Internship Report on

Leveraging MIS for Smart Manufacturing and Supply Chain Integration: A Case Study of Kamal Steel& Re-Rolling Mills Ltd.

Submitted to:

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Designation: Lecturer, School of Business & Economics (SoBE)

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Major: Management Information Systems (MIS)

Registration Trimester: Spring 2025

School of Business and Economics

United International University

Date of submission: 24th July, 2025

Letter of Transmittal

Date: 22/07/2025

Mr. Ahmed Imran Kabir,
Lecturer, School of Business & Economics (SoBE)
United International University (UIU),
United City, Madani Ave, Dhaka 1212.

Subject: Submission of Internship Report on "Leveraging MIS for Smart Manufacturing and Supply Chain Integration: A Case Study of Kamal Steel & Re-Rolling Mills Ltd.".

Dear Sir,

It is a great pleasure to present the internship report titled "Leveraging MIS for Smart Manufacturing and Supply Chain Integration: A Case Study of Kamal Steel & Re-Rolling Mills Ltd." which was assigned to me as a partial requirement for the competition of Bachelor of Business Administration degree.

It is my honor to work for a leading organization of Bangladesh and gain an in-depth knowledge on lending process and monitoring techniques. Throughout the study, I have tried with the best of my capacity to accommodate as much information and relevant issues as possible and tried to follow the instructions as you have suggested. I tried my best to make this report as much informative as possible.

I am grateful to you for your guidance and kind cooperation at every step of my endeavor on this report. I shall remain deeply grateful if you kindly take some pen to go through the report and evaluate my performance.

Sincerely yours,

Jannatul Ferdous
111-192-105
School of Business & Economics (SoBE)
United International University (UIU),

Certification of Similarity Index

This is to certify that the internship report titled:

“Leveraging MIS for Smart Manufacturing and Supply Chain Integration: A Case Study of Kamal Steel & Re-Rolling Mills Ltd.”

submitted by **Jannatul Ferdous,**
Student ID: **111-192-105**,
in partial fulfillment of the requirements for the degree of **Bachelor of Business Administration (BBA)**,
Major in **Management Information Systems (MIS)**,
School of Business and Economics,
United International University,

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Supervisor’s Name: Mr. Ahmed Imran Kabir

Designation: Lecturer, School of Business & Economics (SoBE)

Signature: _____ **Date:** _____

Declaration of the Student

I hereby declare that the internship report titled:

“Leveraging MIS for Smart Manufacturing and Supply Chain Integration: A Case Study of Kamal Steel & Re-Rolling Mills Ltd.”

has been prepared and submitted by me, **Jannatul Ferdous**, ID: **111-192-105**, as a partial requirement for the fulfillment of the degree of **Bachelor of Business Administration (BBA)**, major in **Management Information Systems (MIS)** at **United International University (UIU)**.

I also declare that this report is based on my **original work** and has not been previously submitted for any other degree, diploma, or publication in any form.

Any materials or information used from other sources have been properly cited and acknowledged. I understand that any instance of plagiarism will result in disciplinary action in accordance with the policies of UIU.

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Date:	**23rd July, 2025**

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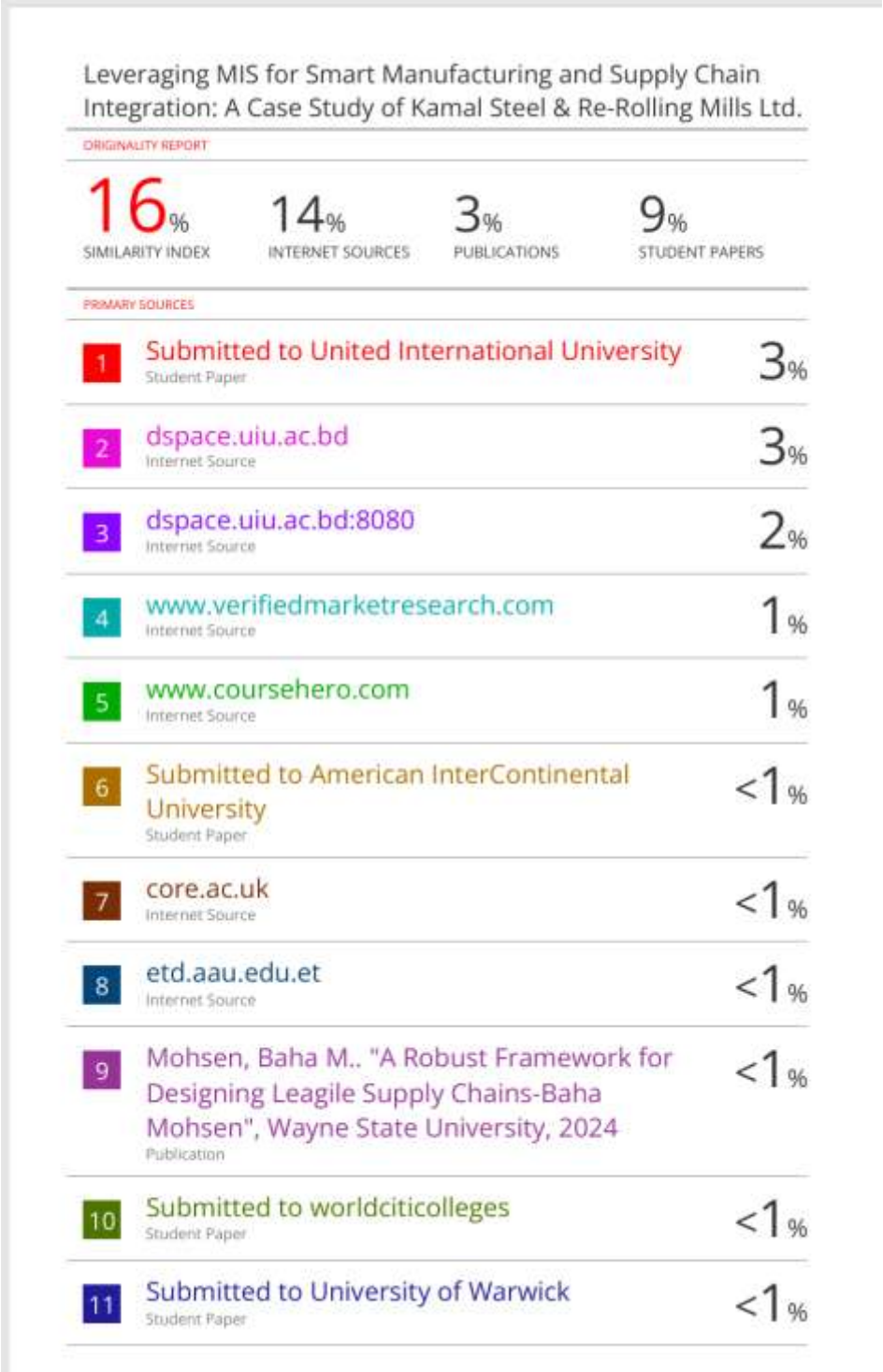

