

**THE FACTORS AFFECTING DEVELOPMENT OF E-COMMERCE FOR SMALL
AND MEDIUM ENTERPRISES. A CASE STUDY OF BUSINESS ENTERPRISES
WITHIN DAGORETTI NORTH SUBCOUNTY, NAIROBI COUNTY.**

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**A RESEARCH PROJECT SUBMITTED TO THE SCHOOL OF MANAGEMENT
AND LEADERSHIP IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR
THE AWARD OF THE DEGREE IN BACHELOR OF COMMERCE OF THE
MANAGEMENT UNIVERSITY OF AFRICA.**

AUGUST, 2025

DECLARATION

Declaration by the Student

This research is my original work and has not been presented for a degree in any other university.

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DECLARATION BY THE SUPERVISOR

This Research Project has been submitted for examination with my approval as the University Supervisor.

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DEDICATION

I wholeheartedly dedicate this research project to my beloved wife, Judith, whose unwavering love, encouragement, and support have been a source of strength throughout this academic journey. I also dedicate it to my cherished children Purity Awuor, Shaline Adhiambo, Peter Onyango, and Griffin Adede whose presence continues to inspire me to strive for excellence. It is my sincere hope that this work serves not only as a reflection of my commitment to lifelong learning, but also as a motivation for them to pursue their own academic and professional endeavors with passion, determination, and integrity. May they be inspired to author their own meaningful projects in the areas that ignite their interests and talents.

ACKNOWLEDGEMENT

I would like to express my sincere gratitude to all the individuals and business owners who generously contributed their time, insights, and support throughout the development and completion of this research project. Your cooperation was invaluable and greatly appreciated.

Special thanks go to my work colleagues, whose collaboration and shared knowledge enriched my understanding of how to effectively compile and synthesize information into a coherent and meaningful study. Your encouragement and input played a crucial role in shaping the final output of this work.

I am especially indebted to my research supervisor, Dr. Samuel Thiong'o, for his invaluable guidance, constructive feedback, and thoughtful recommendations. His academic mentorship significantly enhanced the quality and clarity of this project, and I am deeply grateful for his support.

Finally, I extend my heartfelt appreciation to all the respondents from Small and Medium Enterprises (SMEs) who willingly participated in the study. Your honest responses and openness provided the foundation for this research. May you be richly blessed for your contribution.

ABSTRACT

This study investigated the key determinants influencing the development and adoption of e-commerce among Small and Medium Enterprises (SMEs) within Dagoretti North Sub-County, Nairobi, Kenya. Although digital commerce continues to reshape modern business landscapes, SMEs in this region encounter a variety of persistent challenges that limit their effective engagement with the digital economy. The research was guided by four core objectives: to examine technological factors, financial constraints, market and customer-related dynamics, and legal and regulatory conditions that affect the uptake and growth of e-commerce. The study was grounded in two theoretical frameworks Technological Determinism Theory, which emphasizes the role of technology in shaping societal change, and Protection Motivation Theory, which explains how perceived threats and coping mechanisms influence behavioral responses toward technology adoption. A descriptive research design was adopted to systematically capture the current status of e-commerce adoption among SMEs. Data was collected using structured questionnaires distributed to owners and managers of SMEs. A stratified random sampling technique was used to ensure representation across different business categories from a target population of 67 registered SMEs in the sub-county. Data analysis was performed using descriptive statistics, specifically frequencies and percentages, to summarize and present the findings. The results revealed that technological enablers such as access to affordable digital tools, reliable internet connectivity, and employees' digital competencies significantly support e-commerce engagement. However, technological challenges including cybersecurity threats and inadequate technical support were found to hinder progress. On the financial front, lack of access to SME-specific funding options and the high costs associated with adopting secure online payment platforms were major obstacles. Market-related factors such as evolving customer preferences, the effectiveness of digital marketing strategies, and competitive positioning were shown to have a direct influence on e-commerce performance. In the legal and regulatory context, many SMEs expressed difficulty in complying with complex regulations, despite acknowledging the importance of consumer protection, data privacy, and legal trust-building mechanisms in digital business environments. The study concludes that a multifaceted interplay of technological, financial, market, and legal factors either accelerates or restricts the successful adoption of e-commerce among SMEs in the study area. Based on these findings, it recommends several interventions: improved digital infrastructure, the introduction of SME-friendly financing models, expanded regulatory education programs, and comprehensive capacity-building initiatives to strengthen digital skills among SME stakeholders.

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LIST OF ABBREVIATIONS AND ACRONYMS

CAGR	Compound Annual Growth Rate
CBK	Central Bank of Kenya
DESI	Digital Economy and Society Index
GDP	Gross Domestic Product
ICT	Information And Communication Technology
MSMEs	Micro, Small and Medium Enterprises
NGOs	Non-Governmental Organizations
OECD	Organization For Economic Co-Operation and Development
ONDC	Open Network for Digital Commerce
PMT	Protection Motivation Theory
SEO	Search engine optimization
SMEs	Small And Medium Enterprises

OPERATIONAL DEFINITION OF TERMS

- Cybersecurity:** cybersecurity encompasses the protection of online platforms, customer information, and financial transactions against threats such as hacking, phishing, malware, and identity theft. Strong cybersecurity practices are essential to maintaining trust, ensuring data integrity, and preventing fraud in online business environments.
- Development:** Development, within the e-commerce framework, signifies the process of enhancing and expanding digital business operations. This involves the integration of advanced technologies, refinement of online marketing strategies, and improvements in customer engagement and service delivery.
- Digital Infrastructure:** Digital infrastructure encompasses the foundational physical and technological systems required to support e-commerce operations
- E-Commerce:** Involves the purchase and sale of products and services using digital platforms, mainly via the internet.
- Online Payment Systems:** Online payment systems are digital mechanisms used to facilitate monetary transactions over the internet. These systems include credit and debit cards, electronic funds transfers (EFT), mobile payment solutions such as M-Pesa, and digital wallets like PayPal.
- Small and Medium Enterprises (SMEs):** Small and Medium Enterprises (SMEs) are business entities characterized by limited scale in terms of employee count and annual turnover

CHAPTER ONE

INTRODUCTION OF THE STUDY

1.0 Introduction

This chapter introduces the study by presenting its background, research problem, objectives, and key research questions. It also outlines the study's significance, discusses its potential contributions, and highlights its limitations, providing a clear overview of the research scope and focus.

1.1 Background Information

E-commerce, as a subset of international trade, involves transactions between parties located in distinct customs territories, facilitated entirely through digital platforms. These transactions are voluntarily undertaken, with logistics and product delivery being independently arranged across borders (Wei et al., 2017). E-commerce is characterized by several distinct features: it is intangible, operates in real time, evolves rapidly, reaches global markets, and functions without the need for paper-based documentation. Over the last two decades, e-commerce has undergone exponential growth, transitioning from a virtually unknown concept to a major global trade channel. According to Fatima et al. (2017), global e-commerce was projected to reach an estimated value of USD 1.92 trillion by the end of 2016, reflecting its meteoric rise.

A critical enabler of e-commerce development especially for small and medium enterprises (SMEs) is the presence of adequate technological infrastructure. A 2023 report by Statista revealed that over 4.66 billion people worldwide now have internet access, underscoring the immense market potential for online business ventures. However, for SMEs to tap into this digital opportunity, they must first overcome barriers such as inconsistent internet connectivity, lack of affordable technological solutions, and limited access to platforms tailored to their scale and operational needs.

In China, despite being a pioneer in the digital economy, SMEs still report significant financial constraints. A 2022 study published in the *Journal of Small Business Management* indicated that 67% of Chinese SMEs identified lack of capital as a key barrier to e-commerce adoption (Looi, 2018). In response, the Chinese government introduced the “Internet Plus” initiative to provide SMEs with financial support and digital integration tools. Likewise, in India, the Ministry of Micro, Small, and Medium Enterprises reported in 2023 that just 16% of MSMEs had access to formal financial credit, which stifled investment in digital platforms. Programs

such as “Digital India” and the “Open Network for Digital Commerce (ONDC)” are now being implemented to provide both technological and financial resources to facilitate SME participation in e-commerce (Hendricks & Mwapwele, 2024).

Papazafeiropoulou et al. (2022) found that resistance to change, lack of awareness about digital tools, and distrust in the security of online transactions continue to discourage e-commerce adoption among SMEs. Yet, the benefits are clear: e-commerce can expand market access, diversify trade, enhance competitiveness, and reduce operational costs. Moreover, it enables SMEs to access international markets, build efficient supply chains, and improve customer engagement. Importantly, cross-border e-commerce is not limited to tangible goods; it encompasses digital goods, services, and even real estate. For instance, a user in one country can invest in a real estate property abroad without physically relocating, completing the entire transaction online. Service-based digital trade, such as legal consultations or software support, particularly highlights the efficiency and global potential of e-commerce (Hussein & Baharudin, 2023; Wan & Chen, 2018).

In the African context, e-commerce faces more formidable challenges due to lower internet penetration and infrastructural deficits. The World Bank’s 2021 Digital Economy for Africa report noted that only 28% of the continent’s population had internet access, severely restricting the ability of SMEs to leverage e-commerce platforms (Kimana, 2022). However, there are emerging success stories. Kenya, for instance, has made impressive strides in digital connectivity. The Communications Authority of Kenya reported in 2022 that internet penetration had reached 93.9%, primarily driven by widespread mobile internet adoption. These advancements have contributed to rapid growth in Kenya’s e-commerce sector, especially among SMEs.

The future of e-commerce in Kenya looks promising. Analysts project that ongoing improvements in mobile internet speed, the introduction of a comprehensive national addressing system, and a growing cultural acceptance of digital transactions will catalyze further growth (Wanjau *et al.*, 2023). In 2014, the country’s e-commerce market was valued at approximately Ksh. 4.3 billion, and it has continued to expand since then. As one of Africa’s leading digital economies, Kenya is considered well-positioned for substantial e-commerce expansion (Atema, 2018). Nevertheless, SMEs in Kenya still face numerous constraints that limit their ability to fully capitalize on digital trade. These include technological limitations, financial bottlenecks, regulatory complexities, and limited customer trust in online platforms.

1.2 Statement of the Problem

According to the World Bank (2018), inefficient border management and bureaucratic bottlenecks significantly restrict economic advancement by impeding access to international markets. Lengthy delays associated with export and import procedures tend to reduce the volume and efficiency of trade. As the cost and time required for cross-border transactions escalate, local businesses find it increasingly difficult to participate in global commerce. Ineffective customs clearance systems, underdeveloped infrastructure, and unreliable logistics services all contribute to delays, leading to additional expenses such as prolonged storage charges, inspection costs, and demurrage. In fact, several African countries are estimated to suffer revenue losses exceeding 5% of their Gross Domestic Product (GDP) due to such border inefficiencies. The World Bank (2014) further emphasized that even a one-day reduction in inland travel time across Sub-Saharan Africa could boost export volumes by as much as 7% (Kimana, 2022), underscoring the significance of streamlined logistics for trade growth.

