THE ROLE OF MANAGEMENT INFORMATION SYSTEMS (MIS) IN TELECOMMUNICATION SECTORS IN BANGLADESH

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Abstract

Any organization that strives to provide its users with quick access to complete, understandable, and reliable information should have a Management Information System (MIS). Information systems for management assisted in the automation of tasks. Automation can improve organizational workflow, save time, money, and resources, and minimize the number of employees. It raised customer happiness, labor efficiency, productivity, and effectiveness within the firm. MIS, in general, allows information to be gathered, processed, and stored by telecommunication sectors with the ultimate goal of making that information available on demand in the necessary format. Because the telecommunications industry has millions of users and manual data storage would be difficult, MIS is required for these industries to operate (using files). Through a combination of information from the literature and interviews with specific telecom company employees in Bangladesh, this research article seeks to illustrate the concept of MIS and its role in the country's telecom industries. In order to gather information about how MIS is used in the organizations of the 100 respondents who completed a standardized questionnaire, descriptive statistics were examined in addition to secondary data. This study also looks at the connection between organizational performance and MIS. This study indicates that to regulate

telco industries more efficiently, MIS helps to gather, store, process, and retrieve data more effectively.

Keywords: Role of MIS, Telecommunication Sectors, and Organizational Performance Management Information System, MIS

1. Introduction

Bangladesh has one of the highest populations in the world, but its information and communications infrastructure is not up to par with many Asian nations. However, numerous organizations in Bangladesh, including banking, telecommunications, government offices, and universities, rely on MIS. These systems are crucial for optimizing workflows, raising productivity and efficiency levels, and enhancing overall performance.

The significance of MIS stems from its ability to provide timely and useful information, boost labor productivity, reduce costs, ensure accurate and prompt information delivery, and enhance work management. Telecommunication sectors in Bangladesh extensively utilize various types of information systems software such as like marketing information system, accounting information systems, human resource information systems or HRIS, and customer relationship management ystems or CRMS. Among these, Human Resource Information Systems and Customer Management Systems are particularly prevalent, containing essential employee and customerrelated information, respectively.

Given the critical dependence of telecommunication sectors on MIS, understanding their role is paramount. MIS aids in managing, organizing, and retrieving information, thereby facilitating quicker service delivery, more accurate market insights, and ultimately, improved organizational performance. This study's goal is to explore the utilization of MIS and its impact on organizational performance within the telecommunication sector.

2. Literature Review

Accelerated by technical improvements and rising demand for connectivity, Bangladesh's telecommunications sector has seen substantial upheaval and quick expansion in recent years. Management information systems (MIS) has a significant part in enabling telecommunication companies to manage their operations effectively, optimize resources, and capitalize on emerging opportunities. Throughout this literature survey researcher seeks to explore the role of MIS in the telecommunication sector of Bangladesh.

Salameh and other reserchers mentioned in their sudies that MIS integrates information technology, personnel, and business procedures to record, store, and process data, yielding datadriven insights for managerial decision-making. It encompasses systems, hardware, processes, and people working in unison to generate useful organizational information. However, not all MIS meet stakeholder requirements due to factors like inadequate design or user training (Salameh A. Mjlae et al., 2020) .

Resercher Purkar suggested that a management information system is an essential for modern organizations, utilizing computer-based processes to deliver timely and effective information crucial for decision-making and other management functions. With the exponential growth of business data, efficient decision-making relies on fast, accurate, and high-quality information managed by competent staff. The rapid advancement of information technology and telecommunications enables organizations to enhance decision-making quality across all levels. Adequate MIS is vital in bridging the gap between managerial needs and expectations by facilitating the flow of information, ensuring effective d ecision-making at every level [2]. Kulbir and Balajeet declared in their research that MIS largely entails processing data into actionable information, which is subsequently shared across many departments for effective decision-making. It encompasses the utilization of people, technology, and information resources. Unlike other information systems, MIS specifically analyzes operational activities within organizations. In academic discourse, MIS typically suggests to a spectrum of information management technologies targeted at automating or aiding human decision-making, such as descision support system or DSS, Expart system, Executive information system or ESS. Different organizational levels, functions, and processes necessitate various types of MIS, presenting both opportunities and challenges [3].

