

Internship Report
On
**Enhancing Healthcare in Bangladesh through IT: The DGHS's
Contribution**



الجامعة الإسلامية للتكنولوجيا
UNIVERSITE ISLAMIQUE DE TECHNOLOGIE
ISLAMIC UNIVERSITY OF TECHNOLOGY
DHAKA, BANGLADESH
ORGANISATION OF ISLAMIC COOPERATION



Submitted To

Islamic University of Technology

In partial fulfillment of the requirements for the degree of BBA in Business and
Technology Management (BTM)

Submitted By

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Date of Approval: 22nd May, 2024

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I understand that my final report will become part of the permanent collection of the Islamic University of Technology BBA in Business and Technology Management Program. My signature below authorizes the release of my final report to any reader upon request.

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Date: 22nd May, 2024



This internship report is submitted to the Department of Business and Technology Management (BTM) at the Islamic University of Technology (IUT) for the course BTM 4800.

Letter of Transmittal

Dr. Mohammad Shamsu Uddin
Assistant Professor
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Islamic University of Technology

Subject: Submission of “Enhancing Healthcare in Bangladesh through IT: The DGHS’s Contribution”

Dear Sir,

I hereby submit the Internship report titled “Enhancing Healthcare in Bangladesh through IT: The DGHS’s Contribution” which is a part of the internship program. It was a great honor and privilege on my part to work under your direct guidance.

I've done my best to reflect on the organization's state as well as my own work experience when putting this report together. The opportunity to work at DGHS has opened a door to a huge possibility of learning about health sector operations, and strategies and growing personally. It was a great experience working there and preparing this report under your supervision.

I will be highly obliged if you kindly accept this report and provide me with any kind of expert judgment or feedback you may have.

Sincerely yours,

Zarin Lamisa Authoi

ID: 190061125

Declaration

I, Zarin Lamisa Authoi, a student of the Department of Business and Technology Management of the Islamic University of Technology hereby declare that I have prepared this report on DGHS (MIS) by myself with the guidance provided by my supervisor Dr. Mohammad Shamsu Uddin, Assistant Professor, BTM. I have not breached any copyright purposefully. As far as I can tell, the work of art is genuine. I hereby also declare that the report was not submitted to any other organization or person to get a certificate of any kind.

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Acknowledgment

I extend my heartfelt gratitude to everyone who contributed to this report within the Directorate General of Health Services (DGHS). As an intern at DGHS, I want to acknowledge the strength and perseverance granted by Allah during my tenure. Dr. Mohammad Shamsu Uddin, an Assistant Professor in the Department of Business and Technology Management, deserves special recognition for her unwavering support and valuable guidance throughout my internship.

The entire DGHS team played a pivotal role in ensuring the success of our internship program. Their commitment allowed theoretical understanding and practical experience to coexist seamlessly within the health sector.

My family's unwavering support was instrumental in keeping me strong and healthy during this period. Their encouragement helped me overcome challenges as I adjusted to the new environment at DGHS.

Additionally, I want to express my appreciation to my coworkers at DGHS. Their helpful recommendations and guidance motivated me as I navigated my responsibilities. The welcoming and supportive environment within DGHS made a significant difference.

Lastly, I am truly thankful to DGHS's MIS team, including our Director of MIS, the senior analyst and all others who consistently showed me how to give my best. Their constant love and support will always be remembered.

And not to forget, I spent valuable time with the MIS department at DGHS—a brief yet informative experience that contributed to my overall learning.

Executive Summary

The Directorate General of Health Services (DGHS) of Bangladesh, established as a directorate in 1978 and upgraded to Directorate General in 1980, operates under the Ministry of Health and Family Welfare. It is responsible for the health services across the nation. The DGHS has been pivotal in addressing various health challenges, including the management of the COVID-19 pandemic. It signed a memorandum of understanding with Regent Hospital in March 2020, which later became controversial due to the issuance of fake COVID-19 certificates.

The DGHS has seen its share of controversies, such as the investigation of 23 officers for corruption by the Anti-Corruption Commission in January 2019. Despite these challenges, the DGHS has made significant contribution in improving healthcare in Bangladesh. It claimed that Bangladesh would receive 68 million vaccines for COVID-19 from GAVI under COVAX, with an additional 30 million from the Serum Institute of India.

With a focus on innovation and improvement, the DGHS aims to enhance the quality of healthcare services. It has embraced digital strategies and has been involved in various initiatives to modernize and streamline health services. The DGHS's commitment to healthcare excellence is evident in its efforts to ensure the well-being of the Bangladeshi population, making it a cornerstone of the nation's health infrastructure.

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Chapter 1: Introduction

Introduction

Embarking on an internship with the Directorate General of Health Services (DGHS) within the Management Information System (MIS) department has been an enlightening journey into the heart of Bangladesh's healthcare sector. This experience has allowed me to immerse myself in the intricate practices, governance, and management styles that drive a cornerstone institution in our nation's health infrastructure.

In this report, We will explore the operational history of the DGHS, and its organizational structure, and conduct a SWOT analysis to understand its strengths, weaknesses, opportunities, and threats. Additionally, we'll examine the current strategies in place and how the integration of technology can enhance service delivery and patient care.

The DGHS, powered by a team of dedicated and brilliant minds, stands as a testament to effective public health management. Operating with autonomy and funded through government support, the DGHS has made significant strides in winning the trust and hearts of the Bangladeshi population.

During my tenure as an intern, I have gained a comprehensive understanding of organizational dynamics. My participation in various health campaigns has enriched my experience, equipping me with the skills to handle public inquiries and develop problem-solving competencies.

Moreover, the digital transformation initiatives undertaken by the DGHS have profoundly improved its operational efficacy. Notable milestones include the launch of the Smart Health Information Center and the integration of digital payment systems, among other advancements in digital health services. These initiatives are just a few examples of the department's commitment to leveraging technology for the betterment of public health services.

1.1 Background of the Study

The Directorate General of Health Services (DGHS), with its multifaceted directorates, is the cornerstone of public health initiatives in Bangladesh. As part of the Management Information System (MIS) department, my internship has been focused on exploring how IT solutions can be integrated across different sections to boost health marketing strategies and enhance the overall patient experience. Recognizing that patients are at the heart of healthcare, the more personalized and efficient the service, the greater the benefit to the community and the healthcare system as a whole.

1.2 Origin of the Internship Report

This report originates from the internship program of the Islamic University of Technology, a prerequisite for students pursuing a degree in Business and Technology Management (BTM). The program's primary objective is to bridge the gap between academic knowledge and the professional world, introducing the pioneering batch of BTM graduates to the corporate landscape. With a solid grounding in business theories and a foundational understanding of engineering principles, the internship is structured to facilitate the application of theoretical concepts to real-world scenarios, thereby enriching the professional experience and underscoring the distinctiveness of our graduates.

1.3 Main Purpose of the Internship Program

The internship program is designed with several key objectives in mind:

- To provide hands-on experience in a real-world business setting.
- To acquaint students with the job market and professional environments.
- To connect academic theories with practical applications.
- To detail specific job responsibilities and descriptions.
- To fulfill the academic requirements of the BTM program.

This report, conforming to the university's stipulations for the Business and Technology Department, is a culmination of a three-month immersive experience at the DGHS. It encompasses an overview of the healthcare sector, insights into the workings of a leading health institution, and reflections on how market leadership is maintained through innovation and service excellence.

1.4 Generic Objectives

The overarching goal of my three-month internship at the Directorate General of Health Services (DGHS) was to gain a comprehensive understanding of how the Management Information System (MIS) department operates and achieves its objectives. This period served as a corporate apprenticeship, allowing me to apply my academic knowledge in a practical setting. This report encapsulates my activities and reflects on the knowledge and experience I have accrued, offering a comparative analysis of my learning outcomes within the organization.

Specific Objectives

- To present a detailed account of my responsibilities and tasks as an intern.
- To portray the current state and standing of the DGHS in both local and international healthcare landscapes.
- To acquire insights into the overall operational processes of the health services industry.

1.5 Methodology and Data Sources

The methodology of this report is rooted in a blend of primary and secondary research methods.

Primary Sources:

A significant proportion of this report is from the data obtained through primary research. The core insights and information were gathered through direct interactions with various officers and senior officials within the department.

Information Sources:

I was provided access to a range of internal documents, including the *System Performance Report*, tariff manuals, and other relevant publications. I have also compiled comprehensive notes throughout my internship.

Secondary Sources:

Complementing the primary research, secondary sources have played a critical role in shaping the content of this report. These include academic journals, healthcare industry reports, and other authoritative publications that offer a broader context to the DGHS's operations and strategies.

Main sources:

- Company Website.
- Google search engine.
- Reference Books
- Research papers about the health sector of Bangladesh

1.6 Significance

This report offers a detailed and analytical view of the Directorate General of Health Services (DGHS), particularly focusing on the Management Information System (MIS) department's role within the organization and the broader health sector. It aims to provide a fresh perspective on the department's performance and its impact on both local and international healthcare landscapes. The purpose of this report is to shed light on the operational and strategic aspects of the health services in Bangladesh, serving as an essential resource for students in the *Business and Technology Management (BTM)* department who are eager to expand their understanding and explore the practicalities of industrial exposure. This document serves as a guide to grasp the opportunities and challenges present in the healthcare field.

1.7 Limitations

While striving to maximize the learning experience during my internship, I encountered certain limitations:

- The three-month duration was relatively brief to fully grasp the entirety of the department's operations and insights.
- Balancing the intensive learning process with academic responsibilities presented a significant challenge.
- Confidentiality agreements restricted the disclosure of certain data and information pertaining to the department, limiting the scope of this report's content.

These constraints notwithstanding, the insights and knowledge gained have been substantial and will be reflected in the comprehensive analysis presented in this report.

Chapter 2: Company/Industry Overview

2.1 Introduction to DGHS

The Directorate General of Health Services (DGHS) is the backbone of Bangladesh's healthcare system, established to ensure the health and well-being of the nation's populace. Starting from humble beginnings, the DGHS has grown into a robust network of healthcare services, overcoming numerous challenges along its journey toward excellence. Known for its commitment to service and hospitality, the DGHS has earned a reputation for being a welcoming and caring health provider in the face of adversity.

As the primary healthcare provider, the DGHS operates from its main hub at Dhaka's Mugda Medical College and Hospital, with significant operations extending from the Chittagong Medical College Hospital and the Sylhet MAG Osmani Medical College Hospital. These centers are pivotal in generating comprehensive healthcare services that connect various parts of the country. The DGHS is recognized for its dedication to serving the health needs of the Bangladeshi people, flying the flag of healthcare excellence across the nation and beyond.