In global contexts like China despite its rapid digital transformation and dominance in the e-commerce sector cross-border e-commerce continues to face external constraints. Factors such as geographic distance, cultural disparities, difficulties with international payment systems, varying tariff regimes, and regulatory incompatibilities still exert a substantial influence on the development and efficiency of e-commerce platforms. These challenges have hindered the momentum of digital trade and caused a deceleration in the growth of cross-border e-commerce enterprises, subsequently affecting China's economic and trade relations with other countries (Looi, 2018). Recognizing and addressing these issues is essential. Research suggests that identifying the relationships between these limiting factors and actively mitigating their impact can enhance the scalability and global reach of e-commerce platforms not just in China, but also in emerging economies pursuing digital trade advancement (Wang & Zhang, 2017).

In the Kenyan context, e-commerce has witnessed impressive expansion, largely attributed to advancements in internet connectivity and mobile technology. A growing number of enterprises are now leveraging e-commerce platforms to enhance their business operations and reach new markets. Various studies have linked business success in Kenya to the strategic implementation of e-commerce practices. However, despite the growing awareness and benefits, the actual rate of e-commerce adoption among small and medium-sized enterprises (SMEs) remains disproportionately low (Chepngeno, 2017). While the penetration of computer technology has improved over the years with a 2008 study indicating that 77% of SMEs in

Kenya owned at least one computer many SMEs still use these tools primarily for basic administrative functions such as documentation and internal communication (Kiveu, 2018). More advanced uses, such as digital marketing and transactional e-commerce, remain significantly underutilized. For instance, only 28% of surveyed SMEs reported having a company website, and just 24% engaged in e-commerce or digital marketing activities (Kiveu, 2018).

Kenya has approximately 16.2 million internet users, representing an internet penetration rate of 41.1%. Although this reflects progress, it also highlights the digital divide that continues to affect SME participation in online trade. Kisiwaa et al. (2021) acknowledge that e-commerce provides SMEs with a powerful tool for entering global markets. However, several persistent barriers hinder the full adoption of digital platforms. These include high costs of computer hardware and internet connectivity, frequent network disruptions, lack of digital literacy, and inadequate technical expertise (Orori, 2021; Wanjau et al., 2023). Moreover, new obstacles continue to emerge with the rapid evolution of digital commerce, creating a dynamic challenge for regulators and business owners alike. Current legal frameworks and policy guidelines are often outdated and ill-equipped to deal with the complex and evolving nature of modern e-commerce activities, leaving a regulatory gap that further complicates compliance and innovation in the sector. Thus, the study will identify factors affecting development of e-commerce for small and medium enterprises in Dagoretti North Subcounty, Nairobi, Kenya.

1.3 Objectives of the Study

1.3.1 General Objective

To identify factors affecting development of e-commerce for small and medium enterprises in Dagoretti North Subcounty, Nairobi, Kenya.

1.3.2 Specific Objectives

- i. To identify technological factors influencing e-commerce adoption among small and medium enterprises in Dagoretti North Subcounty, Nairobi, Kenya
- ii. To examine financial factors affecting e-commerce implementation in small and medium enterprises in Dagoretti North Subcounty, Nairobi, Kenya
- iii. To explore market and customer-related factors affecting e-commerce growth in small and medium enterprises in Dagoretti North Subcounty, Nairobi, Kenya

- iv. To assess legal and regulatory factors impacting e-commerce for small and medium enterprises in Dagoretti North Subcounty, Nairobi, Kenya.

1.4 Research Questions

- i. What are the technological factors influencing e-commerce adoption among small and medium enterprises in Dagoretti North Subcounty, Nairobi, Kenya?
- ii. What are the financial factors affecting e-commerce implementation in small and medium enterprises in Dagoretti North Subcounty, Nairobi, Kenya?
- iii. What are the market and customer-related factors affecting e-commerce growth in small and medium enterprises in Dagoretti North Subcounty, Nairobi, Kenya?
- iv. What are the legal and regulatory factors impacting e-commerce for small and medium enterprises in Dagoretti North Subcounty, Nairobi, Kenya?

1.5 Significance of the Study

This study aims to shed light on the current state of e-commerce in Kenya by examining the operations and challenges faced by small and medium-sized enterprises (SMEs). It seeks to offer a foundational understanding of the key barriers that hinder the growth and development of e-commerce within the local business environment. As such, the study serves as a critical platform for diagnosing the root causes of limited e-commerce adoption and proposing evidence-based solutions to address them.

The findings of this research will be particularly valuable to policymakers, especially within government institutions such as the Ministry of Trade. These insights can guide the formulation of informed and targeted interventions aimed at closing gaps in the e-commerce ecosystem, ultimately promoting smoother and more efficient trade facilitation across the country. Moreover, customs authorities who play a pivotal role in trade regulation stand to benefit from the study's analysis of procedures such as taxation, goods classification, and transaction monitoring. By understanding how these regulatory mechanisms either support or hinder e-commerce development, customs officials can work towards optimizing compliance and efficiency.

Additionally, this study will contribute to the academic field by offering a knowledge base for scholars and future researchers. It will help identify existing gaps in literature and practice, thereby opening avenues for more in-depth research on digital trade and electronic platforms. Traders and financial institutions, who form a critical part of the e-commerce value chain, will

also find this study beneficial. It will assist them in recognizing systemic weaknesses in transaction processes and understanding the regulatory and infrastructural constraints that limit cross-border digital trade. Ultimately, the study will facilitate a more inclusive and supportive environment for the growth of e-commerce in Kenya.

1.6 Scope of the Study

This study is confined to investigating the key factors that influence the development and adoption of e-commerce among small and medium-sized enterprises (SMEs) operating within Dagoretti North Sub-county, Nairobi, Kenya. Specifically, the research examines four critical dimensions technological, financial, market/customer-related, and legal/regulatory factors—and how each contributes to or impedes the growth of digital commerce in the SME sector. The study focuses exclusively on officially registered SMEs across diverse sectors such as retail, manufacturing, services, and distribution. Informal businesses and large enterprises are excluded from the scope in order to maintain consistency with the unique operational dynamics of formal SMEs.

Geographically, the research is limited to Dagoretti North Sub-county, an urban area that provides a representative context for understanding the challenges and opportunities of e-commerce adoption in Nairobi's broader SME ecosystem. The findings are intended to offer practical insights for SME owners and managers, inform policy formulation by governmental agencies, and assist digital service providers in designing targeted interventions to enhance e-commerce uptake. While the study is limited in scope to a specific sub-county, the implications may be relevant for other urban settings facing similar socio-economic and infrastructural conditions.

1.7 Chapter Summary

Chapter One outlines the study's focus on identifying factors affecting e-commerce development among SMEs in Dagoretti North Sub-county, Nairobi. It presents the background, problem statement, objectives, significance, and scope of the study. The chapter highlights four key areas of focus: technological, financial, market/customer-related, and legal/regulatory factors influencing e-commerce adoption among SMEs.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter offers a detailed literature review on the development and adoption of e-commerce among SMEs, focusing on technological, financial, market/customer-related, and legal/regulatory factors. It begins with theoretical frameworks that explain SME adoption of technology, followed by a thematic review of global and local empirical studies. The chapter aims to summarize existing knowledge, identify research gaps, and justify the study's focus on Dagoretti North Sub-county, Nairobi, thus providing a solid foundation for the research.

2.1 Theoretical Framework

This study is grounded in two complementary theoretical perspectives Technological Determinism Theory and Protection Motivation Theory (PMT). These frameworks provide a robust conceptual foundation for understanding the interplay between technological capabilities and behavioral responses in shaping e-commerce adoption among small and medium-sized enterprises (SMEs).

2.1.1 Technological Determinism Theory

The roots of Technological Determinism Theory can be traced to Thorstein Veblen (1857–1929), an American economist and sociologist, who initially posited that technological advancement is a central force shaping social and economic institutions. This perspective was later enriched by scholars like Marshall McLuhan and Karl Marx. McLuhan, for example, famously asserted that “the medium is the message,” emphasizing that the form of technology itself not merely its content—transforms human perception, interaction, and societal structures. These theorists converge on the notion that technology is not a passive tool but an active agent that reorganizes cultures, economies, and institutions.

Technological Determinism posits that technological innovation is a dominant and independent force driving historical, social, and economic change. It implies that once a technology is introduced, individuals, organizations, and societies are compelled to adapt, often reconfiguring practices, relationships, and behaviors to align with the new technological paradigm. In this view, technology is an autonomous catalyst, setting the pace and direction of progress, often irrespective of human intent or readiness.

Within the context of this study, Technological Determinism Theory offers critical insight into how the development of e-commerce among small and medium enterprises (SMEs) in Dagoretti North Sub-county, Nairobi, is heavily influenced by the availability and integration of digital tools. E-commerce platforms, online payment gateways, mobile applications, and broadband infrastructure are not merely supplementary tools for business they are transformative forces reshaping how SMEs engage with customers, manage operations, and compete in the marketplace. From this perspective, without accessible, affordable, and user-friendly technological infrastructure, widespread e-commerce adoption remains unattainable for many SMEs. This theoretical lens also explains the disparities in digital adoption. Some SMEs quickly embrace digital platforms, propelled by exposure to and capacity for leveraging new technologies. Others lag due to constraints in digital literacy, financial capacity, or infrastructural access. As Castells (2000) argues in his concept of the network society, information and communication technologies (ICTs) play a decisive role in redefining how economies operate, particularly in decentralized and small-scale enterprises.

Molla and Licker (2005), in their study of e-commerce readiness in developing countries, found a strong correlation between ICT infrastructure and the successful implementation of digital business tools. Boateng et al. (2011), examining SMEs in Ghana, further highlighted that factors like internet availability, website interactivity, and mobile platform integration were primary drivers of digital commerce adoption. Their findings reinforce the deterministic view that technological access or the lack thereof significantly determines the extent of e-commerce engagement. In Kenya, similar findings were presented by Mutua, Oteyo, and Njeru (2013), who observed that SMEs equipped with current digital tools and technical knowledge were more inclined to adopt e-commerce practices, while those lacking such capabilities remained offline. This underscores the importance of technological readiness as a precondition for digital transformation.

Therefore, in the urban context of Dagoretti North Sub-county, where technology access may be uneven, Technological Determinism offers a compelling framework for understanding the patterns and barriers to e-commerce growth. It underscores the idea that technology is not simply a facilitator but a driving force that determines the trajectory of SME development in the digital age. This theory provides a foundational basis for analyzing how the presence, quality, and evolution of technology directly shape the capacity of SMEs to adopt and sustain e-commerce operations.