Mishra and other researcher mentioned in their research that is emphasised the organization necessity, advantages, and model of MIS within organizations. In order to understand how decisions are made inside an organization, it gives a general overview of the decision-making structure and process. However, the primary focus lies on exploring the pivotal role of MIS in organizational decision-making. The paper discusses how MIS aids in decision-making, the challenges organizations encounter in this process and offers recommendations to address these challenges [4].

Resecher Mohammed Rafiqul Islam has mentioned in his study that MIS aimed to determine the effects of MIS and the interactions between MIS and organizational decision-making. MIS

comprises hardware, software, databases, networks, and personnel, working together to collect, store, and process data for organizational information. Secondary data was gathered and a descriptive design was used in the study by the researcher. Results from a range of literature sources suggested that MIS furnishes structured, real-time information to management, suggesting a strong correlation between MIS and organizational decision-making. It emphasized MIS's crucial role in providing necessary information, analyzing situations, identifying problems, and supporting management decision-making processes [5].

3. *Objectives of the Study*

- To understand the notion of MIS and Organization.
- To analyze the relationship between the MIS and the organizational performance.

4. *Hypothesis of the Study*

H_0:There is no significant association between MIS and organizational performance.

H_1:There is a significant association between MIS and organizational performance.

5. *Methodology of the Study*

The research methodology includes several approaches, such as collecting data, analyzing it, and accuracy evaluation of search results. A descriptive research design was applied in this study, entailing the collection based on the primary data and the secondary data.

Based on the primary and the secondary data sources had to be gathered for this study's data collection. The sampling procedure included convenient sampling techniques, and the researcher selected a sample size of 100 from among all participants in Bangladesh's telecommunications industry. A questionnaire has been used to collect information from business executives. A set of questionnaires has been prepared to gather data for this research and Employees of private communications businesses were given this standardized questionnaire to complete to collect primary data.

Books, research journals, bank brochures, websites of telecommunications companies, and other sources were the sources of secondary data.

6. The Concepts of Management Information Systems (MIS)

MIS is a system that gives supervisors access to the necessary information to make decisions effectively about an organization's operations. MIS is a computerized system that gives managers the resources they need to effectively manage, assess, and arrange data in order to facilitate internal decision-making. It is made up of individuals, databases, hardware, software, processes, and procedures working together to gather, process, store, and distribute data. Kenneth C. Laudon and Jane P. Laudon mentioned that MIS helps in planning, controlling, and decision-making at various levels of management [6]. MIS consist of three parts like management, information, and systems.
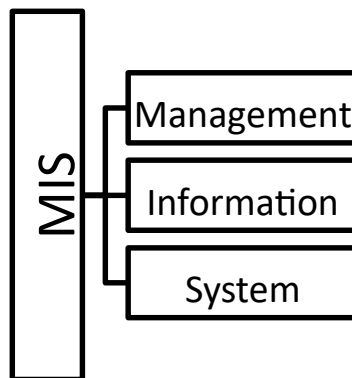

Figure 1. The basic concept of MIS

6.1 Management

Al-Najjar and F.G. found that management is a multifaceted discipline that encompasses a range of activities aimed at achieving organizational objectives through the effective utilization of resources [7]. Let's delve deeper into each component:

- **Planning and Decision Making**: The planning and decision-making process is fundamental to process for the management. This entails deciding on a plan of action, defining goals, and selecting the best tactics to reach those goals. Through careful planning, managers anticipate future challenges and opportunities, enabling them to make informed decisions that align with the organization's mission and goals.

- **Organizing**: Organizing resources in a way that makes goal attainment easier comes next after decisions have been made and goals have been set. This involves setting up the organization's workflows, roles, and duties. Efficient work allocation, excellent resource use, and simplified team member coordination are all ensured by effective organizing.