2.2 History

The Directorate General of Health Services (DGHS) has been pivotal in shaping and managing healthcare services in Bangladesh. Established as a directorate in 1958 during the Pakistani era, it initially focused on coordinating health services across the region. In 1980, it was upgraded to a Directorate General, reflecting its expanded responsibilities and authority. Over the years, the DGHS has evolved to meet the dynamic healthcare needs of the population. Its primary responsibilities include planning, implementing, and monitoring health programs, policies, and services across the nation, and overseeing public health, including disease prevention, health promotion, and healthcare delivery.

The DGHS has played a crucial role in developing healthcare infrastructure and establishing hospitals, clinics, and health centers to improve access to essential health services, particularly in rural and underserved areas. It manages the health workforce by recruiting, training, and deploying healthcare professionals, ensuring an equitable distribution of healthcare workers across Bangladesh. The DGHS actively engages in disease control programs, focusing on preventing and managing communicable diseases like malaria, tuberculosis, and dengue, and operates surveillance systems to monitor and respond to disease outbreaks promptly.

Immunization and maternal health are also significant areas under the DGHS's purview, overseeing immunization programs to ensure children receive essential vaccines and promoting maternal health through antenatal care, safe delivery services, and family planning counseling. Despite its critical role, the DGHS has faced challenges such as corruption, mismanagement, and inadequate resource allocation, with controversies including the issuance of fake COVID-19 certificates by some healthcare facilities. Leadership changes, such as those involving Prof. Abul Kalam Azad and Dr. ABM Khurshid Alam, have been part of its journey, with ongoing reforms aimed at enhancing healthcare delivery, strengthening governance, and improving transparency.

The Directorate General of Health Services (DGHS) in Bangladesh has made significant strides in digital health over the past few years. Here are some key achievements:

Digital Health Strategy 2023-2027:

The DGHS has developed a comprehensive Digital Health Strategy for the period from 2023 to 2027. This strategy outlines the roadmap for leveraging technology to improve healthcare services, data management, and overall health outcomes in Bangladesh.

Deployment of DHIS2:

Bangladesh has implemented one of the world's largest the open-source District Health Information Software 2 (DHIS2). This system serves as a national public sector health data warehouse, enabling efficient data collection, analysis, and reporting.

Health Data Management:

The DGHS has been actively involved in managing health data at various levels. This includes collecting and analyzing data related to diseases, health facilities, and population health. The goal is to enhance decision-making and resource allocation.

Health Infrastructure Development:

The DGHS has worked on improving health infrastructure across the country. This includes expanding healthcare facilities, upgrading existing ones, and ensuring access to quality healthcare services.

Health Information Exchange:

Efforts have been made to establish a massive health information exchange system. This allows seamless sharing of health data among different healthcare providers, leading to better coordination and patient care.

Telemedicine and E-Health Services:

The DGHS has promoted telemedicine services, enabling remote consultations and medical advice. Additionally, e-health initiatives have been launched to facilitate online appointments, prescription management, and health education.

Capacity Building and Training:

The DGHS has focused on capacity building by training healthcare professionals, administrators, and IT personnel. This ensures effective implementation of digital health solutions.



In summary, the DGHS has been a cornerstone of Bangladesh's healthcare system, reflecting the nation's commitment to providing quality health services. As you delve deeper into your thesis, consider exploring specific milestones, policy changes, and the challenges faced by the DGHS to provide a comprehensive analysis of its impact and evolution.

2.3 Company Profile

Company Name:	Directorate General of Health Services (DGHS)
Established:	1978
Main Hub:	Mugda Medical College and Hospital, Dhaka
Secondary Hubs:	Chittagong Medical College Hospital, Sylhet MAG Osmani Medical College Hospital
Company Activity:	Healthcare provision, public health management, and related services.
Health Programs:	EPI (Expanded Program on Immunization),

TB Control Program, etc.

Subsidiaries: National Institute of Preventive and Social Medicine (NIPSOM), National Institute of Population Research and Training (NIPORT)

Service Reach: Nationwide coverage with various health programs and initiatives.

Headquarters: Mohakhali, Dhaka, Bangladesh

Key People: Prof. Dr. Abul Bashar Mohammad Khurshid Alam

[Director General in (Health)]

Prof. Dr. Md. Shahadat Hossain

[Director (MIS)]

Website: www.dghs.gov.bd

Vision: To ensure a healthy population by achieving excellence in healthcare services by 2030.

Mission: To provide safe, efficient, and quality healthcare services to all citizens.

Objectives: To develop and maintain a healthcare system that is safe, effective, and capable of meeting the health needs

of the Bangladeshi population.

Ethics:

The DGHS upholds the highest standards of integrity

and ethical conduct, actively participating in anti-corruption

initiatives and promoting transparency and accountability in all

its operations.

2.4 Organogram

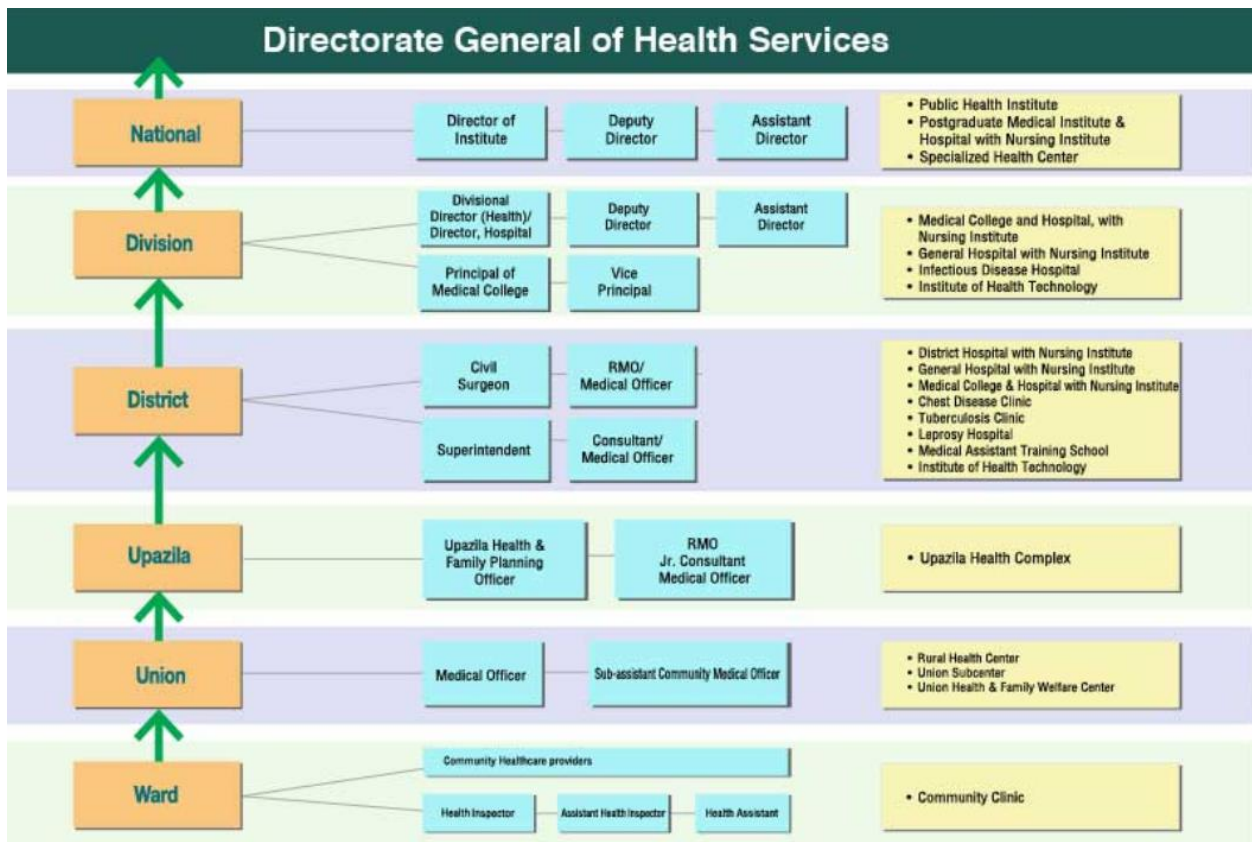
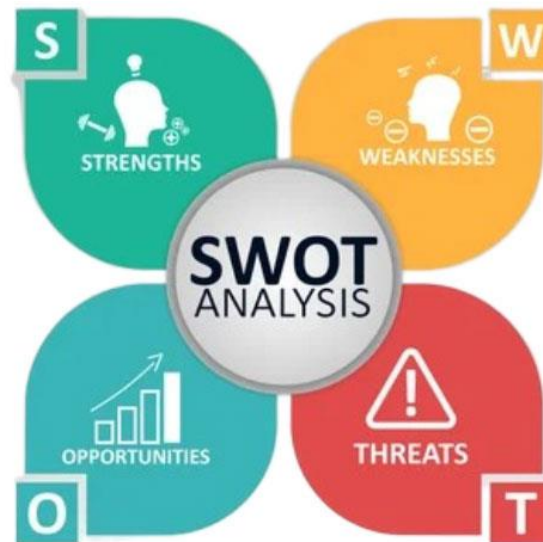


Fig: Organogram of DGHS

2.5 SWOT Analysis of DGHS



Strengths:

- **Comprehensive Data Management:** Robust information systems for managing health data effectively.
- **Government Support:** Strong backing from the government for digital health initiatives.
- **Skilled Workforce:** A team of dedicated professionals with expertise in health informatics.
- **Digital Innovation:** Progressive adoption of digital solutions for healthcare challenges.
- **Public Health Surveillance:** Effective monitoring and response systems for public health issues.
- **Strategic Partnerships:** Collaborations with international health organizations and NGOs.
- **Infrastructure:** Well-established ICT infrastructure for supporting health information systems.

Weaknesses:

- **Resource Constraints:** Limited financial and human resources can hinder project implementation.
- **System Integration:** Challenges in integrating various health information systems.

- **Training Needs:** Continuous need for training personnel on new systems and technologies.
- **Maintenance:** Regular maintenance of digital systems can be resource-intensive.
- **User Adoption:** Resistance to change and slow adoption of new technologies by end-users.
- **Policy Barriers:** Regulatory and policy constraints that may affect the deployment of digital health solutions.

Opportunities:

- **Technological Advancements:** Leveraging emerging technologies like AI and big data for health analytics.
- **Funding Opportunities:** Potential for increased funding from international donors for health projects.
- **Public-Private Partnerships:** Collaboration with private sector for innovative health solutions.
- **Capacity Building:** Opportunities for enhancing the skills and capabilities of the health workforce.
- **Healthcare Access:** Improving access to healthcare services through telemedicine and mobile health.
- **Research and Development:** Engaging in R&D for better health outcomes and informatics solutions.
- **Regional Leadership:** Positioning Bangladesh as a leader in digital health within the region.

