Report On

Integration of Payment Gateways with Student Information Systems for Enhance Administrative Efficiency

By

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An internship report submitted to the BRAC Business School in partial fulfillment of the requirements for the degree of
Bachelor of Business Administration

BRAC Business School
Brac University
July 2025

Declaration

It is hereby declared that

1. The internship report submitted is my/our own original work while completing degree at Brac University.
2. The report does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.
3. The report does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.
4. I/We have acknowledged all main sources of help.

Student's Full Name & Signature:

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19104054

Supervisor's Full Name & Signature:

Shihab Kabir Shuvo
Senior Lecturer, BRAC Business School
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Letter of Transmittal

Shihab Kabir Shuvo
Senior Lecturer,
BRAC Business School
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Kha 224 Bir Uttam Rafiqul Islam Avenue, Merul Badda, Dhaka 1212

Subject: Submission of Internship Report for the completion of “BUS400 - Internship” as registered in the semester of Fall 2023

Dear Sir,

I am submitting my internship report titled "Integration of Payment Gateways with Student Information Systems for Enhanced Administrative Efficiency", which was prepared during my internship at SSLCOMMERZ. I have detailed my term as an “E-commerce Services Intern” internship report during my tenure at SSLCOMMERZ. The report outlines the research, practical work, and insights gained on the integration of payment systems into educational platforms for enhanced administrative processes.

I sincerely appreciate your guidance throughout my internship, and I hope this report meets your expectations.

Sincerely yours,

Zarif Tajwar Ahmed
19104054
BRAC Business School
BRAC University
Date: Oct 7, 2024

Non-Disclosure Agreement

This agreement is made and entered into by and between SSLCOMMERZ and the undersigned student at Brac University…………………………………….

Acknowledgment

I am writing to express my sincere gratitude to everyone who has contributed to the successful completion of this report. First and foremost, I am profoundly grateful to my supervisor Shihab Kabir Shuvo, Senior Lecturer, BRAC Business School, and my co-supervisor Ahmed Abir Chowdhury, Senior Lecturer, BRAC Business School, BRAC University for their guidance, valuable insights, and encouragement throughout this project.

My heartfelt thanks also go to SSLCOMMERZ, especially Ananya Sarker, Deputy Manager, and Asif Khan, Executive, for giving me the opportunity to gain practical experience and for their support and collaboration during my internship.

I also thank the wonderful colleagues for their assistance and teamwork during this journey.

Executive Summary

The three-month SSLCOMMERZ internship offered me firsthand Fintech experience by implementing my abilities toward essential company projects. My internship responsibilities at SSLCOMMERZ required market analytics and database maintenance as well as research activities for strategic business partnerships. My research focused on how Educational Management Systems (EMS) were accepted in 64 Bangladeshi districts along with their payment gateway implementation.

Microsoft Excel enabled me to maintain organised data structures that resulted in reliable entry of company system records. The quality of deliverables increased through teamwork with colleagues combined with my focus on precise details allowed the creation of an effective business partner database.

Participating in an internship provided me with enhanced research abilities together with analytical capabilties and communication skills as well as the ability to function effectively in a fast-moving corporate setting. My ability to organise my time effectively together with my supervisor's help allowed me to face data entry repetition and EMS procedure learning challenges and unite classroom education with hands-on abilities essential for Fintech career success.

Keywords: Fintech; Student Information Systems; Education Management System;
Payment Gateways; Strategic Planning.

Table of Contents

List of Table

List of Figures

List of Acronyms

EMS	Educational Management System
SIS	Student Information System
EMI	Equated Monthly Interest
KPI	Key Performance Indicator
CRM	Customer Relationship Management
AML	Anti-Money Laundering
SSL	Secure Socket Layer
BASIS	Bangladesh Association of Software and Information Services
APICTA	Asia Pacific ICT Alliance
EV SSL	Extended Validation Secure Sockets Layer
PCI DSS	Payment Card Industry Data Security Standard
GDPR	General Data Protection Regulation

Chapter 1: Overview of the Internship

1.1 Student Information

- Name: Zarif Tajwar Ahmed
- ID: 19104054
- Program: Bachelor of Business Administration
- Major: Computer Information Management (CIM)

1.2 Internship Information

1.2.1 Period, Company Name, Department, Address

- Period: January 1st, 2024 to March 31st 2024
- Company Name: SSLCOMMERZ
- Department: E-commerce Services Department
- Address: 93 B, New Eskaton Road, Dhaka 1000

1.2.2 Internship Company Supervisors Information

- Name: Ananya Sarker
- Position: Deputy Manager

1.2.3 Job Scope - Job Description

- Conduct research on potential merchants through Google and various social media platforms.
- Verify and update the accuracy of the gathered information regularly.
- Provide insightful information and analysis based on the gathered data.
- Ensure efficient and accurate data entry into relevant systems and databases.
- Organize and categorize information for easy accessibility.

- Undertake various tasks and projects as assigned by the department.
- Collaborate with team members to support ongoing initiatives.
- Report on findings and seek guidance for further actions.

1.3 Internship Outcomes

1.3.1 Student's Contribution To The Company

During my internship period at SSLCOMMERZ, I contributed to several key projects and task that benefited and supported company activities, particularly in the education department. My main responsibilities included conducting thorough research on potential merchants and clients, creating database with necessary information. This helped streamline the compay's process in identifying and connecting with merchants who would benefitted by using SSLCOMMERZ's payment gateway.

My research also included studying the trends of using EMS across educational institutes and maintaining a database if they had EMS (Educational Management System) or not. Along with that, I had to analyse which EMS were vastly used in all 64 districts of Bangladesh which was filtered to find out either the EMS or educational institutions were using payment gateway or not. This research provided the team with valuable insights that could inform strategic marketing decisions and market offerings. I leveraged my skills in Microsoft Excel to analyze and interpret data.

In addition to research, I provided support to my team members by engaging in multiple brainstorming sessions and team discussions which involved data entry task to ensure a solid merchant database. I learned attention to detail and effective communication, which played a significant role in my overall contribution to success.

1.3.2 Benefits to the student

My internship period at SSLCOMMERZ, provided me with invaluable experience that significantly contributed to both personal and professional development. Through this internship, I was able to apply theoretical experience and gain knowledge from real-world situations, particularly the Fintech industry and payment gateway services.

One of the key benefits was the opportunity to develop my research and analytical skills, as I had to conduct thorough research on potential merchants and anlayze data trends. Moreover, I also gained deeper understanding of how merchants acquisitions and payment gateway services work as well as the education sector of Bangladesh. This opportunity also allowed me to sharpen my Microsoft Excel skills and enhance my ability analyze and interpret data for my future career.

Moreover, I also received an in-depth understanding of effective communication and teamwork. I learned how to contribute effectively in a professional environment by making decisions and providing solutions. This challenging atmosphere has prepared me to work in a dynamic, fast-paced organization.

I also gained valuable insights into corporate operations and the practical effects of decision-making. Working with SSLCOMMERZ, gave me a broader perspective of the industry, complementing my academic studies

In conclusion, I believe this experience will help me to cave a better a path for my future career, academics and technology.

1.3.3 Problems/Difficulties (faced during internship period)

During my internship, I faced challenges that tested my adapting and problem-solving skills. One of the primary difficulties wasw the repetitive nature of data entry tasks. To ensure better strategic decisions, I had to carefully input the data. Sometimes, the tasks was monotonous so I had to divide task in half to be motivated and honest towards my work-ethic. The first two weeks were challenging aswell. As a fresher I had to indulge myself into various conversations and tasks which I was new to.

Moreover, it had taken good time to get a better understanding of how EMS (Educational Management System) and payment gateways operate. Although, Kudos to my team and supervisors who deliberately guided through tasks and difficult situations during the three month period.

1.3.4 Recommendations (to the company on future internships)

The three month internship program at SSLCOMMERZ, will help freshers to grasp a better understanding of how Fintech and payment gateway services work. Although, the task were good there wasn't much a transparency when compared with what is written on job description. If that transparency is maintained, freshers/students will be more aware of their daily duties and be able to streamline the background process. Moreover, data entry tasks are crucial when it does become monotonous. If freshers were given tasks to aid the teams in field work or engage in sales task, they will get a better understanding of the market and its future demands.