131

- **Influencing**: Management also entails influencing individuals and groups to work towards common goals. This involves leadership, motivation, and communication skills to inspire and guide employees towards peak performance. Effective managers possess the ability to inspire trust, foster collaboration, and resolve conflicts, thereby creating a positive work environment conducive to productivity and innovation.

- **Controlling**: The final component of management involves monitoring performance and implementing corrective measures when necessary. Through various control mechanisms such as feedback systems, performance evaluations, and key performance indicators (KPIs), managers assess progress toward goals and identify deviations from the planned course of action. Managers can guarantee that the organization stays on course and effectively adjusts to changing conditions by implementing timely corrective actions.

In reality, management acts as a dynamic, iterative process that calls for a blend of strategic thinking, interpersonal skills, and analytical abilities. In a business environment that is always changing, competent managers use their knowledge of organizing, planning, influencing, and controlling to lead their companies to success.

6.2 Data and Information

Patterson and A mentioned in their study tha data refers to unprocessed facts and figures lacking context or purposeful meaning. It is the basis for creating information and can take many different forms, like numbers, dates, or measures. [8].

Information, on the other hand, is the result of processing and transforming data into a meaningful and useful context. This transformation involves analyzing, interpreting, and organizing data to provide insights or knowledge that can inform decision-making and enhance understanding. Data is presented in a way that makes it easier for readers to understand and take action by customizing the information to match their unique needs. Thus, while data represents the starting point, information represents the refined output that enables users to derive value and make informed choices.

6.3 System

O'Brien, J.A. and other reserchers mentioned that A system is an arrangement of related tasks or parts that cooperate to accomplish a common objective [9]. This idea, as applied to MIS, entails coordinating a variety of tasks and procedures to make it easier to collect, process, and distribute data for managerial decision-making. In essence, MIS integrates technology, people, and processes to optimize organizational performance and efficiency.

6.4 Functions of Management Information System

Nowduri1 and other researchers mentioned that MIS serves as a crucial tool for organizations to efficiently manage their operations and make informed decisions [13]. Here are the key functions of MIS:

- Data Collection: MIS gathers data from various sources within and outside the organization, including transactions, operations, and external market data.
- Data Processing: Once collected, MIS processes the raw data into meaningful information through sorting, filtering, analyzing, and summarizing processes.
- Storage: Processed data is stored in databases or data warehouses for easy access and retrieval when needed.
- Retrieval: MIS allows users to retrieve relevant information quickly and efficiently using various querying methods and interfaces.
- Analysis: MIS provides tools for analyzing data trends, patterns, and relationships to gain insights into the organization's performance and market dynamics.
- Information Presentation: MIS provides decision-makers with easily interpreted reports, charts, graphs, and dashboards that display the processed data.
- Decision Support: By offering projections, predictive analytics, and timely and accurate information, MIS helps managers make well-informed decisions.
- Communication: MIS facilitates communication and collaboration among different departments and levels of management by sharing relevant information across the organization.
- Control: MIS helps in monitoring and controlling organizational processes by setting benchmarks, tracking performance metrics, and identifying deviations from planned targets.

- Strategic Planning: By offering insights into market trends, competitive analysis, and internal capabilities to develop long-term goals and strategies, MIS helps strategic planning operations.

6.5 Benefits of MIS

Al-Mamary and other researchers mentioned in their study MIS offer numerous benefits to organizations. By providing timely and accurate information, MIS empowers decision-makers at all levels to make informed choices swiftly, leading to improved decision-making processes [16]. Additionally, MIS streamlines operations, automates tasks, and enhances workflow efficiency, thereby boosting productivity and reducing costs. Moreover, MIS facilitates strategic planning by offering access to historical data, market trends, and forecasts, enabling organizations to align their strategies with business objectives effectively. Furthermore, MIS enhances communication and collaboration among teams by providing a centralized platform for information sharing and coordination. In the end, MIS helps to improve customer service by providing access to consumer information and preferences, enabling customized service delivery, and encouraging client loyalty and satisfaction.

