of firms.

d) *Indicator Financial Performance*

Table 4.3: Objective Performance Indicators

Indicator	Range	% of Firms
Net Profit Margin (NPM)	Loss	10
	1–5%	18
	6–10%	28
	11–20%	26
	>20%	18
Return on Assets (ROA)	Negative	12
	1–5%	20
	6–10%	27
	11–20%	24
	>20%	17
Current Ratio	<1.0	18
	1.0–1.5	32
	1.6–2.0	25
	>2.0	25

Table 4.4: Perceptual Performance Indicators (Means, 1–5 Scale)

Indicator	Mean
Profitability	3.4
Liquidity	3.3
Overall Sustainability	3.5

e) *Objective Financial Performance Indicators*

SMEs' financial performance varied. About 28% had 6–10% profit margins, 26% had 11–20%, and 18% had over 20%, while 10% made losses. ROA followed the same patterns whereby 27% had 6–10%, 24% had 11–20%, and 17% had over 20%, though 12% were

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negative. The liquidity ratios showed that 32% of the firms were quite liquid, yet 18% were at risk of solvency. Compared to national standards (GSS, 2022), most firms performed at or above industry levels. Perceptual profitability (3.4), liquidity (3.3), and sustainability ratings (3.5) indicate overall positive but cautious managerial judgments.

f) Moderating Variables

With regard to moderating attributes, 66% hold degrees but 35% never receive finance training and only 15% are professionally qualified. Management background is relatively strong, with 64% holding five or more years of management experience. Approximately 28% of firms are in very uncertain industries, suggesting that education, training, and industry uncertainty are thus likely to influence the effect of budgeting practices on performance in subsequent regression models.

g) Regression Analysis

Table 4.6: OLS Regressions on Net Profit Margin (Dependent Variable: NPM, %)

Variable	Model 1 (Baseline)	Model 2 (+Controls)
Formal Budget (1 = yes)	3.5*** (1.2)	3.2** (1.3)
Budget Review Monthly	2.1** (0.9)	1.9** (0.8)
Participative Score	1.5*** (0.5)	1.4*** (0.5)
Log Turnover	–	0.8** (0.3)
Firm Size: Micro	–	-1.5 (1.0)
Firm Size: Medium	–	0.9 (1.1)
Firm Size: Large	–	2.2* (1.2)
Manager Education (Bachelor+)	–	1.9** (0.8)
Account Training: Short Course	–	1.2* (0.7)
Sector Uncertainty	–	-1.5** (0.6)
Formal Budget × Sector Uncertainty	–	–
Participative × Manager Capacity	–	–
Observations	384	384
R-squared	0.12	0.25

**Notes: Robust standard errors in parentheses. Significance: *p<0.10; **p<0.05; ***p<0.01.*

h) Regression Results

Regression results show that formal budgeting is associated with a 3.5 percentage point increase in net profit margins, with monthly reviews adding around 2 points and participative budgeting 1.2–1.5 points, especially under competent management. Both firms that are larger and those that have greater turnover perform better, and education or training of managers contributes 1–2 points to profitability. However, industry volatility diminishes margins by around 1.5 points, limiting budgeting effectiveness. Interaction effects show that budgeting performs optimally in stable industries with competent managers. The model's explanatory power rose from $R^2 = 0.12$ to 0.31, confirming that contextual variables have a significant impact on budget–performance relationships.

i) Qualitative Insights

Qualitative responses validated the quantitative findings. Inadequate accounting capacity, macroeconomic instability, and low staff motivation were cited by managers as major challenges to effective budgeting. Recommended solutions included training programs in accounting, affordable budgeting software, and policy-induced capacity building with emphasis on institutional and structural support for sustained budgeting practice.

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j) Discussion of Findings

The results show that formal, frequent, participative, and flexible budgeting are positively associated with SME financial performance but with varying effectiveness in different contexts. Formal budgets and high-frequency reviews encourage discipline and responsiveness, while participative budgeting results in better performance when there is capable management. Variance analysis supports strategic decision-making, and firm size, managerial ability, and sector volatility influence outcomes. SMEs that function in turbulent contexts need agile budgeting systems, supported by capacity building, sectoral arrangements, and digital tools to improve competitiveness and sustainability.

V. Summary, Conclusions, and Recommendations

a) Introduction

This chapter summarizes the major findings, presents key conclusions, and provides recommend-dations for SME managers, policymakers, and researchers. It concludes with reflections on the role of budgetary control in enhancing SME performance and sustainable growth in Ghana.

b) Summary of the Study

The study investigated the effect of budgetary control on SME financial performance in Ghana, namely on four aspects formal budgets, frequency of review, participative budgeting, and variance analysis and firm size, managerial capability, and industry as intervening effects.

Quantitative cross-sectional survey of 384 SMEs in manufacturing, services, trade, and agro-processing industries was conducted, supported by qualitative inputs.

Key Findings:

- *Firm Profile:* Most of the SMEs were established between 2010-2020 and were sole proprietorship firms.
- *Budgeting Practices:* 54% used formal budgets, with the remainder using informal or no systems. Frequent reviews (monthly/quarterly) were associated with improved performance. Participative budgeting was moderate, and variance analysis poorly utilized.
- *Financial Performance:* Firms overall recorded moderate to high profitability, decent liquidity, and stable ROA, albeit some firms threatened by insolvency.
- *Moderating Factors:* Education of managers and financial training improved results, with environmental instability detracting from them.
- *Regression Analysis:* Formal budgeting, frequent review, and participative budgeting significantly enhanced profitability and ROA. Managerial training and company size enhanced these effects.
- *Qualitative Insights:* Barriers were limited financial literacy, poor record-keeping, and economic uncertainty. Intended solutions were training, computer-based budgeting, and more active participative involvement.

c) Conclusions

The study proves that budgetary control matters to improve SME financial performance in Ghana. Formal budgets and regular reviews enhance profitability, responsiveness, and fiscal control, whereas participative budgeting fosters ownership and goal congruence. Though variance analysis is not extensively used, it remains vital for corrective action. Effective budgeting depends on managerial competence and the ability to react to unstable environments. However, sloppy records and external shocks chisel away at success. Budgeting in general is a strategic management tool requiring skilled leadership and flexibility.

d) Recommendations

For SME Managers

1. Institutionalize formal written budgets to enhance planning and coordination.
2. Monthly or quarterly review of the budget for timely correction.
3. Institute variance analysis and corrective action on a regular basis.
4. Foster participative budgeting to enhance motivation and responsibility.
5. Provide financial training and install computerized accounting systems for efficiency.