Threats:

- **Cybersecurity Risks:** Vulnerability to cyber-attacks and data breaches.
- **Political Instability:** Changes in political situation can impact funding and support for health initiatives.
- **Economic Fluctuations:** Economic downfall can lead to budget cuts and reduced investment in health IT.
- **Regulatory Changes:** New regulations can impose additional compliance requirements.
- **Technological Obsolescence:** Rapid changes in technology can render current systems outdated.
- **Natural Disasters:** Prone to natural disasters which can disrupt health information systems.
- **Pandemic Outbreaks:** Risk of pandemics that can overwhelm the health system and its information management capacity.

2.6 The Directorate General of Health Services (DGHS) of Bangladesh: A Comprehensive Analysis of Progress and Challenges

The Directorate General of Health Services (DGHS) under the Ministry of Health and Family Welfare in Bangladesh has been a cornerstone in the nation's pursuit of improved public health outcomes. Over the years, the DGHS has made significant strides in enhancing the healthcare landscape of Bangladesh, navigating through a myriad of challenges and seizing opportunities to ensure the well-being of its citizens.

Historical Progress

Since its inception, the DGHS has been instrumental in orchestrating national health policies, strategies, and programs. Its efforts have been pivotal in achieving remarkable progress in various health indicators. For instance, the under-five mortality rate (U5MR) has seen a dramatic decline, showcasing the effectiveness of child healthcare initiatives. Similarly, the infant mortality rate (IMR) and neonatal mortality rate (NMR) have also decreased, reflecting improvements in maternal and child health services.

The maternal mortality ratio (MMR) has been another area of significant advancement. Through concerted efforts in prenatal and postnatal care, as well as safer delivery practices, the DGHS has contributed to a substantial reduction in maternal deaths. The increase in births attended by skilled health personnel is a testament to the enhanced capacity and reach of healthcare services.

Challenges and Responses

Despite these achievements, the DGHS has faced its share of challenges. Issues such as poor punctuality and schedule adherence, complex bureaucratic systems, and government influence slowing decision-making have been persistent. These challenges have sometimes hindered the swift implementation of health programs and affected service delivery.

Moreover, the adoption of innovation and modern technologies has been comparatively slower than other world-class health services. This lag has implications for the efficiency and effectiveness of healthcare provision. Mismanagement in areas like baggage handling and rebranding issues have also surfaced, necessitating a reevaluation of operational strategies.

Customer experience has varied, with instances of dissatisfaction highlighting the need for a more patient-centric approach. Weaknesses in public relations and promotional activities have further compounded the challenge of addressing public misconceptions and effectively communicating the strengths and services of the DGHS.

Opportunities for Growth

Nevertheless, the opportunities for the DGHS are vast. Bangladesh's economic development opens new avenues for healthcare investment and innovation. The large labor market and the

exponentially developing student market in Europe and North America present potential for expanding healthcare education and services.

The DGHS's full membership in the International Air Transport Association (IATA) and approvals from various international safety organizations underscore its commitment to global health standards. The modern fleet with state-of-the-art technologies like Wi-Fi and entertainment systems positions the DGHS as a leader in healthcare provision in Southeast Asia.

Strategic Direction

Looking ahead, the DGHS is poised to capitalize on these opportunities. Its energetic and dedicated workforce, backed by government support as a financial guarantor, sets the stage for continued progress. The centralized directorates housed in the Balaka Building facilitate smooth connectivity and fast decision-making, enabling the DGHS to respond promptly to emerging health challenges.

Threats and Mitigation

The path forward is not without threats. Cybersecurity risks, political instability, economic fluctuations, and regulatory changes pose potential disruptions to the DGHS's operations. Technological obsolescence and natural disasters also present risks that require proactive planning and robust contingency measures.

To mitigate these threats, the DGHS must continue to invest in cybersecurity, adapt to regulatory changes, and update its technological infrastructure. Building resilience against natural disasters and pandemics is crucial to maintaining uninterrupted healthcare services.

Chapter 3: Industry Overview & Analysis

3.1 Evolution of Healthcare Delivery

The evolution of healthcare delivery has been marked by significant shifts in practice, policy, and patient care paradigms. Over the past few decades, the global healthcare landscape has transformed from a reactive, provider-centric model to a proactive, patient-centric system. This transformation has been driven by advancements in medical technology, changes in healthcare policies, and a growing emphasis on health outcomes and patient experience.

From In-Person to Virtual Care

The transition from traditional in-person healthcare to virtual care has been a remarkable development in the medical field. This shift has been driven by the rapid advancement of digital technologies, which have made it possible to deliver healthcare services remotely. In Bangladesh, this transformation has been particularly significant, with the Directorate General of Health Services (DGHS) utilizing Management Information Systems (MIS) to facilitate this change.

In the past, healthcare delivery in Bangladesh was primarily conducted in-person. Patients would visit clinics and hospitals to receive medical attention, which often meant traveling long distances and waiting in long queues. This method of healthcare delivery was not only time-consuming but also posed significant challenges for those living in rural areas or for individuals with limited mobility.

The introduction of digital technologies in the healthcare sector marked the beginning of a new era. Telehealth services, which allow for remote consultations and treatments, have grown exponentially. The COVID-19 pandemic served as a catalyst for this growth, with many patients and healthcare providers adopting telehealth services to maintain social distancing and reduce the spread of the virus. Reports indicate that consumer adoption of telehealth jumped from 11% in 2019 to 46% in 2020, demonstrating a significant shift towards virtual care.

The DGHS has been instrumental in promoting virtual care in Bangladesh. By integrating MIS into healthcare services, the DGHS has improved the efficiency and effectiveness of healthcare delivery. MIS has enabled better data management, allowing for the collection, analysis, and dissemination of health-related information. This has been crucial for informed decision-making and healthcare planning.

The impact of virtual care in Bangladesh has been profound. It has made healthcare more accessible, especially for those in remote areas. Telemedicine initiatives have facilitated remote consultations, reducing the need for travel and making healthcare more convenient for patients. Additionally, virtual care has allowed for continuous monitoring of patients with chronic conditions, improving the management of their health.

Despite the benefits, the transition to virtual care has not been without challenges. Issues such as digital literacy, internet connectivity, and the availability of technological infrastructure have

been barriers to the widespread adoption of virtual care. But, these challenges also present opportunities for innovation within the healthcare sector.

The future of healthcare in Bangladesh is promising, with virtual care expected to play an important role. The continued support of the DGHS and the further integration of MIS will be vital in enhancing healthcare delivery. As Bangladesh continues to develop its digital health strategy, the potential for improving healthcare accessibility and convenience is immense.

In conclusion, the shift from in-person to virtual care represents a significant advancement in healthcare delivery in Bangladesh. With the ongoing efforts of the DGHS and the utilization of MIS, the country is well-positioned to overcome the challenges and capitalize on the opportunities presented by virtual care. This transition is not just a change in how healthcare is delivered; it's a step towards a more inclusive and efficient healthcare system that benefits all citizens.

This expanded passage provides a detailed exploration of the transition from traditional in-person healthcare to virtual care in Bangladesh, examining the role of DGHS and MIS, the impact of telehealth services, and the challenges and opportunities that lie ahead. It should serve as a valuable contribution to your internship thesis on the subject.

3.2 Shift Towards Value-Based Care

Shift Towards Value-Based Care in Bangladesh

The transformation of healthcare delivery from a volume-driven approach to a value-driven model has become a critical focus in Bangladesh. As the Directorate General of Health Services (DGHS) continues to evolve its strategies, the shift from traditional fee-for-service (FFS) to value-based care (VBC) is gaining prominence. Let's delve into the key aspects of this transition and its implications for patient outcomes and healthcare sustainability.

Understanding Value-Based Care (VBC)

Value-based care represents a paradigm shift in healthcare delivery. Unlike the traditional fee-for-service model, where providers are served based on the quantity of services delivered, VBC emphasizes quality, efficiency, and patient outcomes. Here's how VBC differs from FFS:

Reimbursement Approach:

Fee-for-Service (FFS): Providers receive payment for each service received, regardless of the outcome. This model often leads to overutilization and fragmented care.

Value-Based Care (VBC): Providers are incite to improve patient outcomes while managing costs effectively. The focus is on delivering value—better health outcomes per dollar spent.

Patient-Centered Approach:

FFS: Historically, FFS prioritized service volume, often neglecting patient-centered care.

VBC: Patient-centeredness is at the core of VBC. It aims to enhance patient experiences, prevent illness, and promote overall wellness.

Key Components of Value-Based Care Implementation

Integrated Practice Units (IPUs): IPUs organize care around specific medical conditions or patient populations. They facilitate collaboration among multidisciplinary teams, leading to better coordination and streamlined care delivery.

Measuring Outcomes and Costs: VBC emphasizes measuring both clinical outcomes and costs for every patient. This data-driven approach enables providers to find the areas for improvement and optimize resource allocation.

Bundled Payments: Moving away from individual service fees, bundled payments cover an entire care cycle. This encourages providers to work together efficiently and achieve better outcomes.

Care Integration: VBC promotes seamless care delivery across different facilities. Integrated care models enhance continuity and reduce fragmentation.

Geographic Expansion of Excellent Services: VBC encourages extending high-quality services beyond specific locations. This ensures equitable access to care for all patients.

Information Technology Infrastructure: Building robust IT platforms enables data sharing, analytics, and informed decision-making. Technology supports VBC implementation.

Challenges and Opportunities

Digital Literacy and Infrastructure: Bangladesh faces challenges related to digital literacy and internet connectivity. Addressing these gaps is crucial for successful VBC adoption.

Provider Engagement: Engaging clinicians and empowering them to take ownership of quality outcomes is essential. Clinician task forces can collaborate with the Ministry of Health and Family Welfare to drive VBC initiatives.

Balancing Quality and Cost: While VBC aims for better outcomes, cost containment remains critical. Striking the right balance ensures sustainable healthcare delivery.

Integration of Data and Analytics

Integration of Data and Analytics in Bangladesh's Healthcare Landscape

In recent years, the integration of data and analytics has revolutionized healthcare delivery in Bangladesh. This transformation has been driven by the strategic adoption of electronic health records (EHRs) and the establishment of health information exchanges (HIEs). Let's delve into the key aspects of this integration and its impact on patient care and decision-making.

Electronic Health Records (EHRs)

Enhanced Coordination of Care: EHRs have replaced paper-based medical records, allowing healthcare providers to access patient information seamlessly. Whether a patient visits a primary care clinic, a specialist, or a hospital, their medical history, diagnoses, medications, and test results are readily available.