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KAMAL STEEL RE-ROLLING MILLS LIMITED

Date: July 04, 2025

Ref:

TO WHOM IT MAY CONCERN

This is to certify that JANNATUL FERDOUS, Student of United International University, Bearing ID#111-192-105 has successfully completed Three (03) Months long internship program on Smart Manufacturing and Supply Chain in Steel Industry from Kamal Steel & Re-Rolling Mills Ltd.under supervision of Mohammad Sheikh Rifat (Director). Her Internship started on March 01,2025 and end on May 31, 2025.

We wish all the best for her future endeavor.

KAMAL STEEL RE-ROLLING MILLS LTD.
Director

Signature

Head Office: Road # 13, House # 83, Block # NE(K), Gulshan-2
Dhaka-1212, Bangladesh.

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Acknowledgement

The final outcome of this research required a lot of guidance and assistance from many people, and I'm immensely grateful for their unwavering support throughout this journey. Firstly, I extend my heartfelt thanks to Mr. Ahmed Imran Kabir, my course supervisor, for assigning this research and providing me with all the support and guidance that were instrumental in successfully completing this research.

I am deeply indebted to the entire team at Kamal Steel & Re-Rolling Mills Ltd. Their cooperation, insights, and willingness to share their expertise were pivotal in gathering valuable data and conducting a thorough analysis. Without their effort and cooperation, this research would not have been possible.

Furthermore, I would like to express my gratitude to my university for offering a conducive environment for academic growth and research. Their resources and facilities were indispensable throughout this project.

I also extend my appreciation to my internship supervisor, whose mentorship during my internship period greatly enriched the research. Their practical insights and guidance were invaluable.

I cannot overlook the immense support from my office supervisor and co-workers Kamal Steel & Re-Rolling Mills Ltd. Their encouragement and willingness to collaborate significantly enhanced the quality of this research. I'd like to acknowledge the support of my family, whose unwavering encouragement and understanding were a constant source of motivation.

To all those who have contributed in various capacities, I offer my sincere thanks for being an integral part of this research journey. Your support has been invaluable, and I am truly appreciative of your assistance in bringing this research to fruition.

Executive Summary

As a business administration student, analyzing the contemporary business landscape is vital in navigating the complexities of our current environment. It's crucial to comprehensively assess various domains of knowledge, both theoretical and practical.

As a component of my academic curriculum, I had the privilege of participating in an internship program. This experience was invaluable, providing first hand exposure to the business world as I pursued my four-year BBA program. Within this paper, my focus centered on the realms of Management Information System.

The objective was to delve into the supply chain and MIS practices of the organization under study and discern their role in facilitating organizational growth.

This study evaluates the supply chain in Bangladesh's steel industry and offers recommendations for improvement. It identifies stakeholders, highlights inefficiencies in transportation and inventory management, discusses challenges, and suggests technology integration. Recommendations include process enhancements, technology adoption, collaboration, and sustainability measures.

In summary, this research aims to enhance the efficiency and competitiveness of Bangladesh’s steel industry supply chain.

FOR INTERNSHIP

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1. List of Acronyms & Abbreviations

List of Acronyms & Abbreviations

Acronym / Abbreviation	Full Form
MIS	Management Information Systems
ERP	Enterprise Resource Planning
SCM	Supply Chain Management
CRM	Customer Relationship Management
IT	Information Technology
HR	Human Resources
SQL	Structured Query Language
DBMS	Database Management System
BI	Business Intelligence
TMT	Thermo-Mechanical Treatment
KPI	Key Performance Indicator
R&D	Research and Development
HCI	Human-Computer Interaction
JIT	Just-in-Time (Inventory System)
API	Application Programming Interface
UI	User Interface
CSR	Corporate Social Responsibility
ESG	Environmental, Social, and Governance
IoT	Internet of Things
AI	Artificial Intelligence
SME	Small and Medium Enterprises
MT	Metric Ton
UIU	United International University

CHAPTER 1: INTRODUCTION

The steel industry plays a crucial role in the economic growth and industrial development of any nation, and Bangladesh is no exception. As one of the emerging economies in South Asia, Bangladesh has experienced remarkable growth and development over the past few decades. The steel industry supply chain involves a variety of complex activities, from the procurement of raw materials to the delivery of finished products to customers. The rapid pace of urbanization, infrastructure expansion, and construction projects in Bangladesh have significantly increased the demand for steel products. This surge in demand is driven by the need to build modern cities, robust transportation networks, and stable structures. As a result, the steel industry has played a significant role in realizing Bangladesh's developmental aspirations. Amidst this growth, the efficiency and effectiveness of the steel industry's supply chain becomes crucial. The supply chain is a critical interface where raw materials are transformed into value-added products, and timely delivery is essential to keep pace with the country's growing infrastructure requirements. The interconnected stages of purchasing, production, distribution, and consumption within the supply chain require a deep understanding of the challenges and opportunities that shape its dynamics.

However, the complexities of the steel supply chain in Bangladesh are not without their challenges. Challenges such as transportation bottlenecks, inventory management complexities, regulatory compliance, and environmental sustainability are all challenges that demand careful analysis and strategic intervention. Addressing these challenges by capitalizing on emerging opportunities within the industry will be instrumental in ensuring its sustainable growth, global competitiveness and economic progress, and alignment with the broader goals of sustainable development.

In this context, this study attempts to delve deeper into the supply chain of the steel industry in Bangladesh. Examines the multifaceted dimensions of the supply chain, from its functional complexity to its contribution to economic progress and sustainability, this

study seeks to contribute to a comprehensive understanding of the industry's role within the larger socio-economic fabric of Bangladesh. Through a combination of qualitative and quantitative methods, this research aims to uncover insights that can inform strategies, policies, and practices within the steel supply chain, ultimately fostering a more robust and resilient industry capable of meeting the country's growing needs. This study has the potential to serve as a guideline for the steel sector in Bangladesh. In this increasingly volatile and increasingly challenging world, a strong and agile supply chain is not only an advantage; this is a demand. It serves as the foundation for the country's infrastructure, cities, and future development. Furthermore, the implications of this research could extend beyond the steel sector. They could serve as a model for other industries to deal with complex supply chains. The methods, best practices, and learnings gained from here can be applied across various industries, further improving the overall picture of sustainable economic growth.