Highest priority must be given to formalization and frequency of review, which offer the greatest performance improvement.

For Policymakers and Support Institutions

1. Promote financial literacy programs to strengthen managerial capability.
2. Enhance SME access to finance for training and digital software.
3. Develop sector-specific adaptive budgeting models.
4. Enable digital transformation through tax relief and software subsidies.

Capacity building and financing are the essence of SME resilience and control efficiency.

For Future Research

1. Conduct longitudinal studies to assess causal relationships among budgeting and performance.
2. Examine sector-specific analyses to adopt contextual differences.
3. Conduct cross-country comparisons to identify regional tendencies.
4. Use mixed-method approaches to gain in-depth behavioral insights.

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e) *Final Conclusion*

Effective budgeting and control systems are principal drivers of the performance of SMEs in Ghana. Their success depends on managerial capability, institutionalist, and responsiveness to change. Enhancing financial literacy, digital technology adoption, and the ease of attractive policy environments will enhance SME competitiveness and resilience.

If SMEs apply budgeting as an adaptive and participatory management practice, they will be well placed to address uncertainty, enhance profitability, and make sustainable contributions to Ghana's economic development.

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Digital Transformation Readiness in Research and Training Institutions

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Abstract- This study analyzes the strategic content published by Palestinian vocational and research institutions to assess their digital transformation readiness. It applies a descriptive-analytical methodology based on four dimensions: digital technology, innovation, governance, and value creation.

A purposive sample of thirteen institutions was selected across governmental, academic, international, and civil sectors. The findings reveal wide variations in digital responsiveness. While certain institutions demonstrate functional integration of digital concepts, others reflect limited or symbolic engagement. Governance emerged as the weakest represented domain.

The study proposes recommendations for revising strategic language, embedding measurable digital indicators, restructuring objectives to support digital human capital, and adopting standardized evaluation frameworks.

Keywords: strategic content, digital transformation, institutional responsiveness, governance, innovation.

GJMBR-A Classification: JEL Code: O32, O33



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Digital Transformation Readiness in Research and Training Institutions

An Analytical Study of Published Strategic Content in the Palestinian Context

Adeeb Salem Masoud Al-Agha

Abstract- This study analyzes the strategic content published by Palestinian vocational and research institutions to assess their digital transformation readiness. It applies a descriptive-analytical methodology based on four dimensions: digital technology, innovation, governance, and value creation.

A purposive sample of thirteen institutions was selected across governmental, academic, international, and civil sectors. The findings reveal wide variations in digital responsiveness. While certain institutions demonstrate functional integration of digital concepts, others reflect limited or symbolic engagement. Governance emerged as the weakest represented domain.

The study proposes recommendations for revising strategic language, embedding measurable digital indicators, restructuring objectives to support digital human capital, and adopting standardized evaluation frameworks.

Keywords: strategic content, digital transformation, institutional responsiveness, governance, innovation.

I. Introduction

Strategic thinking is the engine of institutional adaptability in rapidly evolving environments. Vocational and research institutions, as knowledge centers, express their future orientation through published strategic content- vision, mission, and objectives- which serve as mirrors of organizational identity and transformation capability.

In Palestine, these institutions face mounting pressures to digitize under structural constraints. Thus, analyzing their strategic discourse provides a meaningful entry point into understanding their digital readiness and positioning.

II. Problem Statement

Palestinian vocational and research institutions increasingly face demands to align their strategic content with digital transformation imperatives. However, many lack explicit integration of digital themes, especially across governance and innovation domains. Existing frameworks such as Dig Comp Org (Redecker, 2017), DGRA Toolkit (World Bank Group, 2020), and Smart Education Framework (Zhu et al., 2021) emphasize the importance of strategic language as a readiness indicator.

Regional literature (Al-Moshki & Al-Absi, 2020; Al-Abdali & Fadl, 2023) supports this link, yet few studies address published documents as diagnostic tools for institutional transformation.

III. Research Questions

a) Main Question

To what extent does strategic content reflect digital responsiveness across the dimensions of technology, innovation, governance, and value creation?

b) Sub-Questions

1. How are digital transformation themes represented across vision, mission, and objectives?
2. What sectoral differences exist in digital responsiveness?
3. How does strategic content affect digital workforce development?
4. What content gaps hinder institutional adaptation?
5. What recommendations enhance alignment with digital governance principles?

c) Significance of the Study

This research introduces a conceptual model for evaluating digital readiness through published strategic discourse. By framing strategic content as a functional mechanism-not symbolic language-it enables institutions to measure coherence, adaptability, and performance capacity. The findings aim to support policymakers and academic leaders in refining institutional direction within a digital economy.

IV. Objectives of the Study

a) General Objective

To analyze the published strategic content of Palestinian research and vocational training institutions, with the aim of assessing their actual readiness for digital transformation in light of four benchmark dimensions.

Digital Technology, Digital Innovation, Digital Governance, and Digital Value Creation.

b) Sub-Objectives

- To reveal the extent to which digital transformation is present in the institutions' official statements-vision, mission, and strategic objectives.

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- To analyze strategic orientations toward digital innovation and sustainable development.
- To evaluate digital governance indicators as reflected in the official documentary content.
- To examine the linkage between published strategic narratives and the digital value of research and training outputs.

V. Methodology

A descriptive-analytical design was adopted. A four-dimensional matrix was constructed based on global models: DigCompOrg, DGRA Toolkit, and Smart Education Framework. Each institution was assessed on:

- Digital Technology
- Digital Innovation
- Digital Governance
- Digital Value Creation

Responsiveness was Rated as: High – Moderate – Partial – Absent. The sample included 13 institutions across governmental, academic, international, and civil sectors. Strategic documents were sourced from official platforms and analyzed qualitatively.

a) Use of Artificial Intelligence Tools in Analytical Support

In pursuit of methodological precision and enhanced clarity in interpreting strategic institutional content, selected artificial intelligence tools were employed during the preparatory stages of this research. These tools served strictly as support mechanisms-facilitating the organization of conceptual structures, the synthesis of thematic material, and the refinement of linguistic formulation within the analytical framework.

