Role of Information Management System 4IR-Based Approach in Achieving E-Governance in Bangladesh

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This Report Presented in Partial Fulfillment of the Requirements for the Degree of Master of Science in Management Information Systems (MIS)

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DHAKA, BANGLADESH

FEBRUARY 2024

APPROVAL

This Thesis titled "**Role of Management and Information System 4IR based approach in achieving E-governance in Bangladesh**", submitted by Md. Ohidul Islam to the Department of Computing and Information System, Under CSE, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of MS in Management Information System and approved as to its style and contents. The presentation was held on 03 February Saturday, 2024.

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I hereby declare that, this project has been done by us under the supervision of **Dr. S M Aminul Haque, Professor and Associate Head, Department of CSE,** Daffodil International University. I also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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ACKNOWLEDGMENT

First, I express my heartiest thanks and gratefulness to almighty God for His divine blessing makes me possible to complete the final year thesis successfully.

I am really grateful and wish my profound indebtedness to **Dr. S M Aminul Haque, Professor and Associate Head**, Department of CSE Daffodil International University, Dhaka. Deep Knowledge & keen interest of my supervisor in the field of "*E-governance*" to carry out this project. His endless patience, scholarly guidance, continual encouragement, constant and energetic supervision, constructive criticism, valuable advice and correcting them at all stage have made it possible to complete this thesis.

I would like to express my heartiest gratitude to Professor Dr. Sheak Rashed Haider Noori, Professor and Head, Department of CSE, for his kind help to finish my thesis and also to other faculty member and the staff of CSE department of Daffodil International University.

I would like to thank our entire course mate in Daffodil International University, who took part in this discussion while completing the course work.

Finally, I must acknowledge with due respect the constant support and passion of my parents.

ABSTRACT

Information management in the public sector can improve transparency, reduce corruption, speed up service delivery, provide easy access to public services, reduce errors, and reduce poverty. As the landscape of governance experiences transformative shifts in the 21st century, propelled by technological advancements, this thesis delves into the pivotal role played by the Management of Information Systems (MIS) employing a 4th Industrial Revolution (4IR)-based approach in the pursuit of effective E-Governance in Bangladesh. In an era marked by unprecedented connectivity and innovation, the integration of cutting-edge technologies has emerged as a cornerstone in reshaping administrative processes and fostering citizen-centric governance. The study employs a comprehensive research design, incorporating both qualitative and quantitative methodologies, to investigate the impact and potential of MIS with a 4IR-based approach in the context of Bangladesh. Extensive data collection, including surveys, interviews, and case studies, forms the basis for analysis, shedding light on the current state of E-Governance initiatives and the efficacy of 4IR technologies in addressing inherent challenges. Key findings underscore the critical role of MIS leveraging 4IR technologies in enhancing government service delivery, transparency, and efficiency. The majority of respondents express positive sentiments, affirming the potential of these systems to streamline bureaucratic processes, mitigate corruption, and foster a responsive and inclusive governance framework. Furthermore, the study explores the challenges faced in the adoption of such systems, providing insights into the barriers that must be navigated for successful integration. The thesis contributes valuable insights to the academic discourse on E-Governance and 4IR technologies, offering recommendations for policymakers, government officials, and technologists. By illuminating the symbiotic relationship between MIS and the 4IR paradigms, this research aims to inform strategic decision-making, laying the groundwork for a technologically advanced and citizen-centric governance model in Bangladesh.

TABLE OF CONTENTS

CONTENTS **PAGE**

LIST OF FIGURES

CHAPTER 1

Introduction

1.1 Background information:

The role of Information Management System 4IR-Based Approach in Achieving E-Governance in Bangladesh recommendations include improving transparency, reducing corruption, speeding up service delivery, providing easy access to public services, reducing poverty, implementing big data for cost-effective service delivery, controlling corruption, ensuring sustainable development, and bringing every public sector under information resource management.

The study employs a comprehensive research design, incorporating both qualitative and quantitative methodologies, to investigate the impact and potential of MIS with a 4IR-based approach in the context of Bangladesh. Extensive data collection, including surveys, interviews, and case studies, forms the basis for analysis, shedding light on the current state of E-Governance initiatives and the efficacy of 4IR technologies in addressing inherent challenges.

Key findings underscore the critical role of MIS leveraging 4IR technologies in enhancing government service delivery, transparency, and efficiency. The majority of respondents express positive sentiments, affirming the potential of these systems to streamline bureaucratic processes, mitigate corruption, and foster a responsive and inclusive governance framework. Furthermore, the study explores the challenges faced in the adoption of such systems, providing insights into the barriers that must be navigated for successful integration.

The thesis contributes valuable insights to the academic discourse on E-Governance and 4IR technologies, offering recommendations for policymakers, government officials, and technologists. By illuminating the symbiotic relationship between MIS and the 4IR paradigm, this research aims to inform strategic decision-making, laying the groundwork for a technologically advanced and citizen-centric governance model in Bangladesh.

1.2 Motivation:

The motivation for exploring the role of a 4IR-based Information Management System (IMS) in achieving e-governance in Bangladesh stems from a deep-seated belief in the transformative power of technology for good. Witnessing the limitations of traditional governance practices, often burdened by inefficiency, opacity, and citizen disconnect, fuels my desire to find solutions. I envision a Bangladesh where technology bridges the gap between citizens and their government, where information flows freely, and processes are streamlined for maximum impact.

Bangladesh, poised at the precipice of the Fourth Industrial Revolution, presents a unique opportunity to leapfrog into a new era of governance. My research delves into the potential of a 4IR-powered IMS to become the catalyst for this transformation. Imagine a system that harnesses the power of data analytics, artificial intelligence, and blockchain to enhance transparency, empower decision-making, and deliver citizen-centric services.

This motivation goes beyond mere academic curiosity. It's driven by a personal commitment to contributing to Bangladesh's social and economic progress. I believe that the effective implementation of a 4IR-based IMS can improve the lives of millions, reducing corruption, fostering trust in government institutions, and promoting sustainable development. So, it is possible to establish a foundation for effective e-governance endeavors that effectively address the changing requirements of individuals and facilitate the modernization of governance methodologies in the era of digitalization.

1.3 Rationale of the study:

Ever feel like navigating a tangled web of instructions with people who speak entirely different languages? That's the essence of studying information systems - untangling the threads of technology, people, and society to see how information moves between them. In this master's thesis, I'm venturing into the exciting realm of e-governance, where governments ditch the dusty paperwork and embrace technology to forge a new connection with their citizens. Imagine filing taxes from your couch, tracking passport applications in real-time, or accessing healthcare records with a click - that's the transformative power of e-governance in action. So, buckle up as I dissect how information systems act as digital

bridges between governments and citizens, paving the way for a more accessible, transparent, and efficient future.. The utilization of e-governance has emerged as a significant mechanism for augmenting citizen engagement, overseeing and assessing governmental initiatives, guaranteeing governmental responsibility and transparency, and facilitating the transfer of information across various sectors (Adah and Abasilim, 2015).

Many developing nations encounter challenges when implementing e-governance initiatives, which occasionally result in failure. As stated by Heeks (2003), the implementation of e-government initiatives in developing nations often encounters failure or abandonment due to their inability to effectively achieve the intended objectives for which they were deployed. Nigeria, a developing nation, is actively pursuing the establishment of a robust electronic governance system. This entails transitioning from a fragmented and specialized organizational structure to a more integrated approach to public service delivery, while also moving away from constitutional devolution. This represents a significant step towards the realization of a cohesive and interconnected governmental system that actively involves its citizens. This study aims to investigate the potential of Management Information Systems (MIS) in facilitating an integrated public service delivery approach.

Management information systems (MIS), a component of information systems, employ information communication technology (ICT) to collect and disseminate information that organizations utilize for their operational activities (Laudon and Laudon, 2017). The aforementioned concept refers to a form of information communication technology that is designed to improve communication processes necessary for managerial functions and establish connections between an organization and its external environment (Olalekan, 2014).

This definition provides a solid basis for the examination of management information systems, which encompass the improvement of communication and the establishment of connections between organizations and their external environment. Management information systems (MIS) can be defined as a means of facilitating communication to enable the execution of managerial roles and functions (Laudon and Laudon, 2017).

In addition to the advantages of improved interaction and communication, alternative interpretations of Management Information Systems encompass the significance of data and information in facilitating the efficient execution of business and societal endeavors. According to King and Rodriguez (1978, p. 46), management information systems can be defined as technological systems that convert data into pertinent information, crucial for facilitating informed decision-making. These systems contribute to technological advancements that enable effective governance by enhancing various sectors such as public administration, education, health, agriculture, and the environment (Mohammed et al., 2017).

As governments increasingly shift from structural devolution, disaggregation, and single-purpose organizations towards a more integrated approach to public service delivery, it becomes imperative for these systems to possess interoperability. Hence, it can be inferred that management information systems are a technological solution designed to facilitate interactions and improve interoperability between the government and its various initiatives. Given the significant role that management information systems (MIS) play in facilitating the interoperability of e-governance systems, it is imperative to examine the existing practices pertaining to MIS within organizations in Nigeria. This investigation is necessary to acquire contextual knowledge of this complex phenomenon.

This thesis is firmly situated within the domain of Informatics research. While studies have explored the potential of MIS to connect and streamline e-governance initiatives, there's a gap in understanding how this actually works in real-world organizations. We need deeper dives into how different government agencies, with their unique cultures and workflows, implement and utilize MIS for better interoperability. This thesis makes a practical contribution to the development of information systems in organizations by proposing measures to enhance interoperability. In the context of interoperability, the predominant emphasis often lies on the technical dimension, while insufficient attention is given to the human factors that encompass the identification and consensus-building of necessary processes to facilitate the smooth exchange of data across technical infrastructures. This thesis aims to examine the integration of technical and human elements within systems to facilitate the efficient provision of governance services to the public.

1.4 Research Question:

- How familiar are you with the concept of E-Governance and 4IR?
- Have you ever interacted with any government services or platforms online in Bangladesh?
- How satisfied are you with the current E-Governance services provided by the government in Bangladesh?
- What do you think? Does using technology save time?
- Are our technology and information systems sufficiently adaptable to meet the challenges of today's fast-paced business world?
- Do you think general people have enough knowledge to use government online portals?
- Do you think integrating 4IR technologies into E-Governance will help in reducing corruption and bureaucratic hurdles?
- How would you rate the effectiveness of current E-Governance initiatives in Bangladesh?
- There are many challenges in Mastering Emerging 4IR Technologies.
- Management Information Systems play a significant role in the E-Governance sector.
- What is the impact of information systems in the banking industry?
- Information technology has brought a new dimension to the economic activities of our country.
- What potential benefits do you anticipate from the integration of MIS in E-Governance during the 4IR in Bangladesh?
- Do you believe the integration of 4IR technologies in E-Governance can lead to more efficient and transparent government services?

This lead to help

- MIS streamlines, automates, and reduces government bureaucracy. This improves government efficiency, resulting in faster and better citizen service. Digitizing paper-based processes saves government and citizens time and money.
- MIS provides simple and accessible channels for government information and services, enabling citizen-centric services. Citizens can apply, pay, and track government services online. This improves citizens' government service experiences.
- MIS tools and technologies help policymakers make data-informed judgments. MIS analyzes massive data sets to find trends, patterns, and insights that inform policy and strategy. Data-driven policymaking benefits citizens and governance.
- MIS provides access to information and helps track and oversee government activity. Access to government information, policies, and choices increases openness. MIS tracks performance metrics and evaluates government programs, providing accountability and ongoing development.
- MIS provides platforms for citizen participation in governance. Digital networks enable citizen feedback, issue reporting, and ideation. Citizens feel ownership and participation, making government more inclusive and responsive.
- MIS protects sensitive data in e-governance. MIS protects government data from hackers and breaches using strong security and data protection standards. This boosts citizens' faith in the government's privacy protections.
- MIS lets governments examine user feedback, service usage, and performance metrics. This data-driven strategy identifies government service improvements and innovations. Governments may improve service delivery, optimize operations, and introduce new initiatives to suit changing citizen requirements by regularly monitoring and analyzing performance.