Chapter 2: Organization Part

2.1 Introduction

SSLCOMMERZ is Bangladesh's largest payment gateway aggregator, operating since 2010 to revolutionize how businesses conduct transactions online. SSLCOMMERZ was initially developed by SSL Wireless to offer payment gateway integration; however, with 14 years of experience, it has evolved into a comprehensive digital payment platform. With a strong track record, It has empowered 5,000 businesses, onboarded more than 10,000 digital commerce businesses, and gained the trust of over 15,000 retail stores (SSLCOMMERZ, n.d). SSLCOMMERZ provides 33+ payment options and is affiliated with 30+ banks providing EMI solutions, SSLCOMMERZ stands out as a leader in the Fintech industry.

Committed to enabling business growth in the digital economy, it ensures seamless, secure, and scalable payment solutions. To ensure seamless and secured transactions, SSLCOMMERZ has PCI-DSS certificates, 3D security systems ISO 27001 compliance, and anti-fraud systems and utilizng the industry-grade EV SSL Protocol (SSLCOMMERZ, n.d). In a nutshell, SSLCOMMERZ is the only Merchant Solution Provider in Bangladesh that provides top-tier business growth solutions.

2.2 Overview of the Company

SSLCOMMERZ, operating under the name SSL Wireless, began its operation in 2008. Initially, SSLCOMMERZ started off as a small fintech startup to streamline the payment process in Bangladesh (BASIS, 2022). SSLCOMMERZ is located at New Eskaton, Dhaka, Bangladesh.

It is worth noting that, within 10 years in the fintech industry SSLCOMMERZ became the pioneer of payment gateway. During its course progression, the company has successfully achieved a lot of milestones: Nominated for Excellence in Online Payment Service in the National Digital Innovation Award South Asia 2011, championship award at BASIS National ICT Awards 2017, and also nominated for the APICTA Award in the Financial Industry Application Category. Bangladesh Bank has granted SSLCOMMERZ a No Objection Certificate (NOC) to spread merchant services nationwide (BASIS, 2018). Besides, SSLCOMMERZ expanded its operations to mobile financial solutions and enterprise-level integration systems. These milestones have marked the company's evolution and solidified its position as an industry leader. The company's goal is to leave a positive footprint by empowering people and creating growth opportunities which will be done by developing innovative, secure, and reliable that make businesses run smoothly and establish a cashless economy in Bangladesh. On the other hand, operating in the Fintech industry SSLCOMMERZ is emphasizing bridging the gap between traditional banking systems and modern e-commerce platforms. This strategic positioning allows them to play a pivotal role in the country's economy.

2.2.1 Products of the Company

- Payment Gateway
- Payment Invoices
- Payment Links

- EMI (Equated Monthly Installment)
- Bangla QR

2.2.2 Vision, Mission and Values

- **Vision:** Leave a positive footprint by empowering people and creating an environment of growth through innovative, secured, and robust software in providing excellent business service experiences.
- **Mission:** The legacy should consist of empowering people by developing secure robust software solutions for delivering extraordinary business service experiences that foster growth while empowering people**.**
- **Values:** Building relationships, ensuring excellent quality, meeting commitments, and delivering trustworthy service experiences are ingrained deep into our ethos.

2.3 Management Practices

SSLCOMMERZ follows an autocratic leadership style that aims at establishing a direct chain of command and complete control over the organization. The top-level authority includes the Chairman to the Managing Director with the assistance of the Chief Operating Officer (COO) are primarily responsible for decision-making that aligns with company goals and its objectives. They also emphasize direct communication and high expectations from their employees. The scheme of management setup is listed below:

- Chairman
- Board of Directors
- Managing Director
- Chief Operating Officer (COO)

- Head of Department (HOD)
- Manager
- Team Lead
- Executive
- Intern

During my internship, I observed the top-level authority often held weekly meetings to ensure the employees were on track and focused on individual Key Performance Indicators (KPI) and the organization's monthly/annual goals.

Critically analyzing this leadership style reveals both strengths and weaknesses. On the optimistic side, SSLCOMMERZ, a highly renowned payment gateway aggregator in the fintech industry is a structured organization. In such cases, running the company and keeping it on its track requires strict regulations and policies and the same goes for the ability to align with the company's objectives. Moreover, in high-risk environments, autocratic leadership style does play a critical role. However, from a pessimistic point of view, autocratic leadership has its drawbacks. The top-level authority is responsible for all decision-making and involves direct communication and less input from employees. In this case, employees might feel unheard which raises employee retention rates and unhappiness amongst the employees. Such inconveniences often lead to an imbalance in the premises. To maintain a balance, organizational growth, and employee well-being would support overall productivity and satisfaction.

2.3.1 Recruitment and Selection Process

The recruitment and selection process at SSLCOMMERZ is designed to attract and identify potential individuals who align with the company's values and drive organizational success.

To do this, the HR posts job listings on online platforms i.e. LinkedIn, Bdjobs.com, and their website. The applicants are then instructed to send a CV/Portfolio for the required job. After evaluating the submitted applications, the HR handpicks the suitable applicants. After securing the selection process, the applicants are told to sit for 2-3 rounds of interviews including written exams, aptitude tests, and presentations. In the first interview, the applicant will sit with the HR and the manager of the specified department for written and aptitude tests. After getting selected on the first round of interviews, the applicants are told to prepare a presentation which they'll present to the HOD (Head of Department) and the Manager. Subsequently, these tests evaluate the applicant's knowledge, experience,e and abilities. After the final interview, the hiring panels do a background check regarding criminal history, educational background, and other information. After this, the chosen applicant will be given a job offer if they intend to satisfy the organizational requirements and which fully completes the whole recruitment and selection process.

2.3.2 The Compensation System

The compensation system at SSLCOMMERZ is designed to attract and retain employees by integrating variable and fixed compensation, as well as comprehensive packages that prioritize overall employee welfare. Although the compensation system follows industry standards, it is strict in terms of guidelines and policies. Employees get a fixed compensation based on their work experience and job responsibilities. Bonuses and variable compensation are provided when employees can achieve their monthly key performance indicators (KPI). The other comprehensive benefits and packages include health insurance, vacations, sick leave as well as paid holidays.

2.3.3 Training and Development Initiatives

At SSLCOMMERZ, It is believed that investing in recruits is the key to success. That's why they have a six-month-long probationary period dedicated to training. During this time, the organization trains the recruits in every aspect of fintech, payment gateway, and other technical knowledge. The training modules are thoughtfully designed to help employees gain the most technical knowledge the recruits need to excel in this fast-paced industry. However, the commitment doesn't end at training. SSLCOMMERZ is passionate about fostering ongoing employee development activities such as conducting weekly meetings and seminars or workshops on e-commerce, payment gateway, financial technology, finance, etc. These development initiatives allow employees to grasp a better understanding and be up-to-date with recent trends. By prioritizing both training and continuous learning, it empowers the workforce to stay sharp, and competitive in the booming Fintech industry.

2.4 Marketing Practices

Successful marketing practices are no longer about broadcasting mottos but creating an adaptive atmosphere, and innovation that resonates with the clients' experiences. SSLCOMMERZ has managed to segment each product that align with its target audience. NGAGE360 is an in-house marketing agency responsible for SSLCOMMERZ's digital marketing and promotional activities. Moreover, their market also expands through word-of-mouth and client experiences. For the marketing strategy, SSLCOMMERZ has used the 4P's of marketing.

Product

- Variety of payment options (Payment gateway, payment links, EMI, Bangla QR, and payment invoices)

- 36+ payment partners
- 3D Security System

Price

- Industry Standard Pricing
- One-time setup and subsequent transactional charges

Place

- E-commerce business/Freelancers
- Brick-and-mortars
- Educational institutions/ Alumni
- SME/PLC
- Government Agencies
- Hotel and Tourism

Promotion

- Social Media Platform
- Digital Marketing
- Partnerships
- Campaign Management
- Referral/Word-of-mouth

Targeting Strategy

SSLCOMMERZ when it comes to targeting their clients, they first see whether the clients need online payment solutions or other solutions. For example, when collecting online fees schools need a payment solution so they target schools with integrated ERP systems and integrate their solution for a seamless transaction.

Positioning Strategy

For this strategy, SSLCOMMERZ showcases them as the only reliable option for payment solutions, they highlight 36+ payment partners and their newly equipped 3d security solutions are bigger to provide than other payment gateway companies.