This integration ensures that healthcare professionals have a detailed view of a patient's health, and possibly better coordination of care across different settings.

Patient Safety and Accuracy: EHRs reduce the risk of errors due to ununderstandable handwriting or lost paper records. Errorless and up-to-date information is crucial for safe and effective patient management.

Alerts within EHR systems notify providers of potential drug interactions, allergies, or other critical information, enhancing patient safety.

Health Information Exchanges (HIEs)

Seamless Data Sharing: HIEs facilitate the secure exchange of health information among different healthcare organizations. Whether it's a hospital, a diagnostic center, or a community health center, relevant data can be shared electronically.

For example, if a patient undergoes lab tests at one facility, the results can be instantly accessible to their primary care physician through the HIE.

Interoperability and Continuity: Interoperability standards ensure that different EHR systems can communicate with each other. This interoperability promotes continuity of care, especially when patients transition between providers or healthcare settings.

HIEs bridge gaps, allowing providers to access historical data, track trends, and make informed decisions.

Data-Driven Decision-Making

Personalized Medicine: Data analytics enable personalized treatment plans based on individual patient characteristics, genetics, and responses to previous therapies.

For instance, predictive models can identify patients at high risk for specific diseases, allowing early interventions and tailored preventive strategies.

Predictive Analytics: By analyzing large datasets, predictive models can forecast disease outbreaks, resource needs, and patient outcomes.

Bangladesh can leverage predictive analytics to allocate resources efficiently, plan for epidemics, and optimize healthcare delivery.

Quality Improvement: Data-driven insights help identify areas for improvement. Hospitals can analyze readmission rates, infection rates, and patient satisfaction scores to enhance quality of care.

Continuous monitoring of performance metrics ensures accountability and drives quality improvement initiatives.

Challenges and Opportunities

Data Privacy and Security: Protecting patient privacy is critical. Robust security measures are essential to prevent unauthorized access or breaches.

Bangladesh must balance data sharing for improved care with stringent privacy safeguards.

Capacity Building: Healthcare professionals need training in data analytics. Building a skilled workforce proficient in handling health data is crucial.

Collaborations with universities and industry experts can enhance data literacy.

Patient-Centric Approach: Patient-centricity is at the heart of modern healthcare delivery. This approach emphasizes the importance of understanding and responding to individual patient preferences, needs, and values. Healthcare providers are increasingly adopting a holistic view of patient care, considering not just physical health but also mental and social well-being.

Expansion of Ambulatory Care: There has been a significant expansion of ambulatory care, with healthcare services increasingly being provided in outpatient settings. This shift is due to several factors, including the development of minimally invasive surgical techniques and the desire to reduce healthcare costs. Ambulatory care is more convenient for patients and often results in faster recovery times.

Home-Based Healthcare Services: Home-based healthcare services are becoming more prevalent, especially for chronic disease management and post-acute care. Advances in medical technologies have made it possible to monitor and treat patients in the comfort of their homes, improving their quality of life and reducing the burden on healthcare facilities.

Global and Local Implications: The evolution of healthcare delivery is not only for high-income countries. Low- and middle-income countries, including Bangladesh, are also experiencing changes in healthcare delivery. The use of mobile health (mHealth) technologies is growing, providing opportunities to reach underserved populations and improve health outcomes.

In conclusion, the evolution of healthcare delivery reflects a paradigm shift towards more patient-centered, efficient, and technologically advanced care. These changes are reshaping the healthcare industry, improving patient outcomes, and creating a more sustainable healthcare ecosystem for the future.

3.3 Healthcare Sector Overview in Bangladesh

Bangladesh's healthcare system is a mix of public and private sectors, aimed at providing healthcare services to its vast and diverse population. Below is a detailed overview of the various types of healthcare facilities in Bangladesh, categorized into government and private sectors, and further broken down by specific types of healthcare centers.

Government Healthcare Facilities

The government of Bangladesh runs a comprehensive network of healthcare facilities across the country, including Union Health and Family Welfare Centers (UH&FWC), Upazila Health Complexes, District Hospitals, Medical College Hospitals, and specialized hospitals.

1. Union Health and Family Welfare Centers (UH&FWC)

Total Number: Approximately 4,000

Description: These centers provide primary healthcare services, maternal and child health care, family planning, and basic health education at the union level, which is the lowest administrative unit in Bangladesh.

2. Upazila Health Complexes

Total Number: Around 480

Description: These facilities offer secondary healthcare services including inpatient and outpatient care, diagnostic services, and minor surgical procedures. They serve as referral centers for Union Health and Family Welfare Centers.

3. District Hospitals

Total Number: 64 (one in each district)

Description: District hospitals provide more comprehensive secondary healthcare services. They are equipped to handle a larger number of patients and more complex medical conditions than Upazila Health Complexes.

4. Medical College Hospitals

Total Number: 37 (as of recent data)

Description: These tertiary care hospitals are affiliated with medical colleges and provide advanced medical services, specialized treatments, and serve as training centers for medical students.

5. Specialized Hospitals

Total Number: 23 (as per latest figures) Description: These hospitals focus on specific medical specialties, such as cardiology, cancer treatment, neurology, and orthopedics. They are located mainly in major cities and cater to patients with specialized healthcare needs.

Private Healthcare Facilities

The private healthcare sector in Bangladesh has grown significantly, providing a range of services from primary to specialized care. This sector includes private clinics, hospitals, diagnostic centers, and specialist centers.

1. Private Clinics and Hospitals

Total Number: Approximately 5,000 registered private clinics and hospitals

Description: These facilities vary widely in terms of size and services offered, ranging from small clinics providing outpatient care to large hospitals offering comprehensive medical and surgical services.

2. Diagnostic Centers

Total Number: Over 10,000 diagnostic centers

Description: These centers provide diagnostic services like laboratory tests, imaging services (such as X-rays, CT scans, MRIs), and other diagnostic procedures. They play a crucial role in the healthcare delivery system by supporting both government and private healthcare providers.

3. Specialist Centers

Total Number: Numerous (exact figures vary)

Description: Specialist centers focus on specific medical fields such as cardiology, oncology, nephrology, and pediatrics. They are usually located in urban areas and offer advanced and specialized treatments.

Summary

Government Healthcare Facilities:

Union Health and Family Welfare Centers: ~4,000

Upazila Health Complexes: ~480

District Hospitals: 64

Medical College Hospitals: 37

Specialized Hospitals: 23

Private Healthcare Facilities:

Private Clinics and Hospitals: ~5,000

Diagnostic Centers: ~10,000

Specialist Centers: Numerous

The healthcare sector in Bangladesh is structured to provide a detailed range of services to meet the needs of population. The government facilities are widely distributed across the country, ensuring access to basic and specialized healthcare services even in rural areas, while the private sector complements this by offering additional capacity and specialized services predominantly in urban areas.

Chapter 4: Description of Main Duties/ Job Activities

4.1 Internship Information

During my internship at the Directorate General of Health Services, Management Information System (DGHS MIS), I had the privilege to engage in several significant projects, participate in specialized workshops, and develop a range of new skills. These experiences have been instrumental in providing me with a deep understanding of health information systems and their critical role in public health management, while also allowing me to make valuable contributions to the organization's mission.

4.2 Sectional Overview of Directorate of Marketing & Sales

During my internship at the Directorate General of Health Services (MIS), I was fortunate to work on several impactful projects, attend informative workshops, and acquire new skills that significantly enhanced my professional development. These experiences provided me with valuable insights into health data management and system development, while allowing me to contribute meaningfully to the organization's objectives.

4.2.1 Comprehensive Evaluation of Union Health Complexes in Bangladesh

Description: I participated in a project titled "Comprehensive Evaluation of Union Health Complexes in Bangladesh," which aimed to rank all 460 Union Health Complexes across the country. This project was essential for assessing the performance, resource allocation, and service delivery of these primary healthcare facilities. We employed a detailed questionnaire to collect data on various aspects such as infrastructure, staffing, patient care, and community outreach programs.

Tasks Involved:

- Designing and refining the detailed questionnaire to ensure comprehensive data collection.
- Coordinating with health complexes to facilitate data submission.
- Analyzing collected data to assess performance metrics and identify key areas for improvement.
- Creating a ranking system based on various performance indicators.
- Generating detailed reports and visualizations to present the findings.
- Providing recommendations to DGHS for enhancing the efficiency and effectiveness of Union Health Complexes.

4.2.2 Strategic Assessment of Specialized Hospitals in Bangladesh

Description: In another project, "Strategic Assessment of Specialized Hospitals in Bangladesh," I worked on ranking the specialized hospitals across the country. This project focused on

evaluating hospitals that provide advanced and specialized medical services. The objective was to benchmark these institutions based on their quality of care, operational efficiency, and patient outcomes. Similar to the first project, we utilized a comprehensive questionnaire to gather detailed information from each hospital.

Tasks Involved:

- Developing an extensive questionnaire tailored to specialized hospital services.
- Collecting data on a wide range of parameters, including medical technology, specialist availability, treatment outcomes, and patient satisfaction.
- Analyzing the data to create a performance ranking for the hospitals.
- Comparing and contrasting the facilities to identify best practices and areas needing improvement.
- Preparing detailed analytical reports and presentations to communicate the results.
- Advising DGHS on strategic initiatives to elevate the standards of specialized healthcare services.

4.2.3 Advanced Excel Proficiency Development

Description: During my internship at DGHS (MIS), I underwent extensive training to enhance my proficiency in Microsoft Excel, a critical tool for data management and analysis. This training focused on advanced functionalities such as pivot tables, data visualization, complex formulas, and macros. Mastering these skills enabled me to efficiently handle large datasets, perform intricate data analyses, and generate insightful reports. Excel's versatility in managing health data significantly contributed to the accuracy and efficiency of our department's data operations.

Tasks Involved:

- Learning to create and manage pivot tables for dynamic data analysis.
- Utilizing advanced formulas and functions for complex calculations.
- Developing data visualizations, including charts and graphs, to represent data trends.
- Automating repetitive tasks through the creation and application of macros.
- Ensuring data integrity and accuracy through meticulous data cleaning and validation.

4.2.4 Python Programming for Data Science and Automation

Description: As part of my internship, I was assigned a dedicated trainer to learn Python, a powerful programming language widely used in data science, automation, and system development. This training equipped me with the skills to write efficient scripts for data manipulation, automate routine tasks, and perform advanced data analyses. Python's robust

libraries such as Pandas, NumPy, and Matplotlib enabled me to handle and visualize health data effectively, thereby enhancing the analytical capabilities of the MIS department.