7. Organizational Performance

Al Matrooshi and other reserchers showed that organizational performance is the extent to which an organization's accomplishments correspond with its set objectives [10]. Sharoo Nawrooz Fadhil, Nozad Mahmood and Nozad Mahmood mentioned in their study that, It basically compares an organization's production to its original strategy. This idea emphasizes how crucial it is to manage people, processes, and resources well in order to achieve desired results [11]. Al.Gharaibeh and other reserchers showed that, Individual productivity plays a major role in a company's performance, which emphasizes the significance of task completion as a crucial element of effective leadership. Accordingly, technology has had a significant influence on streamlining operations and reducing time, costs, and effort in organizational administration [12]. This has fueled the shift to e-government. MIS, which help to centralize managerial activities through data gathering, organization, and sharing, are a result of this technological transition.

8. Management Information Systems in Organizations

Al-Najjar, F.G. mentioned in their study that MIS hold a strategic significance within organizations, providing timely and pertinent information to management for various functions,

including planning, organizing, directing, controlling, and decision-making. In today's business landscape, MIS is indispensable, with every organization requiring it to monitor their activities effectively. The influence of MIS extends to managerial decisions, employee management, product development, and overall business operations, making it an integral aspect of contemporary organizations [15]. As such, the responsibility for MIS cannot be solely delegated to technical personnel, as it directly impacts managerial processes and organizational success. MIS has become deeply ingrained in daily business operations, akin to other major functions like accounting, finance, and marketing. Its importance is underscored by its role in enhancing business efficiency, managerial decision-making, and collaborative work processes, thereby bolstering competitiveness in dynamic market environments. Because MIS is crucial to achieving corporate success in today's global marketplace, it is therefore vital for aspiring managers, entrepreneurs, and business professionals to have a solid understanding of the subject.

9. Telecommunication Sectors in Bangladesh

Al-Mamary and others mentioned in their research work that in Bangladesh, the rapid advancement of information and communication technology which is known as ICT, has similarly presented a plethora of opportunities for both businesses and communities . However, despite the proliferation of current telecommunication devices and networking, there remains a notable gap in ICT adoption between developed and developing countries. In terms of telecommunications infrastructure, Bangladesh boasts a range of providers offering services across the country [16]. One of the main companies in the telecommunications industry is the government-owned "Bangladesh Telecommunication Company Limited (BTCL)". In addition, a number of private telecom firms that provide mobile services to customers including Grameenphone, Robi, Banglalink, and Teletalk. Over the years, these companies have seen a significant increase in the number of subscribers as they have broadened their service to include outlying corners of the nation. Moreover, Bangladesh has seen the introduction of advanced technologies, such as 4G and 5G networks, further enhancing connectivity and communication capabilities. Despite challenges, the telecommunications sector in Bangladesh continues to evolve, with efforts to bridge the digital divide and promote widespread ICT adoption across the country.

10. MIS in Telecommunication Sectors

Al-Mamary and others mentioned in their study that In Bangladesh's telecom industry, MIS are essential for effective operations, decision-making, and customer support [16]. The telecommunications sector in Bangladesh is fiercely competitive, developing quickly, and dominated by a few significant companies fighting for market dominance. MIS enables these companies to manage their resources effectively, optimize network performance, and provide innovative services to consumers. The Bangladesh Telecommunication Regulatory Commission (BTRC) estimates that by the end of 2021, there would be over 181 million mobile phone subscribers in Bangladesh, a considerable increase from the country's previous telecom figures. This broad reach and the strong demand for telecom services emphasize how crucial MIS is to effectively managing the enormous networks. Major players like Grameenphone, Robi, and Banglalink have been expanding their 4G network coverage to provide faster and more reliable internet services to their subscribers, showcasing their investments in technology infrastructure. A MIS's ability to provide customized services and quickly handle client inquiries through efficient customer relationship management (CRM) is essential to improving customer experiences. Furthermore, the BTRC data indicates that the telecom industry makes a substantial contribution to the Bangladeshi economy, accounting for around 6.5% of the GDP in the fiscal year 2020–2021. This illustrates the significance MIS has in improving customer experiences, increasing efficiency, and fostering economic growth in Bangladesh's telecom industry.