Marketing Channels

1. Digital Marketing (SEO and PPC)
2. Content Marketing (Blogs, tutorials, and articles)
3. Partnerships
4. Referrals

2.6 Operations Management and Information System Practices

During my stay at SSLCOMMERZ, I observed their extensive use of information system tools to store, share, and process data among the stakeholders and clients. They used Hubspot as a CRM (Customer Relationship Management) tool to monitor monthly sales goals, client interactions, and sales pipelines. This system enables SSLCOMMERZ to analyze performance metrics, identify trends, and increase client engagement. Similarly, SSLCOMMERZ used E-buddy an operation management system for better efficiency. This software has various administrative functions like team location monitoring, leave management, task management, etc. This system streamlined their operations. To monitor their clients they used their platform to monitor each client's transactions whether they operating without minimal issues,

2.7 Industry and Competitive Analysis

Payment Gateway	Setup Fee	Cards fee	AMEX fee	MFS & Netbanking	Annual Fee	Security	Transaction Fee
SSLCOOMERZ	15k	2.5%	3%	2% - 4%		1. 3D security systems ISO 27001 compliance 2. Anti-fraud systems 3. Industry-standard EV SSL protocol	

						4. PCI DSS LEVEL 1	
aamarPay	SME (15k) & GROWTH (20k)	Ed (1.50%), Growth (2.35%), SME (2.50%)	Ed (1.50%), SME & GROWTH (3.50%)	Ed (1.50%), Growth (1.90%), SME (2.00%)		1. PSO Licensed from CBoB 2. PCI DSS LVL 1 3. Industry Standard PositiveSSL by SECTIGO	
Shurjopay.com	Ed (5k), Corporate (20k)	Corporate (2.50%), Ed (1.5%),	3.50%	2%		1. CMMI-DEV Level 3 2. PCI DSS LVL 1 3. PSO Certified	
EasyPayWay	Basic – BDT 5,000 Starter – BDT 10,000 Professional – BDT 18,000 Corporate – BDT 20,000	2.5%		3%	Starter – BDT 500 Professional – BDT 2,000 Corporate – BDT 2,500	1. PCI DSS Compliance Certified 2. Comodo Extended 256 Encryption SSL	
Bttpay	Free	3.8% plus 2$ for each transaction	-	-	-	-	
PaysuiteFintech	10,500	2.45%	3.45%	2.45%		1. 3D Security Systems 2. PSO Licensed	
Portwallet	Starter Package- 5k, Business Plan- Free	S (2.99%), B (2.59)	S (3.50%), B (3.50%)	S (2.30%), B (2.20%)			Starter (2 BDT) and B (1 BDT)

Table 1

Competitive Rivalry

Bangladesh's financial sector is currently experiencing a rapid growth which led to surge in internet-based businesses and online payments. This expansion has given rise to many Payment System Operators (PSO) including SSLCOMMERZ, PaySuiteFintech Ltd, AamarPay, ShurjoPay, PortWallet and EasyPayWay. Among these, SSLCOMMERZ has established itself as a leader in payment gateway services sector. Since, this company had the early-mover advantage, they were able to build a huge customer base and brand recognition. To become unique and user-centric these payment gateway companies have adopted brilliant pricing strategies. For example, SSLCOMMERZ takes a one-time setup fee for all of its merchants similarly other payment gateway providers have segmented their pricing for business, education and starter plans. In terms of product offerings, both SSLCOMMERZ and AamarPay provides payment links, payment gateway, invoices, EMI and QR but here SSLCOMMERZ is ahead due to first mover's advantage. Similarly, all the other payment gateway providers are also emphasizing on building their clients trust by data and security assurance and having the proper licenses and regulatory allows them to get hold on their clients. In conclusion, the competitive rivalry is high here.

Bargaining Power of Suppliers

The fintech industry's rapid growth enabled the rise of the payment system operators (PSOs) but also the number of suppliers such as cards, banks, MFS, and banking. For a payment gateway to operate properly, it must maintain good relationships with its suppliers to maintain their deal. A payment gateway that can onboard multiple banks, accept AMEX and other cards, and offer better MFS are ahead in the sector. For instance, SSLCOMMERZ has more than 33 payment channels and over 30 banks providing EMI solutions, which led it to be the pioneer in the industry. In addition to that, banks and MFS play a crucial role when it comes to competitive transactional charges. For example, SSLCOMMERZ, ShurjoPay, and AamarPay being the local companies have very close transactional fees. A payment gateway company has to depend on multiple suppliers to ensure the best user experience which is why negotiating with them to maintain balanced fees. Moreover, payment system operators (PSOs) that deal with high transaction volumes often gain the bargaining power to negotiate with lower transactional charges.

Bargaining Power of Buyers

For a merchant to make a choice among payment gateways available, the merchant has a lot of bargaining power — depending on which payment system operator (PSO) that merchant picks should offer the best transaction fees, not only with the latest data security and integrity and the promise of customer service, among others. The higher competency of them came from the presence of payment gateways such as SSLCOMMERZ, AmarPay, ShurjoPay, EasyPayWay, PortWallet, PaySuiteFintech Ltd facilitated them to compete with price strategies and post sales service and reliability. Payment gateways are somewhat used by Ecommerce platform, Retail stores and Service oriented platform, Education institutions are its primary customers. Ok, this allows us to work with such a wide scope of clients, the pricing of payment services should be price sensitive and have much competitive transaction fees and more secure infrastructure. Typically merchants choose operators who allow such flexible prices plans and 100 percent Govt. licence and regulation. SSLCOMMERZ, AamarPay, ShurjoPay, EasyPayWay, and PaySuiteFintech are some of the govt. Legislated locally operated. On the market, these operators were well used by the merchants and referred by many. This is when operators have to excel in the customer retention. With this brutal situation, there is no other option available other than to come up with a long term strategy when you on boarded a client to ensure that your client experience is in the best possible way including after sells or business solution that will positively ease the transaction process leading to better reliability.

Threat of New Entrants

The rapid expansion of internet businesses intensified the competition between payment system operators (PSO). They compete by providing the lowest transaction rate, advanced data and information security assurance and best-in class after sales services. In order to establish a payment gateway, the management has to ensure that they line of business is aligning with Bangladesh Bank approval and regulations. In this case, the regulatory barriers includes:

- **Data localization:** Adhere to Bangladesh Banks's Cybersecurity Guidelined 2018
- **Certifications:** ISO 27001 certification.
- **Security Standards:** Data security and privacy Payment Card Industry Data Security Standard and the General Data Protection Regulation (PCI-DSS) (GDPR)
- **Capital Requirement:** Baseline requirement of BDT 5,000,000 (Tahmidur Rahman, n.d.)
- **Encryption Protocol:** Secure Socket Layer (SSL) & Transport Layer Security (TLS) for encryption
- **Legal Compliance:** Anti-Money Laundering (AML) Act, 2012 and Know Your Customer Guidelines (KYC)
- **Registration:** Register under Bangladesh Bank Order 1972

Currently companies with early mover advantage have captured large market share in exchange of providing better rates and advance after service and business solutions. The clients tend to stick to PSOs that had long client relationship and had high volume transactions which also created a massive network amongst which in return help them expand their services. To entry such a huge market, they have to keep up the base-line requirement, previously mentioned. Moreover, they also have to collaborate with banks and financial institutes to offer the client to pay through any banks or Mobile Financial Services (MFS), which in the end creates brand values and recognition.

Threat of Substitutes

- Alternative payment methods include direct bank transfers, cash-on-delivery (COD), mobile wallets (bKash, Rocket, Nagad), and cryptocurrency.
- COD remains popular in Bangladesh, reducing reliance on online gateways.
- Some businesses integrate directly with banks or MFS providers, bypassing third-party gateways.

In Bangladesh fintech sector a lot substitutes exists including MFS, Buy Now Pay Later (BNPL) services & installements, card payments, bank transfers and e-wallets. In addition to that, the MFS, Bank Transfers are the most used alternatives. According to Bangladesh Bank, “MFS handled more than 563 million transactions worth $109 billion in FY 2022–23”. Additionally, bank transfers are also used for high value-transaction that is trusted by the people. Despite these alternatives, business might avoid the usage of payment gateways due to transactional fees as they require to pay an extra percentage. Integration challenges, business want payment system that works seamlessly like (‘plug n play’), reliability issues where having to depend on third-party services and unreliable customer support can create doubt in business owners. Although, payment gateways have disadvantages but they offer data & security assurance, fraud detection abilities and providing analytics which not found in other alternatives. These provided values can enhance the businesses and can understand the payment structure better.