Tasks Involved:

- Learning the fundamentals of Python programming, including syntax and data structures.
- Using Pandas for data manipulation and analysis.
- Implementing NumPy for numerical computations.
- Creating data visualizations with Matplotlib and Seaborn.
- Developing scripts to automate data collection and processing tasks.
- Debugging and optimizing code for improved performance.

4.2.5 Specialized Training in MCCD and COLB Documentation

Description: I attended a specialized course focused on accurately filling out forms for the Medical Certification of Cause of Death (MCCD) and Certificate of Live Birth (COLB) within the online health repository. This training was crucial for ensuring that vital health records are completed correctly and comprehensively, which is essential for maintaining accurate public health data. The course covered the legal and procedural aspects of these documents, highlighting their importance in health information systems and public health policy.

Tasks Involved:

- Understanding the legal and procedural requirements for MCCD and COLB documentation.
- Learning the correct methods for filling out these forms to ensure accuracy and compliance.
- Utilizing the online health repository to submit and manage these documents.
- Ensuring data accuracy and completeness in all submitted forms.
- Collaborating with healthcare professionals to verify and correct documentation as needed.
- Gaining insights into the significance of accurate vital statistics in public health monitoring and policy making.

4.3 What Tools and Software are being used and how

In the dynamic landscape of Information Technology (IT), the Directorate General of Health Services (DGHS) of Bangladesh, with its Management Information System (MIS), is committed to the vision of “Digital Bangladesh.” The DGHS (MIS) employs a comprehensive suite of IT tools to enhance efficiency, streamline healthcare operations, improve the accuracy of data-driven decisions, and foster innovation at every juncture. These tools include specialized software applications, advanced hardware devices, and integrated digital platforms tailored to

meet the unique requirements of the healthcare sector. IT tools are integral to all facets of healthcare management, from patient communication to collaborative medical research, from epidemiological data analysis to the development of decision support systems. The robust digital infrastructure of DGHS (MIS) is crucial for driving technological progress, which is instrumental in realizing the dream of a “Digital Bangladesh.”

What Tools and Software are being used and how

4.3.1 Integrated Information Management System (IIMS)

Usage: The Integrated Information Management System (IIMS) is designed to centralize and streamline the diverse streams of data flowing within the DGHS. This system integrates information related to human resources, new healthcare innovations, administrative functions, and various other operational aspects, providing a unified platform for data management and analysis.

Functionality:

I. Human Resources Management:

- **Centralized HR Data:** The IIMS maintains detailed records of all healthcare personnel, including their qualifications, training, deployment, and performance evaluations.
- **Efficient Deployment:** By integrating HR data, the system helps in planning and optimizing the deployment of healthcare workers to ensure an equitable distribution across different regions.
- **Training and Development:** The system tracks training programs and professional development activities, ensuring that healthcare workers are adequately trained and up-to-date with the latest medical practices.

II. Innovation Tracking:

- **New Technologies and Practices:** The IIMS includes a module for monitoring and evaluating new healthcare technologies, treatments, and best practices being implemented across the country.
- **Research and Development:** It supports research initiatives by providing a centralized repository of information on ongoing and completed research projects, facilitating collaboration and innovation.

III. Comprehensive Data Integration:

- **Unified Data Repository:** The IIMS integrates data from various subsystems such as HMIS, EHR, GIS, and others into a single repository, enhancing data accessibility and reducing redundancy.

- **Real-Time Data Access:** Healthcare administrators and policymakers have real-time access to a broad spectrum of data, enabling informed decision-making and prompt response to public health needs.

IV. Enhanced Reporting and Analytics:

- **Data Analytics:** The system employs advanced data analytics to identify trends, predict outcomes, and provide insights that support strategic planning and policy formulation.
- **Customizable Reports:** Users can generate customizable reports that cater to specific requirements, whether for internal reviews, government reporting, or public dissemination.

V. Operational Efficiency:

- **Streamlined Processes:** By integrating multiple functions into a single platform, the IIMS streamlines administrative and operational processes, reducing time and effort.
- **Improved Coordination:** Enhanced data sharing and communication between different departments and regions improve overall coordination and efficiency within the DGHS.

The IIMS thus serves as a backbone for the DGHS, enabling it to manage its vast array of responsibilities more effectively. By providing a holistic view of the organization's operations and integrating crucial information into one system, the IIMS supports better governance, improved healthcare delivery, and a more responsive public health infrastructure in Bangladesh. This comprehensive approach ensures that the DGHS can adapt swiftly to emerging healthcare challenges and continue to advance public health outcomes across the nation.

4.3.2 Health Management Information System (HMIS):

- **Usage:** HMIS is a comprehensive system used for collecting, processing, and analyzing health data. It provides valuable insights into public health trends and helps in planning and decision-making.
- **Functionality:** HMIS facilitates the collection of data from healthcare facilities across the country, integrates this data into a centralized database, and generates reports that inform policy and operational decisions.

4.3.3 Geographic Information System (GIS):

- **Usage:** GIS tools are used to map and analyze spatial data related to health services and disease outbreaks.

- **Functionality:** GIS helps in visualizing the geographic distribution of health resources, tracking disease outbreaks, and planning targeted interventions in specific areas.

4.3.4 Surveillance Systems:

- **Usage:** These systems are used to monitor and track the incidence and prevalence of diseases, especially communicable diseases.
- **Functionality:** These systems enable real-time data collection and reporting, which is crucial for early detection and response to disease outbreaks.

4.3.5 Data Warehousing and Business Intelligence Tools:

- **Usage:** These tools are employed to store large volumes of health data and perform complex analyses to derive actionable insights.
- **Functionality:** Data warehousing consolidates data from various sources into a central repository, while business intelligence tools analyze this data to support strategic planning and decision-making.

4.3.6 Telemedicine Platforms:

- **Usage:** Telemedicine tools facilitate remote consultations and healthcare services, particularly beneficial in rural and underserved areas.
- **Functionality:** These platforms enable healthcare providers to diagnose and treat patients distantly, improving the facility of healthcare services and reducing the need for physical visits.

4.3.7 Laboratory Information Management System (LIMS):

- **Usage:** LIMS manages laboratory operations, including sample tracking, test results, and reporting.
- **Functionality:** This system enhances the efficiency and accuracy of laboratory processes, ensuring timely and reliable test results.

4.3.8 Supply Chain Management Systems:

- **Usage:** These systems manage the procurement, storage, and distribution of medical supplies and equipment.
- **Functionality:** Supply chain management systems identify and calculate inventory levels, reduce wastage, and ensure the timely availability of essential medical supplies.

4.4 What Tools, Software, and IT features will be used in near future

In the near future, the Directorate General of Health Services (DGHS) in Bangladesh is poised to adopt a range of advanced tools, software, and IT features to further enhance healthcare delivery, data management, and public health monitoring. These innovations will build on the current infrastructure to address emerging challenges and leverage new opportunities in the healthcare sector. Here are some anticipated advancements:

4.4.1 Artificial Intelligence (AI) and Machine Learning (ML)

Usage: AI and ML will be increasingly utilized to analyze large datasets, predict health trends, and optimize resource allocation.

Functionality

Predictive Analytics: AI can predict disease outbreaks, patient admissions, and resource needs, allowing for proactive measures.

Clinical Decision Support: ML algorithms can assist healthcare providers by offering evidence-based treatment recommendations and identifying patterns in patient data that may indicate underlying health issues.

Automated Diagnostics: AI-driven tools can assist in diagnosing diseases through image analysis (e.g., radiology) and pattern recognition in medical records.

4.4.2 Internet of Medical Things (IoMT)

Usage: IoMT will enhance patient monitoring and data collection through connected medical devices.

Functionality:

Remote Patient Monitoring: Wearable devices and remote sensors will monitor patient vitals in real-time, allowing for continuous care and early detection of health issues.

Telemedicine Integration: IoMT devices will integrate with telemedicine platforms, providing real-time health data during virtual consultations.

Data Collection and Analysis: These devices will collect vast amounts of health data, feeding into centralized systems for comprehensive health analytics.

4.4.3 Blockchain Technology

Usage: Blockchain will be employed to enhance data security, transparency, and integrity in health information systems.

Functionality:

Secure Health Records: Blockchain can provide a secure, immutable ledger for patient records, ensuring data integrity and preventing unauthorized access.

Supply Chain Management: It will increase the transparency of medical supplies, reducing fraud and ensuring the authenticity of drugs and medical equipment.

Data Sharing: Blockchain will facilitate secure and verifiable data sharing among healthcare providers, researchers, and patients.

4.4.4. Advanced Telemedicine Platforms

Usage: Enhanced telemedicine platforms will provide more comprehensive and accessible healthcare services.

Functionality:

Virtual Consultations: Platforms will offer high-definition video consultations, integrated with patient records and diagnostic tools.

AI Integration: AI will assist in virtual consultations by providing diagnostic support and triaging patients based on urgency.

Remote Treatment Plans: Doctors can prescribe and monitor treatment plans remotely, with IoMT devices providing continuous feedback.

4.4.5. Enhanced Geographic Information Systems (GIS)

Usage: Advanced GIS tools will be used for more detailed and dynamic health mapping and analysis.

Functionality:

Real-Time Health Mapping: GIS will provide real-time maps of disease outbreaks, vaccination coverage, and healthcare resource distribution.

Predictive Modeling: GIS will integrate with AI to model and predict health trends based on environmental and demographic data.

Resource Allocation: Improved mapping will assist in the efficient allocation of health resources to areas most in need.

4.4.6. Cloud Computing and Big Data Analytics

Usage: Cloud-based platforms and big data analytics will handle the growing volume of health data, offering scalable storage and powerful analytical capabilities.

Functionality:

Scalable Data Storage: Cloud computing will provide scalable solutions for storing large health datasets securely.

Advanced Analytics: Big data tools will analyze complex datasets to uncover insights into population health trends, treatment outcomes, and healthcare system performance.

Collaborative Platforms: Cloud solutions will facilitate collaboration among healthcare providers, researchers, and policymakers through shared access to data and tools.

4.4.7 Mobile Health Applications (mHealth)

Usage: Next-generation mHealth apps will offer more interactive and personalized health services.

Functionality:

Personalized Health Tracking: Apps will provide personalized health tracking, reminders, and health tips based on individual health data.

Patient Engagement: Interactive features will enhance patient engagement, allowing for better adherence to treatment plans and health advice.

Data Integration: mHealth apps will integrate seamlessly with EHR systems and IoMT devices, delivering a holistic view of a patient's health.

4.4.8 Cybersecurity Enhancements

Usage: Advanced cybersecurity measures will protect sensitive health data from emerging threats.