2.1.2 Protection Motivation Theory

Protection Motivation Theory (PMT), initially proposed by Rogers in 1975, was developed to explain how individuals are motivated to engage in protective behaviors when confronted with perceived threats. While its origins lie in health psychology, PMT has since been widely applied across various fields such as information systems, cybersecurity, organizational management, and more recently, e-commerce. The theory emphasizes that behavioral intentions, especially those involving risk mitigation, are shaped by individuals' evaluations of threats and their perceived capacity to cope with those threats.

At the heart of PMT are two critical cognitive mechanisms: threat appraisal and coping appraisal. Threat appraisal refers to the individual's or organization's assessment of the severity and likelihood of a potential danger (e.g., how damaging and probable a cyberattack is). On the other hand, coping appraisal focuses on evaluating the effectiveness of available responses, confidence in one's ability to implement them (self-efficacy), and the perceived cost or effort associated with taking protective actions. These combined evaluations determine whether a person or entity feels sufficiently motivated to act.

In the context of this study, PMT is particularly relevant for understanding the behavioral factors that influence the adoption of e-commerce among small and medium enterprises (SMEs) in Dagoretti North Sub-county. While technological infrastructure may be increasingly available addressed by Technological Determinism Theory many SMEs remain hesitant to transition to or expand their digital operations. This hesitation is often not due to technological unavailability, but rather due to perceived cybersecurity risks, fears of data breaches, concerns about online fraud, and doubts over privacy protections.

According to the logic of PMT, unless SME owners and their employees recognize both a credible threat in remaining offline or unprotected and a reliable way to handle those threats, they will be unlikely to adopt or invest in e-commerce platforms. For example, without confidence in secure payment systems, strong firewalls, staff training in digital hygiene, or trustworthy IT support, businesses may avoid e-commerce despite the potential benefits.

Several studies lend support to this interpretation. Woon, Tan, and Low (2005) extended PMT to cybersecurity behavior, arguing that users' willingness to adopt secure technologies is shaped by their perceived vulnerability and belief in the effectiveness of protective strategies.

Similarly, Herath and Rao (2009) applied PMT to organizational information security, concluding that management decisions regarding IT investment are often based on perceived threat severity and the organization's coping capacity.

Mutua, Oteyo, and Njeru (2013) found that Kenyan SMEs frequently cited security concerns, digital illiteracy, and limited knowledge of fraud prevention as reasons for resisting e-commerce adoption. These barriers align well with PMT's assertion that motivation to adopt protective behavior (such as secure online trading) depends on one's ability to evaluate and effectively manage perceived risks.

Bulgurcu, Cavusoglu, and Benbasat (2010) demonstrated that employees' compliance with information security policies is strongly influenced by their assessments of threat magnitude and confidence in coping strategies. This is especially pertinent to SMEs, where the responsibility for digital security often falls on a few individuals or the business owner, and their perception of risk significantly influences strategic decisions.

Therefore, PMT introduces a valuable behavioral and psychological perspective to this study. It expands the analysis beyond infrastructure and technical capabilities to explore how perceptions of vulnerability and confidence in protective measures shape e-commerce adoption. This is crucial for understanding why, even in technologically connected areas like Dagoretti North, e-commerce uptake remains inconsistent. It also highlights the importance of building awareness, enhancing digital skills, and fostering trust in online systems to mitigate risk aversion and accelerate digital transformation among SMEs.

2.2 Empirical Review

This section provides a comprehensive analysis of empirical studies related to the adoption and development of e-commerce among small and medium-sized enterprises (SMEs). It draws upon a wide range of scholarly research conducted at both the global and local levels, offering critical insights into the diverse factors that influence e-commerce uptake. Specifically, the review is organized around four thematic dimensions: technological, financial, market/customer-related, and legal or regulatory determinants of e-commerce growth.

The purpose of this empirical review is twofold: first, to contextualize the current study within the broader academic discourse on digital transformation in SMEs; and second, to establish a benchmark for comparing and validating the findings emerging from the fieldwork conducted in Dagoretti North Sub-county, Nairobi. Ultimately, this review helps to identify existing

knowledge gaps, inform methodological choices, and justify the focus on specific variables within the study.

2.2.1 Technological Factors Influencing E-Commerce Adoption among SMEs

The rapid evolution of digital technologies has fundamentally transformed business operations globally, positioning e-commerce as an integral component of contemporary business strategies. Small and medium-sized enterprises (SMEs), which constitute a significant portion of global and local economies, are increasingly acknowledging the strategic importance of e-commerce for expanding market access, streamlining operations, and enhancing customer engagement (Al-Tayyar et al., 2021). However, the extent to which SMEs embrace e-commerce is significantly shaped by several technological determinants, both enabling and constraining. This section explores four primary technological factors that affect e-commerce adoption: availability of technology, accessibility of technology, digital literacy levels, and cybersecurity concerns.

Availability of technology refers to the presence and reach of the requisite digital infrastructure, hardware, and software needed for online business operations. It forms the foundation upon which e-commerce systems can be developed and sustained. According to the OECD (2021), access to broadband and other digital infrastructures has improved globally, with business-level broadband penetration in OECD countries averaging 93% in 2020 an increase from 85% in 2010. This surge has enhanced the operational environment for SMEs seeking to enter the digital marketplace (Govinnage & Sachitra, 2019). Additionally, the rise of cloud-based and plug-and-play e-commerce platforms has significantly lowered entry barriers for SMEs. Solutions such as Shopify, WooCommerce, and BigCommerce have simplified the process of establishing and managing online stores, eliminating the need for heavy upfront investment in IT infrastructure (Hendricks & Mwapwele, 2024). Grand View Research (2022) projected the e-commerce software market to grow at a compound annual growth rate (CAGR) of 16.3% between 2022 and 2030, largely due to growing demand for SME-friendly technologies. These developments indicate that enhanced availability of technology is a strong enabler of e-commerce uptake among small businesses.

While availability speaks to the existence of technology, accessibility pertains to how easily SMEs can acquire, implement, and use these technologies. Factors such as affordability, technical complexity, and access to support services influence this dimension (Zain et al., 2020). The International Trade Centre (2022) reported that nearly half (45%) of surveyed

SMEs in Africa identified high costs as a major obstacle to adopting digital technologies. To mitigate this, the emergence of Software-as-a-Service (SaaS) models has introduced more scalable and cost-effective solutions. Gartner (2022) noted that the SaaS market was expected to grow to \$176.6 billion by the end of the year, underscoring the increasing demand for flexible digital solutions that support SME adoption.

However, accessibility is not solely a matter of cost. The complexity of implementation can also discourage uptake. Wymer and Regan (2018) found that 38% of SMEs reported e-commerce systems to be too technically challenging for their current capabilities. In response, tech providers have introduced simplified platforms with intuitive user interfaces and customer support features. For example, Mahliza (2019) reported that over 54% of small firms used website builders, demonstrating a strong preference for tools that are easy to deploy and manage. Thus, enhancing technological accessibility is key to scaling e-commerce adoption.

Digital literacy, defined as the ability to understand and use digital tools and platforms effectively, is a fundamental enabler of e-commerce success. A digitally literate workforce can better navigate e-commerce ecosystems, leverage online tools, and engage customers through digital channels. Yet, many SMEs, particularly in developing countries, suffer from a digital skills gap. The European Commission (2023) reported that only 55% of EU citizens had basic digital skills, with likely lower figures in less-developed regions. Salih et al. (2019) found that 62% of SMEs cited lack of digital knowledge as a significant barrier to e-commerce adoption. The study also identified a strong correlation between the digital competence of SME managers and the successful implementation of e-commerce platforms.

In response to this gap, several governments and agencies have launched digital literacy campaigns. The UK's "Digital Business Academy" and Singapore's "SMEs Go Digital" programs have reached hundreds of thousands of entrepreneurs, enabling them to acquire essential digital skills for business transformation. Such initiatives underscore the importance of targeted interventions to build capacity and bridge the digital divide within the SME sector (Nurlinda et al., 2020).

As SMEs increasingly rely on digital platforms for transactions, cybersecurity has become a major determinant of e-commerce adoption. Digital operations expose businesses to cyber risks such as data breaches, phishing attacks, online fraud, and reputational damage. SMEs are often more vulnerable than larger organizations due to limited resources for advanced security infrastructure (Govinnage & Sachitra, 2019). Verizon's (2023) Data Breach Investigations

Report indicated that 46% of all recorded data breaches involved small businesses. Additionally, Keeper Security (2022) found that 66% of SMEs globally had experienced a cyberattack in the preceding year. Financially, the IBM (2023) Cost of a Data Breach Report estimated the average loss for small businesses to be nearly \$3 million—an amount many SMEs cannot absorb.

These risks often result in hesitation or complete avoidance of e-commerce technologies. Al-Tayyar et al. (2021) noted that 58% of SMEs considered cybersecurity concerns a significant barrier. However, the same study found that SMEs investing in cybersecurity tools and training were 2.5 times more likely to successfully adopt e-commerce platforms. This highlights the critical need for affordable, effective security solutions and awareness training to boost trust and confidence in digital commerce.

2.2.2 Financial Factors Affecting E-Commerce Implementation in SMEs

Financial capacity plays a pivotal role in determining the extent to which small and medium-sized enterprises (SMEs) can embrace and implement e-commerce solutions. The transition to digital platforms often requires substantial upfront and ongoing investments in areas such as website development, IT infrastructure, digital marketing, and staff training. For resource-constrained SMEs, especially in developing economies, these costs can act as significant deterrents. The Organisation for Economic Co-operation and Development (OECD, 2019) notes that SMEs typically operate with limited access to capital, which limits their ability to invest in innovative technologies, including those required for e-commerce. Without sufficient financial support, these businesses are often unable to initiate or sustain digital transformation processes. To address these challenges, several public and private sector initiatives have been implemented globally. Government grants, subsidized loans, and financial incentives can significantly ease the financial burden associated with digital adoption. For instance, within the European Union, the European Regional Development Fund (ERDF) has been instrumental in supporting SMEs through co-financing of projects aimed at digital innovation (Fatima *et al.*, 2017). Similar programs exist in other regions, offering SMEs access to capital that would otherwise be unattainable.