1.6 Report Layout:

The master's thesis research is introduced in Chapter 1 of the thesis.

Chapter 1:

The backdrop, research issue, and research setting are first described. Second, the goals and objectives of the study as well as the research questions were stated. Thirdly, prior research on the subject is discussed, providing a foundation for the topic's argument. The research's limitations and scope are then examined.

Chapter 2:

The theoretical framework for the research is developed in Chapter 2 through a survey of the literature. It first outlines the search process for locating relevant books and articles. Additionally, it discusses the key concepts that emerged from the literature review and serve as the theoretical foundation for the master's thesis, such as resource base theory, interoperability, and management information systems. The theoretical framework that will be used to analyze and discuss the research findings in subsequent chapters is presented as the chapter's conclusion.

Chapter 3:

In Chapter 3, the chosen philosophical worldview is described, followed by a discussion of the methodology that was used to carry out the thesis. The third point is a discussion of data collecting and analysis methodologies. Finally, the research's validity, dependability, and ethical implications are given.

Chapter 4:

An overview of the empirical conclusions drawn from the collected data is presented in Chapter 4. It goes over the thematic data analysis's key themes. The findings are then used to support each topic with supporting data. The chapter concludes with a summary of the results.

Chapter 5:

The primary conclusions from the data analysis are described in Chapter 5, and they are related to the study objectives and theoretical framework that were covered in Chapters 1 and 2.

Chapter 6: The thesis is concluded in Chapter 6, which first examines the objectives and methods of the study before moving on to the difficulties that were faced. Finally, ideas for additional research are offered.

CHAPTER 2

Literature review

2.1 Overview of relevant literature:

In recent years, e-governance—the use of information and communication technologies (ICTs) in government operations—has attracted a lot of interest. The role of management and information systems (MIS) in accomplishing e-governance goals has emerged as a significant field of research as governments everywhere work to modernize their procedures and enhance service delivery. This review of the literature looks at significant studies that provide information on the functions and effects of MIS in supporting effective e-governance projects.

2.2 Review of related studies:

The importance of effective data management to e-governance is highlighted by the function that MIS plays in this area. Bhatnagar (2012) asserts that MIS assists governments in gathering, storing, and managing substantial amounts of data pertaining to regulations, procedures, and services. In order to ensure the availability of trustworthy and up-to-date information for decision-making and service delivery, it permits data integration from several government agencies. Singh and Pandey (2016) emphasize the significance of MIS in assuring data consistency and quality, which is necessary for precise analysis and decision support.

Efficiency and Process Automation: MIS supports process automation, streamlining administrative procedures and increasing overall effectiveness. The importance of MIS in automating governmental procedures, such as application submission, approval, and service delivery, is highlighted in Dwivedi et al. (2015)'s study. Automation minimizes manual intervention, speeds up processing, and increases output. Joshi and Sharma (2014) further contend that MIS enhances departmental collaboration and communication, facilitating seamless workflow integration and removing bureaucratic barriers.

Government officials can make educated judgments with the help of the decision support tools and technologies that MIS offers. Palvia et al. (2018) emphasize the value of MIS in data analysis, forecasting, and modeling, empowering decision-makers to comprehend

trends, spot issues, and come up with relevant solutions. By providing insights generated from in-depth data analysis, MIS improves evidence-based decision-making and facilitates policy formation.

Transparency, Accountability, and Citizen Engagement: Promoting transparency and accountability is one of the main objectives of e-governance. To accomplish these goals, MIS is essential. In order to provide openness in procedures and decision-making, MIS, according to Pandey and Bawa (2013), permits the tracking and monitoring of government actions. By allowing access to government information and services via digital means, it also improves citizen engagement. According to Gupta et al. (2014), MIS encourages citizen empowerment and engagement by enabling citizens to voice opinions, file complaints, and actively participate in the political process.

Security and privacy of information are crucial since e-governance mainly rely on the digitalization and sharing of information. By providing the architecture and tools for data protection, access control, and the prevention of illegal access or data breaches, MIS helps to ensure information security. According to Mishra et al. (2018), MIS plays a crucial part in protecting sensitive government data, reducing cybersecurity threats, and abiding by privacy laws.

Monitoring and Evaluation of Government Programs: MIS makes it possible to keep track of and assess government activities and programs. It offers tools for monitoring development, measuring results, and evaluating the efficiency of governance actions. How MIS facilitates performance assessment, accountability, and evidence-based evaluation of government activities is highlighted by Gupta and Kaur (2017). Governments can use MIS-driven analytics to make data-driven decisions and constantly enhance service delivery by monitoring key performance indicators.

Management Information Systems (MIS) refer to the discipline that focuses on the use of technology and systems to support the management and decision-making processes. The management information system (MIS) is a technological solution designed to facilitate the management process. streamline the process of decision-making, which previously exhibited a higher degree of manual intervention.

The decision-making process in traditional systems is primarily guided by informal heuristics, intuition, and individual experiential knowledge. According to Laudon and Laudon (2017), the term "medium" refers to a means or channel through which information or communication is transmitted. The aforementioned approach was lacking in facilitation and was ill-suited for organizations experiencing rapid growth and expansion. In order to enhance or optimize

According to Laudon and Laudon (2017), systems play a significant role in various contexts. The attainment of corporate objectives is contingent upon certain factors. Regarding the topic of information systems quality and management. The user's text: "Specific corporate goals" Rewritten: "Precise objectives set by corporations" The concept of optimal information systems is discussed by Laudon and Laudon (2017) in their academic work. Hence, it can be.

Management Information Systems (MIS) play a crucial role in the functioning of businesses, akin to the vital role of the heart in the human body. The heart functions as a pump, circulating oxygenated blood to all regions of the body. Incorporating the cerebral organ. In addition to this, the heart serves the function of regulating and controlling the The introduction of contaminated blood. Additionally, the cardiac system exhibits an increased rate of activity and facilitates the circulation of blood in the body. In essence, the cardiac organ is responsible for facilitating the circulation of blood throughout the human body. The human body functions in both typical circumstances and during times of emergency. Similar to the functioning of the heart, management Information Systems serves a comparable function. This process ensures that accurate and relevant data is obtained from the source. Various sources are gathered, undergo processing, and subsequently transmitted to the relevant destination.

Potential Locations for Developing Corporate Strategies. Laudon and Laudon's work should be taken into account. In his analysis, Laudon (2017) categorized corporate strategies into six distinct categories. The concept of operational excellence encompasses the pursuit of efficiency and effectiveness in various organizational processes. This includes the development and implementation of new products, services, and business

models. Additionally, the satisfaction and loyalty of customers are integral aspects of achieving operational excellence, enhanced supplier relationships; enhanced decision-making processes; strategic advantage and survival.

Based on the research conducted by Sipior (2017), it can be inferred that a management information system is established. Information technology (IT) is a field that primarily focuses on the transformation of raw data. External and internal sources are utilized to gather information, which is subsequently employed in the process of formulating.

Reports play a crucial role in facilitating informed decision-making within various departments of an organization, thereby enhancing their operational effectiveness.

making decisions with greater knowledge and understanding. In summary, Management Information Systems (MIS), gather data from both external and internal sources, and subsequently analyze and interpret this information in order to the objective is to expedite the process of decision-making within a business context. In alternative terms, the concept of management. Information systems refer to a structured collection of data that serves as a repository for organizational information. In a manner that enhances the generation of reports that expedite prompt decision-making. The three terms that play a crucial role in comprehending the fulcrum are "management,"

The sources cited by the user include Sipior (2017) and Siering and Janze (2019), which discuss the topics of information and system. In light of this observation, Management is the facet that encompasses the utilization of human resources, wherein individuals assume a central role in the execution of tasks and responsibilities. The individuals responsible for making decisions. However, it can be argued that information is predominantly influenced By means of technological advancements, the system operates based on a predetermined set of principles or guidelines.

The methods by which a particular task or action is executed. Several definitions of Management Information Systems (MIS) are provided below: A management information system (MIS) is a system that provides information for managerial decision-making within an organization. Communication technology designed to enhance and facilitate communication is required to provide assistance.

The managerial functions encompass the activities undertaken by managers to effectively oversee and guide an organization. These functions include planning, organizing, leading, and controlling. Additionally, managers play a crucial role in connecting the organization with its external environment. This involves establishing and maintaining relationships with external stakeholders such as customers, suppliers, and regulatory bodies. The environment (Olalekan, 2014). referred to as MIS in academic literature.

The communication link is characterized as a mechanism that guarantees the effective transmission of information, thereby facilitating the coordination and execution of various roles and functions. The concept of management and the role of managers are both viable and feasible. Management Information System (MIS) refers to a system that is designed to facilitate the management and processing of information within an organization. An integrated technological system designed to gather, analyze, categorize, retain, and disseminate information. The field of Management Information Systems encompasses a comprehensive collection of data and knowledge pertaining to various aspects of organizational management and information technology.

The individuals, structures, and surroundings that are of utmost importance to the organization. According to Sipior (2017), Siering and Janze (2019) provided a definition for Management Information. A system refers to a computer-based and manual system that facilitates the transformation of data into a desired output. The inclusion of pertinent data is crucial in order to offer the requisite assistance needed for decision-making. The Management Information System (MIS) is a platform dedicated to the strategic planning and decision-making processes and the process of integrating systems is conducted to gather pertinent information.

Executives at various hierarchical levels facilitate the provision of accurate information. According to Siering and Janze (2019), it is crucial to inform relevant personnel at the appropriate time about the information of interest.

The definitions mentioned above provide several key points that can be inferred.

1. The utilization of a Management Information System (MIS) facilitates the attainment of operational efficiency and enlightening managerial decision-making. That is to say, decisions that are grounded in factual information.

2. The Management Information System provides feedback regarding performance of the institution

3. The provided information is grounded in a systemic approach.

4. The utilization of Management Information Systems facilitates efficient, secure, and expeditious operations. The dissemination of data within the organization.

5. The management of conflicting data requirements is a critical task in achieving balance. An information system is advantageous as it allows for the retrieval of data from multiple sources. More than one location that is geographically distant from the organization and parameters.

6. Management information systems (MIS) facilitate the processing of information for decision-makers. The inability to process a substantial amount of data within a limited timeframe can result in a lack of logical reasoning. The decision incurs costs for the company. In order for managers to effectively handle this substantial amount of data.The significance of Management Information Systems lies in its ability to utilize data for decision-making purposes. In attaining that objective.

7. The utilization of Management Information Systems enables a business to enhance its competitive advantage.

In an era characterized by rapid change, it is imperative for humans to effectively harness the resources that are currently accessible. In the contemporary era characterized by the prominence of technology, it is imperative that we Utilize this capability and apply it towards expediting a logical decision-making process. Management The opportunity is provided by the Information System, which utilizes a database to store and manage the necessary information. One effective approach to facilitate the generation of reports is to organize information in a structured manner that enable efficient and prompt decision-making. The utilization of Management Information Systems facilitates.

In order for businesses to effectively adapt to evolving circumstances, it is imperative for them to maintain a state of preparedness, accurately forecast forthcoming changes, and strategically capitalize on these opportunities. Seize opportunities as they present themselves**.**

Electronic Governance (E-governance):

The contemporary world has evolved into a globalized society, wherein every nation across the globe, the global community is currently engaged in efforts to effectively govern its populace and achieve a significant degree of electronic advancement. The utilization of information and communication technology for governance purposes has been discussed in a study conducted by Adah (2015).

According to Bannister and Connolly (2012), the previous two decades have witnessed an increase in the

The proliferation of a prevalent convention involving the placement of the letter 'e' at the forefront.