Functionality:

Threat Detection and Response: AI-driven cybersecurity tools will detect and respond to threats in real-time, ensuring data protection.

Encryption and Access Control: Enhanced encryption methods and strict access controls will safeguard patient data.

Training and Awareness: Regular training programs will ensure that healthcare staff are aware of the latest security practices and threats.

4.4.9 Virtual Reality (VR) and Augmented Reality (AR)

Usage: VR and AR will be used for medical training, patient education, and enhanced treatment procedures.

Functionality:

Medical Training: VR simulations will provide intense training environments for healthcare professionals, enhancing skills and preparedness.

Patient Education: AR will be used to educate patients about their conditions and treatments through interactive visualizations.

Surgical Assistance: AR can assist surgeons by overlaying critical information during procedures, improving accuracy and outcomes.

By adopting these advanced tools and technologies, the DGHS will significantly enhance its capability to deliver efficient, responsive, and high-quality healthcare services across Bangladesh, addressing both current challenges and future needs.

4.4 Internship Outcomes

What Experience I Have Gained

For aspiring professionals in the field of health information systems, the opportunity to intern at an esteemed institution like the Directorate General of Health Services, Management Information System (DGHS MIS), is an invaluable experience. Over the past few months, I had the privilege of immersing myself in the dynamic world of health data management, gaining invaluable insights, and experiencing firsthand the operations of one of the country's leading health information systems. Below, I summarize the most important experiences I gathered during my internship at DGHS MIS:

- **Acquisition of Technical and Professional Skills:** During my internship at DGHS MIS, I gained essential technical skills, including advanced Excel proficiency and Python programming. These skills will be invaluable assets in my future professional endeavors. Additionally, I developed interpersonal and personal development skills through daily interactions and collaborations with experienced professionals.
- **Involvement in Data Collection and Analysis:** I participated in the comprehensive evaluation of Union Health Complexes and specialized hospitals across Bangladesh. This involved designing detailed questionnaires, collecting and validating data, and performing statistical analyses to rank these health facilities. This experience deepened my understanding of health data management and its critical role in public health planning.

- **Exposure to Health Informatics:** I had the opportunity to engage with electronic health record (EHR) systems and other health informatics tools. This exposure provided me with a thorough understanding of how technology can enhance healthcare delivery and patient outcomes.
- **Development of Communication Skills:** The collaborative environment at DGHS MIS, where cross-departmental communication is encouraged, significantly enhanced my communication skills. I learned to effectively convey technical information to non-technical stakeholders, a crucial skill in any professional setting.
- **Understanding of Public Health Policy:** Working on projects that involved policy development and strategic assessment of healthcare facilities gave me insights into the formulation and impact of health policies. I learned how data-driven decision-making can influence public health outcomes and the importance of accurate data in policy development.
- **Inspirational Professional Environment:** The dedication, motivation, and positive mentality of the professionals at DGHS MIS were inspiring. Their commitment to their duties and continuous pursuit of excellence has instilled in me a strong work ethic and a passion for continuous learning and improvement.

4.5 Difficulties Faced During Internship

During this internship, I faced some challenges that occasionally slowed down my work pace but did not diminish my enthusiasm. Striving to ensure my internship report stood out in my department, I faced difficulties balancing my academic responsibilities with my internship tasks. Here are some of the main challenges I encountered:

1. **Adjusting to Work Environment:** As this was my first professional experience, adapting to the work environment and understanding the professional culture and norms was challenging.
2. **Learning Curve:** Despite having a background in technological studies, adapting to the various technological tools, software, and systems used at DGHS MIS required a significant amount of time and effort.
3. **Time Management:** Balancing my academic responsibilities with the self-study required to master new skills and complete my internship tasks was difficult. Effective time management became crucial to ensure I met all my obligations.
4. **Imposter Syndrome:** Initially, I experienced feelings of inadequacy and self-doubt, surrounded by highly experienced and dedicated professionals. Overcoming these feelings was essential for my professional growth and development.

4.6 My Contribution to the Organization

During my internship with the Directorate General of Health Services, Management Information System (DGHS MIS), I had the opportunity to make significant contributions that positively impacted the organization. My role involved direct participation in data collection, analysis, and reporting projects that were crucial for the organization's operations and strategic planning.

Project Contributions:

- **Comprehensive Evaluation of Union Health Complexes:** I played a key role in the project aimed at ranking all 460 Union Health Complexes across Bangladesh. My responsibilities included designing detailed questionnaires, coordinating data collection efforts, and conducting thorough data analysis. This project provided critical insights into the performance and operational efficiency of these primary healthcare facilities. By producing comprehensive reports and rankings, my work helped DGHS MIS identify areas for improvement and allocate resources more effectively.
- **Strategic Assessment of Specialized Hospitals:** In the project focused on ranking specialized hospitals in Bangladesh, I contributed by developing a tailored questionnaire, collecting and validating extensive data, and analyzing the results to benchmark these institutions. This project highlighted the strengths and weaknesses of specialized hospitals, offering valuable information for policy development and strategic improvements. My involvement ensured accurate data collection and insightful analysis, supporting DGHS MIS in enhancing the quality of specialized healthcare services.

Additional Contributions:

- **Advanced Excel and Python Proficiency:** Utilizing my advanced skills in Excel and Python, I automated several data processing and analysis tasks, significantly improving efficiency and accuracy. My ability to handle complex data sets and generate detailed visualizations and reports was instrumental in supporting the organization's data-driven decision-making processes.
- **Quality Assurance and Data Integrity:** I contributed to maintaining the high standards of data quality by developing and implementing quality control protocols. Regular audits and validation checks ensured the reliability and accuracy of the health data managed by DGHS MIS.
- **Health Informatics and System Development:** My involvement in health informatics projects, including the implementation of electronic health record (EHR) systems, helped streamline data management processes and improve patient care outcomes. I provided technical support and participated in system development activities, contributing to the enhancement of DGHS MIS's technological infrastructure.

4.7 Additional Experience and Engagement

Workshops and Training Programs

During my internship, I also attended several workshops and training programs that enriched my understanding and skills in health information systems:

- **MCCD and COLB Documentation Workshop:** This specialized training focused on accurately filling out forms for the Medical Certification of Cause of Death (MCCD) and Certificate of Live Birth (COLB) within the online health repository. The workshop covered legal and procedural aspects, ensuring that I could contribute to maintaining accurate vital statistics.

Engagement with Professionals and Stakeholders

Interacting with experienced professionals and stakeholders at DGHS MIS provided me with valuable insights into the healthcare sector. The collaborative environment fostered my professional growth and improved my communication and interpersonal skills. Engaging in cross-departmental projects and discussions broadened my understanding of public health management and policy development.

Chapter 5: Findings and Analysis

Description

To understand my academic theoretical knowledge in light of my internship experience, I have come across a few points where I have found some interrelations, which are depicted as below:

5.1 Company Level Analysis

During my internship with the Directorate General of Health Services, Management Information System (DGHS MIS), I had the invaluable opportunity to immerse myself in various internal procedures and operations. This experience provided me with firsthand insights into both the strengths and weaknesses within the department's processes. One of the most effective procedures at DGHS MIS was the comprehensive data collection and analysis system employed for evaluating healthcare facilities. The use of detailed questionnaires and sophisticated data analysis tools allowed the department to accurately assess the performance of Union Health Complexes and specialized hospitals. This approach not only maximized the effectiveness of data-driven decision-making but also ensured a thorough evaluation of healthcare services across Bangladesh.

Drawing parallels to customer segmentation strategies in marketing, DGHS MIS utilized a similar approach for public health data. By categorizing healthcare facilities and services based on various performance metrics, the department tailored its improvement strategies to address specific needs. This method ensured that resources were allocated efficiently and that targeted interventions were implemented to enhance public health outcomes. For instance, identifying underperforming health complexes enabled DGHS MIS to direct resources and support where they were most needed, much like targeted marketing campaigns in the corporate sector.

Despite these strengths, one of the less effective procedures observed was the integration of real-time data feeds. The department relied heavily on historical data, which sometimes led to delayed responses to emerging health trends and challenges. The absence of a centralized platform for real-time data integration and analysis hindered the department's ability to make swift, informed decisions. This highlighted a critical area for improvement, similar to the challenges faced in market trend analysis in corporate settings.

Recognizing the importance of addressing these inefficiencies, I proposed implementing a comprehensive real-time data integration system. Leveraging advanced technologies such as AI and ML could provide deeper insights into health data trends and dynamics. This proposal aligns with modern business intelligence systems that integrate real-time data feeds and predictive analytics to stay ahead of market shifts. To enhance the department's proficiency in utilizing advanced data tools effectively, I recommended ongoing training programs for staff. This is akin to continuous professional development in corporate environments, where staying updated with the latest tools and technologies is crucial for maintaining competitive advantage. Investing in training ensures that the team can leverage new systems and tools to their fullest potential, ultimately improving the department's operational efficiency.

MIS actively engages in public health outreach programs to educate and inform the community. These initiatives are essential for promoting health awareness and encouraging the public to utilize healthcare services. The fair arrangement approach can be seen in health camps and community health education programs organized by DGHS MIS, which aim to showcase the benefits of health services and encourage community participation.

My internship experience at DGHS MIS underscored the critical role of efficient internal processes in driving organizational success. While some procedures, like data collection and analysis, showcased remarkable efficiency and effectiveness, others, such as real-time data integration, highlighted areas for improvement. By identifying and addressing these inefficiencies, DGHS MIS can optimize performance, capitalize on opportunities, and achieve strategic objectives in the realm of public health.

5.2 Market-Level Analysis

The Directorate General of Health Services (DGHS) is a central body responsible for health care administration in Bangladesh. It plays a crucial role in shaping the health policies and ensuring the implementation of the same across the nation. The market-level analysis of DGHS involves examining the supply, demand, and distribution of health workers, the quality of health services, and the overall performance of the health sector.

Supply and Demand of Health Workers:

The density of doctors, nurses, and midwives in Bangladesh is approximately 9.9 per 10,000 population, which is significantly lower than the sustainable development goals index threshold of 44.51.

The total density of all health workers is estimated at 49 per 10,000 population, but considering only qualified and recognized health workers, the density drops to 33.22.

A substantial portion of the health workforce operates in the private sector, with an estimated 82% of all health workers employed outside the public sector².

Educational and Training Institutions:

There is a need for investment in educational institutions to increase the number of trained health workers.

Faculty development and accreditation mechanisms for training institutions are essential to ensure the quality of education and training¹.

Public Sector Challenges:

A high proportion of unfilled positions in the public sector, especially in rural areas, is a concern. Rural areas, where 67% of the population resides, have only 11% of doctors and nurses².