11. Ethics is an Information Society

Kenneth C and other reserchers mentioned that ethics penetrate all facets of the telecommunications industry in an information society, radically influencing the ways in which information is sent, received, and used. Large volumes of data are transported by telecommunication technologies, thus privacy, security, and fair access must all be protected. Ethical frameworks oversee decisions about censorship, monitoring, and striking a balance between private profit and public welfare, encompassing topics ranging from data encryption to net neutrality [6]. Furthermore, ethical behavior is crucial to bridging the digital divide and ensuring that marginalized groups have equal access to the digital world. The telecommunications industry faces a vital role in promoting a just and inclusive Information Society, as seen by the increasingly complicated ethical problems surrounding artificial intelligence, data ownership, and algorithmic biases. As technology advances, these questions become increasingly important.

12.Data Analysis and Discussion:

Descriptive Statistic

Here, the researcher has chosen 1 to 5 Likert scale to receive the responder's data where 1 strongly disagrees and 5 strongly agree. By the SPSS researcher calculated mean and standerd deviation based on the responders data.

12.1 The Use of Management Information System (MIS)

Table 1: MIS Uses

	Mean	Std. Deviation
1. I use managerial programs in my work	4.3800	.76251
2. We use internet in managerial works	4.4100	.75338
3. Our company depends on *MIS*	4.6400	.57770
4. Our customers are buying the company products using website	3.9500	.95743
5. *MIS* is secure	4.2800	.86550
6. *MIS* gives better output than the traditional one	4.6500	.60927
7. *MIS* is safer for account information	4.6300	.52522
8. Managerial mistakes are less in *MIS*	4.5800	.62247
9. Company can update *MIS* at any time on database	4.7300	.52905
10. Company can develop *MIS* easily	4.5200	.70324
11. Your *MIS* is completely for managerial operations	4.5100	.71767
12. Upgraded *MIS* do not need to change the current system	4.2700	.76350

(Source: SPSS Generated)

Because the resultant means in the above table are higher than the conventional mean of three, it is evident that respondents had a good attitude regarding using the MIS. Additionally, the researcher found that the standard deviations are less than one, indicating that the data's variability is not excessive.

12.2 Organizational Performance

Table 2: Organizational Performances

	Mean	Std. Deviation
Employer can use management information system easily to increase organizational performance	4.4800	.71746
Employer can control the feathers of management information system easily to increase organizational performance	4.6100	.60126
Mistakes are under control in management information system. As it can increase organization performance by taking feedback	4.6900	.59789
Managerial information system is suitable for our sector	3.3200	.27266

(Source: SPSS Generated)

Given that all of the mean values in Table 2 above are larger than 3, it is clear that respondents had a good opinion regarding their organizational performance. Additionally, because the standard deviations are smaller than one, the data's variability is not excessive.

Hypothesis result

Table 3. Classification Table

Organizational Performance * Management Information System Crosstabulation				
Count				
		Management Information System		Total
		No	Yes	
Organizational Performance	No	8	3	11
	Yes	3	86	89
Total		11	89	100

(Source: SPSS Generated)

Here, for each individual, mean Organizational Performance and mean Management Information System are calculated. Means greater than the standard mean 3 are coded as Yes, and less than 3 are coded as zero.