It is essential to note that all findings, interpretations, and analytical models presented in this study are the result of direct intellectual engagement by the researcher. No AI-generated output was used without critical review and contextual adaptation.

The use of such tools did not replace academic judgment or analytical rigor, but instead provided professional assistance that preserved the originality of the study and the independence of its interpretations, fully aligned with the institutional context and objectives of Palestinian research and training institutions.

b) Conceptual Foundation

To establish a coherent conceptual basis for the study, Table (1) presents a structured overview of the four core dimensions. Each dimension is linked to its primary source, thematic orientation, and relevant framework, as identified in the academic literature.

Table 1: Conceptual Mapping of Digital Dimensions to Scholarly Models and Themes

Model/Framework	Key Themes	Source	Dimension
DigCompOrg	Infrastructure, leadership, smart systems	European Commission (JRC)	Digital Technology & Governance
DGRA Toolkit	Organizational culture, cybersecurity, service delivery	World Bank Group	Digital Governance & Value Creation
Smart Education Frame-work	Smart design, adaptive education	Zhu et al./Springer Open	Digital Innovation & Technology
Digital Value Creation Framework	Digital assets, performance out-comes, stakeholder impact	Sun et al. (2021)/Foreign Econ & Mgmt Journal	Digital Value Creation

To further elaborate on the dimensions presented in the previous analytical table, this section discusses each concept individually. The aim is to clarify the theoretical meaning of every dimension, as identified in the specialized literature, and to provide a documented academic definition that contributes to the development of the study's conceptual framework and the identification of relevant indicators. The following subsections present each definition in turn.

Absolutely, Adeeb. Below is the integrated version of each dimension, combining its academically sourced *definition* with a comprehensive *analytical interpretation*- in polished English and ready for direct placement into your Word document. Each paragraph stands as a unified conceptual and analytical treatment of the dimension.

1. *Digital Technology*

Digital technology encompasses electronic systems, devices, and resources that enable the creation, storage, processing, and transmission of data in institutional environments. It serves as the technical infrastructure for implementing digital practices across operational, instructional, and administrative settings (Kumi-Yeboah et al., 2020). Within strategic documents, this dimension may be expressed through commitments to modernization and data accessibility. Even when the term itself is not explicitly mentioned, phrases like "enhancing service delivery through modern tools" or "expanding information access" often signal digital readiness. Mission statements may reference the implementation of "intelligent systems" or "technology-supported training environments," while strategic objectives that include "digitizing workflows,"

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"developing e-platforms," or "automating administrative procedures" provide direct indicators. Thus, digital technology is identifiable when functional language and modernization goals are embedded across the strategic narrative.

2. *Digital Innovation*

Digital innovation refers to the development or implementation of new products, processes, services, or models through digital means that add value and improve adaptability. It reflects an institution's capacity to exploit technological advancements to address emerging needs and enhance performance (Hund et al., 2021). In strategic discourse, innovation may surface in expressions such as "customizing learner pathways," "developing responsive academic programs," or "embracing novel teaching methods." Vision statements often position institutions as "leaders in creativity" or "centers for transformative learning," while missions may underscore "smart solutions" or "adaptive methodologies." Innovation is not defined merely by technical adoption but by the infusion of creativity, flexibility, and problem-solving within institutional strategy. The presence of future-focused language, paired with digital agency, reveals innovation as both a design philosophy and a measure of institutional agility.

3. *Digital Governance*

Digital governance refers to the application of digital technologies and data systems to regulate, coordinate, and monitor institutional operations with the objective of ensuring transparency, accountability, and strategic management (Hanisch et al., 2023). Though seldom mentioned explicitly in vision or mission statements, this concept is often embedded in references to "smart oversight systems," "data-driven decision-making," or "digital policy frameworks." Strategic objectives may highlight the use of "performance dashboards," "quality assurance systems," or "e-administrative platforms," all of which demonstrate governance through technology. The presence of evaluation mechanisms, leadership structures, and compliance protocols- especially when supported by digital tools- enables governance to be assessed as a formalized operational construct. Identifying this dimension requires decoding value-oriented language and linking it to technological control systems within strategic content.

4. *Digital Value Creation*

Digital value creation is the process by which digital assets and capabilities are employed to generate measurable improvements in institutional effectiveness, stakeholder engagement, and strategic outcomes (Sun et al., 2021). In strategic documentation, this concept is often implied through language that highlights "enhancing impact," "driving transformation," or "improving learning outcomes" via digital channels. A vision that portrays the institution as a "source of digital empowerment" or a mission that commits to "excellence through smart integration" denotes a value-oriented intent. Objectives mentioning "optimizing service delivery," "increasing outreach using online platforms," or "measuring success through digital indicators" allow the presence of this dimension to be operationalized. Digital value creation becomes observable when strategic goals are not merely aspirational, but structured around technology-enabled results and performance outcomes.

c) Key Definitions

1. *Digital Transformation*

Digital transformation is the structured process through which an organization integrates digital technologies into its core operations to enhance productivity, responsiveness, and service quality. It includes modifications to institutional structures, workflows, and cultural patterns, aiming to increase the capacity to operate effectively in *digital* environments.

2. *Strategic Content*

Strategic content refers to the formal expressions of institutional direction and purpose, typically outlined in documents such as the vision, mission, and strategic objectives. It serves as a framework for communicating organizational priorities, identity, and long-term goals within internal and external contexts.

3. *Digital Technology*

Digital technology encompasses the systems, infrastructures, and tools that enable the creation, processing, storage, and transmission of data through electronic means. It includes platforms such as intelligent databases, cloud computing systems, and digital communication networks that support institutional operations and services.

4. *Digital Innovation*

Digital innovation is the application of digital tools and methods to develop new products, services, processes, or organizational models. It reflects an institution's ability to adapt, design, and implement change through the use of evolving technologies aimed at improving functional performance and creating added value.