The government's authority over DGHS can sometimes lead to prioritizing national interests over commercial ones, affecting the operational freedom of the organization¹.

Private Sector Oversight:

Adequate oversight of the private sector is necessary to ensure patient safety and the quality of health services.

Policy and Investment:

Policy attention is needed to address the competencies and skill mix of the health workforce. Investments are required to halve inequalities in access to a qualified health workforce and to strengthen intersectoral coordination across sectors.

5.3 Professional Level Analysis for DGHS of Bangladesh

The Directorate General of Health Services (DGHS) is the cornerstone of Bangladesh's healthcare system, overseeing a vast network of services and initiatives aimed at improving public health outcomes. This analysis delves into the strategic framework, operational challenges, and forward-looking recommendations for the DGHS.

Strategic Framework:

The DGHS operates under the Bangladesh Health Workforce Strategy 2023, which outlines the goals and objectives for a robust health workforce by 2030¹.

Key strategic actions include developing a comprehensive health workforce (HWF) requirement plan, updating service level-wise HWF needs, and conducting periodic Health Labor Market Analysis (HLMA).

Operational Challenges:

The density of doctors, nurses, and midwives is critically low at 9.9 per 10,000 population, against the sustainable development goals index threshold of 44.52.

A significant portion of the health workforce is concentrated in the private sector, with an estimated 82% of all health workers employed outside the public sector².

Rural areas, home to 67% of the population, are underserved, with only 11% of doctors and nurses stationed there.

Educational and Training Institutions:

There is an urgent need to invest in health education institutions to increase the number of trained health workers.

Establishing accreditation mechanisms for training institutions is crucial to ensure the quality of education and training.

Policy and Investment:

Policies must address the competencies and skill mix of the health workforce to meet the nation's health needs effectively.

Investments are required to reduce inequalities in access to a qualified health workforce and to strengthen intersectoral coordination across sectors.

Quality of Care:

Ensuring the quality of care in the public health system is paramount. This includes maintaining essential health services during crises and leveraging technology for better health service utilization.

Recommendations:

- **Strengthening HWF Coordination:** Enhance intersectoral coordination to improve the distribution and utilization of the health workforce.
- **Regulation and Oversight:** Implement regulations to ensure patient safety and adequate oversight of the private sector.
- **Investment in Education:** Increase funding for health education and training to produce a competent and skilled workforce.
- **Rural Healthcare Focus:** Address the disparity in healthcare services between urban and rural areas by incentivizing rural postings.
- **Digital Transformation:** Accelerate the digitalization of health services to improve efficiency and accessibility.

The DGHS of Bangladesh has made significant strides in health service delivery and workforce development. However, addressing the challenges of workforce density, rural service provision,

and quality of care is essential to achieving Universal Health Coverage and the Sustainable Development Goals by 2030.

Chapter 6: Conclusion and Recommendations

6.1 Recommendations

I. Data Quality and Accuracy:

- **Recommendation:** Investigate methods to ensure data accuracy and quality. Implement data validation checks, regular audits, and data cleansing processes.
- **Challenge:** Inaccurate or incomplete data can lead to faulty decision-making. Highlight the importance of data governance and quality assurance.

II. Scalability and Performance:

- **Recommendation:** Evaluate the scalability of the existing MIS infrastructure. Propose solutions to handle increasing data volumes and ensure optimal system performance.
- **Challenge:** As DGHS expands, the MIS must accommodate growth without compromising efficiency.

III. Stakeholder Engagement:

- **Recommendation:** Engage stakeholders (including healthcare providers, administrators, and policymakers) in the MIS development process. Gather their input, address their needs, and create a collaborative environment.
- **Challenge:** Lack of stakeholder involvement can lead to misaligned priorities and ineffective MIS design.

IV. Change Management:

- **Recommendation:** Develop a change management plan for MIS implementation. Identify potential resistance points, communicate benefits, and manage the transition effectively.
- **Challenge:** Change can be disruptive. Discuss strategies to mitigate resistance and ensure smooth adoption.

V. Monitoring and Evaluation:

- **Recommendation:** Establish key performance indicators (KPIs) for the MIS. Regularly monitor system performance, user satisfaction, and impact on DGHS operations.
- **Challenge:** Without proper monitoring, it's challenging to assess the MIS's effectiveness and make necessary improvements.

VI. Blockchain Integration for Health Records:

- **Recommendation:** Investigate the use of blockchain technology to enhance data security, transparency, and interoperability. Implement a decentralized health record system where patients have control over their data.
- **Innovation:** Blockchain ensures tamper-proof records, reduces fraud, and allows seamless data sharing across healthcare providers while maintaining privacy.

VII. Predictive Analytics for Resource Allocation:

- **Recommendation:** Develop predictive models using historical data to forecast healthcare resource needs (e.g., hospital beds, medical supplies, staff). Use machine learning algorithms to optimize allocation.
- **Innovation:** Real-time predictions can help DGHS allocate resources efficiently during emergencies or outbreaks

VIII. Health IoT and Wearables Integration:

- **Recommendation:** Integrate data from wearable devices (e.g., fitness trackers, smartwatches) into the MIS. Monitor patient vitals, activity levels, and health trends.
- **Innovation:** Real-time data from wearables can aid in preventive care, early detection, and personalized interventions.

IX. Gamification for Health Promotion:

- **Recommendation:** Develop health-related mobile apps or platforms that gamify healthy behaviors (e.g., exercise, nutrition, medication adherence).
- **Innovation:** Gamification motivates users, fosters engagement, and promotes preventive health practices.

X. Robotic Process Automation (RPA) for Administrative Tasks:

- **Recommendation:** Use RPA bots to automate repetitive administrative tasks (e.g., appointment scheduling, billing, inventory management).
- **Innovation:** RPA frees up staff time, reduces errors, and enhances overall efficiency

XI. Health Chatbots for Triage and Information:

- **Recommendation:** Develop AI-powered chatbots that assist users with health queries, symptom assessment, and appointment scheduling.
- **Innovation:** Chatbots provide 24/7 support, reduce workload on call centers, and improve user experience.

6.2 Conclusion

As the Directorate General of Health Services (DGHS) continues to be a cornerstone of the healthcare system in Bangladesh, it stands at a critical juncture in maintaining its effectiveness and relevance amidst evolving public health challenges and healthcare demands. Historically, the DGHS has played a pivotal role in coordinating and managing health services, contributing significantly to public health advancements across the nation. However, it now faces challenges in enhancing service delivery, ensuring equitable healthcare access, and managing resources efficiently.

To address these challenges and secure its position as a trusted and effective healthcare institution, the DGHS must prioritize patient-centric strategies and robust healthcare governance within its various departments. This involves not only delivering high-quality healthcare services but also fostering a strong and reliable public health infrastructure that resonates with the needs of the population.

One key aspect for the DGHS to focus on is improving its healthcare service delivery and patient engagement efforts. By implementing personalized healthcare services, enhancing communication channels, and developing responsive support systems, the DGHS can elevate the overall healthcare experience and build stronger relationships with the communities it serves. Additionally, the DGHS must actively engage in community outreach and education programs to promote health awareness and preventive care.

Furthermore, the DGHS should leverage its unique position to showcase and strengthen Bangladesh's healthcare capabilities. Through targeted health campaigns, partnerships with international health organizations, and innovative healthcare initiatives, the DGHS can position itself as a key facilitator of public health improvements and economic growth in Bangladesh.

Additionally, the DGHS must remain agile and adaptable to changing health dynamics and global health trends. This includes continuously monitoring public health data, optimizing healthcare resource allocation, and exploring new healthcare technologies and methodologies to stay ahead of health challenges and capitalize on emerging health opportunities.

In conclusion, this analysis provides valuable insights into the strategic imperatives for the DGHS. By prioritizing patient-centric initiatives, strengthening healthcare governance, and maintaining responsiveness to health trends, the DGHS can reinforce its position as a symbol of national health progress and a trusted partner in shaping the future of healthcare in Bangladesh.

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Appendix

This section contains the Similarity reports of the Internship Report “Leveraging Information Technology for Improved Healthcare Service Delivery and Management in Bangladesh: A Role for the Directorate General of Health Services (DGHS)” verified by Turnitin and the weekly reports of the internship across various sections of Biman Bangladesh Airlines which are signed by both the company supervisors and my academic supervisor. The 12 weekly summary reports are made in accordance with the rules and with utmost care & sincerity.

PAPER NAME

Enhancing Healthcare in Bangladesh through IT-The DGHS's Contribution.docx

AUTHOR

Zarin Lamisa Authoi

WORD COUNT

10867 Words

CHARACTER COUNT

69768 Characters

PAGE COUNT

46 Pages

FILE SIZE

825.7KB

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May 25, 2024 2:59 PM GMT+6**● 9% Overall Similarity**

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Weekly Overview of Internship Activities

Week: 01

Date: 07.01.2024 – 11.01.2024

List of Activities with Brief Description:

Department Orientation: During the first week, I focused on getting introduced to the department. I met with key personnel, including the honorable Director (MIS), Prof. Dr. Md. Shahadat Hossain, the Senior System Analyst, Sukhendu Shekhor Roy, and the Senior Analyst, Md. Humayun Kabir Shikdar. These meetings provided valuable insights into the department's structure, roles, and responsibilities.

Introductions and Team Building: I had the opportunity to introduce myself to other staff members. This helped me feel more comfortable and establish connections within the department.

Formalities: I completed essential onboarding formalities, including signing up the required papers and familiarizing myself with internal policies and procedures.

Department Overview: I attended presentations or meetings that provided an overview of the DGHS MIS department's functions and its role in the national healthcare system. I learned about the types of health data the department manages and their importance in informing decision-making.

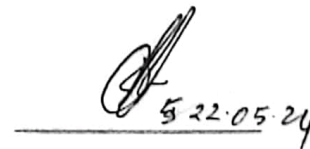


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Weekly Overview of Internship Activities

Week: 02

Date: 14.01.24 – 18.01.24

List of Activities with Brief Description:

Excel Expertise Evaluation

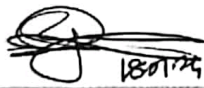
The DGHS MIS department assessed my proficiency in Microsoft Excel. This evaluation helped them gauge my ability to handle data management tasks often required within the department.

Familiarization with the DGHS Website Interface:

In this initial phase, I focused on understanding the layout and functionalities of the Directorate General of Health Services (DGHS) website. This involved familiarizing myself with the information architecture, and learning how to access relevant resources.

Exploration of the DGHS MIS Role in the National Healthcare Sector:

I learned about the role of the Management Information System (MIS) department within DGHS. This included gaining insights into their critical responsibilities for data collection, analysis, and dissemination within the healthcare sector of Bangladesh.