SWOT Analysis

Strengths

- Common Strengths:-
    - **Established Market Reputation:** SSLCOMMERZ is a reputed and one of the pioneers of the payment gateway industry in Bangladesh, supported by multiple banks and financial institutions to serves it market base.
    - **Regulatory Compliance & Security:** SSLCOMMERZ is well-equipped with advanced regulatory standards and implemented standard encryption protocols to ensure secure online transactions.
    - **Comprehensive Service Offering:** It provides a wide range of payment solution (Payment Links, Payment Gateway, Payment Invoices, EMI & Bangla QR etc.)
- Imitable Strengths:-
    - **Reliable Technology Infrastructre:** SSLCOMMERZ’s robust payment features, solutions and security is good but this service and offerings can be replicated by other PSO’s by investing in technologies.
    - **Standardized Security Measures:** Although SSLCOMMERZ’s security measures are up-to-date (PCI-DSS & EV SSL Protocol) are becoming common with other PSO’s as they are adapting.
- Distinctive Strengths:-

    - **Market Leadership & Network Scale:** Being the largest payment gateway aggregator in Bangladesh, SSLCOMMERZ is benefitted by mass banking network and the early-mover advantage allowed the company to be the leader.

    - **Deep-Industry Integration:** It's all-rounder integration system allows it to used in educational institutions, e-commerce businesses, brick-and-mortars, hospital & tourism and NGO and charities etc.

- Weaknesses:-
    - **Geographic Focus:** Operating only under local market, which might limit international transaction expansion

    - **Dependency on External Partners:** Relying on banking partners and regulations often puts SSLCOMMERZ to risks due to policy and regulatory changes

    - **Integration Challanges:** Technical issues and complexities during update and maintenance can disrupt operational efficiency

- Opportunities:-
    - **Market Expansion:** The thriving e-commerce businesses and digital payments creates an opportunity for SSLCOMMERZ to expand its services.

    - **Technology Enhancements:** Investing in emerging technologies i.e Blockchain, AI-based fraud detection system can further improve its offerings and security assurance.

    - **Diversification:** SSLCOMMERZ can introduce new fintech solutions like Buy Now Pay Later (BNPL) and digital wallets which could open additional revenue streams.

- Threats:-
    - **Intense Competition:** As the fintech industry is rapidly expanding, more and more payment service operators are joining the competition.

    - **Economic Fluctuations:** Economic fluctuations often shifts consumer buying pattern which affects transaction volumes.

CHAPTER 3

3.1 Introduction

The integration of payment gateways into Student Information Systems (SIS) is a significant step toward modernizing higher education administration in Bangladesh. The traditional payment methods that are currently used like cash payments, bank or check transactions at the university or other educational institutions, administrative officer and Bank have long caused harassment of student and institutional staff. Constant delays and errors, long line on banks, and the lack of transactional transparency have always hindered the efficiency of financial transactions which has impacted both students experience and the administrative workflows. To solve this problem many educational institutions all over the world which also include those in Bangladesh, are trying to adopt digital payment method to increase their administrative efficiency and their financial accountability.

People conducting payments digitally provide smoother transaction processing together with reduced error rates for students who combine on-campus with online learning activities - OmniFund research confirms. Students depend on scholarships and various financial aid to handle their tuition together with housing needs as well as medical costs and educational supplies and certification payments. The traditional payment methods require three weeks for processing yet digital and mobile solutions both speed up and streamline distribution and provide lenders with secure fund distribution. (Pymnts, 2021).

However, despite the advantages of e-payment and online payment systems, they are not effective and efficient in less developed countries due to numerous challenges facing their operators. Such challenges, according to (Ogedebe & Babatunde , 2012) include, lack of uniform platform by Banks and MDAs, lack of adequate infrastructures, a lack of seriousness by Banks, resistance to changes in technology among customers and staff, and security in terms of platform, hackers and virus attacks. However, Government and the private sector are making concerted efforts in addressing these challenges. Such efforts have yielded positive results as volume of e-payment and online payment is witnessing exponential growth (OBAA & JIBRIL, 2024).

The study on integrating a payment gateway into SIS aims to identify the benefits, challenges, and solutions related to digital financial transactions in higher education institutions. This paper plans to offer insights on the advantages and disadvantages of implementing digital payment solutions by examining case studies and the body of existing literature. The findings of this paper will help university administrators and policy makers to make data driven decisions to improve student experience, increase transparency and overall administrative efficiency in the education sector.

3.1.1 Literature Review

(Mayunga & Jilenga, 2024) They researched how Tanzanian higher education revenue investment is affected by the government's electronic payment gateway (GePG). In the research, they have found that implementing GePG has enhanced the revenue of higher educational education. They have identified the reasons as an increase in financial transparency and more predictable revenue streams. They noted that every institution had different administrative cost savings, they attributed the reason as different levels of GePG integrations and leadership supports in GePG adoption. They have suggested that the best way to implement GePG is to strengthen staff training programs and a standard adoption strategy.

(Nur, Akbar, Sukarwoto, & Ulfa, 2024) The main purpose of this research was to evaluate how academic information systems connected to virtual accounts affect financial management efficiency and transparency at Midden Aviation Polytechnic. The teams concluded that the integrated information system ran successfully according to their evaluations. User roles consisting of university administrators and lecturers, and students benefit from improved efficiency when utilizing KRS filling and transcript printing, and payment confirmation functions. The study also showed a reduction of human error in data processing and increased transparency. The combination of SIAKAD with virtual accounts created an efficient academic data management system that represented clear financial data flows at Politeknik Penerbangan Medan.

(Chibuzor , Otohinoyi, & Animoku, 2024) This paper evaluated electronic payment systems in student administration at Ahmadu Bello University Zaria by using the Technology Acceptance Model (TAM). Research results demonstrated an inherent positive link between student preferences for electronic payment systems which they view as an efficient and user-friendly method to enhance administrative operations. They identified that the university administration cannot handle too much traffic in their e-payment platform for this the students suffer. They have suggested that the university upgrade their bandwidth and backup systems to prevent data loss from crash and slowdowns. Inconclusion their research shed a light on the role of technology in modern student administration.

(Rajathi & Kumar, 2024) Their study analyses the preferences and the trends regarding payment gateway system among college students and a demography that was increasingly becoming reliant on digital transactions. The study highlighted the payment preferences based on factors such as age and financial literacy. Their study also provided recommendations for businesses to enhance their user experience and implement better security measures. Also, their paper suggested offering incentive to the students to adopt specific payment platform. This research has contributed to getting a better understanding of the payment gateway system and its uses in the college demography as information for the future innovative in financial technology for young customers.

(Byabato, 2022) The study indicated that students faced significant challenges as they had to use banks to deposit their tuition fees. This led to delays in the payment also there was a lot of paperwork to be completed. As the students had to pay before taking their final exams their studies got hampered as they had to wait in long lines to pay the tuition fees. This sometimes led to missing their exams and worse performance of overall students. Their finding reported that the payment systems increased efficiency and led to time saving and it was also easy to use.

3.1.2 Objectives

The primary objectives of this study are:

1. To analyze the impact of integrating a payment gateway into an SIS on administrative efficiency.
2. To evaluate the challenges associated with traditional fee payment methods in educational institutions.
3. To explore the benefits of digital payment systems for students, administrators, and finance departments.
4. To propose recommendations for optimizing digital payment integration in SIS platforms.

3.1.3 Significance

The study will provide the university administrations and the policy makers to understand the benefits of integrating payment gateway into the student information system. The study will discuss the hurdles of the students and administrative stuff which they have to go through in the lack of an digital and online transaction methods. This study will also help in understanding the implications and problems of implementing these transition systems. This study also examines the issue of security and effectiveness of payment systems which may be compromised due to lack of complete integration or use of unsophisticated methods in technology. The paper explains how stakeholders actively contribute to implementing student electronic payment systems that prove successful.