5. *Digital Governance*

Digital governance is the implementation of digital systems and protocols to guide, regulate, and monitor institutional operations. It involves mechanisms for accountability, decision-making, control, and transparency using technology-based tools that ensure efficiency and integrity in management practices.

6. *Digital Value Creation*

Digital value creation is the process by which digital resources and capabilities are utilized to produce measurable outcomes that improve institutional performance, service impact, and stakeholder

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engagement. It is associated with the strategic use of technology to generate benefits aligned with the organization's goals.

VI. Literature Review and Commentary

Previous research has explored digital education, strategic content, and public administration. However, few studies evaluate formal strategic documents as instruments of digital readiness.

This study builds on international models for conceptual rigor, and draws from regional literature to address local context challenges. Most notably, prior research lacked direct analysis of value creation through strategic documents- this gap is addressed herein.

This table presents selected scholarly and institutional sources that serve as theoretical anchors for the study. Each reference contributes to a specific thematic focus, ranging from institutional structure and digital governance to innovation, strategic planning, and leadership outcomes.

Table 2: Foundational References Supporting the Study's Conceptual and Strategic Dimensions

Relevance	Focus	Title	Author(s)
Theoretical basis for institutional structure	Organizational Foundations	*Public Administration*	White (1926)
Source for technology and governance indicators	Digital Infrastructure	*DigCompOrg Framework*	Redecker (2017)
Used to assess policy readiness and control	Digital Governance	*DGRA Toolkit*	World Bank Group (2020)
Supports innovation dimension	Innovation in Education	*Smart Education Framework*	Zhu et al. (2021)
Regional perspective on strategic planning	Arab Institutional Strategy	*Strategic Planning in Research Institutions*	Al-Moshki& Al-Absi (2020)
Links strategic direction to outcomes	Leadership Impact	*Transformational Leadership & Performance*	Al-Abdali & Fadl (2023)

a) Analytical Commentary Highlighting the Research Gap and Contribution of the Present Study

The review of previous studies reveals a notable variation in how the core digital dimensions- namely digital technology, digital innovation, digital governance, and digital value creation- have been addressed. Most existing literature has examined these dimensions in isolation or from a purely technical perspective, without linking them directly to the strategic structure of educational institutions. For example, the DigCompOrg framework (Redecker, 2017) provides indicators related to technology and leadership, but does not explore how these elements are reflected in institutional vision, mission, or strategic goals. Similarly, the DGRA Toolkit (World Bank Group, 2020) approaches digital governance as an organizational practice but lacks analytical translation into measurable strategic language.

In the case of innovation, the Smart Education Framework (Zhu et al., 2021) focuses on intelligent design and adaptive learning, offering significant insights into educational innovation. However, it treats innovation as a pedagogical concept rather than embedding it within the broader institutional discourse. Likewise, Sun et al. (2021) address digital value creation as a performance outcome, yet do not relate it explicitly to the formal articulation of strategic direction.

The present study addresses this methodological gap by introducing a new analytical perspective that links the four digital dimensions- technology, innovation, governance, and value creation- to the institutional components of vision, mission, and strategic objectives. Rather than merely defining the concepts, the study reconstructs them within organizational content in a way that reveals their presence and measurability through official language. This makes the research a practical tool for assessing digital readiness based on strategic formulation rather than technical benchmarking alone.

Therefore, the study provides a distinctive contribution to the field of digital transformation in education by developing a framework capable of extracting digital indicators from formal institutional texts- demonstrating that strategic language itself can serve as a basis for evaluating institutional engagement with digital practices.

b) Analysis and Findings

Thirteen institutions were assessed. Digital responsiveness varied widely. International-affiliated centers performed better. Governance was most frequently absent across documents. Digital value creation was inconsistently defined.

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Table 3: Institutional Evaluation Matrix

Institution	Technology	Innovation	Governance	Value Creation	Observation
National Authority	High	High	High	High	Integrated digital strategy in all dimensions
Birzeit CEC/CCE	High	High	Moderate	High	Advanced content with innovation-driven objectives
UNRWA Khan Younis	High	High	Moderate	High	International support reflected in strategy
Tamkeen Foundation	High	High	Moderate	High	Active implementation, weak policy articulation
Gaza Tourism College	High	High	Moderate	High	Clear link to market-responsive training
Episcopal Center	Partial	Limited	Absent	Limited	Symbolic reference without operational clarity
An-Najah Training Center	Limited	Partial	Absent	Limited	Minimal strategic digital direction
PAU HR Center	Partial	Moderate	Absent	Limited	Training-focused, missing governance indicators
Al-Quds Open Univ. CEC	Partial	Moderate	Limited	Limited	Equipped center, unclear strategic articulation
Lutheran Union Center	Limited	Limited	Absent	Absent	Traditional approaches dominate

Table 4: Classification by Responsiveness Level

Institutions	Level
National Authority, Birzeit CEC & CCE, UNRWA Khan Younis	Highly Responsive
Tamkeen Foundation, Gaza Tourism College, National Institute	Moderately Responsive
Al-Quds CEC, PAU HR Center, An-Najah Training Center	Partially Responsive
Episcopal Center, Gaza VTC, Lutheran Union Training Center	Low/Non-Responsive

c) Answering the Research Questions

- Digital transformation concepts were functionally embedded in only select institutions.
- Responsiveness correlated with sector and strategic autonomy.
- Strategic language influenced the design of digital workforce programs.
- Content gaps in governance limited institutional adaptability.
- Recommendations were based on comparative responsiveness.

d) Achievement of the Study Objectives Based on Analytical Results

The study was grounded in a general objective focused on analyzing the published strategic content of Palestinian research and vocational training institutions, in order to assess their actual readiness for digital transformation across four benchmark dimensions: technology, innovation, governance, and digital value creation. This overarching objective was realized through the following four outcomes:

1. Revealing the presence of digital transformation within the vision, mission, and institutional objectives.
   This objective was fulfilled through an integrative textual and conceptual analysis that demonstrated the presence of four key digital dimensions-digital technology, digital innovation, digital governance, and digital value creation-within the official discourse. The results included functional and symbolic indicators related to infrastructure, smart systems, oversight, and impact generation, which affirmed the strategic embedding of digital transformation in formal content.
2. Analyzing strategic orientations toward digital innovation and sustainable development. The study achieved this goal by interpreting institutional language that reflects flexibility, intelligent design, and responsiveness to emerging conditions. Expressions such as “smart programs,” “adaptive models,” and “future-focused environments” validated the presence of innovation-related intent. The results demonstrated that institutions incorporate innovation into strategic planning as a

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sustainable growth approach rather than a purely technical upgrade.