I.1 Background of the Report

In the modern industrial context, the use of Management Information Systems (MIS) is crucial to improve operational efficiency, enable data-driven decision-making, and maintain competitive advantage. Industries around the world are using information systems to automate processes, streamline communication, monitor performance, and ensure real-time access to critical business data.

The steel industry in Bangladesh is no exception. With growing demand, increasing competition, and increasing complexity of operations, steel producing companies are increasingly integrating digital technology into their business processes. From enterprise resource planning (ERP) systems to supply chain management software, MIS tools are becoming central to effectively managing production, logistics, inventory, purchasing, and customer relationships.

As part of the Bachelor of Business Administration (BBA) program in Management Information Systems (MIS) at United International University (UIU), students are required to complete an internship in a real-world business environment. This internship serves as an essential bridge between academic learning and practical application, helping students understand how organizations use MIS to solve operational problems and achieve strategic goals.

This report is based on my internship experience at Kamal Steel and Re-Rolling Mills Limited, a leading manufacturer in the steel industry in Bangladesh. The

primary objective of this report is to analyze how the organization uses information systems to manage its internal operations and external interactions, Especially focusing on areas such as production planning, inventory control, data management, and digital transformation initiatives.

I.2 Objectives of the Report

1.2.1 Broad/General Objectives:

1. **To analyze the term and effectiveness of Management Information Systems (MIS) in supporting business operations at Kamal Steel & Re-Rolling Mills Ltd.**
2. **To execute the use of digital tools, data management practices, and technology infrastructure in optimizing operational efficiency and strategic decision-making.**

1.2.2 Specific Objectives:

- Exploring how MIS integrates into various departments such as manufacturing, supply chain, procurement, and inventory management.
- Examining the use of Enterprise Resource Planning (ERP), database systems, and other digital platforms within the organization.
- To assess the effectiveness of information flow, data accuracy, and decision support capabilities provided by the current MIS infrastructure.
- Identify any gaps or challenges that exist in the implementation and use of MIS tools in daily operations.
- Understanding employee and managerial perspectives on MIS usability, security, and training.
- Recommending strategies to improve MIS adoption, system integration, and automation within the organization.
- Highlighting the impact of MIS on performance, cost efficiency and business scalability in the steel manufacturing industry.

I.3 Rationale of the Report

I.4 In today's digital economy, the effective use of Management Information Systems (MIS) has become crucial for business success in all industries, including manufacturing. The increasing complexity of operations, increased volume of information, and the growing need for real-time decision-making have made it essential for organizations to adopt robust information systems. Bangladesh's

steel industry, although traditionally labor-intensive, is now increasingly embracing digital transformation to increase efficiency, reduce costs, and remain competitive in domestic and international markets.

Kamal Steel and Re-Rolling Mills Limited, as a prominent organization in the industry, has recognized the importance of integrating MIS into their business processes. From inventory tracking and production planning to customer relationship management and compliance monitoring, information systems play a critical role in ensuring uninterrupted operations. However, like many traditional industries, the transition to full digital integration comes with challenges — from system inefficiencies and data inconsistencies to employee resistance and cybersecurity concerns.

This report is significant because it attempts to explore how MIS is currently being used within Kamal Steel and Re-Rolling Mills Limited, identifying areas of strength and weakness and suggesting opportunities for improvement. The insights gathered can help the organization optimize its information flow, automate manual processes, improve decision-making accuracy, and ultimately support strategic growth.

Moreover, as a student of Management Information Systems at United International University (UIU), this report also bridges the gap between theoretical knowledge and practical application. This presents an opportunity to examine the practical application of MIS tools and assess their influence on organizational performance, particularly in a manufacturing setting.

I.5 Scope and Limitations of the Report

This report focuses on the implementation and impact assessment of **Management Information System (MIS) in Kamal Steel and Re-Rolling Mills Limited**, a major player in the steel industry in Bangladesh. The study includes:

- Implementation and use of MIS tools such as **Enterprise Resource Planning (ERP)** systems, inventory tracking software, and digital supply chain platforms.
- Data collection and analysis methods used in various departments such as production, procurement, and supply.
- The role of MIS in supporting operational decision-making, information flow, and organizational efficiency.
- Employee and managerial perceptions of existing MIS practices, challenges in usage, and potential areas for improvement.
- The extent of digital transformation and automation in core business operations.

The findings and recommendations of this report are intended to support improvements in MIS infrastructure and contribute to the digital growth of the organization.

Limitations of the Report:

While every effort has been made to ensure the quality and relevance of the research, this report has a few limitations:

- **Organizational Scope**: The study is limited to Kamal Steel & Re-Rolling Mills Ltd. and does not represent the practices of the entire steel industry in Bangladesh.
- **Access to Information**: Some internal documents and system access were restricted due to confidentiality policies, limiting deeper technical analysis of certain MIS platforms.
- **Time Constraints**: The internship duration was limited, which affected the ability to observe MIS implementation across all functional units or track long-term outcomes.
- **Sample Size**: The number of respondents for interviews and surveys was relatively small and may not fully represent the broader views of all employees.
- **Rapid Technological Changes**: Given the fast-evolving nature of information technology, some insights or tools discussed may change shortly after the report's completion.

Despite these limitations, the report offers valuable insights into the role of MIS in a real-world industrial setting and contributes to the understanding of digital transformation in manufacturing.

I.6 Definition of Key Terms

To ensure clarity and consistency throughout the report, the following key terms are defined as they are used in the context of this study:

1. Management Information Systems (MIS):

A system that collects, processes, stores, and distributes information to support managerial decision-making, coordination, control, and analysis in an organization.

2. Enterprise Resource Planning (ERP):

A type of integrated software used to manage day-to-day business activities such as accounting, procurement, production, supply chain, and project management.

3. Digital Transformation:

The process of adopting digital technologies to fundamentally change how organizations operate and deliver value to customers. It involves automation, data integration, and technology-driven innovation.

4. Database Management System (DBMS):

Software used to create, manage, and manipulate databases, ensuring that data is organized, consistent, and accessible for users and applications.

5. Supply Chain Management (SCM):

The management of the flow of goods, information, and finances involved in the production and delivery of a product from suppliers to end customers. In the MIS context, it includes digital tools used to monitor and coordinate this flow.