E-governance pertains to the utilization of information and communication technologies. The utilization of technology by diverse government agencies to augment accountability. Promote public consciousness and establish a framework of openness in the governance of public administration. According to Otinche Sunday (2013), businesses play a significant role in the economy. Adah (2015) presents a comparable perspective. E-governance is defined as a bilateral communication process that addresses By employing information and communication technology for the purpose of dissemination The provision of government services and the guarantee of their accessibility to the general populace political, and administrative processes" is known as e-governance.

The management of public service in a given context encompasses the political, administrative, and social dimensions. The promotion of citizen involvement in public policy is a means to achieve effective outcomes. Referred to as electronic governance, e-governance has been extensively studied by scholars such as Oyeleye (2014) and Adisa et al. (2017). Additionally, Alonso The perspective presented in the year 2014 offers a distinct

viewpoint by characterizing e-governance as a process of transitioning. The conventional approach to conducting governmental affairs, which is predominantly observed, the utilization of information communication can be approached in a linear and top-down manner. The technology enables individuals to conveniently access information available to the public. This suggests that e-governance is a constructed system designed to engage and establish connections. The utilization of information and communication technology (ICT) can effectively enhance public service delivery and engage citizens and other stakeholders' technologies.

Role of MIS in E-governance:

Information is undoubtedly regarded as a fundamental and cornerstone aspect. The consideration of managerial decision-making in the context of e-governance is of utmost importance, given the prevailing circumstances. The challenges pertaining to governance in the current century have been discussed by Robbins (2004). In order to furnish such in contemporary society, computers play a pivotal role in the dissemination and processing of information. Specifically, management information systems (MIS) are employed to facilitate the organization, storage, retrieval, and analysis of data within various contexts.

According to Sirus and Majid (2017), there is an observed increase in functionality. The role of a particular entity or individual. The demonstration of management information systems in the context of e-governance is exemplified by the utilization of management information and communications technology for exploitative purposes. In order to assess, enhance, and cultivate the diverse administrative procedures.

According to Constantinides and Barrett (2015), the concept of "within the organization" is significant. The advantages associated with the replacement of manual systems with automated systems are manifold. The advent of computerized alternatives has precipitated the transition to e-governance, predominantly as a result. One approach to enhancing service delivery has been discussed by Constantinides and Barrett (2015).

The utilization of management information systems is observed across multiple hierarchical levels, particularly by top-level management. The utilization of middle and operational staff as a means of supporting decision-making processes is widely recognized.

In order to accomplish strategic aims and objectives, it is necessary to take certain actions (Héroux and Fortin, 2014). The management information system (MIS) plays a crucial role in facilitating the integration of technology within organizations. Development initiatives play a crucial role in enabling effective governance by enhancing various sectors such as the areas of focus encompassed within this discussion are public administration, education, health, agriculture, and the environment.

According to Héroux and Fortin (2014), the study conducted... The management information system provides opportunities for the process of gathering and retaining data that is capable of being accessed and utilized for the purpose of making informed decisions.

Whenever the need arises (Héroux and Fortin, 2014). One of the key functions of a management information system is to offer the pursuit of cost-efficiency and enhanced efficacy in the management and processing of information. There are various prospects for engaging in collaborative endeavors with the private sector to facilitate the process of modernization. The study focuses on the examination of governmental processes, with a specific emphasis on transparency, particularly in relation to the procurement of goods and services. The provision of governmental services, as well as the potential for integrating conventional and contemporary elements. The authors Onuigbo and Eme (2015) discuss various approaches to accountability. The primary function of

The purpose of implementing management information systems is to enhance governmental transparency and promote openness. Citizen participation and involvement can serve as a valuable mechanism for enhancing governance. According to Anastasiadou, Santos, and Montargil (2021), The subject of management information refers to the collection, analysis, and utilization of data and knowledge within an organizational context Systems enable governments, by means of their departments and ministries, to Efficiently generate, analyze, distribute, disseminate, and manipulate information.

According to Masuku et al. (2017), meet the demands of various industries. These technologies play a crucial role in enhancing productivity, efficiency, and overall performance. The concept of e-governance encompasses various manifestations, including the development and implementation of specific public sector portals and platforms. Web

services that cater to the needs of both governmental entities and citizens The utilization of websites and social networks has been observed to enhance the level of engagement among individuals. Citizens play a crucial role in facilitating the government's efforts to promote fairness for the betterment of the general public.

According to Anastasiadou, Santos, and Montargil (2021), One of the primary benefits of facilitate democratic decision-making processes by enhancing civic engagement and promoting the flow of information. Allows individuals to increase their level of engagement (Anastasiadou, et all, 2021). The implementation of a management information system enhances organizational efficiency and effectiveness.

The involvement of citizens in their interactions with the government. It provides individuals with the ability to exert control or influence over their own lives and circumstances. Enhancing individuals' and collectives' accessibility to providing individuals with knowledge that empowers them to influence public policies.

According to Anastasiadou, Santos, and Montargil (2021), By utilizing management information systems, individuals have the opportunity to engage in an active role within the system. There exists a more streamlined and effective approach to the decision-making process and its impact on the general public. Discussion forums have been found to enhance collaboration with local citizens in order to provide assistance. Smith, 2019) suggests that the government should prioritize the resolution of local problems (Montargil, 2021).

The affordable nature of internet connectivity, coupled with its convenient and rapid accessibility, The exchange of information facilitated by the internet renders it highly significant in contemporary society. The democratic process has been explored by Anastasiadou, Santos, and Montargil (2021). There exist There are four essential components of a management information system that hold significant importance. The promotion of good governance entails various roles, which encompass the components of review and control. The concepts of approval and allocation are important in various academic disciplines. Approval refers to the act of granting consent or the review and control processes exemplify the principle of accountability. One aspect of e-governance

pertains to the process of approval and allocation. The integrity aspect has been discussed by Anastasiadou, Santos, and Montargil (2021). The government has the ability to

Utilize the management information system platform within the context of e-governance in order to acquire knowledge. The degree of project execution and implementation is a crucial aspect to consider. Additionally, citizens have the ability to utilize this resource. This platform serves as a means to observe and monitor both established and ongoing initiatives with regard to their respective constituencies. According to Mohammed et al. (2017), The utilization of a management information system facilitates the allocation of resources.

The projects have been authorized, monitoring and execution teams have been assigned, and the project is now underway. The significance of management information systems in society, focusing on the paramount concern. The security of information has emerged as a prominent concern. The security of vulnerable individuals is occasionally crucial for the well-being of the entire society. Information systems that necessitate stringent controls and regular maintenance.

According to Anastasiadou, Santos, and Montargil (2021), There exist multiple categories of threats. Examples of potential risks in computer systems include human error, computer crime, abuse, and system failure. One area of concern in the realm of disasters pertains to the level of security offered by electronic voting systems in safeguarding against cyber-attacks.

The interconnectedness of government objectives encompasses the pursuit of an efficient and effective governance system. The seamless delivery of public services to citizens through collaborative efforts involving both government and non-government entities. The aforementioned definitions highlight the inherent nature of e-governance interoperability as a fundamental aspect. Burke, 2011) argue that it is important to view means as a means to an end rather than an end in itself. According to Nengomasha (2018), the primary objective of e-governance initiatives is to offer The provision of services to diverse stakeholders, including citizens and businesses, with the aim of enhancing their quality and effectiveness.

According to Ipinge and Nengomasha (2018), the study focuses on government administrations. According to Williams (2012), the attainment of interoperability remains unattainable. In the absence of a robust framework. In subsequent discussions, Williams (2012) posited that The interoperability framework for e-governance encompasses a standardized structure that facilitates seamless communication and interaction between various systems and platforms. The framework consists of a collection of established principles and recommendations that can be utilized by the general populace. Agencies should establish a clear and defined protocol for stakeholders to engage in interactions. In order to disseminate the information, it is necessary for individuals to engage in knowledge sharing. Hence, the implementation of interoperability the utilization of frameworks in the public domain offers numerous advantages to governmental entities. The technical specifications are delineated with respect to the technical requirements.

The governmental agencies reached a collective agreement, as stated by Williams (2012). Sulehat In addition, Taib (2016) highlighted that the establishment of an interoperability framework encompasses There are two primary components that impede the successful implementation of government initiatives, namely barriers. The topic of discussion pertains to the relationship between Management Information Systems (MIS) and the factors that contribute to their success.

In their study, Sulehat and colleagues identified e-governance management information systems. According to Taib (2016), some of the factors contributing to the challenges faced in the field of information and communication technology (ICT) include inadequate ICT infrastructure, insufficient management support, and a lack of resources.

The challenges encompass a range of factors, including technical proficiencies, apprehensions regarding security, and complications related to the integration of data and information and organizational procedures. In contrast, the authors Sulehat and Taib (2016) examine the critical success factors for the implementation of a Management Information System (MIS) in e-governance initiatives encompass various elements, one of which is effective collaboration between government entities.

According to Taib (2016), it was also observed that there is a significant emphasis on collaboration among government entities. The assurance of achieving common e-governance interoperability goals and objectives can be attained through various means. The aims, dedication of governmental entities, and prioritization of customer-centricity. According to Sulehat and Taib (2016), it was observed that there are benefits and advantages. The key attributes of the model encompass efficacy, productivity, and accountability by means. The administration and management demonstrate a high level of commitment, and there is also consideration of cost. The private-public partnership (PPP) framework facilitates the reduction of costs and enhances returns on investment. In order to enhance responsiveness, minimize duplication, and decrease costs, various strategies can be implemented.

According to the study conducted by Sulehat and Taib (2016). The achievement of effective integration and compatibility. The establishment of a framework necessitates the provision of comprehensive guidance on best practices, as well as the availability of toolkits. provides recommendations for the development of schemas and the use of centrally agreed data schemas.2005). According to Das (2012), the objective of interoperability is to accomplish three primary objectives within a given context. The term "system" encompasses various components, including meaning exchange, process management, and data exchange.

Data exchange is facilitated through interoperability, which allows for the seamless transfer of fundamental data, such as communication via electronic means such as emails, telephone connections, document exchanges, and web forms (web pages), as means of information exchange. Data exchange refers to the process of transferring information between two or more computer systems, characterized by a reciprocal and shared nature. Consensus regarding the magnitude and nature of the data to be shared, as well as the actual data shared. The ability to engage in bidirectional communication allows participants in the data exchange to interact without any prerequisite requirements. According to Das (2012), individuals possess an understanding of the information that is shared between them. (Nengomasha, 2018).

Way from one system to another, without any loss or distortion. It ensures that information can be accurately understood and interpreted across different platforms or applications. Interoperability is crucial in today's interconnected world, where various systems and technologies need to seamlessly communicate and share data. By facilitating the exchange of meaning, interoperability enhances collaboration, efficiency, and effectiveness in

Das (2012) and Ipinge and both interpret the data in a similar manner. According to Nengomasha (2018), The third objective of achieving interoperability is the establishment of a process agreement. Regarding the appropriate course of action or behavior in response to the information that has been exchanged. The process of reaching agreements the focus of this study is on the actions undertaken by participants in communication, specifically during a given period of time. The exchange of information occurred among all the participants involved. Prior agreement on the course of action to be taken with the received communication is imperative.

Perspective: legal, semantic, and technical. These strands are crucial for ensuring effective collaboration and communication between different e-governance systems within the European context. The legal aspect pertains to the establishment of a legal framework that enables interoperability, including the harmonization of laws and regulations across different jurisdictions. The semantic aspect focuses on the standardization.

Alfano and Viscusi (2011) and Ipinge and Nengomasha (2018) are cited in the text. In order to achieve the desired outcome, it is necessary to In the stage of 'transformation', it is imperative to attain interoperability at both the technical level. According to Ipinge and Nengomasha (2018), the study examined both the syntactic and semantic levels.

2.3 Gaps in the literature:

- Implementing e-governance with MIS is complex. Using MIS in e-governance projects might provide some important challenges for businesses:
- MIS requires a solid technical infrastructure. Enterprises may face issues due to outdated gear, software, and IT infrastructure. Lack of technology infrastructure can hinder MIS and e-governance programs.