The role of funding extends beyond initial setup costs. Continued access to capital is essential for maintaining and scaling e-commerce platforms, upgrading digital tools, integrating new technologies, and addressing ongoing operational costs. Mahliza (2019) argues that access to adequate funding is among the most influential enablers of e-commerce adoption, as it allows

SMEs to remain competitive in rapidly evolving digital markets. However, the global funding landscape reveals persistent challenges. According to a report by the International Finance Corporation (IFC, 2017), SMEs in developing nations face an estimated annual financing gap of \$5.2 trillion. This funding shortfall severely constrains their ability to invest in e-commerce capabilities. The World Bank's SME Finance Forum and similar initiatives aim to bridge this gap by facilitating access to finance through partnerships with commercial banks, microfinance institutions, and fintech platforms. In the United States, the Small Business Administration (SBA) provides a range of loan products tailored to support small businesses, including those investing in digital infrastructure.

The World Bank (2023) found that approximately 40% of formal micro, small, and medium enterprises (MSMEs) in developing countries still struggle with financial exclusion. Interestingly, the report observed a positive trend: SMEs engaged in digital transformation or operating within the digital economy, including those implementing e-commerce solutions, were more likely to attract funding. Specifically, 28% of fintech lenders surveyed reported an increased appetite for lending to digital SMEs. This suggests that while funding access remains uneven, digital adoption itself may enhance SMEs' creditworthiness and attractiveness to lenders.

Another financial element crucial to the success of e-commerce ventures is the availability and integration of secure payment gateways. These technologies enable businesses to accept electronic payments efficiently and securely, thus enhancing customer convenience and trust. The global market for payment gateways is rapidly expanding; Statista (2021) estimates its value at \$17.2 billion in 2020, with projections indicating a rise to \$42.9 billion by 2026. For SMEs, leveraging reputable platforms such as PayPal, Stripe, and Square has become increasingly common, as these providers offer reliable, scalable, and secure payment services tailored for smaller enterprises.

Nonetheless, challenges persist in the adoption of payment gateways. A study by Sedighi and Sirang (2018) found that 35% of SMEs were discouraged by high transaction fees, which can erode already slim profit margins. Additionally, 28% of respondents cited integration issues between payment gateways and their existing systems as a significant barrier. These technical and financial hurdles can limit the ability of SMEs to offer seamless digital payment experiences. However, the same study also reported that SMEs that had successfully

implemented modern payment solutions experienced an average 23% increase in online sales, underscoring the value of investing in efficient digital payment infrastructure.

2.2.3 Market and Customer-Related Factors Affecting E-Commerce Growth in SMEs

Customer preferences and market dynamics play a fundamental role in shaping the trajectory of e-commerce development among small and medium-sized enterprises (SMEs). As digital technology continues to reshape consumer behavior, businesses are compelled to align their strategies with evolving customer expectations. Modern consumers now demand greater convenience, faster service, personalized interactions, and seamless experiences across multiple digital platforms. As Al-Tit (2020) reports, 76% of consumers expect companies to understand and anticipate their needs, while 66% are likely to switch brands if they feel they are treated impersonally. These shifting expectations necessitate that SMEs adopt a customer-centric orientation in their digital transformation efforts.

One of the most significant trends influencing e-commerce is the exponential rise in mobile commerce. With widespread smartphone adoption and enhanced mobile connectivity, a growing proportion of consumers now prefer to shop using mobile devices. According to Statista (2023), mobile commerce accounted for 72.9% of total global e-commerce sales, underscoring the need for SMEs to optimize their online platforms for mobile functionality. The importance of mobile optimization is further supported by a PwC (2022) survey, which found that 41% of consumers engage in mobile shopping at least once per week. Moreover, 65% of respondents indicated that the overall user experience on a mobile app or website significantly influences their purchase decisions. This suggests that SMEs must prioritize responsive web design, intuitive navigation, and fast-loading interfaces to remain competitive in the mobile-driven e-commerce landscape.

Personalization also stands out as a critical component of customer engagement and retention. Sedighi and Sirang (2018) observed that 80% of consumers are more likely to complete a purchase when businesses offer personalized shopping experiences. Through the integration of data analytics and artificial intelligence, SMEs can now tailor product recommendations, promotions, and content to suit individual preferences, thereby enhancing customer satisfaction and boosting conversion rates. Leveraging these technologies not only supports increased customer loyalty but also helps SMEs differentiate themselves in a saturated market.

The global e-commerce landscape has become highly competitive, with both multinational corporations and local SMEs competing for digital market share. The ease of entry into the

online space, while beneficial, also leads to market saturation. Hossain et al. (2023) estimate that 60% of global internet users have made at least one online purchase, indicating widespread consumer participation and intensified competition. Large e-commerce platforms like Amazon, Alibaba, and Jumia pose a formidable challenge to SMEs due to their scale, logistics capabilities, and pricing advantages. For example, Amazon accounted for 41.4% of all U.S. e-commerce sales in 2021 (eMarketer, 2021), a level of dominance that can crowd out smaller players.

Despite these challenges, SMEs can still carve out profitable niches by focusing on unique value propositions, specialized products, and localized services. According to eMarketer, SMEs that target niche markets or offer customized solutions recorded higher average annual growth rates 24% compared to 17% for generalist e-commerce businesses. This suggests that SMEs need not compete directly with industry giants but can thrive by targeting specific customer segments underserved by mainstream platforms.

Another important market-related factor is the increasing importance of digital marketing in driving e-commerce growth. Strategic use of digital channels can significantly enhance an SME's visibility, brand reputation, and customer engagement. Looi (2018) found that 70% of marketers actively invest in content marketing, while 60% prioritize social media marketing as part of their outreach strategies. Social media, in particular, has proven invaluable for SMEs due to its affordability, reach, and interactive capabilities.

A report by Hendricks and Mwapwele (2024) highlighted that there are approximately 4.89 billion active social media users globally, representing 62% of the world's population. This provides SMEs with an unprecedented opportunity to reach vast audiences, especially through platforms like Facebook, Instagram, TikTok, and X (formerly Twitter). Influencer marketing, which leverages individuals with large follower bases to promote products, has also gained traction. Wymer and Regan (2018) note that 78% of consumers are willing to buy from a brand after a positive experience on social media, and SMEs that actively engaged in social media marketing reported a 32% average increase in online sales compared to non-users.

Search engine optimization (SEO) remains another vital digital marketing tool. As Sedighi and Sirang (2018) emphasize, organic search accounts for 53% of total website traffic. SMEs that invest in SEO practices such as optimizing website content, improving page speed, and building backlinks are 1.8 times more likely to report significant growth in their e-commerce

operations than those that neglect SEO. These findings highlight that visibility in search engines is a key determinant of digital success for SMEs.

2.2.4 Legal and Regulatory Factors Impacting E-Commerce for SMEs

The legal and regulatory landscape is a critical determinant of e-commerce development, particularly for small and medium-sized enterprises (SMEs) seeking to operate in digital markets. Variations in the legal frameworks governing online commerce across different jurisdictions significantly influence how SMEs engage in e-commerce, affecting aspects such as compliance, consumer protection, competition, and data governance. A supportive regulatory environment not only safeguards stakeholders but also fosters trust and innovation, which are vital for sustainable e-commerce growth.

In advanced economies, comprehensive legal frameworks have provided fertile ground for the growth of e-commerce. For example, the European Union's eCommerce Directive was established to facilitate cross-border online trade by removing regulatory barriers and reinforcing consumer protection. According to KISSIWAA et al. (2021), this directive has helped harmonize e-commerce regulations across EU member states, contributing to increased cross-border commerce. A report by the European Commission (2021) revealed that online sales in the EU surged by 15% in 2020, partly due to the enabling legal infrastructure that enhanced consumer confidence and eased market access for SMEs.

In the United States, the Federal Trade Commission (FTC) plays a vital role in regulating online business practices. The FTC's mandate includes monitoring deceptive advertising, protecting consumer privacy, and enforcing fair trade practices. These measures have strengthened the legitimacy of digital marketplaces, making them more attractive for consumers and businesses alike. Hendricks and Mwapwele (2024) report that e-commerce accounted for 14.3% of total U.S. retail sales in 2022, a growth trajectory supported by the FTC's stringent enforcement of ethical standards and fraud prevention. These examples illustrate how regulatory clarity and consumer protections can catalyze the expansion of e-commerce ecosystems, particularly for SMEs that rely on consumer trust to compete with larger firms.

Another key regulatory consideration is data protection. As e-commerce increasingly relies on consumer data for personalization and marketing, the legal handling of data has become a focal point. The General Data Protection Regulation (GDPR), implemented by the European Union

in 2018, is widely regarded as one of the most rigorous data protection laws globally. It imposes strict obligations on how businesses collect, store, and use personal data. Non-compliance with GDPR can result in substantial financial penalties, which has major implications for SMEs with limited resources. Wanjau et al. (2023) note that GDPR compliance requires significant operational adjustments, yet fosters greater transparency and accountability in digital transactions. According to Mahliza (2019), GDPR violations resulted in fines totaling €158.5 million in 2021, underscoring the importance of robust data governance.

Outside the EU, other regions are also enacting similar data protection laws. In the United States, the California Consumer Privacy Act (CCPA) mirrors many provisions of the GDPR by giving consumers more control over their personal information and imposing obligations on businesses. Mohammed *et al.* (2023) found that by 2020, 88% of companies had taken steps to comply with the CCPA, highlighting the significant influence of data privacy laws on digital business practices. For SMEs, adapting to such regulatory environments is not only a legal necessity but also a strategic opportunity to build consumer trust and demonstrate responsible business practices.

Al-Tayyar et al. (2021) report that since the directive's implementation in 2014, cross-border online shopping among European consumers has risen by 60%, demonstrating the role of consumer protections in fostering e-commerce participation. In the U.S., the FTC enforces similar consumer protection laws that shield customers from misleading advertisements, defective goods, and unauthorized charges. These regulations not only protect end-users but also uphold the integrity of the digital marketplace, benefitting compliant SMEs by leveling the competitive field (Govinnage & Sachitra, 2019).

SMEs still face several challenges in navigating the evolving regulatory terrain. Issues such as late deliveries, poor service, and inadequate dispute resolution mechanisms can erode consumer trust. Nurlinda et al. (2020) found that 42% of online shoppers had experienced problems related to delayed or undelivered orders, emphasizing the need for SMEs to fully comply with consumer protection standards to maintain positive reputations and customer loyalty.

Ochola (2020) found that 61% of consumers believe that online platforms should be held responsible for protecting their rights when purchasing from third-party vendors. This consumer sentiment has prompted regulatory responses such as the EU's Platform-to-Business (P2B) Regulation, which seeks to ensure fairness, transparency, and accountability in

relationships between online platforms and the SMEs that use them. The regulation mandates that platform operators disclose ranking algorithms, provide clear terms of service, and offer avenues for dispute resolution, thereby protecting smaller sellers from unfair treatment.