6. Data Analytics:

The use of statistical and computational techniques to analyze large volumes of data and extract actionable insights to support business decisions.

7. Automation:

The use of technology to perform tasks with minimal human intervention. In manufacturing, automation can improve accuracy, speed, and efficiency.

8. Cybersecurity:

The practice of protecting systems, networks, and data from digital attacks, unauthorized access, or damage. It's a crucial component of MIS in any industry.

9. Human-Computer Interaction (HCI):

The study and design of user interfaces and how individuals interact with computer systems. It’s essential for ensuring usability and employee efficiency when working with MIS tools.

10. System Integration:

The process of linking different computing systems and software applications physically or functionally to act as a coordinated whole, often done via APIs or middleware.

CHAPTER 2: COMPANY AND INDUSTRY PROFILE

2.1 Company Analysis

2.1.1 Overview and History

Kamal Steel & Re-Rolling Mills Limited, established in 1990, is a technologically advanced manufacturing company specializing in the production of Thermo Mechanically Treated (TMT) Bars/Rods, Steel Angles and Billets. The company's operations are fully automated, showcasing state-of-the-art industrial processes and equipment. The production process is divided into two independent units, each with an annual maximum production capacity of approximately 360,000 metric tons. The company effectively utilizes about 85% of this production capacity, resulting in the production of about 300,000 metric tons of finished products per year. The Research and Development (R&D) team relentlessly strives to optimize resource utilization, striving to achieve increased production output to surpass current production rates.

After years of gaining expertise and experience, Kamal Steel & Re-Rolling Mills Limited has established a potentially strong presence in the domestic and international markets. The company's unwavering commitment to quality,

innovation, and customer satisfaction has accelerated its growth and solidified its reputation as a reliable and trusted supplier of steel products. With a broad workforce of over 800 employees, the company embraces a diverse team of skilled professionals, including executives, officers, staff, sales personnel, and hardworking laborers. This dynamic and dedicated workforce collectively works towards the company's goal of excellence, constantly striving to maximize resource utilization and increase production.

In this introduction section, we will begin a comprehensive exploration of Kamal Steel & Re-Rolling Mills Limited, discussing in detail its production processes, supply chain dynamics, technological advancements, and efforts to contribute to sustainable practices within the steel industry. Through this research, we seek to gain deeper insights into the company's operations and its significant impact on the steel sector.

MIS Infrastructure and Digital Environment

Kamal Steel has taken key steps toward **digital transformation**, integrating Management Information Systems (MIS) to support its operations. The company utilizes various IT tools and platforms, including:

- **Enterprise Resource Planning (ERP)** systems for managing production planning, procurement, inventory, and financial reporting.
- **Database systems** for storing and managing operational, employee, and vendor-related data.
- **Supply chain management systems** that track raw materials, monitor transportation, and streamline vendor coordination.
- **Sales and distribution software** for managing customer orders, delivery schedules, and sales performance analytics.

These systems have enabled Kamal Steel to improve **real-time decision-making**, enhance **data transparency**, and minimize **manual errors**.

2.1.2 Trend and Growth

Kamal Steel and Re-Rolling Mills Limited has demonstrated consistent growth and resilience in the competitive steel manufacturing sector since its

establishment in 1990The company has continuously increased its production capacity and expanded its market presence by adopting new technologies and refining its operations. The steady increase in annual production—currently producing approximately 300,000 metric tons of finished products, with utilization at 85%—reflects its efficiency and strong demand for its products.

Market Expansion and Demand Trends

The demand for steel industry is increasing in Bangladesh and neighboring regions due to rapid urbanization, infrastructural development, and industrial growth Kamal Steel has capitalized on these market trends by expanding its product portfolio, maintaining high quality standards, and exploring export opportunities. Its relentless focus on innovation and customer-centric approach positions the company well to capture growing market segments domestically and internationally.

Digital Transformation Driving Growth

The adoption of Management Information Systems (MIS) and digital infrastructure has played a significant role in Kamal Steel's growth trajectory. The integration of ERP, supply chain management, and sales analytics platforms has enabled the company to streamline operations, optimize inventory and purchasing processes, and increase customer service efficiency. These systems provide real-time data and predictive insights that help management make informed decisions, reduce costs, and improve supply chain agility.

Research and Development (R&D) Impact

Kamal Steel's investment in research and development encourages continuous process improvement and resource optimization. By exploring innovative production techniques and sustainable practices, the company aims to increase production beyond current capacity utilization while minimizing environmental impact. This proactive approach to technological advancement and sustainability is in line with the global trend towards environmentally friendly steel production and positions Kamal Steel as a forward-thinking leader in the industry.

Workforce and Skill Development

With a diverse and skilled workforce of over 800 employees, Kamal Steel emphasizes employee training and development to support technological adoption and operational excellence. The integration of MIS tools also enhances workforce productivity by automating routine tasks and facilitating better communication and collaboration across departments.

Future Outlook

Looking ahead, Kamal Steel is poised for continued growth driven by expanding infrastructure needs, government initiatives supporting industrialization, and global steel demand recovery. The company's strategic focus on digital transformation and sustainable manufacturing practices will be crucial in maintaining competitive advantage, improving operational efficiency, and increasing market share in an evolving industry landscape.

2.1.3 Product / Service / Customer mix

2.1.3.1 TMT Bar/Rod (Thermo-Mechanical Treatment Bar/Rod):

For the reinforcement of concrete structures, TMT bars are frequently employed in construction. They go through a special manufacturing process and are constructed of steel. There are three basic steps in the TMT manufacturing process:

- **Quenching:**

  Using water jets to rapidly cool the steel after it has reached a certain temperature is known as quenching. The sudden cooling causes the outer layer to harden, while the inner core retains its flexibility. The result is a strong and flexible bar, making it suitable for construction.

- **Self-Tempering:**

After quenching, the bars are given the opportunity to partially recover their lost heat. As a result, strength and ductility are balanced.

- **Annealing:**

  The bars are heated under controlled conditions to reduce and improve internal stresses. TMT bars are known for their high tensile strength, ductility, and corrosion resistance, making them a preferred choice for construction structures.

2.1.3.2 Steel Angle:

Steel angles, commonly known as angle bars or angle iron, are L-shaped pieces of metal with two legs that meet at right angles. Although they can also be made from materials such as aluminum or stainless steel, steel is the most commonly used option. Steel angles are widely used in structural and construction applications. They are often used as framing, reinforcement, or support for various constructions, including equipment, bridges, and buildings. To meet specific structural needs, steel angles are available in various diameters and thicknesses.