- MIS needs high-quality data to provide reliable decision-making information. Businesses may meet data quality issues include missing or erroneous data, duplicate data, and conflicting government agency data. Integrating data from several sources is difficult due to format, standard, and data governance differences.
- MIS in e-governance requires significant organizational and cultural change. Government personnel's resistance to change, lack of information of MIS's benefits, and insufficient training and capacity building may hinder MIS implementation. Organizations must manage change, address employee concerns, and provide enough training and support to ensure employee acceptance.
- E-governance collects, stores, and shares sensitive citizen data, raising privacy and security issues. To build trust and confidence among citizens, data privacy and security must be guaranteed. Data protection, cybersecurity, and privacy compliance are difficult for organizations. Data breaches and security breaches can lead to public distrust and legal consequences.
- Interoperability and Integration: Government entities often use their own databases and systems. Integrating and operating these technologies for seamless data exchange and collaboration might be tough. Lack of standards, incompatible technologies, and information sharing resistance may hinder integration, resulting in fragmented systems and redundant data.
- Financial constraints: An effective MIS requires infrastructure, software, systems, and training. Budgetary constraints may make it difficult to obtain the necessary resources, which might harm system performance, reduce support services, and delay project delivery. MIS initiatives need stable financing to succeed.
- E-governance programs typically use digital technologies, which may expand the digital gap, especially in undeveloped or rural areas with limited technology and digital literacy. E-governance services must be accessible to persons with disabilities and poor internet connections to prevent exclusion and ensure inclusivity.

CHAPTER 3

Methodology

3.1 Methodology

This study used a variety of cutting-edge research methods.

Sampling: A representative sample taken at random from the client or group in which I have collected data by using several Government offices and bank branches.

3.2: Data Sources:

3.2.1 Primary Data Sources

Interviews with bank, passport office, BTRC and BRTC office's clients and staff are examples of primary data sources. Various times of the day were chosen for the surveys. The study was also organized with the help of a focus group discussion. To supplement the experimentation, observations were also made. It was crucial that no data be gathered from sources outside of this group.

3.2.2 Secondary Data Sources

Multiple secondary data sources were used to compile the information presented. Books, journals, research, websites, and newspapers were only few of the places that provided the data used in this study. Focus group and sample survey questionnaires designed on an A4 sheet and google form as part of step.

3.3 Data analysis procedures:

Data was processed once it was gathered from both primary and secondary sources. After being categorized and evaluated in light of the objectives, the data and information were analyzed utilizing a number of analytical methods and software programs. After amassing information from both primary and secondary sources, data processing was performed. After being categorized and evaluated in light of the objectives, the data and information were analyzed utilizing a number of analytical methods and software programs.

Content analysis: This technique is used to examine both the found documentation and the interviewees' comments.

Narrative analysis: this technique was used to examine data from interviews, field notes, and questionnaires.

Assurance and Control of Quality:

In order to keep quality under control and ensure the highest possible standards throughout the investigation, a pre-made questionnaire was developed.

An approximate standard questionnaire was tested for feasibility before the actual data collecting in the field began.

The objectives of the study informed the development of a questionnaire.

Examining survey responses.

Make sure the questionnaire is correct on a regular basis.

Check back in with 5% of the population that responded.

The correct processes were used throughout data management, gathering, and cleaning.

Ethical Considerations:

Each participant was briefed on the purpose of the study.

Participants were offered the option to withdraw from the study, and their responses would remain confidential.

Respondents' anonymity was stressed to the data collection team as well.

CHAPTER 4

Results and Findings

In this chapter, we embark on a comprehensive exploration of the extensive data collected during our research, focusing on both descriptive analysis and statistical results. Our primary objective is to unravel the intricate relationship between information management system design, service quality, and their combined impact on enhancing user experience. By employing a robust methodology and an expansive dataset, we aim to derive meaningful insights that contribute to the broader understanding of the factors influencing user satisfaction in the realm of information management.

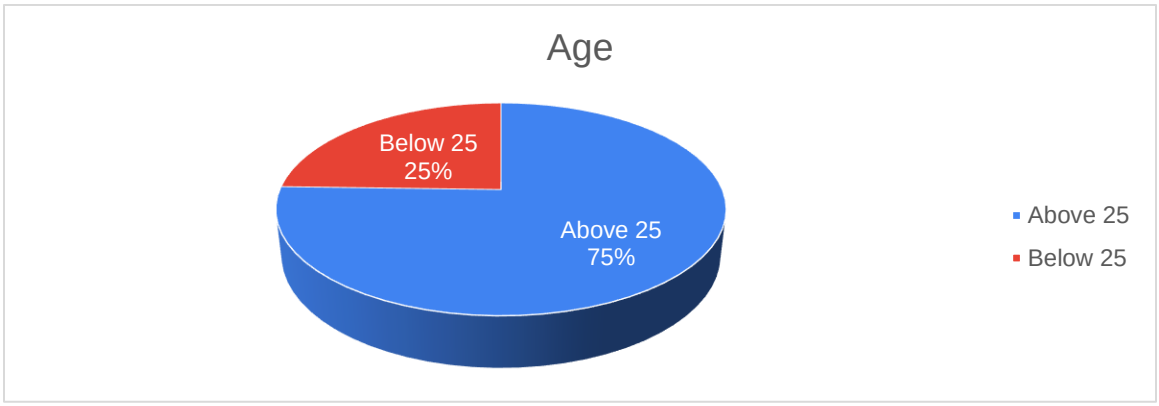


Figure 4.1 : Age

Participants in this recharge study were 25% under 25 years and 75% were above 25 years of age. And there was 42% female & 58% male, figure 4.2.

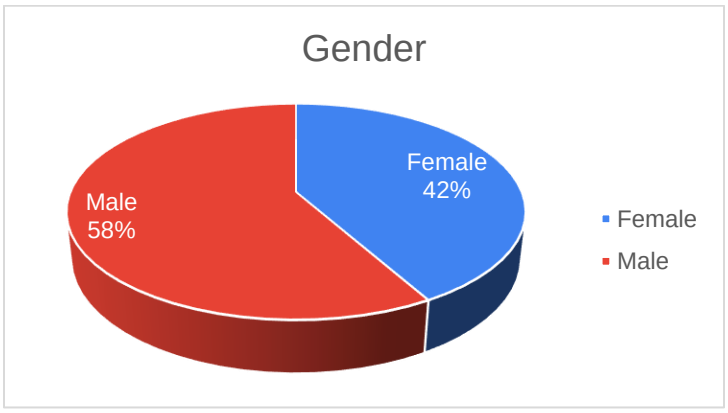


Figure 4.2 : Gender

The education levels of our study participants are diverse, reflecting a range of academic achievements. The breakdown is as figure 4.3

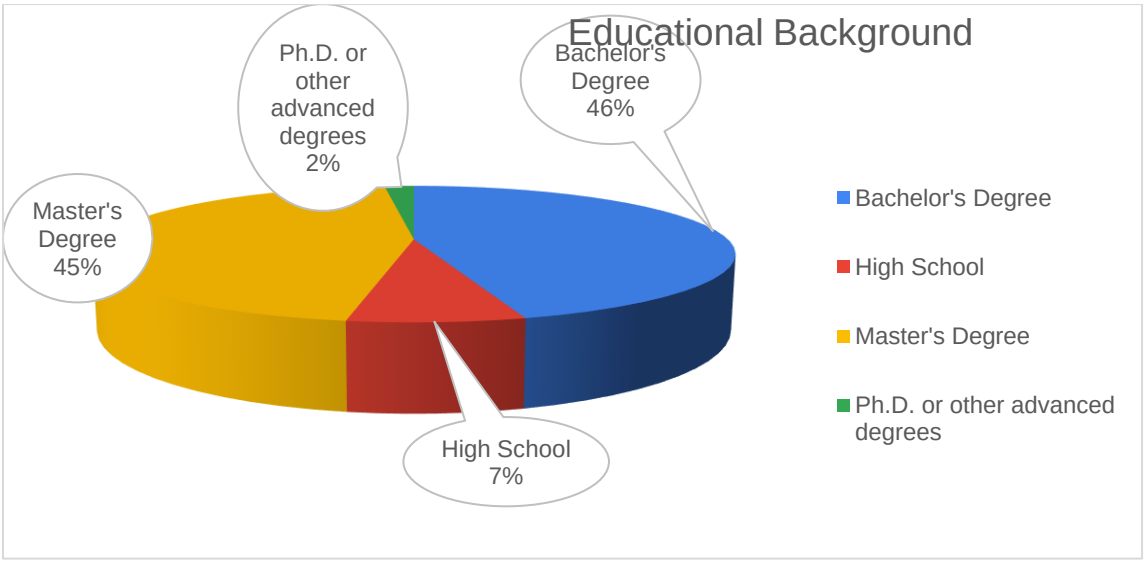


Figure 4.3 : Educational Background

The participant's educational background contributes to the understanding of our study. Most have bachelor's and master's degrees, indicating a well-educated group, while a small percentage have advanced degrees such as Ph.D.

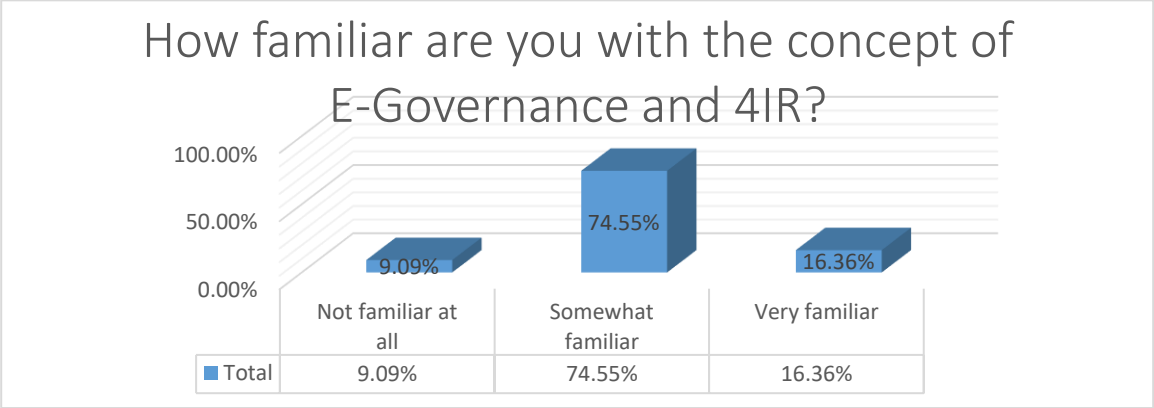


Figure 4.4 : Familiarity with E-Governance and 4IR concept

The data (Figure 4.4) reveals varying degrees of familiarity among participants regarding the concepts of E-Governance and the 4th Industrial Revolution (4IR). The majority, comprising 74.55%, express a Somewhat familiar level of familiarity, while 16.36% indicate a Very familiar. Interestingly, 9.09% of participants report being Not familiar with these concepts.