2.3 Summary and Research Gaps

This chapter provides an in-depth review of literature related to e-commerce and the barriers hindering its development, particularly within the context of small and medium-sized enterprises (SMEs). It critically examines prior research studies that have explored various aspects of e-commerce, shedding light on the key trends, patterns, and findings that have emerged over time. Additionally, the chapter explores relevant theoretical frameworks and models that offer insights into the variables influencing the adoption and growth of e-commerce. These theories serve as a foundation for understanding how different internal and external factors impact the digital transformation of businesses.

The literature review further categorizes the factors affecting e-commerce adoption at three levels: individual, technological, and organizational. At the individual level, factors such as digital literacy, trust, and user attitudes are discussed. Technological aspects include infrastructure, system compatibility, and innovation readiness, while organizational factors encompass leadership support, resource availability, and strategic alignment. This chapter synthesizes findings from a wide range of studies to identify and consolidate the major enablers and challenges associated with e-commerce adoption. By integrating insights from both theoretical and empirical perspectives, it establishes a comprehensive understanding of the critical issues that influence the successful implementation of e-commerce in SMEs.

While several research studies have been conducted on traditional cross-border trade, there is a notable gap in literature regarding the factors influencing the development of e-commerce among SMEs in Kenya. For instance, Chepngeno (2017) found that some cross-border traders violated customs regulations due to a lack of knowledge about procedures, the desire to evade taxes, and the high cost of engaging clearing agents. Additionally, a study by Transparency International (2018) highlighted that the most inefficient customs stations measured by time taken to clear goods were located along the Kenya-Tanzania border, often linked to bribery and corruption.

However, these studies primarily focus on the challenges within traditional cross-border trade and do not address the emerging dynamics of digital commerce. This research, therefore, seeks to bridge that gap by examining the various factors that influence the development of cross-

border e-commerce among SMEs in Kenya, with a particular emphasis on technological, regulatory, financial, and infrastructural aspects.

Table 1: Research Gaps

Study	Findings	Knowledge Gap	Focus of the Current Study
Molla & Licker (2005) – E-commerce adoption in developing countries	Technological infrastructure and organizational readiness significantly influence e-commerce adoption.	Limited focus on small-scale urban enterprises and localized challenges in African cities.	Examines how technological factors affect SMEs specifically within Dagoretti North Sub-county.
Mutua, Oteyo & Njeru (2013) – E-commerce adoption in Kenyan SMEs	Financial constraints, lack of skills, and limited awareness hinder adoption.	Did not segment findings by sub-county or urban demographics.	Investigates financial and awareness-related barriers affecting SMEs in an urban Nairobi sub-county context.
Boateng et al. (2011) – E-commerce readiness in Ghanaian SMEs	Market orientation and customer awareness are key for digital growth.	Lack of empirical data on customer behavior and demand patterns in local Kenyan SME markets.	Explores how market and customer-related factors influence e-commerce growth in Dagoretti North SMEs.
Wanyoike et al. (2012) – Barriers to ICT adoption in Kenya	Regulatory uncertainty and cybersecurity concerns limit adoption.	Generalized across all ICT tools without specific focus on e-commerce platforms.	Assesses the impact of legal and regulatory issues on SME e-commerce engagement.
Kimani (2018) – Digital adoption in Nairobi SMEs	Found increasing interest in digital platforms but uneven implementation due to limited training and poor infrastructure.	Did not analyze each influencing factor (technological, financial, market, legal) separately.	Provides a factor-based analysis to determine which areas most significantly affect e-commerce development.

2.4 Conceptual Framework

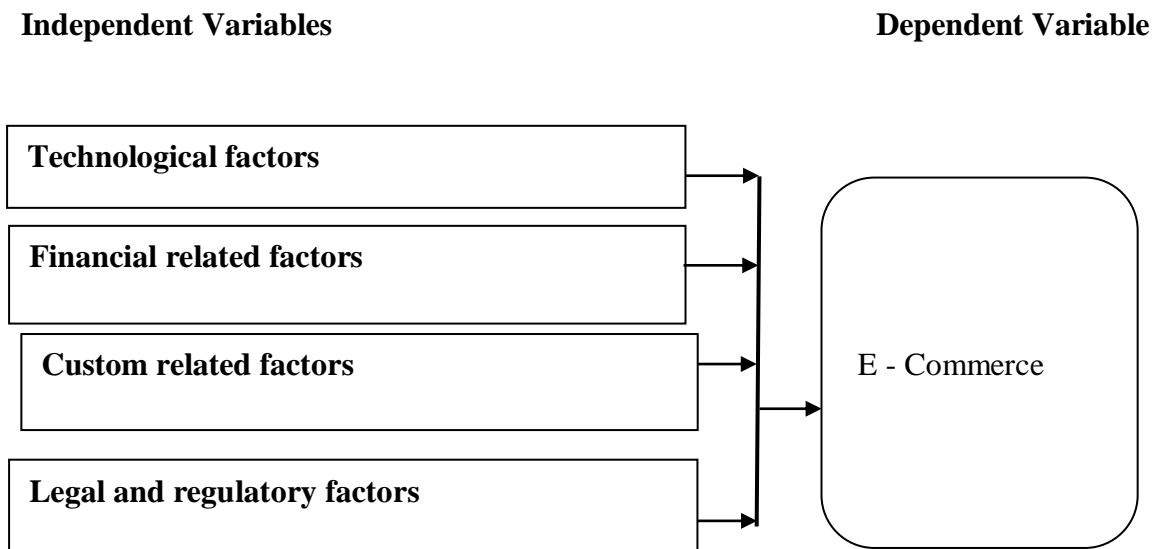


Figure 1: Conceptual Framework

2.5 Operationalization of Variables

Table 2: Showing Operationalization of Variables

Type of Variable	Indicators	Measurements
Technological factors (Independent)	<ul style="list-style-type: none"> • Availability of technology • Accessibility of technology • Level of literacy • Cybersecurity issues 	Likert scale
Financial related factors (Independent)	<ul style="list-style-type: none"> • Financial support • Availability of funding • Payment gateway 	Likert scale
Custom related factors (Independent)	<ul style="list-style-type: none"> • Customer preferences • Competition and market saturation • Digital marketing 	Likert scale
Legal and regulatory factors (Independent)	<ul style="list-style-type: none"> • Existing legal framework • Data protection • Customer rights • 	Likert scale

2.6 Chapter Summary

This chapter presented relevant theories applied in the study, past studies, research gaps, operationalization of the study variables and chapter summary respectively.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.0 Introduction

This chapter presents the research methodology used to examine factors influencing e-commerce development among SMEs in Dagoretti North Sub-county, Nairobi. It details the research design, target population, sampling methods, data collection tools, and analysis procedures. The chosen methods are justified based on their suitability and reliability for addressing the study objectives. The methodology ensures the validity and reliability of findings while systematically investigating technological, financial, market, and legal factors affecting e-commerce adoption.

3.1 Research Design

A research design is a structured plan that guides the collection, measurement, and analysis of data to ensure reliable and valid results (Creswell & Creswell, 2018; Kothari, 2004). This study employed a descriptive research design, suitable for examining and illustrating existing conditions without altering variables (Saunders et al., 2019). The design was chosen to explore the technological, financial, market/customer-related, and legal/regulatory factors influencing e-commerce development among SMEs in Dagoretti North Sub-county, Nairobi.

Descriptive design was ideal for this study as it facilitates the collection of quantitative data from a broad sample, allowing for pattern and trend analysis (Mugenda & Mugenda, 2003). Structured questionnaires were used to gather standardized responses efficiently, supporting consistency and ease of analysis (Cooper & Schindler, 2014). Data were analyzed using SPSS to identify relationships aligned with the research objectives.

3.2 Target Population

The target population includes all entities to which a study's findings can be generalized (Mugenda & Mugenda, 2003). For this research, it consisted of all registered SMEs operating in Dagoretti North Sub-county, Nairobi, selected due to their increasing engagement in digital commerce and contribution to local economic growth. Based on Central Bank of Kenya data (CBK, 2021), 67 registered SMEs were identified and used as the sampling frame. To ensure fairness and reduce bias, the study utilized computerized random sampling, giving each SME an equal chance of selection and enhancing the reliability and generalizability of the results (Saunders et al., 2019). Furthermore, the study prioritized responses from key informants

specifically, SME representatives and individuals directly responsible for managing or overseeing e-commerce operations. Engaging such respondents helped ensure that the data collected was accurate, insightful, and reflective of real-world business practices and challenges. This approach is consistent with best practices in business research, which emphasize targeting decision-makers and domain experts to improve the depth and quality of data (Cooper & Schindler, 2014).

Table 3: Target Population

SMEs	Frequency	Percent
Services	24	35.8%
Manufacturing	14	20.9%
Retail	29	43.3%
Total	67	100.0%

3.3 Sampling and Sample Technique

3.3.1 Sample Size

The sample size is the number of participants selected from the target population to represent the whole group, and it plays a crucial role in ensuring reliable and generalizable results (Mugenda & Mugenda, 2003). In this study, the sample was drawn from a total of 67 registered SMEs in Dagoretti North Sub-county (CBK, 2021). Due to the small and finite population, Yamane’s (1967) formula was used to calculate an appropriate sample size for accurate and meaningful analysis.

$$n = N / (1 + N(e)^2)$$

$$n = 67 / (1 + 67(0.05)^2) = 67 / (1 + 67(0.0025)) = 67 / 1.1675 \approx 57$$

Where:

n = Sample size

N = Population size (67 SMEs)

e = Margin of error (0.05 for 95% confidence level)

Therefore, a sample of 57 SMEs was selected for the study.

The chosen sample size was deemed sufficient for reliable statistical analysis while remaining practical in terms of time and resources. As Krejcie and Morgan (1970) suggest, small populations (under 100) require a high sampling ratio to improve accuracy. Similarly, selecting a sample size close to the total population increases representativeness and minimizes sampling error (Saunders et al., 2019).

3.3.2 Sampling Techniques

Sampling technique refers to the method used to select a representative portion of a population for research purposes (Kothari, 2004). In this study, simple random sampling was used to ensure that every SME in the population had an equal and independent chance of selection (Saunders et al., 2019). The target population of 67 registered SMEs in Dagoretti North Sub-county (CBK, 2021) was assigned unique numbers, and 57 were randomly selected using a computerized generator, based on Yamane’s (1967) formula.

This approach was chosen for its fairness, transparency, and ability to minimize bias, making it ideal for small, well-defined populations. It also simplifies implementation while maintaining the reliability and representativeness of the sample (Mugenda & Mugenda, 2003).