- **Rolling and Shaping:**
  - Raw steel billets or slabs are heated and passed through rolling mills.
  - Specially shaped rolls gradually bend the steel into the desired L-shaped angle.
  - Cooling follows to stabilize the shape.

- **Cutting and Quality Control:**
  - The long steel angles are cut to the desired length.
  - Throughout the process, quality control checks ensure dimensions, surface quality, and mechanical properties meet standards.

- **Finishing and Packaging:**
  - Optional surface treatments such as galvanization or painting can be applied.
  - The finished steel angles are bundled, packaged, and prepared for transportation to customers or construction sites.

2.1.3.3 Billet:

A billet is a semi-finished piece of metal, usually square or rectangular in shape. In the steel industry, billets are often made by casting molten steel into this shape. Billets are required as raw materials for various metalworking techniques such as forging, rolling, and extrusion, to produce finished products such as bars, rods, and tubes. They are often further processed to create specific shapes and sizes to suit the needs of the final application. Since they directly affect the quality of the finished product, the quality and structure of the billet are essential.

The production of billets involves several key steps, from raw materials to finished products. Here are the three main steps in the production of billets:

1. **Melting and Casting:**

- The process begins with the melting of raw materials, typically scrap steel, in an electric arc furnace or induction furnace.

- Alloying elements can be added to achieve specific steel grades or properties.

- Once molten, the steel is cast into a billet shape using continuous casting machines or ingot molds. Continuous casting is a common method, where the molten steel is continuously poured into a water-cooled mold, solidifying it into a long, rectangular shape.

2. **Rolling or Forging:**

- The cast billets are then subjected to further processing through rolling or forging.

- Rolling involves passing the billet through a series of rolling mills, which gradually reduce its size and shape it into the desired dimensions.

- Forging is an alternative method where the billet is heated and shaped using mechanical force, typically with hammers or presses.

3. **Cutting and Quality Control:**

- After rolling or forging, the billet is cut into individual lengths.

- Quality control measures, such as dimension checks, surface inspections, and mechanical property testing, are conducted to ensure the billets meet the required standards and specifications.

2.1.4 Company Operations / Activity

Kamal Steel & Re-Rolling Mills Ltd. operates as a fully integrated steel manufacturing company, with operations structured into distinct units—melting, rolling, and finishing. Each stage of the production cycle is supported by a robust **Management Information System (MIS)** infrastructure to ensure seamless data flow and decision-making.

The company leverages **ERP (Enterprise Resource Planning)** systems to manage procurement, raw material inventory, production scheduling, machine maintenance, labor allocation, and finished goods distribution. The MIS department plays a central role in ensuring that real-time data from each unit is collected, validated, and made accessible to respective departments.

Key operational activities include:

- **Production Monitoring**: Data from production lines, such as machine uptime, output volume, and defect rates, are continuously fed into the ERP system. MIS uses this data to generate shift-wise and daily production reports.
- **Inventory Management**: Raw materials (such as billet and scrap), semi-finished goods, and finished products are tracked via barcoding and system-based stock entries. MIS ensures real-time visibility of stock levels, which supports just-in-time (JIT) inventory practices.
- **Quality Control Integration**: Inspection results are logged into the MIS platform, and any deviations trigger automated alerts to supervisors, enabling faster corrective actions.
- **Human Resource and Shift Planning**: Employee attendance, shift scheduling, and overtime calculations are recorded via integrated biometric and HR modules linked to the MIS platform.
- **Sales and Dispatch Coordination**: Customer orders are tracked through the system from entry to dispatch. The dispatch team receives auto-

generated delivery schedules based on production output and order priority.

- **IT-MIS Support**: MIS ensures network security, data backup, and software maintenance. Routine audits are conducted to check for data consistency and system errors.

Overall, the MIS department acts as a digital nerve center that synchronizes every aspect of the company's manufacturing and business operations to optimize efficiency, reduce manual errors, and support data-driven decision-making.

2.1.5 SWOT Analysis

A SWOT analysis of Kamal Steel & Re-Rolling Mills Ltd. from an MIS and operations perspective reveals the following insights:

Strengths

- **Robust MIS Infrastructure**: The company has implemented a well-integrated ERP system that links production, procurement, HR, finance, and sales departments.
- **Data-Driven Culture**: Management actively uses real-time dashboards and system reports to monitor KPIs and make informed decisions.
- **Automation Support**: Automated systems reduce manual errors and improve production tracking accuracy.
- **In-House IT Team**: Skilled MIS professionals manage network, system development, data backups, and user support.

Weaknesses

- **Limited Cloud Integration**: The current systems are mostly hosted on local servers, increasing the risk of data loss or downtime in case of system failure.

- **Lack of Advanced Analytics Tools**: While basic reporting is strong, advanced analytics, predictive modeling, and AI-driven insights are yet to be adopted.
- **Departmental Silos**: Some departments still rely on Excel sheets or manual reporting outside the ERP, causing data discrepancies and delays in reporting.

Opportunities

- **Digital Transformation**: The company has the potential to implement cloud-based ERP and advanced BI (Business Intelligence) tools to improve scalability and system resilience.
- **Mobile Accessibility**: Enabling mobile-based MIS access can enhance real-time field reporting and managerial oversight.
- **Cybersecurity Enhancement**: There is scope to invest in stronger cybersecurity infrastructure to protect against data breaches and ransomware attacks.

Threats

- **Cybersecurity Risks**: As dependence on digital systems grows, the risk of data breaches, malware, and unauthorized access also increases.
- **Technology Obsolescence**: Without timely upgrades, existing MIS tools may become outdated and incompatible with modern industrial requirements.
- **Skilled Workforce Shortage**: Recruiting and retaining IT professionals skilled in ERP and MIS is becoming increasingly competitive in the local market.

2.2 Industry Analysis

2.2.1 Specification of the Industry

The steel industry in Bangladesh plays a vital role in the country's industrialization, infrastructure development, and economic growth. It is primarily focused on manufacturing long steel products such as TMT bars, angles, and billets, which are extensively used in the construction sector. The industry includes both primary producers (with integrated steel plants) and secondary producers who rely on imported raw materials like scrap metal.

MIS integration in the steel industry has become essential in managing complex production systems, controlling inventory, forecasting demand, and maintaining product quality. Due to the capital-intensive nature of the sector, operational efficiency and data-driven decision-making are necessary to ensure profitability.