3.2 Methodology

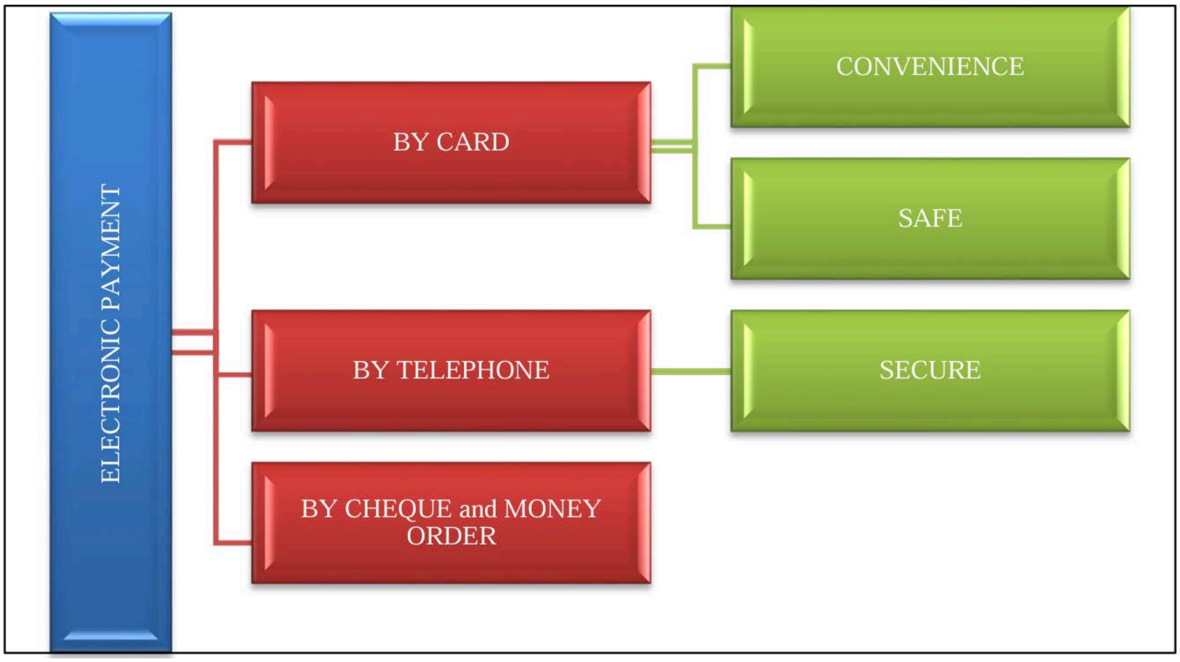
The study uses a qualitative research approach to provide a comprehensive understanding of the impact of digital payment gateway integration in the student information system. The primary data is collected from web scraping, through which the basic understanding of SIS system was analyzed. For the secondary research, a thorough literature review was performed. The literature review emphasized finding existing studies on adoption of digital payment solutions in different academic institutions that have actually worked. This analysis has enabled us to find out the implementation problems and the effectiveness of implementations. Also, a case study approach was used by analyzing and examining institutions that have successfully implemented payment gateway systems and from that the study has identified the best practices and lesson that should be learnt in case of future development.

3.2.2 Limitations

The study only analyses the higher educational entities which doesn't provide a broad understanding of the implementation hurdles. The technological constraints could have been analyzed more in depth. The security and data privacy concerns have been ignored. The study does not fully explore the adoption constraints of new technologies. Most of the data for this study are from secondary or third-party sources. Another limitation of this study is it only focuses on the short term impacts of payment gateway integration. Long term effects are not comprehensively explored.

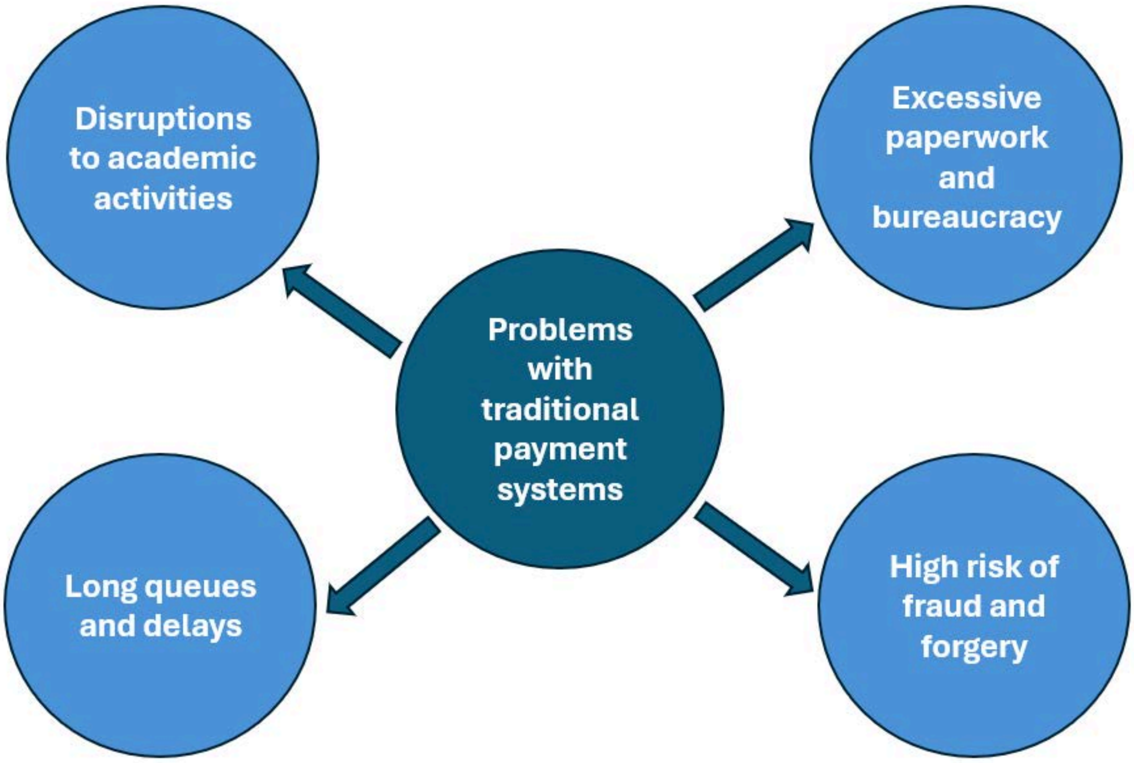
3.2.3 Conceptual Framework of Digital Payment system

An electronic payment represents a digital approach to making bills, together with other transactions through phone systems, internet access as well as Electronic Fund Transfer and card-based methods. The figure below shows how electronic payment allows consumers to choose cash, together with checks and money orders, to settle debts and bills. (Mweaw, 2018)



3.3 Findings and Analysis

3.3.1 Problems with traditional payment systems



The research shows that there are many problems with traditional payment methods in higher education institutions which show several inefficiencies in the transactional system.