Table 4: Proportionate Sampling

SMEs	Study population	Sample Size
Services	24	20
Manufacturing	14	12
Retail	29	25
Total	67	57

3.4 Data Collection Instruments

Research instruments are the tools used to systematically and consistently collect data from respondents (Creswell & Creswell, 2018). In this study, a structured questionnaire was used, targeting SME managers and proprietors knowledgeable about their businesses and e-commerce activities. Structured questionnaires are ideal for quantitative studies, offering standardized data collection, objectivity, and ease of analysis (Mugenda & Mugenda, 2003). The questionnaire included only closed-ended questions, with Likert-scale items used to measure attitudes and perceptions toward e-commerce adoption (Kothari, 2004).

To improve data quality, the questionnaires were physically distributed and collected by the researcher and trained assistants, enabling clarification where needed and reducing the risk of data loss. This approach ensured the collection of accurate, reliable data and supported triangulation, thereby enhancing the credibility and depth of the research findings.

3.5 Pilot Study

Pre-testing, or pilot testing, involves evaluating research instruments on a small sample before full-scale data collection to identify and correct issues related to clarity, structure, relevance, and reliability (Mugenda & Mugenda, 2003). In this study, 6 SMEs 10% of the total sample were purposively selected from Dagoretti South Sub-county, which shares similar characteristics with Dagoretti North. This allowed for testing under comparable conditions.

As recommended by Creswell (2014), pilot testing helped refine the questionnaire and data collection process. Participants provided feedback on any challenges they encountered, leading to revisions such as rewording unclear items, removing redundancies, and improving the flow of questions. These adjustments enhanced the tool's content validity and internal consistency, increasing the chances of collecting accurate and reliable data during the main study (Kothari, 2004).

3.5.1 Validity of Research Instruments

Validity refers to how well a research instrument measures what it is intended to measure and accurately reflects the concept under study (Creswell & Creswell, 2018). In this research, both content validity and face validity were applied to ensure data credibility and accuracy.

Content validity was ensured by developing questionnaire items based on the study's conceptual framework, objectives, and relevant literature, covering key variables such as technological, financial, market-related, and legal factors affecting e-commerce adoption. Expert feedback from academic supervisors and ICT scholars helped refine the questions for relevance, clarity, and completeness.

Face validity was assessed through a pilot study in Dagoretti South Sub-county, where SME respondents reviewed the questionnaire for clarity and logical flow. Their feedback led to minor adjustments that enhanced question understanding and alignment with the study's constructs. These validation steps significantly strengthened the reliability and trustworthiness of the research instruments and findings.

3.5.2 Reliability of Instruments

Reliability refers to the consistency and stability of a research instrument in producing dependable results under similar conditions (Kothari, 2004). In this study, internal consistency reliability was assessed using Cronbach's Alpha during the pilot phase. This statistical measure evaluates how well items within a construct are related. According to Gliem and Gliem (2003), an alpha score of 0.70 or above indicates acceptable reliability in social science research.

Each section of the questionnaire covering technological, financial, market/customer-related, and legal/regulatory factors was tested individually. Items that weakened the overall reliability were revised or removed to enhance internal consistency without compromising validity. This careful process ensured that the final instrument was both reliable and aligned with the study's goals, making it suitable for collecting trustworthy data from SME managers and proprietors in Dagoretti North Sub-county.

3.6 Data Collection Procedure

Data collection procedure refers to the systematic method used by a researcher to gather information from participants in order to meet research objectives (Creswell & Creswell, 2018). In this study, data were collected using self-administered structured questionnaires and semi-structured interview guides directed at SME managers and proprietors in Dagoretti North Sub-county. These tools were designed to gather information on four key areas: technological, financial, market/customer-related, and legal/regulatory factors influencing e-commerce development.

Before data collection began, the researcher obtained necessary approvals, including permits from NACOSTI and authorization letters from local administrative offices. Participants provided informed consent, having been briefed on the study's purpose, their rights, confidentiality, and voluntary participation (Resnik, 2018).

Questionnaires were physically distributed by the researcher and trained assistants, who followed standardized procedures to ensure consistency. Respondents were given 3–5 days to complete the questionnaires, with follow-up visits and calls conducted to ensure timely return and minimize non-response (Saunders et al., 2019). This organized approach ensured ethical compliance and high-quality data collection.

3.7 Data Analysis and Presentation

Data analysis involves systematically organizing and interpreting raw data to uncover patterns, draw conclusions, and inform decision-making (Creswell & Creswell, 2018). In this study, analysis was carried out using SPSS version 26, employing descriptive statistical techniques such as frequencies, percentages, means, and standard deviations. These methods were used to summarize respondent characteristics and analyze responses, offering clear insights into data trends, distributions, and key variable patterns relevant to the study's objectives.

The analysis focused on quantifying responses related to key constructs: technological, financial, market/customer-related, and legal/regulatory factors influencing e-commerce development among SMEs in Dagoretti North Sub-county. This enabled the identification of prevailing issues, perceived barriers, and opportunities within the local e-commerce environment.

To facilitate clear and accessible communication of findings, the results were presented using tables, charts, and graphs. These visual aids helped to simplify complex data sets, making patterns and relationships more easily interpretable by various stakeholders, including policymakers, SME owners, and academic audiences. The visual presentation of data also enhanced the reader's ability to compare variables across different groups and to appreciate the magnitude and implications of the findings.

3.8 Ethical Considerations

Ethical considerations are essential in research to protect participants' rights, dignity, and safety, while also ensuring the study's credibility and scholarly value (Resnik, 2018). This study followed strict ethical guidelines throughout all stages from planning to dissemination. Before data collection, informed consent was obtained from all participants after clearly explaining the study's purpose, procedures, voluntary nature, and the right to withdraw at any time without consequences (Creswell & Creswell, 2018). Written consent was used to confirm participation. To ensure confidentiality and anonymity, no personal identifiers were collected. Questionnaires were coded, and data was securely stored with limited access. Information was used solely for academic purposes and reported in aggregate to protect individual identities.

Furthermore, the researcher ensured that no form of coercion, deception, or undue influence was applied. Respondents participated out of their own free will, and all communications were conducted using clear, respectful, and culturally appropriate language. Efforts were made to

maintain neutrality and sensitivity to the social and cultural context of the participants. Lastly, the principles of honesty, integrity, and transparency were upheld throughout the study. Data analysis and interpretation were conducted objectively, with an emphasis on presenting accurate and unbiased results. Ethical compliance was maintained not only to protect participants, but also to uphold the academic integrity and social responsibility of the research endeavor (Saunders, Lewis, & Thornhill, 2019).

3.9 Summary

Chapter Three detailed the study's methodology, highlighting the use of a descriptive research design and a target population of 67 SMEs in Dagoretti North Sub-county. A sample of 57 SMEs was selected through simple random sampling. Data collection involved structured questionnaires, interviews, and observations, with instruments pre-tested to ensure validity and reliability. Data was analyzed using descriptive and inferential statistics via SPSS, and all procedures adhered to strict ethical guidelines, including informed consent and confidentiality.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSIONS

4.0 Introduction

This chapter presents and analyzes the study's findings based on quantitative data. The results are organized according to the study's specific objectives, providing clear insights into the factors influencing e-commerce development among SMEs.

4.1 Presentation of the Study Findings

4.1.1 Response Rate

A total of 57 structured questionnaires were distributed, matching the determined sample size, and all were returned though some had minor incomplete responses resulting in a 100% response rate. According to Mugenda and Mugenda (2003) and Kothari (2004), a response rate above 50% is sufficient for descriptive studies, while Babbie (2014) classifies 50% as acceptable, 60% as good, and 70% or more as very good. Therefore, the 100% response rate in this study is regarded as excellent and highly suitable for valid data analysis and interpretation.

4.1.2 Age of Respondents

Table 5: Age of Respondents

Age Group	Frequency	Percentage (%)
Below 30 years	10	17.5
30 to 39 years	20	35.1
40 to 49 years	15	26.3
50 years and above	12	21.1
Total	57	100

The majority of respondents (61.4%) were aged between 30 and 49 years, indicating a relatively youthful and active business population. This age group is more likely to adopt digital innovations such as e-commerce due to familiarity with technology. Venkatesh *et al.*, (2012) found that younger individuals demonstrate greater behavioral intention to use technology due to higher digital exposure.

4.1.3 Gender of Respondents

Table 6: Gender of Respondents

Gender	Frequency	Percentage (%)
Male	30	52.6
Female	27	47.4
Total	57	100

A fairly balanced gender distribution shows that both men and women are significantly involved in SME operations. Gefen & Straub (1997) suggest that while gender may influence perceptions of e-commerce usability, both genders can equally benefit from digital tools when exposed to training and opportunity.

4.1.4 Level of Education

Table 7: Respondents Level of Education

Education Level	Frequency	Percentage (%)
Primary	5	8.8
Secondary	10	17.5
Diploma	18	31.6
Degree	17	29.8
Masters	7	12.3
Total	57	100

Most respondents (73.7%) had post-secondary education (diploma or higher), indicating high levels of literacy among SME owners. Thong (1999) argues that education improves managerial capacity and enhances understanding and implementation of e-commerce systems.

4.1.5 Duration of Business Operation

Table 8: Duration of Business Operation

Duration	Frequency	Percentage (%)
Less than 5 years	12	21.1
5–9 years	20	35.1
10–14 years	14	24.6
More than 14 years	11	19.3

Duration	Frequency	Percentage (%)
Total	57	100

A significant portion of SMEs (59.7%) had operated for at least 5 years, indicating established enterprises with experience in navigating business challenges. Zhu & Kraemer (2005) note that experience increases digital adaptability, as older businesses are more likely to appreciate operational efficiency offered by e-commerce.

4.1.6 Use of E-commerce

Table 9: Use of E-commerce

Response	Frequency	Percentage (%)
Yes	35	61.4
No	22	38.6
Total	57	100

A clear majority of SMEs (61.4%) have adopted e-commerce, reflecting a growing trend toward digital platforms. Choshin & Ghaffari (2017) emphasize that SMEs embracing e-commerce benefit from expanded market reach and improved operational efficiency.

4.1.7 E-commerce Platforms Used

Table 10: E-commerce Platforms Used

Platform	Frequency	Percentage (%)
Website	15	26.3
WhatsApp	30	52.6
Instagram	25	43.9
TikTok	10	17.5
Facebook	28	49.1
Jumia/Kilimall	18	31.6
Other	5	8.8

Social media platforms especially WhatsApp, Facebook, and Instagram are the most commonly used by SMEs. This reflects a shift towards affordable, accessible, and user-friendly platforms for engaging customers. Dwivedi et al. (2021) confirm that social media-based e-commerce is revolutionizing how SMEs market products, interact with clients, and drive sales.

4.1.8 Technological Infrastructure

Technological infrastructure plays a vital role in facilitating e-commerce adoption among SMEs. This includes affordable platforms, reliable internet, employee skill sets, and cybersecurity measures.