The MIS components used across the industry typically include:

- **ERP systems** for enterprise-wide resource management
- **SCM software** for supply chain visibility
- **CRM modules** for managing client interactions and orders
- **Production Planning systems** for optimizing resource allocation
- **BI Dashboards** for analytics and reporting

Companies that are adopting MIS and automation technologies are better positioned to meet compliance, reduce costs, and maintain customer satisfaction in this highly competitive sector.

2.2.2 Size, Trend, and Maturity of the Industry

Size

The steel industry in Bangladesh has an annual production capacity of over 8 million metric tons, with major players including BSRM, Abul Khair

Steel, KSRM, and Kamal Steel & Re-Rolling Mills Ltd. Local production fulfills around 70–80% of domestic demand, with the remainder imported.

Trend

The sector is currently undergoing digital transformation. Due to government mega projects like the Padma Bridge, metro rail, and elevated expressways, steel consumption has been rising. To meet this demand efficiently, many companies are moving toward:

- **Process automation**
- **Real-time data collection**
- **Predictive maintenance**
- **Smart inventory systems**

There is an increasing trend in **Industry 4.0 adoption**, where the integration of IoT, cloud computing, and AI is transforming traditional manufacturing.

Maturity

While some large steel manufacturers are relatively advanced in implementing MIS, the industry overall is still maturing in terms of digitalization. Many mid-sized firms rely on partial or legacy systems that lack real-time data processing or system integration.

Despite this, the adoption rate is accelerating as businesses recognize the long-term cost benefits and risk-reduction advantages offered by comprehensive MIS solutions.

2.2.3 Industry SWOT Analysis

Here’s a detailed SWOT analysis of the steel industry in Bangladesh, emphasizing MIS and technological infrastructure:

Strengths

- **Growing demand:** Due to ongoing infrastructure development, the demand for steel is still high**.**
- **Government Support:** Government support through supportive industrial policies and tax breaks has provided significant benefits for manufacturers.
- **Local production capacity:** Reducing dependence on imports for basic steel products.
- **ERP System Adoption:** Key players are already using ERP and MIS for operations, creating a technology roadmap for others to follow.

Weaknesses

- **Low digital penetration in small and medium industries:** Many small to medium steel mills operate without complete MIS integration, relying on manual tracking or Excel-based systems.
- **Lack of skilled IT personnel:** There is a shortage of professionals with expertise in both domain and technical aspects of MIS in this industry.
- **Fragmented systems**: Some companies operate disconnected software solutions without a centralized database, resulting in duplication of work and error reporting.
- **Data Reliability Issues:** Challenges arise in data reliability due to inconsistent entry procedures and limited adherence to system use, which puts the accuracy of MIS reports at risk.

Opportunities

- **Adopting cloud-based ERP**: Moving to cloud systems can enable scalability, mobility, and disaster recovery benefits.

- **IoT and Automation:** Taking advantage of IoT and automation, real-time machine data helps improve predictive maintenance and reduce unexpected equipment failures.
- **Data-Driven Decision Making:** By using advanced analytics tools, businesses can make more informed decisions - increasing demand forecasting, optimizing costs, and managing inventory more efficiently.
- **Cybersecurity Services:** The growing use of digital is opening up a market for data security solutions and consulting services.
- **Integration with Financial and Logistics Partners:** Advanced MIS can enable API-based links with banks, transporters, and suppliers for real-time coordination.

Threats

- **Cybersecurity Vulnerabilities:** With the ongoing shift towards digitalization, the industry is facing increasing risks from cyber threats such as ransomware and industrial espionage.
- **Regulatory Risks:** Failure to comply with digital VAT submission, customs reporting, or ESG reporting may result in fines.
- **Economic Instability:** Currency fluctuations, rising inflation, and global market volatility can affect a company's ability to invest in software and upgraded systems.
- **Disruptive Technologies:** Emerging companies that adopt new technologies (AI, blockchain) can outperform traditional companies.

CHAPTER 3: INTERNSHIP EXPERIENCE

3.1 Position, Duties, and Responsibilities

During my internship at Kamal Steel and Re-Rolling Mills Limited, I worked in the Management Information Systems (MIS) department, Where I gained practical experience in how critical information systems support production processes, reporting, and strategic decision-making.

My key duties and responsibilities included:

- **Data Entry and Validation**: I was responsible for entering daily production data (shift-wise) into the company's internal ERP system and ensuring accuracy by cross-checking against physical records.
- **Reporting**: Assisted in generating reports such as daily production summaries, inventory updates, and monthly consumption sheets using Microsoft Excel and internal BI tools.
- **System Monitoring**: Supported the MIS team in monitoring system health, server uptime, and application usage logs to identify performance issues.
- **User Support**: Requests from department users experiencing issues with login, reporting module, or input screen have been responded to.
- **Documentation**: Assisted in documenting system procedures, user access records, and update logs for audit purposes.
- **Internal Coordination**: Coordinated with production, procurement, and finance departments to understand how their data inputs affect MIS outputs.

This experience provided a complete overview of how MIS acts as a central nervous system for a company's operations, ensuring data integrity, process synchronization, and timely decision-making.

3.2 Training & Development

Kamal Steel provided me with the necessary orientation and hands-on training which significantly enriched my practical understanding of MIS functions. Key areas of training included:

- **ERP Interface Navigation**: I was trained to navigate the ERP system to manage modules such as inventory, production, dispatch, and HR.
- **Excel & Pivot Tables**: Advanced Excel training was provided, focusing on formula-based summaries, dashboards, conditional formatting, and VLOOKUP applications.
- **Database Basics**: I was introduced to SQL fundamentals, enabling me to understand how queries are written to extract specific datasets.
- **System Access Control**: I observed how user permissions were assigned, restricted, and monitored in the ERP for security and accountability.
- **MIS Documentation Standards**: I was taught the structure and content of standard MIS documentation, such as incident logs, system change requests, and user manuals.

These training sessions allowed me to confidently participate in real tasks and independently execute several routine functions by the end of the internship.

3.3 Contribution to Organization / Operations

Despite being an intern, I had the opportunity to make meaningful contributions to Kamal Steel's MIS operations, including:

- **Improved Report Accuracy**: By identifying discrepancies in data between physical production logs and ERP entries, I helped reduce reporting errors in daily output summaries.
- **Template Development**: Designed Excel-based templates for material consumption tracking and manpower allocation which are now used by shift supervisors.
- **Process Optimization Suggestion**: Proposed a minor update in the report consolidation process that reduced duplication of work across departments by standardizing input formats.
- **User Feedback Collection**: Gathered informal feedback from non-technical users about interface challenges and relayed this to the MIS supervisor, which informed future UI improvements.