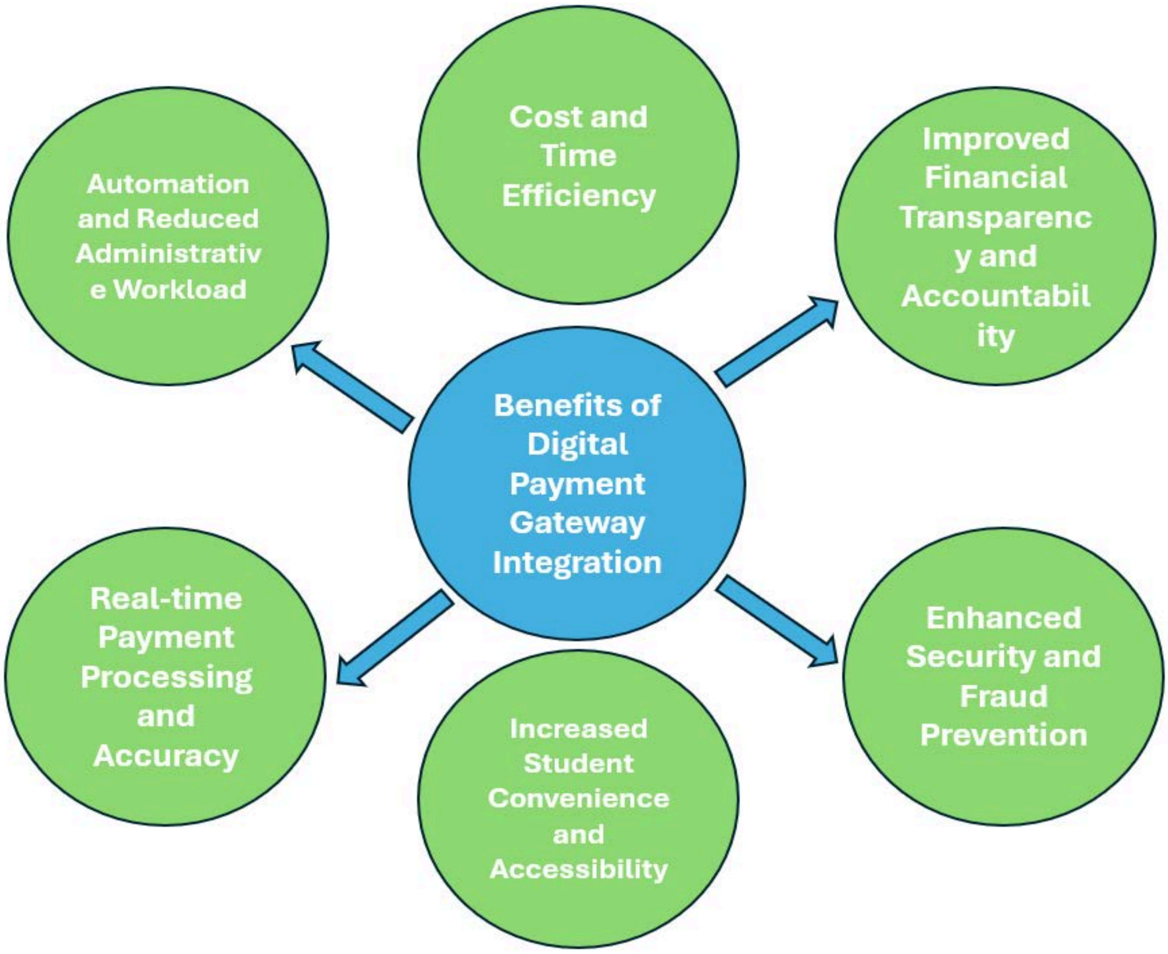
- **Long queues and delays:** The research of (Byabato, 2022) “Respondents at Nobo College indicated bank payment methods as the dominant fee payment method since a majority of 72 (83.7%) respondents agreed while 14 (16.3%) respondents disagreed. According to the poll results the longest bank queues represent one of the primary obstacles students encounter when paying fees at Nobo College because they experience stress.” Although this mode of payment is effective, but students waste time during payment of school fees in bank as well as during the conversion of their bank tellers into official receipts that could have been used in pursuing other academic activities (OBAA & JIBRIL, 2024).
- **Excessive paperwork and bureaucracy:** The study of (Byabato, 2022) also found that there was a challenge of too much paperwork as a result of bank deposits which promotes bureaucracy both in the banks and at the college. Also the research of (Oktavian, Indahyanti, & Astutik, 2023) shows that the payment of new student registration still uses manual payments and online transactions of bank accounts by showing proof of payment, so that archives payments are still not neat. Furthermore, with the present mode of school fees payment, student can only make school fees payment within official working days and working hours as banks and the College services are not available on certain days and times within days. In addition, the present mode of payment is stressful as students pass through many stages before

completing school fees payment process. Furthermore, students have to pay transportation money when going to the bank for school fees payment. (OBAA & JIBRIL, 2024)

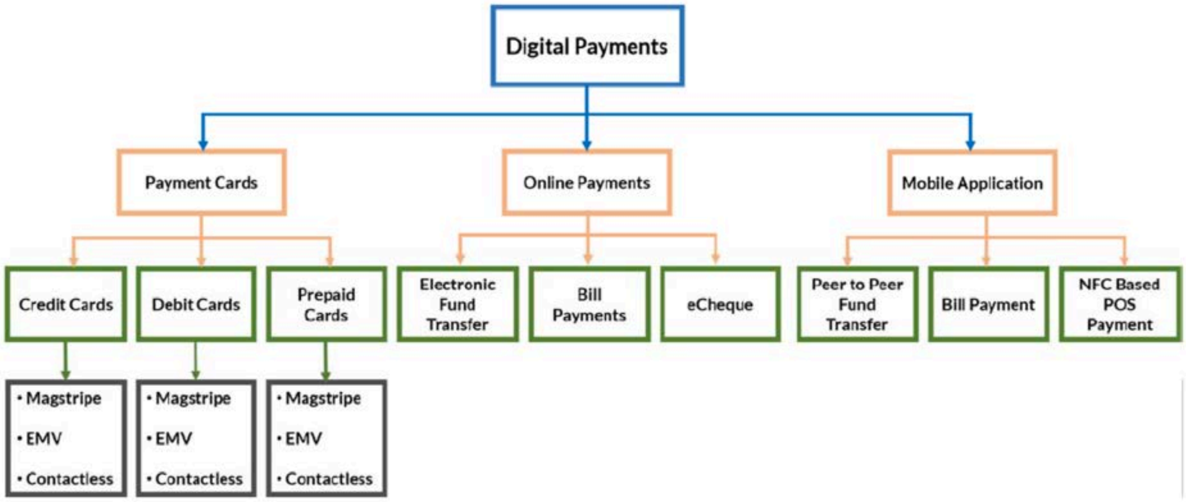
- **Disruption of academic activities:** The students also suffer from the disturbance of the academic activities. According to the research of (Mweaw, 2018) A substantial percentage of students uses cash and electronic fund transfers combined with bank drafts to pay their complete tuition fees at designated bank account destinations. Students experience long queues and excessive waiting as well as bank location congestion while they complete their fee payments. Students do not take their examinations due to the extended queue that develops while they pay their costs. Students from Nobo College stand in queues at the finance department to obtain payment approval and examination card access before getting entry to their classes. Each semester the college operates this examination procedure at its final exam period. Pupils face negative effects to their exam performance when this situation occurs (Byabato, 2022).

3.3.2 Benefits of Digital Payment Gateway Integration

Integrating digital payment gateway in the root level of student information system has tremendous benefits. universities and colleges can offer online portals where students can pay using a credit or debit card or electronic funds transfer (Ménard, 2024).



- **Improved efficiency and transparency:** In their research (Nur, Akbar, Sukarwoto, & Ulfa, 2024) stated that using payment gateway, payment confirmation can be accessed by various users, including university admins, study program admins, lecturers, and students. Also, findings (Byabato, 2022) The researchers observed that online school fee payment implemented effective duties by using modern technology with its time-saving efficiency and availability to users. Digital transaction paths create more transparency because they facilitate financial activity accountability throughout the institution. Educational institutions gain full reporting functionality through digital payment systems which enables tracking of payments and financial reporting creation as well as faster accounting procedures. (OpenEduCat, 2024)
- **Enhanced accessibility:** Digital payments diagram



Source: (Ghosh, Majumder, Kumar, & Goswami, 2017)

- Students along with their parents and professors benefit from digital payment methods which let them pay fees from any location thus improving their absence from physical visits. Online payment methods provide different payment platforms including mobile wallets and online banking in addition to credit/debit cards which enable consumers to pay using their preferred options (OpenEduCat, 2024). Students who utilize digital payment methods gain the ability to make educational service payments at convenience because their background or location is immaterial. Students are able to complete tuition and educational service payments without the requirement of physical attendance at the university. Students studying abroad find this particular advantage especially useful because campus visits are not possible in their situation.
- **Real time processing and reduced administrative workloads:** Integrating payment gateway into the student information system has increased administrative efficiency. According to (Mweaw, 2018) Students at Kwane University of Science and Technology and St Edwards examined how payments took place between themselves and payments institutions. Research conducted at St Edward University shows that the Eulllucian payment center proved successful since 99% of students used this new system. Students gained better control because the system enabled them to finish more steps online thus reducing their queue time. Also, according to (Sausi, Mtebe,