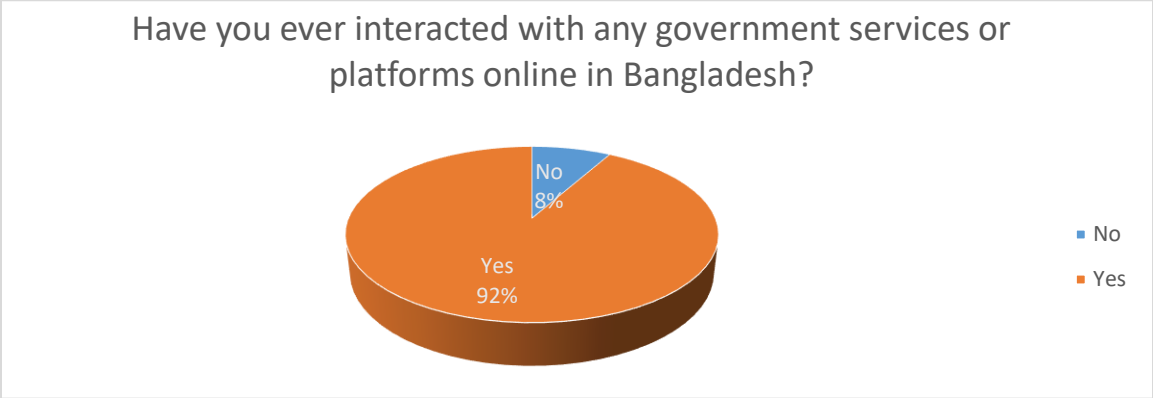


Figure 4.5 : Checking interacted with any government services or platforms

From Figure 4.5, it is evident that the majority of participants, constituting 92%, have actively interacted with various government services. Conversely, 8% of participants reported not utilizing any government services. This report highlights a high level of engagement with government services among the surveyed participants.

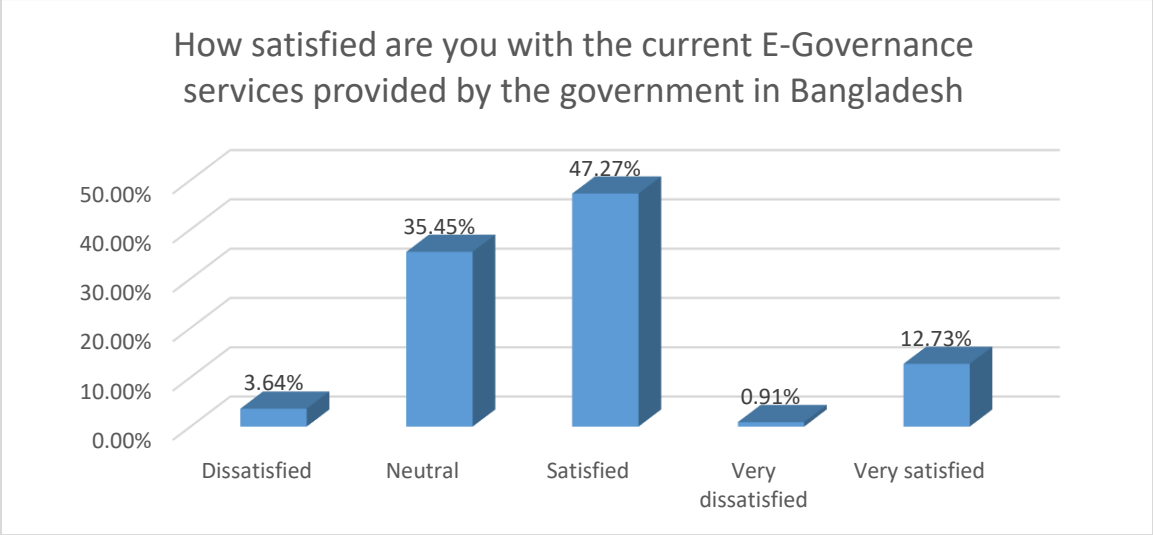


Figure 4.6 : Satisfaction checking with current E-Governance

The satisfaction levels Figure 4.6 among participants regarding the current E-Governance services in Bangladesh exhibit a varied spectrum. A negligible percentage (0.91%) express being very dissatisfied, 3.64% report being dissatisfied. A substantial portion, 35.45%, maintain a neutral stance. The majority, 47.27%, express satisfaction with the existing

services. Notably, 12.73% convey a high level of satisfaction, describing themselves as very satisfied.

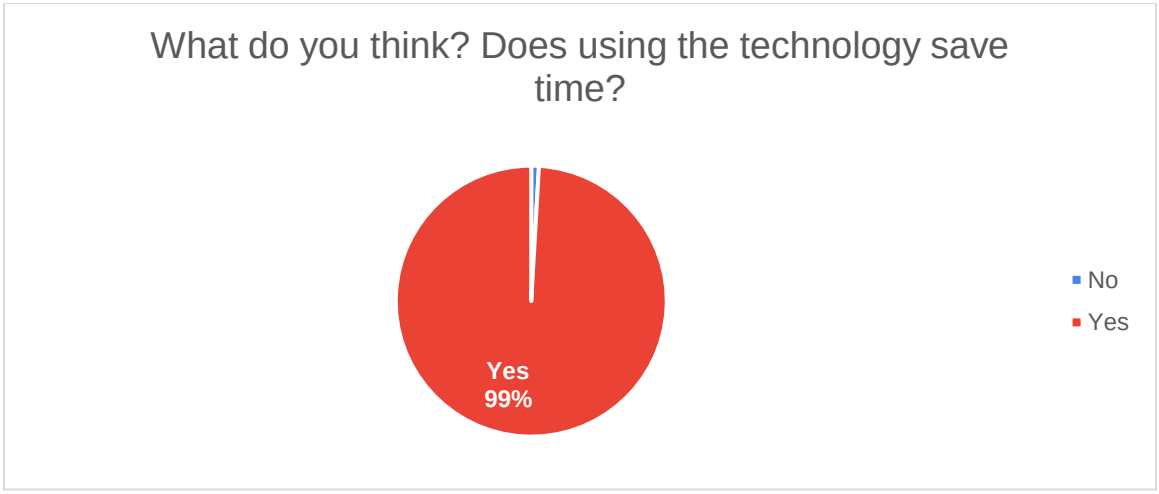


Figure: 4.7 : Checking the technology save time or not

In figure 4.7, the overwhelming majority of participants, constituting 99%, believe that using technology contributes to time savings. Only a minimal percentage, 1%, expressed a contrary opinion, suggesting that there may be some divergent perspectives on the perceived time-saving benefits of technology.

This resounding endorsement of technology as a time-saving tool underscores its integral role in streamlining processes and enhancing efficiency, as perceived by the majority of participants.

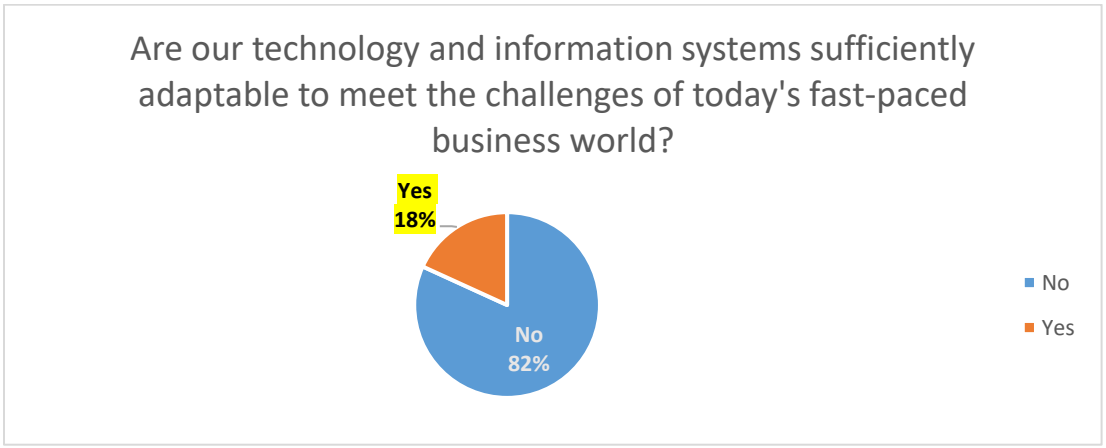


Figure 4.8 : Graph of existing technology

From Figure 4.8, we can see that the findings reveal a prevailing sentiment among participants regarding the adaptability of current technology and information systems to the challenges of today's fast-paced business world. A significant majority, comprising 82%, express reservations, indicating a perceived inadequacy in the adaptability of existing systems. In contrast, a limited proportion (18%) holds the view that the technology and information systems in place are sufficiently adaptable.

These results prompt a critical examination of the current technological infrastructure, highlighting potential areas for improvement and adaptation to the dynamic demands of the contemporary business environment.

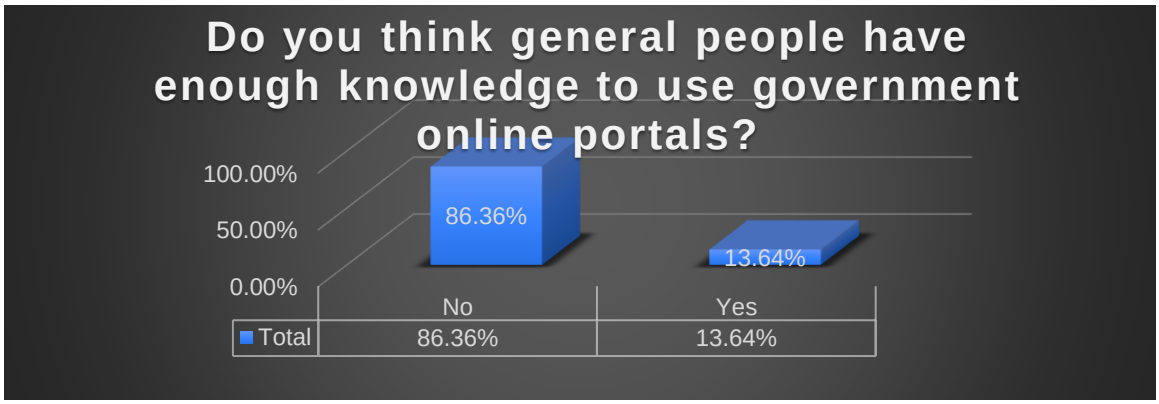


Figure 4.9 : Knowledge to use government online portals

A significant majority of participants (Figure 4.9), 86.36%, express the opinion that the general public does not possess sufficient knowledge to effectively use government online portals. In contrast, a minority, 13.64%, believes that there is adequate knowledge among the public for utilizing these platforms.

This discrepancy in perceptions highlights a potential gap in understanding or awareness concerning the accessibility and usability of government online portals. Addressing this gap may be crucial for enhancing public engagement and promoting effective use of digital government services.

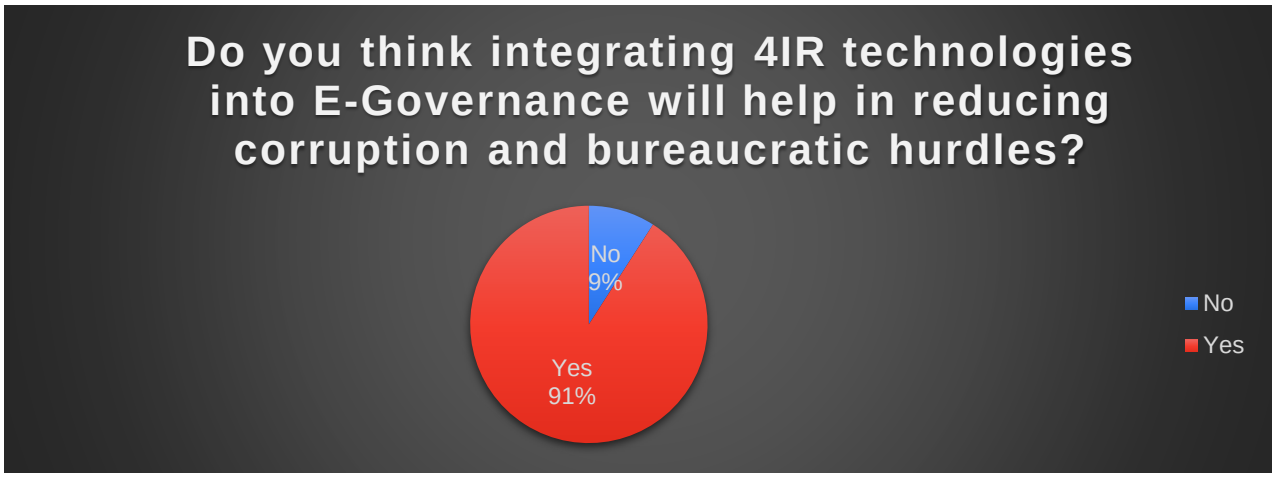


Figure 4.10 : Graph of agreement of reducing corruption and bureaucratic if integrating E-Governance

From figure 4.10, the overwhelming majority of participants, constituting 91%, express the belief that integrating 4th Industrial Revolution (4IR) technologies into E-Governance will help in reducing corruption and bureaucratic hurdles. A small minority, 9%, holds the opposite view.