Through these contributions, I was able to demonstrate initiative, analytical thinking, and the ability to add value through small but impactful process improvements.

3.4 Evaluation

My performance was regularly evaluated by the MIS supervisor based on punctuality, learning curve, accuracy, and problem-solving ability. Key outcomes of my evaluation include:

- Demonstrated strong technical adaptability in learning ERP functions and Excel tools.
- Showed initiative by offering suggestions and completing tasks with minimal supervision.
- Maintained a collaborative attitude while working with teams across departments.
- Delivered consistent and accurate reporting during peak production periods.

Overall, my internship performance was rated positively, and I was encouraged to pursue a future in MIS or systems management roles within manufacturing or enterprise environments.

3.5 Skills Applied

The internship allowed me to apply and sharpen both technical and soft skills. These include:

Technical Skills:

- ERP data entry and report generation
- Microsoft Excel (pivot tables, functions, conditional formatting)
- SQL basics and database understanding
- Dashboard interpretation
- MIS documentation and logging

Soft Skills:

- Cross-departmental communication
- Time management under pressure
- Critical thinking in error detection
- Professional ethics and confidentiality
- Active listening and adaptability

This blend of skills has given me a holistic perspective on how MIS professionals operate in a dynamic manufacturing environment and what competencies are valued in the field.

CHAPTER 4: CONCLUSIONS AND KEY FACTS

4.1 Recommendations

4.1.1 Enhance Supply Chain Visibility

Invest in advanced tracking and monitoring systems that enable real-time visibility across all stages of the supply chain. MIS can play a central role by collecting and analyzing data from procurement, production, inventory, and delivery systems. This improves transparency, reduces delays, and supports proactive decision-making.

4.1.2 Foster Collaborative Partnerships

Encourage digital collaboration platforms that connect manufacturers, suppliers, logistics providers, and retailers. A shared MIS interface or data portal can improve demand forecasting, minimize communication gaps, and align planning processes between supply chain stakeholders.

4.1.3 Invest in Technology Integration

Adopt Industry 4.0 technologies — such as automation, IoT sensors, AI-driven forecasting, and cloud-based ERP systems. These tools can significantly improve supply chain efficiency by optimizing resource allocation, minimizing downtime, and offering real-time analytics for better decisions.

4.1.4 Promote Sustainability Initiatives

Incorporate green practices supported by MIS monitoring tools. Track carbon emissions, optimize fuel usage in logistics, and implement paperless systems for documentation. Data analytics can help assess environmental impact and guide future sustainability measures.

4.1.5 Strengthen Regulatory Advocacy

Engage with policymakers to modernize and digitize regulatory compliance processes. Streamlining customs documentation, tax reporting, and environmental compliance via MIS integration can reduce bottlenecks and support industry-wide digital transformation.

4.1.6 Develop a Skilled Digital Workforce

Bridge the IT-skills gap by investing in employee training on MIS tools, data entry protocols, and system-based reporting. A digitally literate workforce is essential for ensuring accurate data flow and maximizing the return on technology investments.

4.1.7 Establish Risk Management Strategies

Use MIS tools to develop predictive models that identify supply chain risks such as raw material shortages, transport delays, or demand volatility. Integrate contingency plans and automate alerts to ensure the resilience of the supply chain under uncertain conditions.

4.2 Recommendations for Kamal Steel & Re-Rolling Mills Ltd. Based on the Report

4.2.1 Optimize Resource Utilization

Leverage MIS tools to monitor machine efficiency, raw material usage, and labor allocation in real-time. By integrating IoT sensors and production dashboards, the company can achieve deeper insights into resource consumption patterns and identify opportunities for reducing wastage and improving productivity.

4.2.2 Diversify Product Offerings

Utilize market intelligence systems to analyze customer demand trends and product performance. MIS can support R&D efforts by tracking historical sales data, raw material availability, and pricing analytics to identify viable new product segments or customized offerings.

4.2.3 Enhance Energy Efficiency

Introduce energy monitoring systems integrated with MIS to track consumption by unit, shift, and process type. Alerts and analytics generated from these systems can guide strategic decisions to reduce energy dependency and operational costs, especially during peak loads or crises.

4.2.4 Improve Supply Chain Integration

Integrate supplier and logistics partner systems with the internal ERP to allow real-time order tracking, invoice matching, and inventory updates. This level of digital synchronization will reduce lead times, lower procurement overhead, and improve forecast accuracy.

4.2.5 5.2.5 Strengthen Customer Engagement through MIS

Implement a basic CRM (Customer Relationship Management) system or module within the existing ERP to manage orders, feedback, and after-sales support more effectively. This will help sales teams personalize service and build long-term customer relationships based on real-time data.

4.2.6 Foster a Culture of Continuous Improvement

Encourage teams across departments to submit MIS-related feedback and system improvement ideas. Launch a digital suggestion box or a simple

internal portal to capture and review efficiency-boosting proposals. Recognize employees who contribute practical ideas for system enhancements.

4.2.7 Expand Market Reach Using Data Insights

Use internal sales and regional distribution data to identify under-served markets. MIS can help conduct performance mapping by region and client segment, enabling targeted marketing strategies for both domestic and potential export markets.

4.2.8 Implement Sustainability Tracking in MIS

Track environmental performance metrics such as emissions, scrap recycling, and energy use via MIS dashboards. This not only supports CSR (corporate social responsibility) and ESG goals but also allows for transparent reporting to regulators and investors.

4.2.9 Build Risk Mitigation into MIS Architecture

Develop contingency protocols within the MIS platform—such as automatic alerts, scenario planning dashboards, and cloud backups—to respond quickly to disruptions like supply delays, production stoppages, or regulatory changes.

4.2.10 Stay Ahead with Strategic Technology Adoption

Form a cross-functional digital task force to evaluate new technologies such as AI-driven analytics, machine learning for demand forecasting, and blockchain for secure transaction logging. Pilot innovative tools that align with the company's digital transformation roadmap.

These recommendations emphasize the central role of MIS in optimizing Kamal Steel’s operations, improving decision-making, and maintaining

competitive advantage. As the company scales its production and navigates evolving market dynamics, these initiatives can ensure both operational resilience and strategic agility.