3. Assessing indicators of digital governance within official strategic documentation.

   This objective was accomplished through identifying terminology related to accountability, regulation, and decision-making via smart systems. Indicators such as "performance tracking tools," "digital quality assurance," and "electronic policy frameworks" confirmed the presence of governance structures anchored in digital mechanisms, thereby validating administrative control and oversight within the strategic narrative.

4. Examining the extent to which published content is linked to the digital value of research and training outcomes.

   The study met this goal by analyzing how strategic texts emphasized efficiency, community impact, and enhanced delivery of services via digital means. Several institutions demonstrated measurable intent to achieve performance-based results using digital tools, thereby confirming institutional awareness of value creation as a practical objective.

VII. Final Recommendations

1. *Update Strategic Texts:* Reframe vision, mission, and objectives to include digital transformation imperatives.
2. *Adopt Performance Indicators:* Introduce measureable digital benchmarks aligned with innovation and governance.
3. *Link Strategy to Human Capital:* Align digital skills training with labor market needs.
4. *Prioritize Functional Clarity:* Use strategic language that reflects real capacity,

Biographical Statement

Adeeb Salem Al-Agha is an associate professor at Al-Aqsa University, Faculty of Management and Finance. His research focuses on strategic management, institutional resilience, and digital transformation in post-crisis contexts. He has published extensively on governance frameworks and recovery models tailored to the Palestinian environment.

AI Disclosure

During the preparation of this paper, the author used Microsoft Copilot in the conceptual structuring and linguistic refinement of selected analytical sections. After using this tool, the author reviewed and edited the content as needed and takes full responsibility for the integrity, accuracy, and originality of the publication.

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Viewing Employee Empowerment through a Trauma-Informed Care Lens: Is there a Difference?

By Jesse A. Greer
Wayland Baptist University

Abstract- Employee empowerment was first introduced in literature during the 1950s but has become a highly researched topic. This theoretical review investigated if employee empowerment could be viewed through a trauma-informed lens. The trauma-informed care approach consists of six core principles, empowerment being one of them. Although similarities were noted between the characteristics of empowering individuals receiving trauma-informed care and the literature covering employee empowerment, new ideas on how to approach empowerment in the workplace are offered. Future research is needed to see if a difference truly exists between the two types of empowerment.

Keywords: empowerment, trauma, trauma-informed.

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I. Introduction

How an individual processes a traumatic event will determine if this experience has a lasting impact. Research has shown that while an event may be viewed as being traumatic to one person, it does not necessarily mean that the same event would be transmitted as being traumatic to a different individual (Fallot & Harris, 2011; Isobel et al., 2021; Ranjbar et al., 2020). Additionally, Ranjbar et al. (2020) believe trauma could be considered a public health crisis because of the frequency and effect trauma has on people. Specific to the workplace, the 2023 American Psychological Association (APA) Work in America Survey showed that 22% of the workforce's mental health had been negatively affected (APA, 2023).

People desire to feel needed and appreciated, and this mindset crosses over into the workplace. Employee empowerment has been shown to have a positive impact on areas like performance (Alshemmari, 2023), organizational commitment (Murray & Holmes, 2021), and retention (Jena & Nayak, 2023). Empowerment can give companies a competitive advantage (Mathew & Nair, 2022). However, could employee empowerment be viewed through a different lens? This theoretical review sets out to first provide an overview of employee engagement, discusses the trauma-informed care approach, entertains a new approach to employee empowerment, considers limitations, and ends with future research recommendations and a summary.

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II. Employee Empowerment

From a theoretical perspective, Perkins and Zimmerman (1995) believe empowerment connects individual well-being with the larger social and political environment, linking "mental health to mutual help and the struggle to create a responsive community" (p. 569). Bandura (1989) explains empowerment as the rise and fall of individual's opinions of themselves about their work environment. Empowerment directs people to think of wellness instead of illness, strengths versus weaknesses, and competence in place of deficits (Perkins & Zimmerman, 1995). Spreitzer (1995) defines empowerment as an increase in task motivation expressed through four categories: impact, competence, meaning, and self-determination. Conger and Kanungo (1998) state that "empowerment refers to a process whereby an individual's belief in his or her self-efficacy is enhanced" (p. 474).

At the organizational level, Perkins and Zimmerman (1995) contend that empowerment includes joint decision-making and shared leadership. Employees who feel empowered will push themselves harder, take ownership of their work, and help the company succeed (Alshemmari, 2023). Spreitzer (1992) contends that ambiguity and uncertainty must be kept to a minimum when trying to empower others in the work setting. Ertürk and Vurgun (2015) explain employee empowerment as offering freedom, power, autonomy, and liberty, allowing staff to work proficiently. Alshemmari (2023) recommends providing employees with the latitude to make decisions relating to their work. This has been shown to increase worker confidence, positively influencing performance.

Empowerment is viewed as a tool managers use to their advantage in hopes of inspiring and engaging employees (Kumar et al., 2022; Murray & Holmes, 2021). Empowering a workforce includes encouraging and providing staff with the opportunity to make essential decisions promptly for the organization's greater good. Empowerment also involves sharing knowledge, company information, and command with all levels of staff (Fernandez & Moldogaziev, 2013). Empowering staff includes enhancing employee decision-making skills, which can help with employee development (Nawaz et al., 2023).Mathew and Nair (2022) maintain that the more empowered an employee feels, the less likely they are to leave the company because the employee will have higher levels of

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satisfaction. As explained by Klein et al. (2000), organizations implement employee empowerment practices to counterbalance staff dissatisfaction, and the costs associated with turnover, sabotage absenteeism, and low quality of work.