These findings underscore a strong consensus among participants regarding the potential transformative impact of 4IR technologies on E-Governance, suggesting widespread optimism about the role of advanced technologies in addressing issues of corruption and bureaucratic inefficiencies.

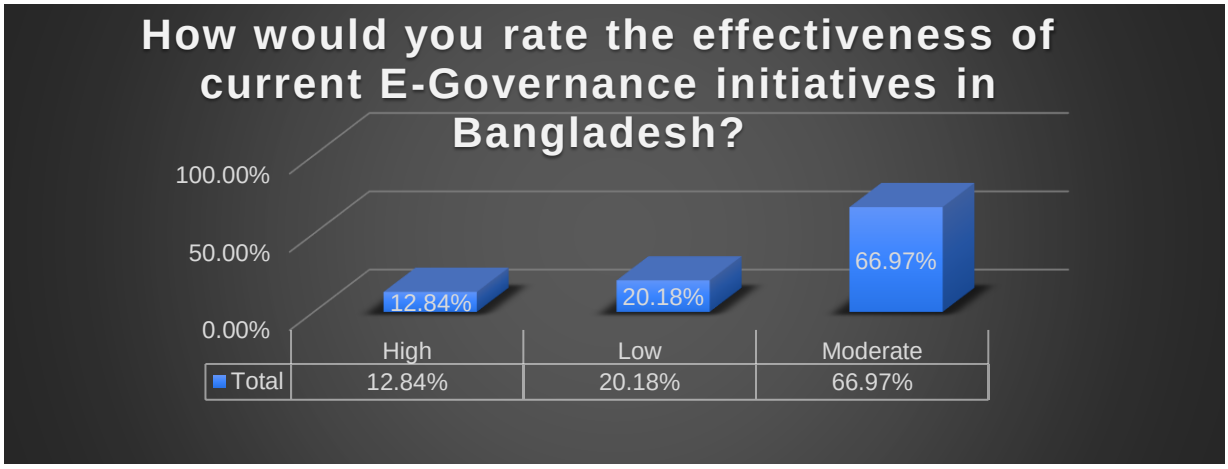


Figure 4.11: Rate of effectiveness of current E-Governance initiatives in Bangladesh

Participants provide varied assessments of the current effectiveness of E-Governance initiatives in Bangladesh:

- A minority, 12.84%, considers the effectiveness to be high.
- The majority, 66.97%, rate the effectiveness as moderate.
- A noteworthy proportion, 20.18%, perceives the effectiveness as low.

These diverse perspectives highlight the need for further exploration into specific areas that contribute to the perceived effectiveness or limitations of E-Governance initiatives, paving the way for targeted improvements.

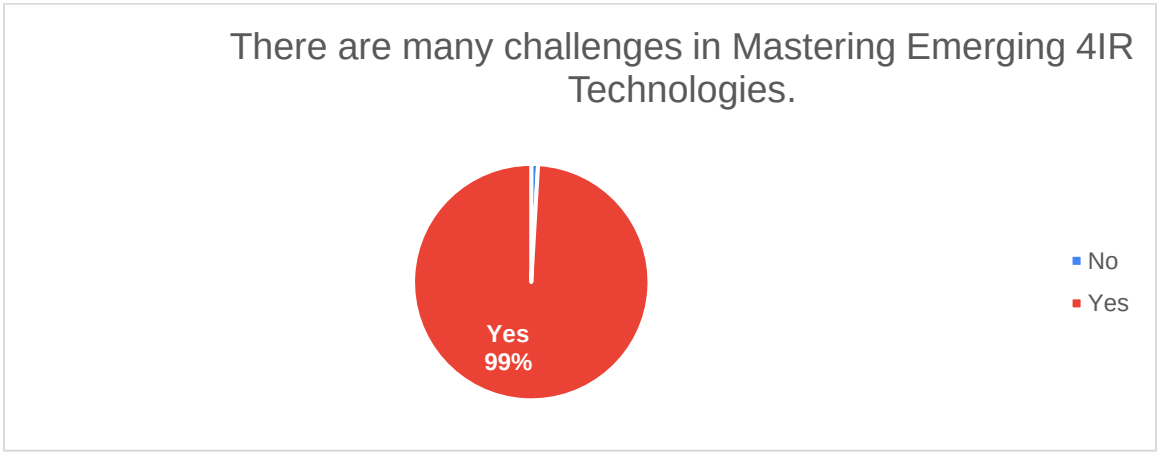


Figure 4.12: Challenge in Mastering 4IR Technologies.

Figure 4.12, a striking consensus emerges among participants, with 99% acknowledging the existence of challenges in mastering emerging 4th Industrial Revolution (4IR) technologies. Only a minute fraction, 1%, expresses a contrary view.

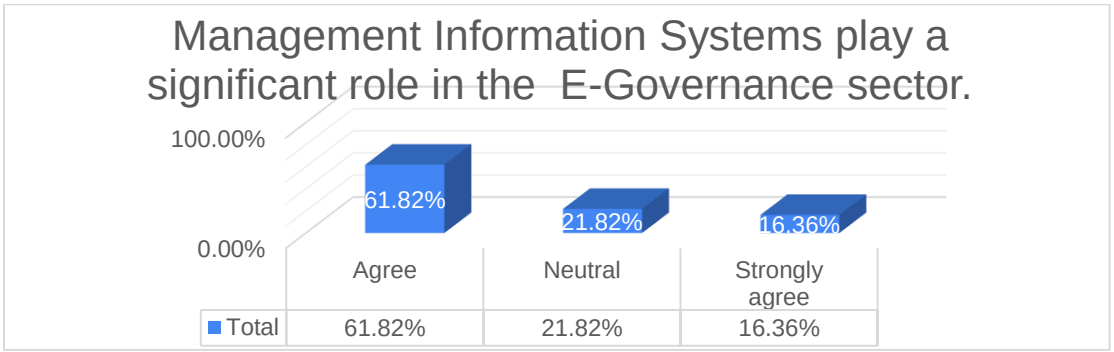


Figure 4.13 : Significant role of MIS in the E-Governance sector

From Figure 4.13, we can see that participants hold diverse perspectives regarding the significance of Management Information Systems (MIS) in the E-Governance sector:

- A substantial portion, 61.82%, agrees on the significant role of MIS.
- A notable percentage, 16.36%, strongly agrees with the pivotal role of MIS.
- A minority, 21.82%, maintains a neutral stance on the matter.

These varied views underscore the nuanced understanding of participants regarding the impact of MIS in driving efficiencies within the E-Governance sector.

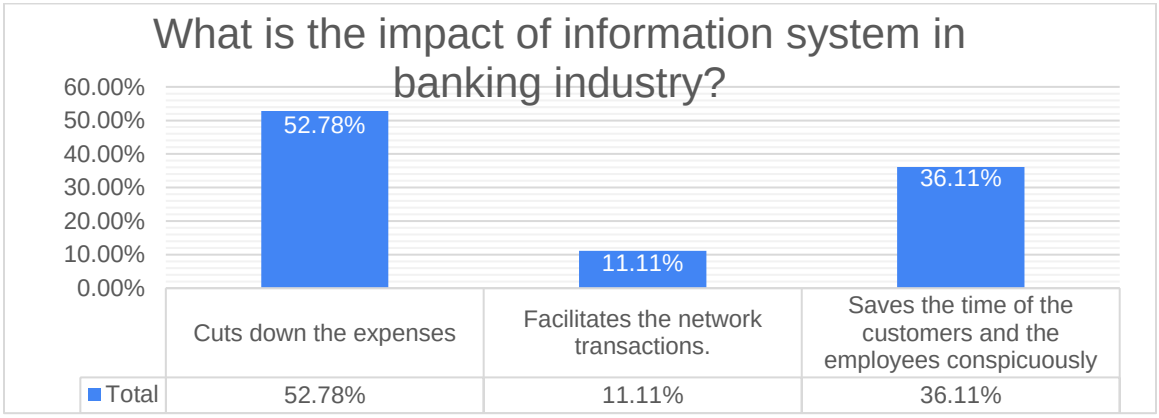


Figure 4.14: Impact of MIS in Banking industry

Participants express varied views on the impact of information systems in the banking industry:

- A majority, 52.78%, believes that information systems cut down expenses significantly.
- A smaller percentage, 11.11%, emphasizes the role of information systems in facilitating network transactions.
- A substantial portion, 36.11%, recognizes the impact of information systems in saving time for both customers and employees conspicuously.

These diverse opinions shed light on the multifaceted contributions of information systems in the banking sector, including cost reduction, network transaction facilitation, and time savings.

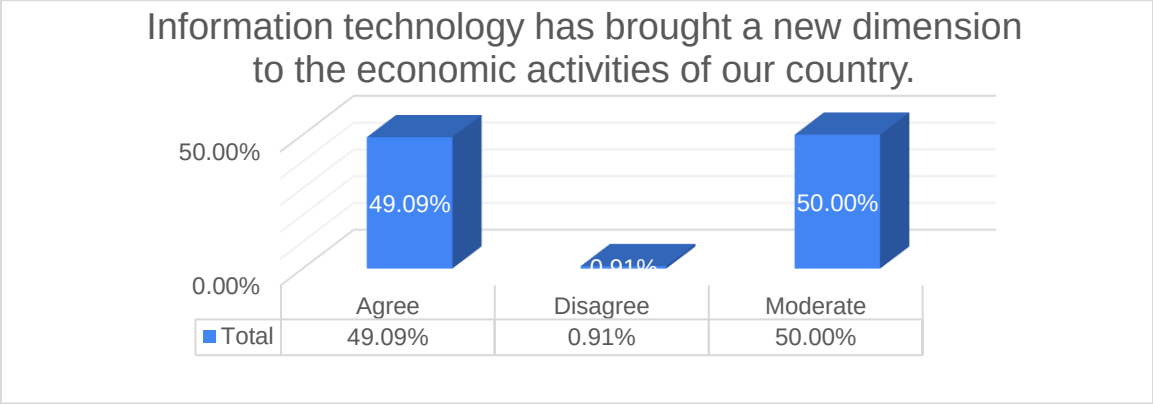


Figure 4.15: MIS activities of our country

Participants hold diverse views on the impact of information technology on economic activities:

- Nearly half of the participants, 49.09%, agree that information technology has brought a new dimension to the economic activities of the country.
- A very small minority, 0.91%, disagrees with this perspective.
- A significant portion, 50%, maintains a moderate stance on the impact of information technology on economic activities.

These varied opinions indicate a nuanced understanding among participants regarding the role and significance of information technology in shaping the economic landscape of the country.