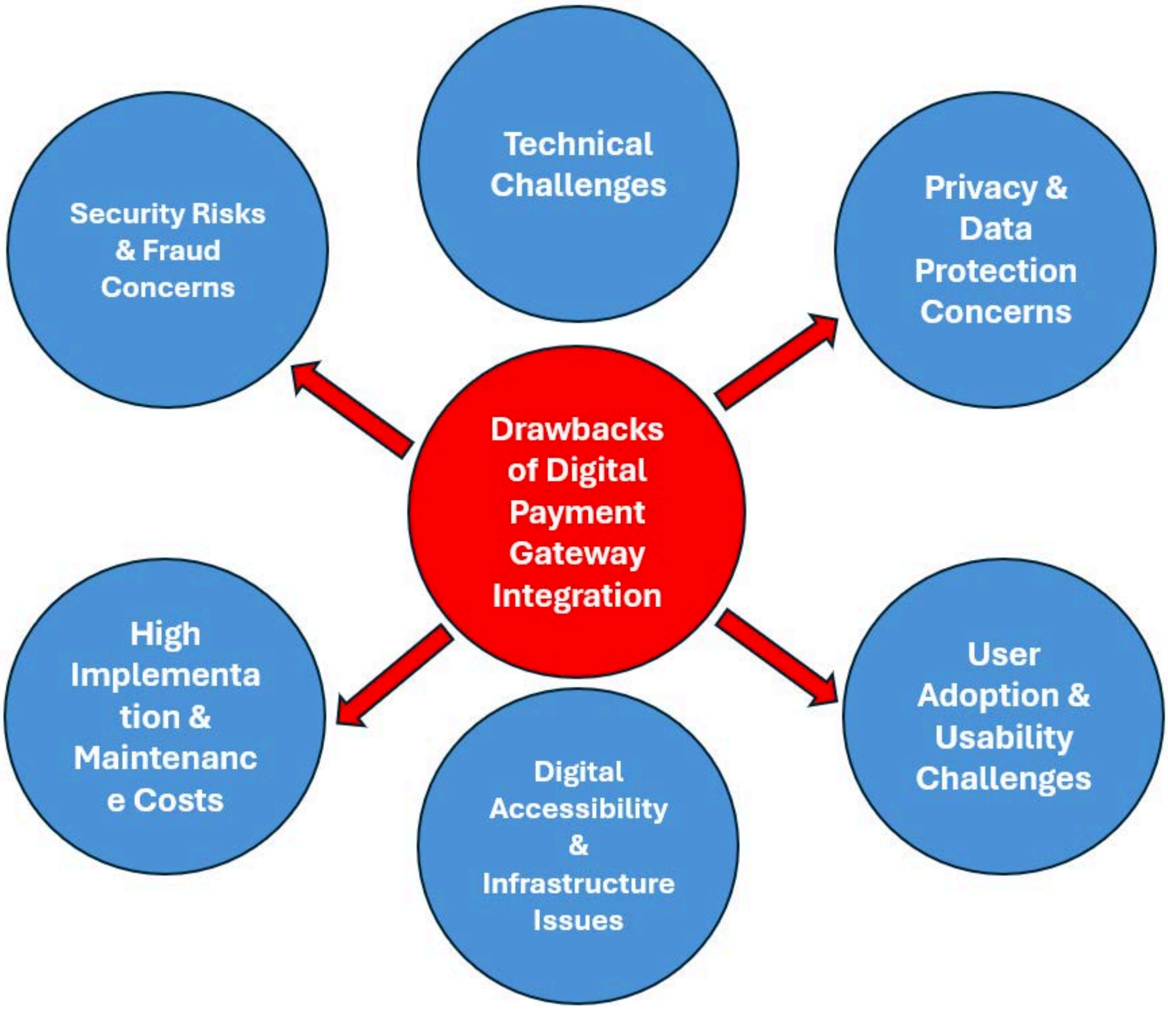
& Mbelwa, 2021) Users at the payment gateway within financial and accounting departments utilize the system to manage invoicing before receiving payments from service customers. Data through the system dashboard presents collection summary and collection objectives besides paid and outstanding invoices with a list of service providers. Real-time data tracking and monitoring capabilities exist for information regarding revenue collection in this specific context. Users can view revenue reports while the system performs reconciliation until it moves revenue directly to the central bank. Which improves administrative efficiency.

3.3.3 Case studies of implementation

Here are some case studies of several institutions that have successfully implemented digital payment gateway in their student information system.

- **Nobo College of Pharmacy in Tanzania:** According to (Byabato, 2022) The majority of students at Nobo College use banks to pay their fees as shown by the responses of 72 (83.7%) respondents. Banks at Nobo College presented long waiting queues to students which generated stress and excessive paperwork appeared to be one major fee-paying problem. The research established that the online payment system for school fees operated efficiently because it reduced school fee payment tasks while remaining accessible and easy to use. (Byabato, 2022).
- **Ahmadu Bello University Zaria:** (Chibuzor , Otohinoyi, & Animoku, 2024) The research draws major focus on the dominant role that modern technology has in student management systems stressing the significance of resolving online payment discrepancies. Research results demonstrate a positive statistical relationship which confirms that students believe electronic payment systems provide easy use and enhance administrative operations.
- **St Edward’s University:** According to (Mweaw, 2018) St Edward's University researchers found that the system maintained original ERP systems for different functions while serving as the first institution to use the system for online tuition payments. The payment process was highly time-consuming because personnel needed to explore multiple databases along with a complex sequence to determine payment destination accounts. They executed the newly implemented system before performing surveys. The survey at St Edward University demonstrated that 99% of students used the Eulllucian payment center thus enabling them to achieve online completion of tasks while reducing queue wait times.

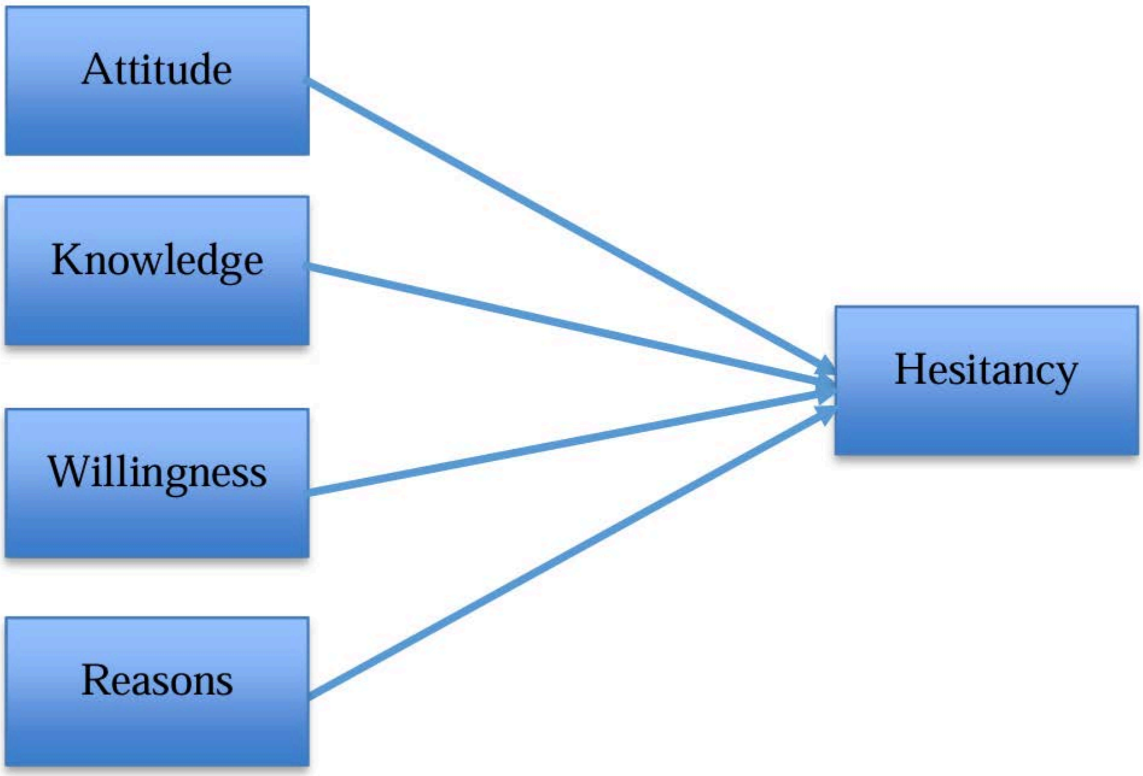
3.3.4 Drawbacks of implementing payment gateway system



- **Technical Challenges:** The integration of the payment gateway system with the student information system can be complex and time consuming. Sometimes it may not be compatible with the existing infrastructure or require different type of new infrastructure structure. Moreover, the payment gateway system has to be on 24/7. If there is no constant power supply or if the system fails, the transaction may fail or be delayed. Also, the system may not be comfortable with all types of online payment methods. Payment systems experience technical malfunctions which cause system downtime because they depend on technology. Staff members and students experience higher levels of tension during payment periods because of this system condition (Ménard, 2024). Also according to (Mweaw, 2018) the old payment system for the St Edward's University, it indicated inefficient processes to the office of Student Financial Services as well as limited reporting capabilities hence the staff had to use multiple databases through a difficult process of identifying the account that has been paid and how payment was made.
- **High Implementation and Maintenance Costs**: The integration of payment gateway systems in student information systems requires high up front development costs.