4.3 Key understanding

This internship experience provided me with several important insights into how MIS supports manufacturing operations and contributes to strategic growth. These include:

- **MIS is a backbone of modern manufacturing:** From raw material tracking to transfer planning and financial forecasting, every function is integrated with the MIS framework.
- **Real-time data accuracy is essential:** Delayed or incorrect data entry can result in faulty reporting, production disruptions, and inaccurate inventory management.
- **Communication between technical and non-technical teams is crucial:** The MIS department must act as both a technical operator and an internal service provider, helping all departments make the most of the system.
- **Small optimizations lead to major improvements:** Even small changes to reporting formats can save time and prevent miscommunication across units.

4.4 Conclusion

Ultimately, this internship and research project provided a deep understanding of how Management Information Systems (MIS) support and optimize operations in the steel industry of Bangladesh, particularly within Kamal Steel and Re-Rolling Mills Limited. This experience has

proven how MIS plays a vital role in data-driven decision-making, improving operational accuracy, and increasing the overall efficiency of the steel production process.

During the internship, I observed how key production, procurement, inventory, and HR functions are digitally integrated through the company's ERP system. These integrations allow for real-time data visibility, error reduction, and streamlining of internal workflowsMIS has proven to be essential not only for operational reporting, but also for coordinating departments, supporting strategic planning, and ensuring supply chain consistency.

The report also reviews the broader challenges facing Bangladesh's steel sector — such as transportation disruptions, energy inefficiency, and fluctuations in market demand. While these macroeconomic factors impact the industry as a whole, technology – particularly MIS – can play a transformative role in helping companies adapt. From risk mitigation strategies to predictive analytics and process automation, MIS provides the tools needed to build a resilient and future-ready steel industry.

At Kamal Steel & Re-Rolling Mills Limited, the use of effective MIS has led to noticeable improvements in the accuracy of reports, coordination between departments, and transparency of processes. Based on this progress, recommendations such as adopting cloud-based systems, expanding employee training, and incorporating sustainability monitoring can enhance performance and strengthen long-term competitiveness.

Overall, this internship provided me with valuable practical experience and confirmed the importance of MIS in an industrial environment. The insights gained from this experience will shape my career path, and the recommendations shared in this report can contribute to Kamal Steel's ongoing digital transformation and the larger steel manufacturing sector in Bangladesh.

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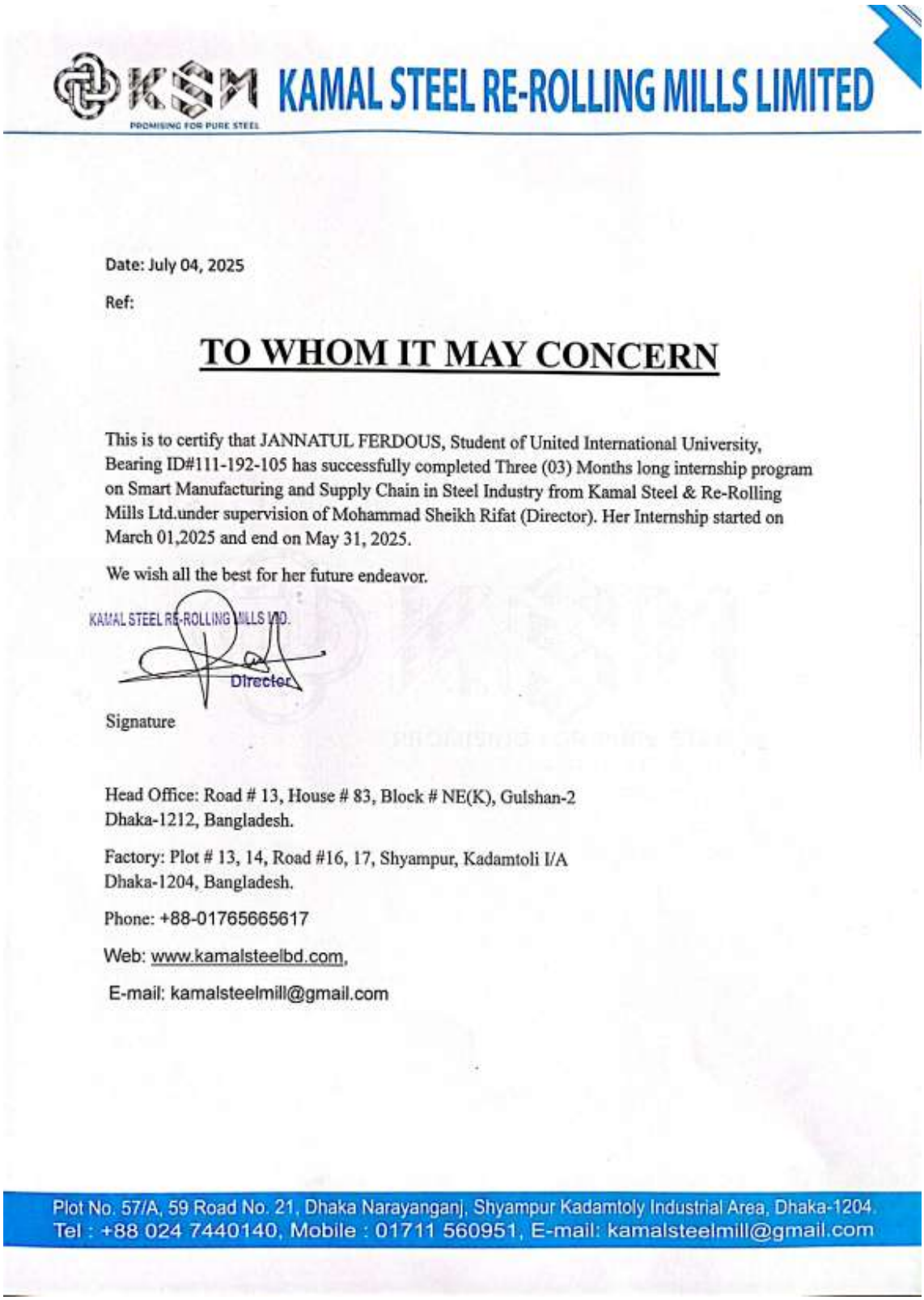
Appendix-A:



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Date: July 04, 2025

Ref:

TO WHOM IT MAY CONCERN

This is to certify that JANNATUL FERDOUS, Student of United International University, Bearing ID#111-192-105 has successfully completed Three (03) Months long internship program on Smart Manufacturing and Supply Chain in Steel Industry from Kamal Steel & Re-Rolling Mills Ltd.under supervision of Mohammad Sheikh Rifat (Director). Her Internship started on March 01,2025 and end on May 31, 2025.

We wish all the best for her future endeavor.

KAMAL STEEL RE-ROLLING MILLS LTD.
Director

Signature

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