Table 11: Descriptive Results on Technological Infrastructure

Statement	SD (%)	D (%)	N (%)	A (%)	SA (%)
Affordable e-commerce technologies facilitate adoption	5%	10%	15%	40%	30%
Access to internet and infrastructure supports implementation	7%	12%	18%	35%	28%
User-friendly tools influence adoption	3%	7%	15%	45%	30%
Difficulty accessing modern tech	25%	20%	18%	22%	15%
Cost of tech is reasonable	20%	25%	20%	20%	15%
Access to technical support influences usage	8%	10%	17%	40%	25%
Staff possess required skills	6%	8%	20%	40%	26%
Training programs are available	18%	22%	20%	25%	15%
Digital literacy influences adoption	4%	5%	16%	38%	37%
Cybersecurity concerns hinder adoption	10%	12%	22%	35%	21%
Cybersecurity is prioritized	6%	7%	20%	34%	33%
SME experienced cyber incidents	30%	28%	22%	10%	10%

The findings from the descriptive analysis of technological infrastructure reveal several key factors that significantly influence the adoption of e-commerce among SMEs in Dagoretti North Sub-county.

To begin with, a majority of respondents (70%) agreed or strongly agreed that the availability of affordable e-commerce technologies, such as website builders and online marketplaces, facilitates adoption. This confirms Zhu and Kraemer's (2005) proposition that the affordability of digital platforms plays a vital role in the diffusion of e-commerce technologies, particularly in resource-constrained SMEs. Cost-effective tools lower entry barriers and enable even small enterprises to digitize their operations.

In terms of technological infrastructure, such as internet connectivity and server access, over 63% of respondents indicated that their SMEs had the necessary setup to support e-commerce. This highlights the importance of foundational infrastructure in fostering digital inclusion. According to Tan et al. (2007), the quality and availability of ICT infrastructure directly influence an SME's readiness to adopt online systems.

Notably, user-friendliness of tools emerged as a significant influence on e-commerce decisions, with 75% of respondents agreeing or strongly agreeing that ease of use matters. Choshin and Ghaffari (2017) support this by asserting that SMEs are more likely to adopt platforms that are intuitive and require minimal technical know-how, reducing the cost and time required for onboarding.

However, technological barriers remain a concern. While responses were mixed, 37% acknowledged challenges in accessing up-to-date e-commerce technologies. This indicates a digital divide where some SMEs may lag behind due to outdated systems or limited exposure to recent innovations. Kapurubandara and Lawson (2006) found similar constraints in developing countries, where small firms often struggle to keep pace with rapidly evolving digital trends.

Regarding the cost of acquiring and maintaining e-commerce technologies, only 35% found it reasonable, reinforcing that affordability is not uniformly experienced across all SMEs. This financial pressure may limit long-term digital transformation efforts, especially for micro-enterprises. As confirmed by Rahayu and Day (2015), cost perceptions significantly shape e-commerce adoption decisions in low- and middle-income contexts.

Furthermore, 65% of respondents acknowledged that technical support availability influences their ability to use e-commerce effectively. This points to the need for external ICT support services, which can help SMEs overcome operational challenges. As noted by Thong (1999), SMEs often lack in-house expertise and thus depend on external consultants to manage and maintain digital tools.

In terms of employee competence, 66% of respondents reported that their staff possess the skills required to effectively use e-commerce systems. This underscores the role of human capital in digital transformation. Trained employees not only increase efficiency but also boost

innovation. According to Ifinedo (2011), workforce ICT competence is a key determinant of e-commerce success in SMEs.

However, only 40% of respondents agreed that training programs or workshops on e-commerce are readily available. This suggests a gap in continuous professional development and digital upskilling. Without structured learning opportunities, SMEs may stagnate digitally. As highlighted by Mutua (2017), regular training ensures SMEs remain competitive and adaptive to new technologies.

The study also revealed that digital literacy among employees significantly affects e-commerce adoption, with 75% agreement. This supports the view that internal digital capacity is just as important as infrastructure. According to Laudon and Traver (2020), organizations with digitally literate employees can better optimize e-commerce strategies and troubleshoot problems effectively.

When it comes to cybersecurity, the findings were mixed. Over half (56%) agreed that cybersecurity concerns limit their e-commerce integration. This shows that risk perception may hinder full digital transition. At the same time, 67% affirmed that they prioritize cybersecurity when selecting platforms, reflecting a proactive approach to managing risks. These findings echo the work of Kim, Ferrin, and Rao (2008), who found that perceived trust and security are central to the adoption of online systems.

Lastly, only 20% of respondents reported having experienced cybersecurity incidents, while a majority (58%) had not. This indicates that although the actual incidence rate is relatively low, perceived vulnerability continues to shape behavior. Awareness campaigns and training could help bridge the gap between risk perception and actual exposure.

4.1.9 Financial Factors

Financial support is a critical enabler for e-commerce implementation among SMEs. This section explores access to funding, cost challenges, and the role of secure payment systems in promoting e-commerce.

Table 12: Descriptive Results on Financial Factors

Statement	SD (%)	D (%)	N (%)	A (%)	SA (%)
Availability of financial support facilitates e-commerce adoption	6%	10%	20%	36%	28%
Ease of securing funding for e-commerce	20%	25%	18%	22%	15%
Financial incentives from public/private sectors influence adoption	8%	10%	17%	40%	25%
Sufficient funding options tailored for SMEs	18%	22%	20%	25%	15%
Challenges in accessing appropriate funding	7%	10%	15%	38%	30%
Funding availability impacts ability to maintain e-commerce systems	5%	8%	12%	40%	35%
Reliable payment gateway availability influences e-commerce engagement	4%	6%	20%	35%	35%
Difficulty integrating payment gateways	12%	18%	22%	28%	20%
Payment gateway security affects trust in e-commerce	3%	5%	15%	37%	40%

The findings from the descriptive analysis on financial factors reveal critical insights into how financial readiness and constraints shape the adoption and implementation of e-commerce among SMEs in Dagoretti North Sub-county.

To begin with, a significant number of respondents (64%) agreed or strongly agreed that the availability of financial support, such as grants, loans, or subsidies, facilitates e-commerce implementation in their SMEs. This finding supports Rahayu and Day (2015), who emphasized that financial capability is one of the most decisive factors in small businesses' transition toward digital platforms. Without external financial support, SMEs often struggle to fund initial set-up costs, platform subscriptions, or technology upgrades.

However, when asked whether they found it easy to secure funding specifically for e-commerce initiatives, only 37% of respondents indicated agreement. This reveals a major gap in the financial ecosystem, where funding bodies may not prioritize or understand the unique needs of digitalization in the SME sector. This aligns with Kapurubandara and Lawson (2006), who identified limited access to finance as one of the most persistent barriers to e-commerce adoption in developing countries. The lack of tailored financial products or funding packages for digital transformation impedes progress for SMEs.

Despite these challenges, 65% of the respondents agreed that financial incentives from the government or private sector (e.g., tax reliefs, subsidies) positively influence their decision to adopt e-commerce. This supports Choshin and Ghaffari (2017), who found that targeted incentives significantly boost SMEs' confidence and willingness to invest in e-commerce, particularly when such support reduces perceived financial risks.

Yet, only 40% of the respondents felt that there are sufficient funding options tailored to SMEs looking to invest in e-commerce technologies. This finding exposes the inadequacy of SME-specific financial instruments in the local context. Financial systems may not have fully evolved to accommodate the growing digital needs of SMEs. As Ifinedo (2011) suggests, the design of financial services must align with the operational scale and goals of small businesses to foster inclusive digital growth.

The study further revealed that 68% of respondents experience challenges in accessing appropriate funding for their e-commerce projects. This confirms that beyond availability, the terms and accessibility of financing options pose significant barriers. SMEs may face collateral requirements, high interest rates, or limited information on financing options. These findings echo the arguments made by Molla and Licker (2005), who noted that perceived financial limitations are a critical inhibitor in e-commerce adoption models, especially in low-resource settings.

Notably, 75% of the respondents indicated that funding availability significantly impacts their ability to invest in and maintain e-commerce infrastructure. This underscores that financial support is not only essential for adoption but also for the long-term sustainability of digital platforms, including regular updates, cybersecurity enhancements, and operational costs. According to Teo, Tan, and Buk (1997), continued investment is required to realize the full potential of digital transformation among SMEs.

Regarding payment systems, 70% of respondents agreed that the availability of reliable payment gateway solutions was a critical factor in their decision to engage in e-commerce. In Kenya, platforms like M-Pesa, PesaPal, and bank-integrated gateways have played a central role in e-commerce growth. Trust in these systems determines how confidently SMEs can conduct digital transactions. This is consistent with the findings of Kim, Ferrin, and Rao (2008), who emphasized that trust in payment systems is foundational to user acceptance and online transaction success.

Despite the value placed on payment systems, 48% of the respondents acknowledged that they have faced difficulties integrating suitable payment gateways. This could be attributed to lack of technical expertise, poor vendor support, or incompatibility between local and international platforms. It highlights a need for simplified and locally adaptable payment technologies. Zhu and Kraemer (2005) also found that integration complexity can hinder SME willingness to expand into digital commerce, especially if they lack IT departments or external support.

Finally, 77% of respondents agreed that the security and reliability of payment gateways influence their trust in e-commerce transactions. This illustrates how critical it is for SMEs to feel confident that their online payments and customer data are protected from fraud or breaches. The role of trust is repeatedly emphasized in e-commerce literature. As proposed by Pavlou (2003), perceived security is one of the strongest predictors of e-commerce acceptance in small business environments.

4.1.10 Market and Customer-Related Factors

Understanding and responding to customer needs, competitive forces, and market saturation play a crucial role in e-commerce growth for SMEs. The results are as tabulated below;-

Table 13 Descriptive Analysis on Market and Customer-Related Factors

Statement	SD (%)	D (%)	N (%)	A (%)	SA (%)
Understanding customer preferences is crucial	2%	5%	10%	38%	45%
Conducts regular surveys or market research	18%	22%	15%	25%	20%
Flexibility in adapting to customer preferences	5%	8%	12%	40%	35%
Competition affects e-commerce growth	4%	10%	18%	36%	32%
Challenges due to market saturation	10%	15%	20%	30%	25%
Differentiation is a strategic priority	3%	5%	15%	35%	42%
Effective digital marketing is essential	2%	4%	10%	40%	44%
SME invests in digital marketing	10%	15%	18%	35%	22%
Digital campaigns impact e-commerce sales	5%	8%	12%	40%	35%

The descriptive findings reveal that market orientation and customer-centric strategies are fundamental to the growth of e-commerce among SMEs in Dagoretti North Sub-county. These

factors encompass understanding customer behavior, responding to competition, leveraging digital marketing, and positioning offerings in a saturated market.