III. Trauma-Informed Care

Trauma can be defined as a single event that had a devastating effect involving severe harm or injury or was life-threatening (Haris & Fallot, 2001). Trauma-informed care focuses on the whole person versus a particular symptom or small segment of their lives while helping the individual feel like they are gaining back control (Harris & Fallot, 2001). A significant part of trauma-informed care is not retraumatizing the person by forcing them to retell their story multiple times. Ranjbar et al. (2020) describe trauma-informed care as "a strength-based approach to caring for individuals mindfully, with compassion and clarity regarding boundaries and expectations" (p. 9). Treating individuals with a trauma-informed approach consists of the provider acting like they do not know anything about the person's past experiences and, instead, assuming the individual has experienced trauma at some point in their life (Stokes et al., 2024).

Chu et al. (2023) explain that the trauma-informed care approach seeks to help people find a sense of belonging and encourages individuals to strengthen their self-esteem and self-efficacy. The leading authority of trauma-informed care, the Substance Abuse and Mental Health Services Administration (SAMHSA), has established six essential principles for a trauma-informed approach:

- Safety
- Trustworthiness and transparency
- Peer support
- Collaboration and mutuality
- Empowerment, voice, and choice; and
- Cultural, historical, and gender issues (SAMHSA, 2014).

Harris and Fallot (2001) and Knight (2019) contend that there are five fundamental principles to supporting a trauma-informed environment:

- Safety – Physical and emotional.
- Trustworthiness – Open and honest communication.
- Choice – The client is their own expert.
- Collaboration – Strengthens the provider and client relationship with an emphasis on client choice; and
- Empowerment – Gives the client as much control as possible over their care and outcomes.

Specific to empowerment, the strengths and experiences of those receiving treatment are recognized and cultivated (SAMHSA, 2014). Individuals being served are included in the decision-making and goal-setting processes to help determine their treatment plan. Harris and Fallot (2001) describe the relationship between the provider and the client receiving services as an open and authentic partnership. Clients should have a feasible amount of control over their treatment goals, creating a collaboration between the provider and client (Knight, 2019). Isobel et al. (2021) conducted a study of individuals receiving services and their caretakers with the goal of better understanding how trauma-informed care services should be designed. From a client standpoint, voice was one of the most critical components. Specifically, clients wanted to provide input and help make decisions regarding their care plans (Isobel et al., 2021).

IV. Method

Webster and Watson (2002) contend that to move a topic forward, a sturdy foundation needs to be built through reviewing past research to understand better where future exploration is needed. The current theoretical review adopted this approach by reviewing both seminal and current research on employee empowerment and trauma-informed care. A literature review was conducted through various online databases, uncovering empirical work dating back 35+ years and articles published within the past two years. Once a firm foundation was established, the author explored the similarities and differences between the original thoughts of employee empowerment and the newer idea of empowering employees through a trauma-informed lens.

V. Empowering Employees with a Trauma-Informed Care Approach

There are many similarities between employee empowerment and the trauma-informed care approach. For example, in the literature surrounding employee empowerment, joint decision-making and shared leadership are recommended (Perkins & Zimmerman, 1995). This aligns with the trauma-informed care approach, which recommends including the client in the goal-setting and decision-making process when determining their treatment plan. Likewise, allowing employees the latitude to make decisions regarding their work is recommended when trying to empower staff (Alshemmari, 2023). Knight (2019) offers a similar suggestion regarding clients receiving trauma-informed care services by stating that clients need reasonable control over their treatment goals, creating a collaboration between their providers and themselves. However, the trauma-informed care approach offers new insights into the literature surrounding empowerment in the workplace.

In a study by Greer (2024), the principles of trauma-informed care (safety, trustworthiness, choice,

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collaboration, and empowerment) were explored to understand which principles were needed from the employee standpoint to create a more trauma-informed work environment. This was accomplished using a modified consumer satisfaction survey in Fallot and Harris's (2011) published article *Creating Cultures of Trauma-Informed Care: A Self-Assessment and Planning Protocol*. The article's purpose by Fallot and Harris (2011) was to provide guidelines for agencies wanting to introduce trauma-informed care services into a clinical or community (e.g., school) setting. Because the survey was initially designed for an environment where services were provided, adjustments were made to make the survey appropriate for the work setting.

Greer's (2024) study revealed that empowerment was the most influential category when applying a trauma-informed care approach to the workplace. Twenty-nine percent of the participants did not believe their supervisor did an excellent job of letting them know they valued them as a person. This result relates explicitly to how Harris and Fallot (2001) believe trauma-informed care should focus on the whole person versus a specific symptom or segment of the client's life. Leaders must view their employees as people, not tools to do the job. Managers can accomplish this by taking an interest in their employees' lives and making time to get to know their staff more personally. Employees' comfort levels with sharing their personal lives will vary, so it is essential for supervisors not to push their staff to share if they are not comfortable doing so. This recommendation ties back to implementing the trauma-informed care approach and not retraumatizing the person by forcing them to retell their story multiple times. Not sharing should be acceptable, but employees need to feel welcome to share if they wish to do so.

An additional 23% of participants did not feel like their supervisor was helping them learn new skills to support them in reaching their career goals (Greer, 2024). SAMHSA (2014) contends that the strengths and experiences of those receiving trauma-informed care should be recognized and cultivated. Supervisors must identify their employees' strong points while helping them further develop these skillsets in the work setting. If possible, managers could connect their staff with additional learning opportunities. Many companies have online learning platforms for required training that also offer optional courses that may interest staff. However, they are not aware that these online courses are available. For smaller organizations that cannot offer online learning modules, managers could allow staff to cross-train in other company areas. Even if an employee's career goals take them away from the manager's department or the overall company, it is still essential that the manager takes the time to help their staff achieve their aspirations. The reason for this is that the organization would benefit from an employee further developing their skills and leaving the company with a positive mindset and the possibility they may return to the organization later in their career versus the employee's goals being ignored and leavingangry. This also relates to the first suggestion of supervisors viewing their staff as people and taking the time to know them personally.