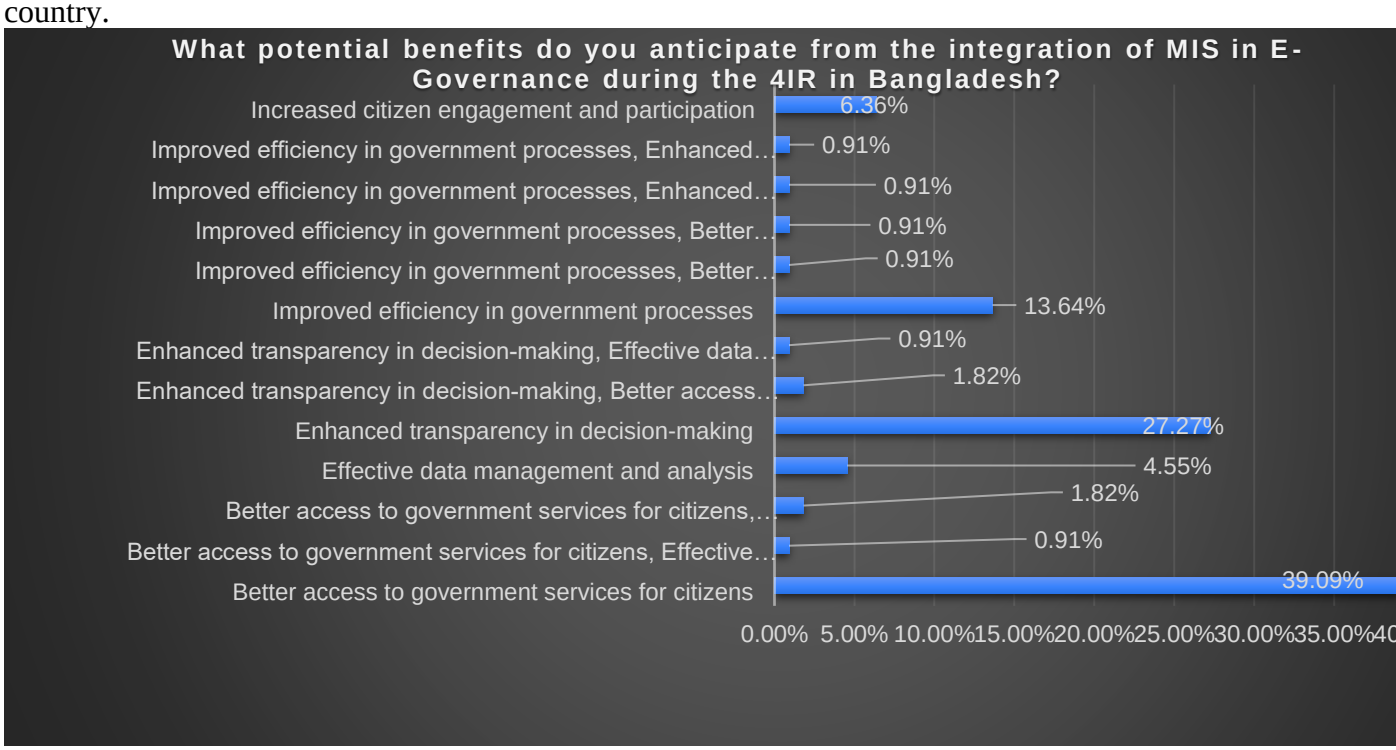


Figure 14.16: Potential benefits from the integration of MIS in E-Governance

From the figure 14.16, we can see participants foresee various potential benefits from the integration of MIS in E-Governance during the 4IR in Bangladesh and maximum participants believe that we can get benefit of better access to government services for citizens.

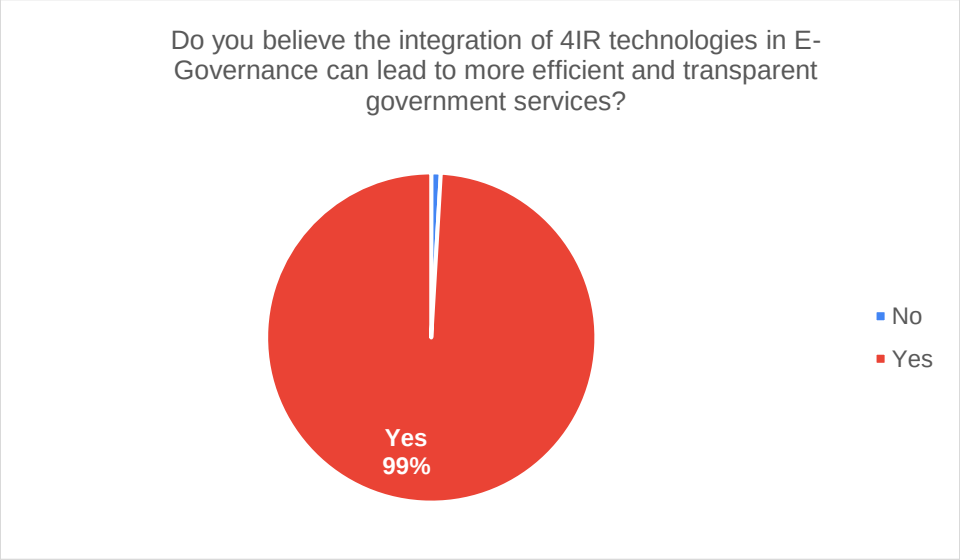


Figure 4.17: Efficient and transparent of government services.

A resounding consensus exists among participants, with 99% expressing the belief that the integration of 4th Industrial Revolution (4IR) technologies in E-Governance can lead to more efficient and transparent government services. A negligible 1% holds a contrary view.

This overwhelming agreement underscores a widespread optimism among participants regarding the transformative potential of 4IR technologies in enhancing the efficiency and transparency of government services.

CHAPTER 5

Role of MIS

Significant societal, environmental, and sustainable effects result from the role of Management and Information System (MIS) in establishing e-governance. Some of the most important ways in which MIS might affect various spheres are as follows:

The use of MIS in e-governance increases the availability of government services and makes them easier to utilize for the general public. This has the potential to benefit society as a whole, and notably those who are underprivileged and disenfranchised and may have trouble gaining access to more conventional forms of government assistance. MIS makes it simple for people to get the information they need, fill out applications, and use government services without having to physically go to a building.

By increasing the availability of information and facilitating citizen scrutiny, MIS increases the openness and accountability of government. Information on government policies, actions, and operations is made available to the public, which increases transparency and decreases corruption. This openness fosters good governance practices and empowers citizens to hold public servants responsible for their decisions, making for a more just and equitable society.

Sustainable Government Practices Thanks to MIS, governments may more efficiently allocate and use their resources. Administrative workloads are lightened and resource consumption, such as paper and energy, is minimized thanks to MIS's ability to streamline procedures, eliminate paperwork, and automate jobs. The carbon footprint of conventional government operations is diminished, and environmental sustainability benefits.

Governments are able to make better decisions based on facts because to the data and insights provided by MIS. Data obtained through MIS allows policymakers to spot patterns, evaluate the efficacy of government initiatives, and make well-informed decisions that further sustainable development objectives. Optimizing resource allocation, prioritizing activities, and tackling societal and environmental concerns are all aided by data-driven decision making.

Enhancing Citizen Participation and Agency in Governance is one of MIS's Primary Goals. Citizens are able to share their ideas, raise problems, and take part in decision-making with the help of MIS because it provides digital venues for feedback, participation, and cooperation. A more sustainable and equitable society can be achieved through this participatory method of development.

The relevance of MIS in environmental monitoring and management cannot be overstated. Governments can better manage environmental hazards and advance sustainable practices by collecting and evaluating data linked to environmental indicators including air quality, water resources, and waste management. Environment-related problems can be effectively tackled with the use of MIS's real-time monitoring, early warning systems, and responsive processes.

While implementing MIS in e-governance, it is important to work toward the goals of digital inclusion and closing the digital gap. The digital divide between the haves and the have-nots can be closed by governments that provide access to technology and encourage digital literacy programs for underprivileged groups. This promotes fairness and guarantees that everyone can take advantage of e-governance and MIS.

The integration of Management and Information Systems in E-Governance serves as a catalyst for positive change across society, the environment, and sustainability. By fostering accessibility, transparency, and efficiency, MIS contributes to the development of a more equitable society, while simultaneously minimizing the environmental impact of administrative processes and promoting sustainable governance practices.

CHAPTER 6

Discussion and Conclusion

6.1 Discussion:

This comprehensive investigation into the relationship between information management system design, service quality, and user experience within the context of Bangladeshi e-governance unveils a wealth of insights with actionable implications. While satisfaction with existing services rests at a moderate level, participants overwhelmingly recognize the potential of a 4IR-powered Information Management System (IMS) to revolutionize the field.

Key findings reveal a need to bridge the gap in public understanding of online portals, address perceived adaptability shortcomings of current technology, and prioritize the integration of 4IR technologies like AI and blockchain to tackle corruption and bureaucracy. Moreover, the substantial agreement about the crucial role of MIS highlights its potential in streamlining processes and enhancing efficiency. To fully capitalize on these opportunities, policymakers and implementers must focus on user-centric design, invest in robust infrastructure upgrades, and prioritize public awareness campaigns to harness the transformative power of a 4IR-based IMS for building a more accessible, efficient, and transparent e-governance ecosystem in Bangladesh.

In conclusion, the comprehensive exploration of the extensive data collected in this research chapter reveals valuable insights into the intricate relationship between information management system design, service quality, and their combined impact on enhancing user experience in the context of E-Governance in Bangladesh. The demographic distribution of participants, encompassing age, gender, and educational backgrounds, provides a nuanced understanding of the study group. Notably, participants exhibit varying levels of familiarity with E-Governance and the 4th Industrial Revolution, emphasizing the need for targeted awareness initiatives. The high level of engagement with government services underscores their significance in the surveyed population. Satisfaction levels with current E-Governance services reflect a spectrum of opinions, necessitating a closer examination of service delivery. The overwhelming consensus on the time-saving

benefits of technology and concerns about the adaptability of current systems signal areas for improvement. Divergent perceptions on public knowledge of government online portals underscore the importance of addressing potential gaps. Participants express optimism about the transformative impact of 4IR technologies on reducing corruption and bureaucratic hurdles. However, there is a varied assessment of the current effectiveness of E-Governance initiatives, highlighting the need for targeted improvements. The acknowledgment of challenges in mastering 4IR technologies and diverse views on the significance of Management Information Systems in E-Governance further enrich the understanding of participants' perspectives. The multifaceted contributions of information systems in the banking sector and diverse opinions on the impact of information technology on economic activities showcase the complexity of these issues. Finally, participants foresee potential benefits from the integration of MIS in E-Governance during the 4IR, with a focus on better access to government services for citizens. Overall, the resounding consensus on the positive impact of integrating 4IR technologies into E-Governance for more efficient and transparent government services underscores a collective optimism about the transformative potential of advanced technologies in addressing governance challenges in Bangladesh.

6.2 Conclusion:

This exploration of data has unveiled a multifaceted tapestry of insights into the interplay between information management systems, service quality, and user experience in the context of Bangladeshi e-governance. As we weave together the threads of our findings, a compelling vision emerges for the future.

The majority of participants expressed a high level of engagement with government services, yet a nuanced picture emerges regarding satisfaction. While many find existing services acceptable, a significant portion yearns for greater efficiency and user-friendliness. Here, the potential of 4IR-based Information Management Systems shines brightly. Participants overwhelmingly believe that integrating these technologies can streamline processes, enhance transparency, and combat bureaucratic hurdles.

However, challenges remain. Public awareness of online portals needs to be fostered, and existing systems must adapt to the dynamic demands of the digital age. Mastering 4IR technologies will be crucial, and policymakers must prioritize capacity building and user education.

Despite these challenges, the future of Bangladeshi e-governance pulsates with promise. Participants expressed optimism about the transformative potential of 4IR, envisioning improved access to services, a reduction in corruption, and ultimately, a more responsive and citizen-centric government. This thesis serves as a stepping stone on this journey, providing valuable insights to guide policymakers and practitioners in charting the course towards a brighter digital future for e-governance in Bangladesh.