Table 4. Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2sided)	Exact Sig. (1sided)
Pearson Chi-Square	48.103[a]	1	.000		
Continuity Correction[b]	41.280	1	.000		
Likelihood Ratio	30.174	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	47.622	1	.000		
N of Valid Cases	100				
a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 1.21.					
b. Computed only for a 2x2 table					

(Source: SPSS Generated)

The chi-square p-value shows that the null hypothesis is rejected at a 5% level of significance. This indicates an association between MIS and organizational performance.

13. Conclusion and Recommendations

This research work clarified the role of *MIS* in Bangladesh's telecommunication industry and gave a survey of the literature on the subject. This paper explains the advantages of adopting *MIS* in the telecommunications business. These industries operate more efficiently because *MIS* make it simpler to gather, store, process, and retrieve data as needed.

This reserch mostly encourages the telecoms industry to use it. The majority of research participants had favorable opinions about the use of MIS. Additionally, we discovered a link between MIS and organizational performance. To improve organizational performance, researchers encourage the telecom industry to employ MIS carefully.

References

Al Matrooshi, B., Singh, S.K. and Faro uk, S. 2016, "Determinants of organizational performance: a proposed framework", International Journal of Productivity and Performance Management, Vol. 65 No. 6, pp. 844-859.

Al.Gharaibeh, S. M. & Malkawi, N. M., 2013. The Impact of Management Information Systems on the Performance of Governmental Organizations- Study at Jordanian Ministry of Planning. International Journal of Business and Social Science, 4, No. 13 (Special Issue), pp. 101-109.

Al-Mamary, Y.H., & Shamsuddin, A., & Nor Aziati, A.H. (2014) Key factors enhancing acceptance of management information systems in Yemeni companies, Journal of Business and Management Research, Volume. 5, pp. 108-111.

Al-Najjar, F.G. (2010) Management Information Systems Managerial Perspective, daralhamed for Publishing and Distribution.

Al-Najjar, F.G. (2010) Management Information Systems Managerial Perspective, daralhamed for Publishing and Distribution.

Kenneth C. Laudon and Jane P. Laudon (2020) Management Information Systems: Managing the digital firm, 16th Global edition,

Kulbir Singh and Baljeet Kaur (2012) Role of Management Information System in Business: Opportunities and Challenges, GIAN JYOTI E-JOURNAL, Volume 1, Issue 2.

Lahar Mishra, Ratna Kendhe, and Janhavi Bhalerao (2015) Review on Management Information Systems (MIS) and its Role in Decision Making, International Journal of Scientific and Research Publications, Volume 5, Issue 10, 1-5.

Mohammed Rafiqul Islam (2018) Impacts of Management Information System on Decision Making of the Organization, International Journal Of Business, Social And Scientific Research issn, Vol. 6, Issue: 2, Page: 56-61.

Nowduri1, S., & Al-Dossary, S. (2012). Management Information Systems and Its Support to Sustainable Small and Medium Enterprises, International Journal of Business and Management; Vol. 7, No. 19, pp. 125-131.

O'Brien, J.A.,& Marakas, G.M. (2007) Management information systems-10th ed., by McGrawHill/Irwin, a business unit of The McGraw-Hill Companies.

Patterson, A. (2005) Information Systems-Using Information, Learning and Teaching Scotland.
Salameh A. Mjlae et al (2020) The Effectiveness Of Management Information System In Decision-Making, Journal of Mechanics of Continua and Methametical Sciences, Vol. 15, No. 07, 316-327.

Sharoo Nawrooz Fadhil, Nozad Mahmood and Nozad Mahmood (2021) "The Significance of Management Information System in Improving Organizational Performance and Effectiveness" Journal of Garmian University, Vol. 7, Issue 4, Page:195-211

Shreyas Purkar et al (2020) The Role of Management Information Systems in Organizations, Gradiva Review Journal, Vol. 09, Issue 09, 506-316.

Yaser Hasan Al-Mamary*, Alina Shamsuddin, Nor Aziati (2014) The Meaning of Management Information Systems and its Role in Telecommunication Companies in Yemen, American journal of software engineering, Vol, 2 , No 2, 22-25.