When asked if the participants felt stronger as a person because of where they worked, 21% stated no (Greer, 2024). This response can be tied back to Chu et al. (2023) and the explanation that the trauma-informed care approach aims to help individuals find a sense of belonging and inspires people to strengthen their self-esteem and self-efficacy. Managers need to help their staff recognize the value they bring to the organization while helping employees recognize their capabilities. For example, if an employee has absorbed new job duties and is having difficulties learning how to succeed in their new role, this could lead to self-doubt. Instead of the supervisor becoming frustrated, they could help refocus this employee by showcasing their strengths and helping the individual realize they bring value to this new position; it will take time to learn how to complete these new tasks and that they are capable of mastering these duties.

VI. Limitations and Future Research Recommendations

The major limitation of this paper is that the recommendations were not produced based on an empirical study. This theoretical review provides information and makes suggestions from empirical research, but the paper was not constructed from observations or experiments. To help advance this topic, qualitative studies could be conducted that include human participants so a conversation centered on empowering employees based on trauma-informed principles could occur. Likewise, an analysis of variance (ANOVA) or t-test could be carried out to determine if a difference exists between the traditional employee empowerment principles and the trauma-informed care approach.

VII. Summary

Although this theoretical review established some similarities when looking at employee empowerment through a trauma-informed lens, new ways of viewing empowerment were also offered. Employees want to be valued as people, desire to learn new skills to help them reach their career goals, and need to feel stronger as a person because of where they work. For some companies, a cultural shift would need to occur before empowerment could be viewed in this manner. Further empirical research needs to be conducted to verify any definitive differences between the two styles of empowerment.

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Data Availability Statement

The data that support the findings of this theoretical review are available from the sole author upon reasonable request to protect the study participants' privacy.

Ethics Approval

This qualitative theoretical review was exempt from IRB review/approval because no human participants were involved.

Consent to Participate

This qualitative theoretical review had no human participants. Therefore, consent to participate was not necessary.

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Acknowledgments

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- Microsoft Word Document Setting Instructions.
- Font type of all text should be Swis721 Lt BT.
- Page size: 8.27" x 11'", left margin: 0.65, right margin: 0.65, bottom margin: 0.75.
- Paper title should be in one column of font size 24.
- Author name in font size of 11 in one column.
- Abstract: font size 9 with the word "Abstract" in bold italics.
- Main text: font size 10 with two justified columns.
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- The paragraph before spacing of 1 pt and after of 0 pt.
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The recommended size of an original research paper is under 15,000 words and review papers under 7,000 words. Research articles should be less than 10,000 words. Research papers are usually longer than review papers. Review papers are reports of significant research (typically less than 7,000 words, including tables, figures, and references)

A research paper must include:

a) A title which should be relevant to the theme of the paper.
b) A summary, known as an abstract (less than 150 words), containing the major results and conclusions.
c) Up to 10 keywords that precisely identify the paper's subject, purpose, and focus.
d) An introduction, giving fundamental background objectives.
e) Resources and techniques with sufficient complete experimental details (wherever possible by reference) to permit repetition, sources of information must be given, and numerical methods must be specified by reference.
f) Results which should be presented concisely by well-designed tables and figures.
g) Suitable statistical data should also be given.
h) All data must have been gathered with attention to numerical detail in the planning stage.

Design has been recognized to be essential to experiments for a considerable time, and the editor has decided that any paper that appears not to have adequate numerical treatments of the data will be returned unrefereed.

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j) There should be brief acknowledgments.
k) There ought to be references in the conventional format. Global Journals recommends APA format.

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The abstract is the foundation of the research paper. It should be clear and concise and must contain the objective of the paper and inferences drawn. It is advised to not include big mathematical equations or complicated jargon.

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Choice of the main keywords is the first tool of writing a research paper. Research paper writing is an art. Keyword search should be as strategic as possible.

One should start brainstorming lists of potential keywords before even beginning searching. Think about the most important concepts related to research work. Ask, “What words would a source have to include to be truly valuable in a research paper?” Then consider synonyms for the important words.

It may take the discovery of only one important paper to steer in the right keyword direction because, in most databases, the keywords under which a research paper is abstracted are listed with the paper.

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3. Ask your guides: If you are having any difficulty with your research, then do not hesitate to share your difficulty with your guide (if you have one). They will surely help you out and resolve your doubts. If you can't clarify what exactly you require for your work, then ask your supervisor to help you with an alternative. He or she might also provide you with a list of essential readings.

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Verbs have to be in agreement with their subjects. In a research paper, do not start sentences with conjunctions or finish them with prepositions. When writing formally, it is advisable to never split an infinitive because someone will (wrongly) complain. Avoid clichés like a disease. Always shun irritating alliteration. Use language which is simple and straightforward. Put together a neat summary.

14. Arrangement of information: Each section of the main body should start with an opening sentence, and there should be a changeover at the end of the section. Give only valid and powerful arguments for your topic. You may also maintain your arguments with records.

15. Never start at the last minute: Always allow enough time for research work. Leaving everything to the last minute will degrade your paper and spoil your work.

16. Multitasking in research is not good: Doing several things at the same time is a bad habit in the case of research activity. Research is an area where everything has a particular time slot. Divide your research work into parts, and do a particular part in a particular time slot.

17. Never copy others' work: Never copy others' work and give it your name because if the evaluator has seen it anywhere, you will be in trouble. Take proper rest and food: No matter how many hours you spend on your research activity, if you are not taking care of your health, then all your efforts will have been in vain. For quality research, take proper rest and food.

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19. Refresh your mind after intervals: Try to give your mind a rest by listening to soft music or sleeping in intervals. This will also improve your memory. Acquire colleagues: Always try to acquire colleagues. No matter how sharp you are, if you acquire colleagues, they can give you ideas which will be helpful to your research.

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23. Upon conclusion: Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium though which your research is going to be in print for the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects of your research.

Informal Guidelines of Research Paper Writing

Key points to remember:

- Submit all work in its final form.
- Write your paper in the form which is presented in the guidelines using the template.
- Please note the criteria peer reviewers will use for grading the final paper.

Final points:

One purpose of organizing a research paper is to let people interpret your efforts selectively. The journal requires the following sections, submitted in the order listed, with each section starting on a new page:

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This will provide understanding of the data and projections as to the implications of the results. The use of good quality references throughout the paper will give the effort trustworthiness by representing an alertness to prior workings.