This may need software licensing and the hire of new developers. Also, when the system is implemented, it requires constant maintenance which requires and dedicated it and maintenance stuff which also adds to the cost of the company. Payment solutions require institutions to cover fees for letting customers use these payment methods whereas retail stores and restaurants apply similar payment costs. Institutional adoption of emerging technology such as payment solutions can present inconvenient fees to institutions when compared with legacy payment methods like cheques and in-person payments. Institutions with smaller sizes are more prone to face this financial burden (Ménard, 2024). In most payment gateways these fees are 1-3% which will increase operational expenses for students and institutions.

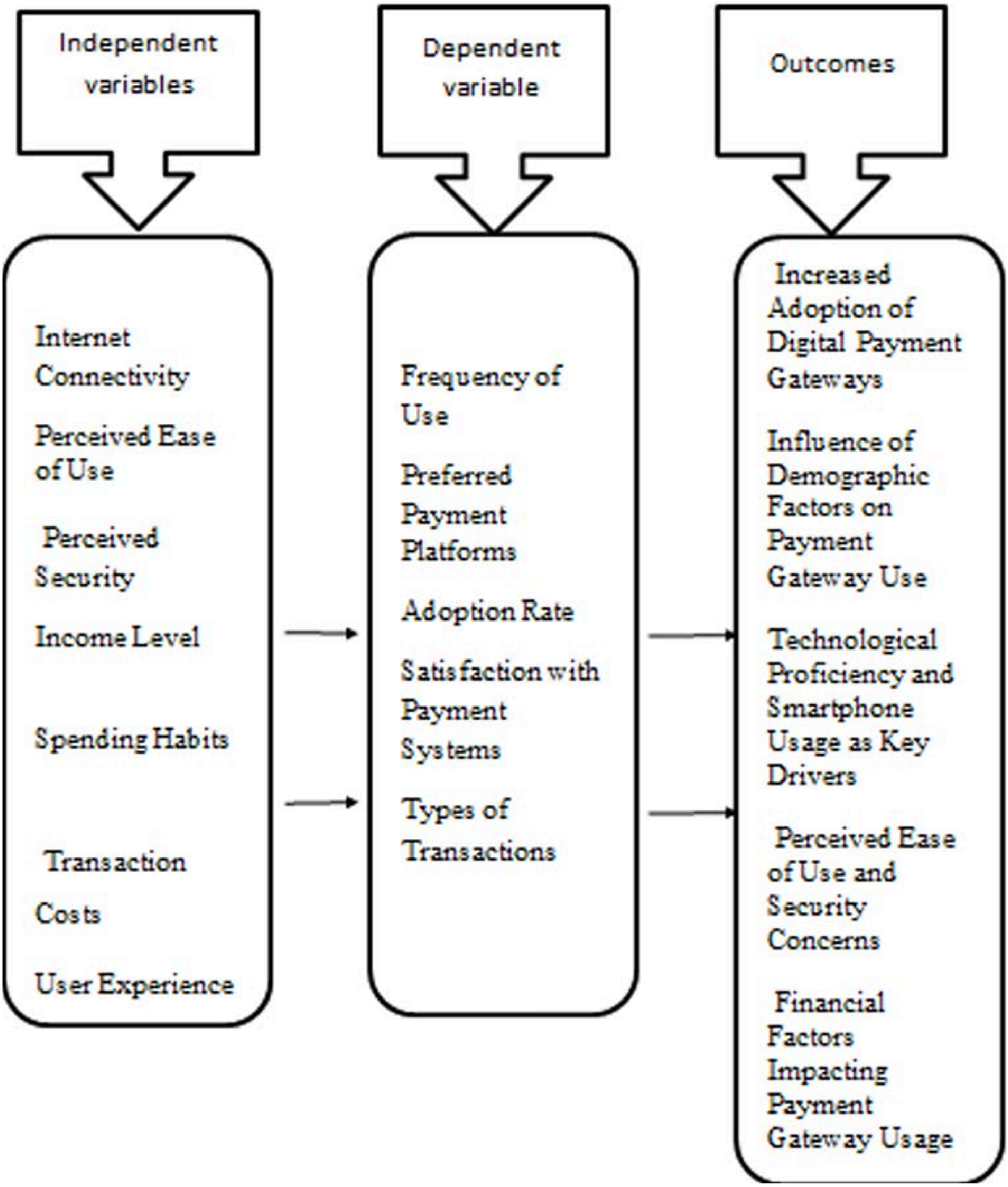
- **User adoption, privacy, and data protection concerns:** Some students faculties or university staff may want to use the traditional payment methods. Also, one of the main concerns is digital literacy. The students the administrative staffs and the faculties have to learn the new system, how to use it and that may be a huge challenge. This may lead to a reluctance to the use of new technology.



Many of the students may not have the devices necessary to make online payment transactions like debit or credit cards. Also, in the remote areas the connectivity can be hampered. The student may also be concerned about their privacy as they have to give out their credit card information or transactional data to universities to provide which they may become hesitant. Also, most of the payment gateway systems are third party softwires that may lead to security concerns. There is the possibility of leaking data and getting hacked. These are a few reasons why implementing the payment gateway in the student information system may become a hassle.

3.4 Recommendations

Here are a few recommendations for the integration of payment gateway into student information system for enhanced administrative efficiency. Here is a basic framework.



Source: (Rajathi & Kumar, 2024)

- **Adopting secure payment solutions:** when building the software, the university should keep in mind that the security of the system. This cannot be compromised; this should be the Ut most concern when integrating the system. Also, the transactional system should be friendly and easy to use and should be able to maintain a secure connection while processing the data efficiently in real time.
- **Awareness and training:** The students and the university staff and the faculties must be given training on how to use this digital payment platform. The administrative staff especially should be trained on how to view and manage the financial reports, and the transaction efficiency. The system must be inclusive, as there are various ways of digital transactions, the system must have the most common ones integrated for smooth operations. Also, awareness must be spread regarding digital transactions so that the student and the staff don't face fraud or give out their valuable information to third parties that may harm them.
- **Continuous system improvement and maintenance:** The online payment platform should be fully integrated with the student management system so that it can ensure easy verification of tuition fee payments and keep financial records. The payment system must be continuously updated and maintained so that there is no security vulnerability in the system also so that it can maintain its optimal performance. Moreover, there should be a support team, which can assist with any problems regarding online transaction. The system should have a backup database in case of system failures or hacking. Also, the system should be modular as if the number of students or users increases the system can accommodate them. There should also be a feedback mechanism so that the technicians can improve the software.

3.5 Conclusion

The integration of a payment gateway into the Student Information System (SIS) significantly increases administrative efficiency by efficiently tracking financial transactions, reducing paperwork, and minimizing manual transaction errors. This study analyses the challenges of traditional payment free methods, such as long lines, bureaucratic delay, payment tracking errors, frauds, and administrative hurdles. Then it shows how the digital payment gateway system solves these issues by lower processing time and minimizing administrative hurdles. Despite the many advantages of digital payment gateway, it also has problems such as high implementation costs, cybersecurity risks, system downtimes, and digital access unavailability. These problems can be solved by having robust system security, making the platform more accessible, and constant optimization.

In conclusion, the successful adoption of payment gateway systems in educational institutions will improve the convince of the students and administrative stuffs. This will not only improve financial management but also promote an inclusive digital learning environment. Ultimately improving the lives of everyone.

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