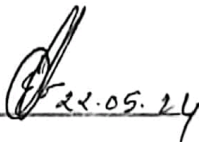


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Weekly Overview of Internship Activities

Week: 03

Date: 21.01.24 – 25.01.24

List of Activities with Brief Description:

User Identification: This week, I gained valuable insights into the user base of the DGHS MIS. Understanding who relies on the system for their daily tasks as frontend user and who inputs those information was an interesting part.

Management Through the System: My focus this week shifted to exploring the role of the DGHS MIS in effective management practices. It's been fascinating to learn how the system facilitates data-driven decision-making and manages the health sector with their crucial decisions.

NextGen Server Collaboration: I learned about the ongoing evaluation of a potential collaboration with NextGen for server provision. And also got to know about the pros and cons of this collaboration.

Enhanced Data Analysis Skills: This week, I dedicated time to practice my proficiency in Microsoft Excel's fundamental formulas. By mastering functions like SUM, AVERAGE, and COUNT, I'm building a strong foundation for efficient data analysis within the DGHS MIS.




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Weekly Overview of Internship Activities

Week: 04

Date: 28.01.31 – 01.02.24

List of Activities with Brief Description:

Shurokkha App: A Foundational Exploration: This week, I delved into the core functionalities and architecture of the Shurokkha app, gaining a deeper understanding of its underlying structure.

Shurokkha's Impact on Vaccination in Bangladesh: I focused on analyzing the transformative role of the Shurokkha app in revolutionizing Bangladesh's vaccination landscape. This section will highlight the app's contribution to improved access and efficiency.

Demographical Analysis of Vaccination Users: I explored the demographic data of citizens utilizing the Shurokkha app for vaccination. This analysis will provide insights into the app's reach and identify any potential areas for improvement.

Building Proficiency in MS Excel Data Entry: This week, I laid the groundwork for data manipulation by mastering the fundamentals of data entry in Microsoft Excel. This newfound skill will be instrumental in future data analysis endeavors.

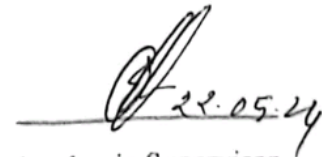


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Weekly Overview of Internship Activities

Week: 05

Date: 04.02.24 – 08.02.24

List of Activities with Brief Description:

- 1. Medical Data Accuracy Training:** This week, I participated in a valuable 3-day seminar focused on the critical importance of maintaining accurate medical data. The seminar explored the impact of data accuracy on various aspects of healthcare delivery.
- 2. Strategies for Ensuring Data Accuracy:** The seminar delved into strategies for securing accurate medical data. This included exploring training initiatives for nurses and other healthcare professionals to promote data quality practices.
- 3. Accurate Birth Certificate Completion:** I gained valuable knowledge on the proper procedures for completing birth certificates within the DGHS MIS. This ensures accurate recording of vital information for newborns.
- 4. Death Certificate Completion Procedures:** The proper completion of death certificates was also addressed. Understanding these protocols ensures accurate data collection for mortality statistics.
- 5. Data Management Techniques for Birth and Death Certificates:** The seminar provided training on effectively entering, modifying, and deleting data related to birth and death certificates within the DGHS MIS data repository.



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Weekly Overview of Internship Activities

Week: 06

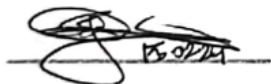
Date: 11.02.24 – 15.02.24

List of Activities with Brief Description:

Performance Ranking Initiative for Union Health Complexes: This week, I explored the ongoing initiative to establish a performance ranking system for Union Health Complexes. This has significant implications for evaluating the effectiveness of healthcare delivery across these facilities.

Developing a Questionnaire for Performance Assessment: My focus shifted to analyzing the criteria that should be incorporated into a questionnaire for assessing the performance of Union Health Complexes. This questionnaire will be a crucial tool for gathering data and informing the ranking system.

Key Factors for Effective Healthcare Delivery: I also gained valuable insights into the critical factors that contribute to a hospital's ability to provide quality patient care. Understanding these factors is essential for developing a comprehensive performance ranking system.

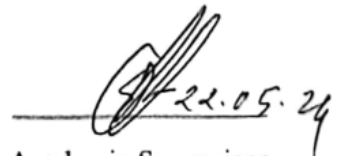


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Weekly Overview of Internship Activities

Week: 07

Date: 18.02.24 – 22.02.24

List of Activities with Brief Description:

Questionnaire Design Fundamentals: This week, I focused on understanding the principles behind crafting effective questionnaires for data collection within the DGHS MIS. This included exploring elements like question formulation, clarity, and response bias.

Developing the Questionnaire Content: I delved into the process of question selection for DGHS MIS questionnaires. Learning the rationale behind chosen questions helps ensure data collected is relevant and impactful.

Criteria-Specific Tools Exploration: This week, I gained valuable insights into the diverse tools employed by the DGHS MIS team to manage data based on different criteria. Understanding these tools will enhance my ability to contribute to future projects.

Data Manipulation Techniques: I expanded my skillset by learning how to apply formulas for data analysis within spreadsheets. This included converting raw data into tables, a valuable skill for efficient data presentation.

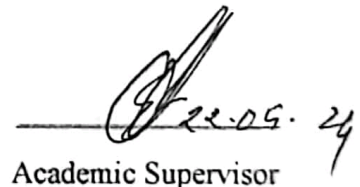


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Weekly Overview of Internship Activities

Week: 08

Date: 25.02.24 – 29.02.24

List of Activities with Brief Description:

Importance of Healthcare Infrastructure: This week, I focused on understanding the critical role of infrastructure in supporting patient care within hospitals. This involved exploring how facilities, equipment, and technology contribute to efficient service delivery and positive patient outcomes.

Developing Human Resource and Service Delivery Metrics: I gained valuable insights into the criteria used to define key questions surrounding human resources and service delivery. This knowledge is crucial for evaluating the effectiveness of healthcare systems and identifying areas for improvement.

Maintaining Quality Standards: This week, I learned about the margin of quality that hospitals are expected to maintain. This includes exploring established standards and practices that ensure patient safety and optimal care.

Exploring Conditional Formatting in Excel: I expanded my knowledge of Microsoft Excel by learning about conditional formatting. This powerful tool allows for the visual representation of data trends and exceptions, facilitating efficient data analysis.



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Weekly Overview of Internship Activities

Week: 09

Date: 03.03.24 – 07.03.24

List of Activities with Brief Description:

1. Development of Union Health Complex Ranking Criteria: This week, I participated in discussions regarding the weightage assigned to various questionnaire elements used for ranking Union Health Complexes (UHCs). Understanding these weights is crucial for ensuring a fair and comprehensive evaluation process.

2. Data Collection Strategy Development: I was involved in exploring different approaches for data collection related to UHC ranking. This included discussions on efficient methods to gather the necessary information.

3. Data Collection Methods: This week, I gained valuable insights into the two primary data collection methods employed for UHC evaluation: standardized self-assessment reports and DGHS inspection-based data collection. Understanding these methodologies will be crucial for future data analysis.

4. Introduction to Data Cleaning in Excel: I familiarized myself with basic data cleaning techniques in Microsoft Excel. This newfound skill will be instrumental in ensuring the accuracy and consistency of data sets used for UHC ranking.

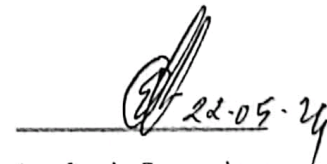


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Weekly Overview of Internship Activities

Week: 10

Date: 10.03.24 – 14.03.24

List of Activities with Brief Description:

Data Acquisition and Processing for Union Health Complex Ranking: This week, I actively participated in collecting online health data. Following data collection, I focused on processing and cleaning the data to prepare it for analysis and ranking of Union Health Complexes within the DGHS system.

Expanding Data Analysis Skills: VLOOKUP and XLOOKUP Techniques: This week, I expanded my data analysis skillset by learning the VLOOKUP and XLOOKUP functions in Microsoft Excel. These formulas will prove valuable for efficiently retrieving and manipulating data for future projects.

Initiating Python Programming Exploration: I started the journey of Python programming this week. This foundational knowledge will open doors to new possibilities for advanced data analysis and automation in the future.



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Weekly Overview of Internship Activities

Week: 11

Date: 17.03.24 – 21.03.24

List of Activities with Brief Description:

Union Health Complex Scoring - Tools 1 & 2: This week, I contributed to the evaluation process of Union Health Complexes by calculating their scores using data from both Tool 1 and Tool 2. Analyzing results from multiple sources helps ensure a comprehensive assessment.

Decision Support for Specialized Hospital Ranking: I gained valuable insights into the process of ranking specialized hospitals. Understanding the factors considered for these rankings will be crucial for future data analysis and reporting.

Python Programming Fundamentals: This week, I expanded my skillset by learning the core elements of Python programming, including modules and pip for managing packages, comments for code readability, escape sequences for formatting output, and print statements for displaying information.

Advanced MS Excel Techniques: My exploration of MS Excel continued this week by delving into scenario manager, a tool for creating different data sets and analyzing potential outcomes. Additionally, I learned how to prepare clear and concise scenario summaries and utilize the goal seek function for efficient target-based calculations.

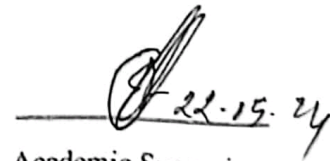


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Weekly Overview of Internship Activities

Week: 12

Date: 24.03.24 – 28.03.24

List of Activities with Brief Description:

1. Union Health Complex Scoring - Tool 3: This week, I delved into the functionality of Tool 3 within the DGHS MIS framework. This tool plays a vital role in assessing the performance of Union Health Complexes. Understanding its evaluation criteria will be crucial for future analysis and improvement strategies.

2. Mastering Data Manipulation in Excel: I expanded my technical skillset by learning data tables and the solver function in Microsoft Excel. These powerful tools will significantly enhance my ability to analyze and model complex datasets relevant to DGHS operations.

3 Focused on Python Fundamentals: This week marked a significant step in my exploration of Python programming. I focused on understanding variables, data types, and the process of typecasting. Additionally, I learned how to take user input, empowering me to create interactive programs.

4. Building with Python - A Simple Calculator: To solidify my grasp of Python concepts, I embarked on a practical project - building a basic calculator. This hands-on experience solidified my understanding of syntax and logic in the language.

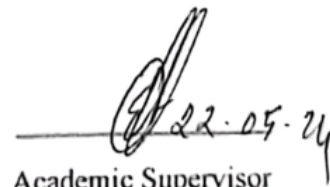


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