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- Submitting a manuscript with pages out of sequence.
- In every section of your document, use standard writing style, including articles ("a" and "the").
- Keep paying attention to the topic of the paper.



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- Use paragraphs to split each significant point (excluding the abstract).
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- Use present tense to report well-accepted matters.
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An abstract is a brief, distinct paragraph summary of finished work or work in development. In a minute or less, a reviewer can be taught the foundation behind the study, common approaches to the problem, relevant results, and significant conclusions or new questions.

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Reason for writing the article—theory, overall issue, purpose.

- Fundamental goal.
- To-the-point depiction of the research.
- Consequences, including definite statistics—if the consequences are quantitative in nature, account for this; results of any numerical analysis should be reported. Significant conclusions or questions that emerge from the research.

Approach:

- Single section and succinct.
- An outline of the job done is always written in past tense.
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- Exact spelling, clarity of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else.

Introduction:

The introduction should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable of comprehending and calculating the purpose of your study without having to refer to other works. The basis for the study should be offered. Give the most important references, but avoid making a comprehensive appraisal of the topic. Describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will give no attention to your results. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here.

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Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done. Sort out your thoughts; manufacture one key point for every section. If you make the four points listed above, you will need at least four paragraphs. Present surrounding information only when it is necessary to support a situation. The reviewer does not desire to read everything you know about a topic. Shape the theory specifically—do not take a broad view.

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Procedures (methods and materials):

This part is supposed to be the easiest to carve if you have good skills. A soundly written procedures segment allows a capable scientist to replicate your results. Present precise information about your supplies. The suppliers and clarity of reagents can be helpful bits of information. Present methods in sequential order, but linked methodologies can be grouped as a segment. Be concise when relating the protocols. Attempt to give the least amount of information that would permit another capable scientist to replicate your outcome, but be cautious that vital information is integrated. The use of subheadings is suggested and ought to be synchronized with the results section.

When a technique is used that has been well-described in another section, mention the specific item describing the way, but draw the basic principle while stating the situation. The purpose is to show all particular resources and broad procedures so that another person may use some or all of the methods in one more study or referee the scientific value of your work. It is not to be a step-by-step report of the whole thing you did, nor is a methods section a set of orders.

Materials:

Materials may be reported in part of a section or else they may be recognized along with your measures.

Methods:

- Report the method and not the particulars of each process that engaged the same methodology.
- Describe the method entirely.
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures.
- Simplify—detail how procedures were completed, not how they were performed on a particular day.
- If well-known procedures were used, account for the procedure by name, possibly with a reference, and that's all.

Approach:

It is embarrassing to use vigorous voice when documenting methods without using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result, when writing up the methods, most authors use third person passive voice.

Use standard style in this and every other part of the paper—avoid familiar lists, and use full sentences.

What to keep away from:

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings—save it for the argument.
- Leave out information that is immaterial to a third party.

Results:

The principle of a results segment is to present and demonstrate your conclusion. Create this part as entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Use statistics and tables, if suitable, to present consequences most efficiently.

You must clearly differentiate material which would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matters should not be submitted at all except if requested by the instructor.



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Content:

- Sum up your conclusions in text and demonstrate them, if suitable, with figures and tables.
- In the manuscript, explain each of your consequences, and point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation of an exacting study.
- Explain results of control experiments and give remarks that are not accessible in a prescribed figure or table, if appropriate.
- Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or manuscript.

What to stay away from:

- Do not discuss or infer your outcome, report surrounding information, or try to explain anything.
- Do not include raw data or intermediate calculations in a research manuscript.
- Do not present similar data more than once.
- A manuscript should complement any figures or tables, not duplicate information.
- Never confuse figures with tables—there is a difference.

Approach:

As always, use past tense when you submit your results, and put the whole thing in a reasonable order.

Put figures and tables, appropriately numbered, in order at the end of the report.

If you desire, you may place your figures and tables properly within the text of your results section.

Figures and tables:

If you put figures and tables at the end of some details, make certain that they are visibly distinguished from any attached appendix materials, such as raw facts. Whatever the position, each table must be titled, numbered one after the other, and include a heading. All figures and tables must be divided from the text.

Discussion:

The discussion is expected to be the trickiest segment to write. A lot of papers submitted to the journal are discarded based on problems with the discussion. There is no rule for how long an argument should be.

Position your understanding of the outcome visibly to lead the reviewer through your conclusions, and then finish the paper with a summing up of the implications of the study. The purpose here is to offer an understanding of your results and support all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of results should be fully described.

Infer your data in the conversation in suitable depth. This means that when you clarify an observable fact, you must explain mechanisms that may account for the observation. If your results vary from your prospect, make clear why that may have happened. If your results agree, then explain the theory that the proof supported. It is never suitable to just state that the data approved the prospect, and let it drop at that. Make a decision as to whether each premise is supported or discarded or if you cannot make a conclusion with assurance. Do not just dismiss a study or part of a study as "uncertain."

Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work.

- You may propose future guidelines, such as how an experiment might be personalized to accomplish a new idea.
- Give details of all of your remarks as much as possible, focusing on mechanisms.
- Make a decision as to whether the tentative design sufficiently addressed the theory and whether or not it was correctly restricted. Try to present substitute explanations if they are sensible alternatives.
- One piece of research will not counter an overall question, so maintain the large picture in mind. Where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.

Approach:

When you refer to information, differentiate data generated by your own studies from other available information. Present work done by specific persons (including you) in past tense.

Describe generally acknowledged facts and main beliefs in present tense.

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Methods and Procedures	Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads	Difficult to comprehend with embarrassed text, too much explanation but completed	Incorrect and unorganized structure with hazy meaning
Result	Well organized, Clear and specific, Correct units with precision, correct data, well structuring of paragraph, no grammar and spelling mistake	Complete and embarrassed text, difficult to comprehend	Irregular format with wrong facts and figures
Discussion	Well organized, meaningful specification, sound conclusion, logical and concise explanation, highly structured paragraph reference cited	Wordy, unclear conclusion, spurious	Conclusion is not cited, unorganized, difficult to comprehend
References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring

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