6.3 Recommendations:

The following recommendations can help achieve e-governance using Management Information System (MIS):

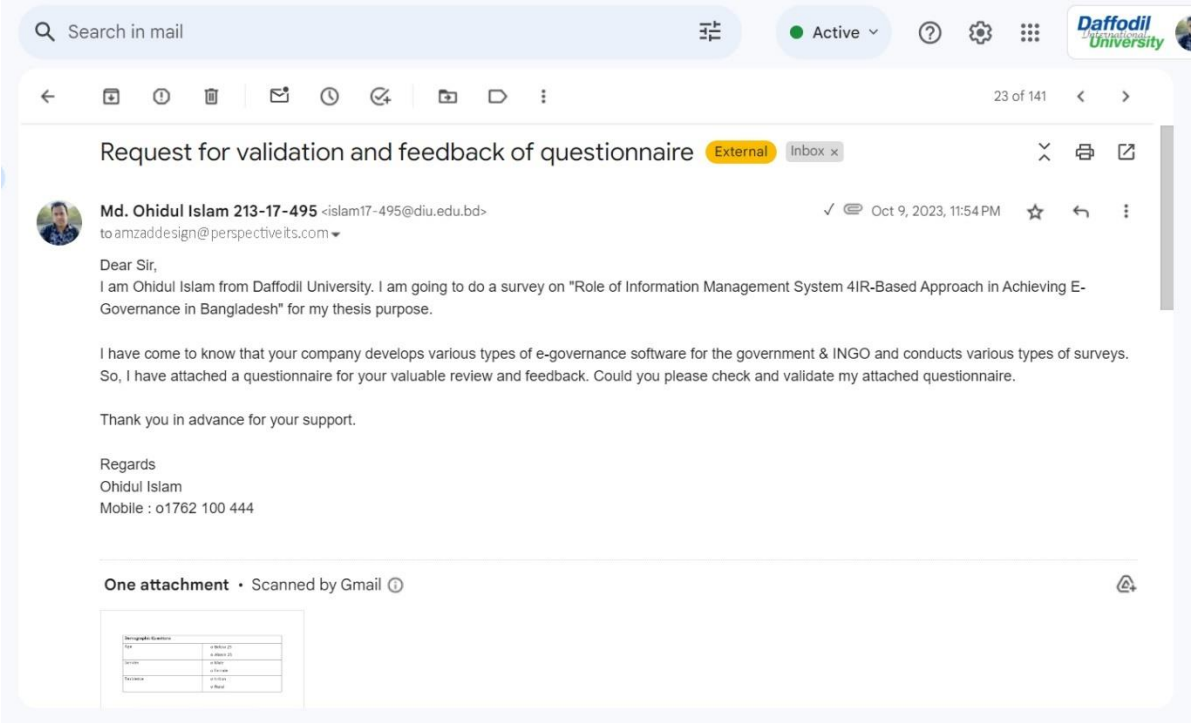
- Invest in Robust MIS Infrastructure: Government should prioritize investing in a robust and scalable MIS infrastructure that can handle growing digital transactions and customer data. To improve operations and data security, upgrade hardware, software, and network infrastructure.
- Implementation of big data for information resource management can lead to cost-effective service delivery, control corruption, and ensure sustainable development.
- Every public sector should be brought under information resource management for easy access, transparency, and measurement.
- Must emphasize information security due to cyber threats and data breaches. Encryption, access controls, and intrusion detection systems protect consumer data and prevent illegal access. Monitoring and frequent security audits should find and fix issues.
- To stay current on regulatory requirements, best practices, and developing technologies should interact with government authorities, industry groups, and technology vendors. Governments can improve their e-governance capabilities through partnerships.

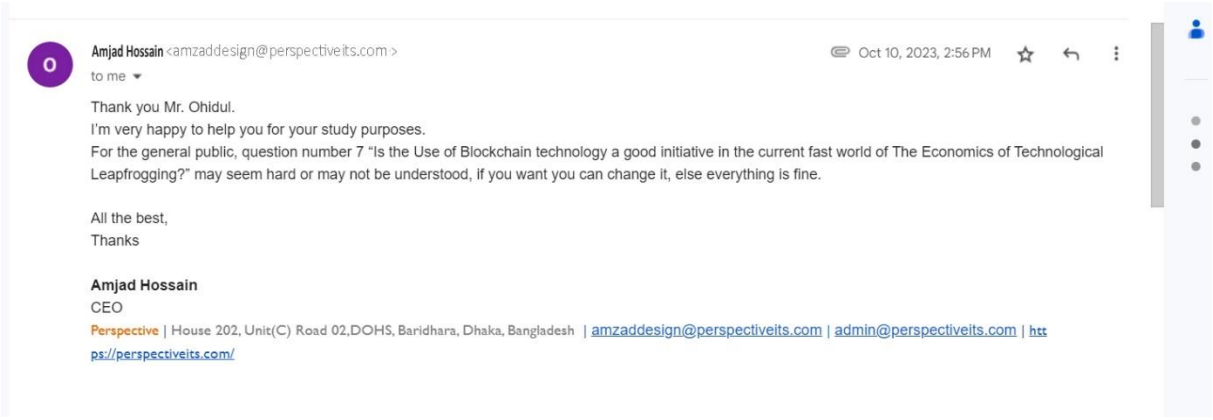
- Customer Education and Awareness: Banks should educate customers about e-governance and digital banking. This includes digital platform training, security best practices, and privacy and data protection issues. Establish consumer feedback methods to resolve concerns and improve customer experience.
- Develop a Solid Disaster Recovery Plan: In case of system failures, natural disasters, or cyberattacks, we should have a solid disaster recovery plan. To minimize disruptions and protect client interests, testing and updating the strategy, including backup and restoration methods, is essential.

Based on the findings, we recommend a detailed examination of technological infrastructure, targeted improvements in E-Governance initiatives, and awareness campaigns to bridge the gap in public knowledge about government online portals. Additionally, considering the perceived challenges in mastering 4IR technologies, educational and training programs can be implemented. The study calls for a closer look at the adaptability of current technology to meet the demands of the contemporary business environment, emphasizing the importance of continuous improvement and innovation.

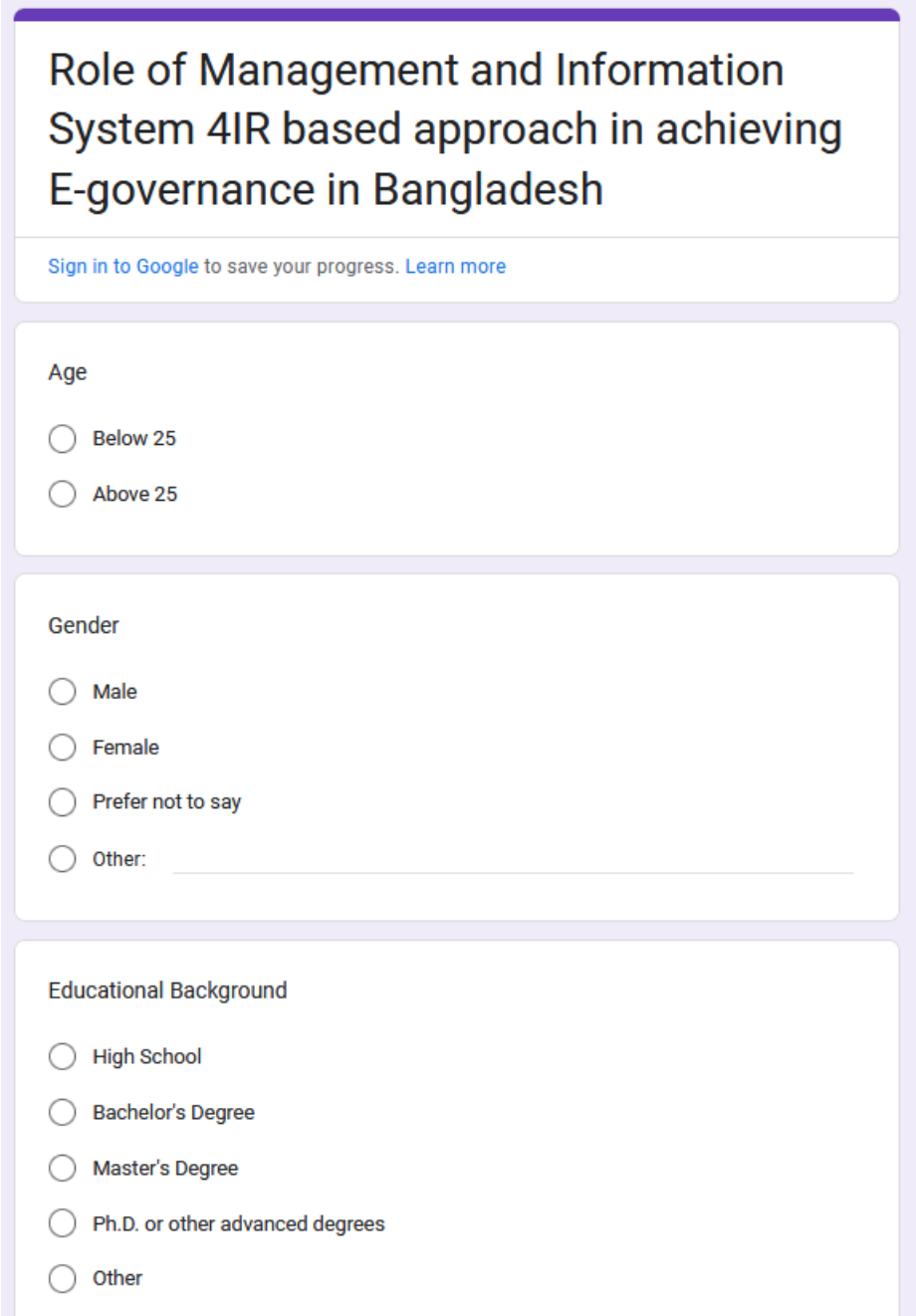
Appendices:

The questionnaire underwent validation for this research study through a comprehensive assessment by an industry expert, who conveyed their professional feedback on the content, structure, and relevance of the questionnaire via email.





The survey questionnaires that were used to collect data for this survey based research are given below



Role of Management and Information System 4IR based approach in achieving E-governance in Bangladesh

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Age

- Below 25
- Above 25

Gender

- Male
- Female
- Prefer not to say
- Other: _____

Educational Background

- High School
- Bachelor's Degree
- Master's Degree
- Ph.D. or other advanced degrees
- Other

How familiar are you with the concept of E-Governance and 4IR?

- ◯ Very familiar
- ◯ Somewhat familiar
- ◯ Not familiar at all

Have you ever interacted with any government services or platforms online in Bangladesh?

- ◯ Yes
- ◯ No

How satisfied are you with the current E-Governance services provided by the government in Bangladesh?

- ◯ Very satisfied
- ◯ Satisfied
- ◯ Neutral
- ◯ Dissatisfied
- ◯ Very dissatisfied

What do you think? Does using the technology save time?

- ◯ Yes
- ◯ No
- ◯ Stay the Same

Are our technology and information systems sufficiently adaptable to meet the challenges of today's fast-paced business world?

- ◯ Yes
- ◯ No

Do you think general people have enough knowledge to use government online portals?

- ◯ Yes
- ◯ No

Do you think integrating 4IR technologies into E-Governance will help in reducing corruption and bureaucratic hurdles?

- ◯ Yes
- ◯ No

How would you rate the effectiveness of current E-Governance initiatives in Bangladesh?

- ◯ High
- ◯ Moderate
- ◯ Low
- ◯ Not sure

There are many challenges in Mastering Emerging 4IR Technologies.

- ◯ Yes
- ◯ No

Management Information Systems play a significant role in the E-Governance sector.

- ○ Strongly agree
- ○ Agree
- ○ Neutral
- ○ Disagree
- ○ Strongly Disagree

What is the impact of information system in banking industry?

- ○ Saves the time of the customers and the employees conspicuously
- ○ Cuts down the expenses
- ○ Facilitates the network transactions.

Information technology has brought a new dimension to the economic activities of our country.

- ○ Agree
- ○ Moderate
- ○ Disagree

What potential benefits do you anticipate from the integration of MIS in E-Governance during the 4IR in Bangladesh?

- ☐ Improved efficiency in government processes
- ☐ Enhanced transparency in decision-making
- ☐ Better access to government services for citizens
- ☐ Increased citizen engagement and participation
- ☐ Effective data management and analysis
- ☐ Other (please specify)

Do you believe the integration of 4IR technologies in E-Governance can lead to more efficient and transparent government services?

- ○ Yes
- ○ No

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