To begin with, an overwhelming 83% of respondents agreed that understanding customer preferences is critical for e-commerce success. This underscores the need for businesses to align their online strategies with the evolving expectations of their customers. According to Kumar and Reinartz (2016), customer insight enables firms to create targeted value propositions, improving conversion and retention rates in digital environments.

Despite the acknowledged importance of understanding customer needs, only 45% of SMEs reported conducting regular market research. This suggests a gap between perceived importance and actual practice. SMEs may lack the resources or technical capacity to implement customer feedback mechanisms such as online surveys or analytics tools. As Chaffey and Ellis-Chadwick (2019) argue, data-driven decision-making is essential for digital competitiveness, especially in dynamic online markets.

Additionally, 75% of respondents emphasized that flexibility in adapting to changing customer preferences influences their e-commerce strategies. This indicates that successful SMEs adopt an agile approach, revising product offerings, pricing, or communication based on real-time customer behavior. Laudon and Traver (2020) emphasize that adaptability is a hallmark of digitally mature enterprises, as consumer expectations evolve rapidly in the online space.

Competitive pressure also emerged as a significant factor, with 68% agreeing that competition from other e-commerce businesses affects their SME's growth. This aligns with Tiago and Veríssimo (2014), who observed that the low entry barrier in e-commerce leads to market saturation and price wars. SMEs must therefore differentiate themselves not just by price, but through service quality, unique branding, or niche targeting.

In line with this, 55% of SMEs acknowledged challenges due to market saturation, reinforcing the competitive intensity in the digital landscape. This can result in reduced visibility and customer loyalty. Strategic differentiation becomes critical, as confirmed by the 77% who noted that distinguishing their products/services is a priority. Porter's differentiation strategy is especially relevant in e-commerce, where brand personality and specialized offerings can create loyal customer segments even in crowded markets.

On the subject of digital marketing, a commanding 84% of respondents believed it is essential for attracting and retaining customers online. This shows that SMEs recognize the power of

tools such as search engine optimization (SEO), social media, and email marketing in reaching broader audiences. Chaffey and Ellis-Chadwick (2019) emphasize that without digital outreach, even the best e-commerce platforms may underperform.

However, only 57% of SMEs indicated they sufficiently invest in digital marketing activities, suggesting that while they value it, actual resource allocation may be inadequate. Budget limitations, lack of skilled staff, or unfamiliarity with digital tools could explain this inconsistency. According to Tiago and Veríssimo (2014), underinvestment in marketing leads to lower brand visibility, missed leads, and stagnant online sales.

Finally, 75% of respondents reported that digital marketing campaigns significantly impact e-commerce sales and engagement. This finding supports the conclusion that digital advertising and outreach are not just supportive functions but are central revenue drivers for e-commerce ventures. Active promotion boosts web traffic, improves customer conversion rates, and sustains long-term loyalty.

4.1.11 Legal and Regulatory Factors

A strong legal foundation is essential for the sustainable growth of e-commerce. SMEs must navigate data protection, consumer rights, and evolving regulatory landscapes to build trust and avoid compliance risks.

Table 14: Descriptive Analysis on Legal and Regulatory Factors

Statement	SD (%)	D (%)	N (%)	A (%)	SA (%)
The existing legal framework supports our SME's e-commerce activities	10%	15%	20%	30%	25%
Our SME finds it challenging to comply with current e-commerce regulations	8%	10%	15%	38%	29%
Clear legal guidelines influence decision to engage in e-commerce	5%	6%	14%	40%	35%
Compliance with data protection regulations is a priority	4%	5%	10%	38%	43%
SME has implemented customer data protection measures	6%	8%	18%	35%	33%
Concerns about data breaches affect data management approach	5%	7%	13%	38%	37%
Upholding customer rights is integral to e-commerce policy	2%	3%	12%	40%	43%
Provides transparent information about customer rights	5%	7%	15%	40%	33%

Statement	SD (%)	D (%)	N (%)	A (%)	SA (%)
Adherence to consumer rights builds trust and satisfaction	3%	5%	12%	38%	42%

The legal and regulatory environment has a profound influence on the success of e-commerce initiatives in small and medium enterprises (SMEs). Findings from the current study show that while legal frameworks are moderately supportive, regulatory compliance remains a significant challenge for SMEs in Dagoretti North Sub-county, Nairobi.

To begin with, 55% of respondents agreed that the existing legal framework adequately supports e-commerce activities, though 25% remained neutral. This indicates that while some SMEs are benefiting from policies such as the Kenya Information and Communications Act and Consumer Protection Act, others may not fully understand or leverage these frameworks. The Organisation for Economic Co-operation and Development (OECD, 2019) emphasizes that legal clarity and business-friendly regulation are essential enablers for digital economy participation, especially for small businesses.

At the same time, 67% of SMEs reported challenges in complying with current e-commerce regulations, suggesting a need for simplified, more accessible regulatory guidance. The complexity of data laws, taxation rules, or cross-border trade regulations can deter SMEs from scaling up their digital operations. These findings echo the views of Bélanger and Crossler (2011), who noted that while regulation promotes safety and accountability, excessive complexity or ambiguity may discourage innovation and e-commerce expansion.

A significant 75% of respondents agreed that clear and updated legal guidelines influence their decision to engage in e-commerce, further reinforcing the role of regulatory transparency in facilitating digital transformation. Businesses want to invest in e-commerce only when they clearly understand their rights and obligations. This finding aligns with the Technology-Organization-Environment (TOE) framework, which asserts that regulatory environments directly impact technology adoption decisions in SMEs.

Data privacy and security also emerged as core themes. A strong 81% of SMEs stated that ensuring compliance with data protection regulations (e.g., GDPR-like standards in Kenya such as the Data Protection Act of 2019) is a priority. This demonstrates that SMEs are becoming increasingly aware of the value of consumer trust and the consequences of data breaches.

According to Bélanger and Crossler (2011), data protection compliance fosters trust, reduces liability, and strengthens the overall reputation of digital enterprises.

Furthermore, 68% of SMEs confirmed that they have implemented data protection measures to safeguard customer information. However, 18% remained neutral, and 14% disagreed, indicating that some businesses may still be lagging in full compliance or lack the resources and expertise to adopt best practices. Additionally, 75% of respondents agreed that concerns about data breaches or privacy violations affect how they manage e-commerce data highlighting that cybersecurity remains both a technical and legal concern in the sector.

The analysis also found that 83% of SMEs prioritize upholding customer rights such as the right to refunds, returns, and product information as a critical element of their e-commerce policy. This is supported by Urban et al. (2009), who found that trust in online shopping environments is largely built on firms' willingness to adhere to and communicate consumer rights clearly.

In support of this, 73% of respondents said they provide transparent information about customer rights, reinforcing the idea that regulatory compliance is not only about avoiding penalties, but also about fostering a strong brand and improving customer loyalty. Lastly, 80% of respondents agreed that legal compliance influences customer satisfaction and trust, confirming that consumers are increasingly sensitive to how their rights are handled in the digital space.

4.2 Limitations of the Study

Another notable limitation was limited access to respondents, as some SME owners and managers were either unavailable or reluctant to participate due to time constraints or concerns over confidentiality. To overcome this, the researcher assured participants of the anonymity and confidentiality of their responses. Self-administered structured questionnaires were utilized to accommodate respondents' schedules, and follow-up visits were conducted to improve participation rates.

The study also faced the challenge of response bias, particularly social desirability bias, where participants might have felt compelled to provide favorable or expected answers. To mitigate this, the questionnaire was carefully designed using neutral language, and anonymity was emphasized to encourage honest and candid responses. This approach helped to minimize distortion and improve the accuracy of the data collected.

4.3 Chapter Summary

Chapter Four presented the descriptive findings of the study on factors influencing e-commerce development among SMEs in Dagoretti North Sub-County. The results revealed that technological factors such as internet access and employee digital skills facilitate adoption, though challenges like cybersecurity and costs persist. Financially, limited access to targeted funding and integration of secure payment systems hinder full implementation. On market-related factors, understanding customer preferences and digital marketing were key, but competition and market saturation posed challenges. Legally, while frameworks exist, many SMEs struggle with compliance and data protection obligations.

CHAPTER FIVE

SUMMARY, RECOMMENDATIONS AND CONCLUSIONS

5.0 Introduction

This chapter presents a summary of the key findings, draws major conclusions aligned with the study's objectives, and offers recommendations for policy and future research. The section is structured according to the study's specific objectives to ensure clarity and relevance.

5.1 Summary of findings

The study aimed to examine the key factors influencing the adoption and development of e-commerce among SMEs. The findings, presented in descriptive form, were organized around four main categories: technological, financial, market/customer-related, and legal/regulatory factors.

5.1.1 What are the technological factors influencing e-commerce adoption among small and medium enterprises in Dagoretti North Subcounty, Nairobi, Kenya?

The study revealed that most SMEs acknowledge the importance of technological infrastructure in adopting e-commerce. Access to affordable technologies, reliable internet, and user-friendly tools positively influences adoption. However, challenges such as the high cost of maintaining e-commerce systems, limited technical support, and cybersecurity concerns were noted. The digital literacy of staff and availability of training programs also emerged as critical enablers or constraints.

5.1.2 What are the financial factors affecting e-commerce implementation in small and medium enterprises in Dagoretti North Subcounty, Nairobi, Kenya?

Findings indicated that access to financial resources significantly affects e-commerce uptake. While financial support (grants, loans) and incentives positively influence implementation, many SMEs struggle to secure funds specifically for digital investments. Payment gateway availability and security were also critical, with some SMEs experiencing integration issues and concerns about transaction reliability.

5.1.3 What are the market and customer-related factors affecting e-commerce growth in small and medium enterprises in Dagoretti North Subcounty, Nairobi, Kenya?

Understanding and responding to customer preferences emerged as a key driver of e-commerce growth. Many SMEs acknowledged the importance of conducting market research and

adapting to shifting consumer demands. However, intense competition, market saturation, and the need for differentiation were major challenges. Digital marketing was widely recognized as essential, and those investing in campaigns reported improved customer engagement and sales performance.

5.1.4 What are the legal and regulatory factors impacting e-commerce for small and medium enterprises in Dagoretti North Subcounty, Nairobi, Kenya

Most respondents agreed that the legal and regulatory environment plays a significant role in shaping e-commerce development. Although some SMEs found the legal framework supportive, a notable proportion reported difficulties in compliance due to complexity or lack of clarity. Data protection compliance, customer rights enforcement, and transparency were viewed as crucial for building consumer trust and ensuring sustainable online operations.

5.2 Conclusions

The findings revealed that technological factors, including access to affordable digital tools, reliable internet connectivity, and employees' digital literacy, significantly influence the ability of SMEs to adopt e-commerce. While many SMEs have embraced digital tools, barriers such as high maintenance costs, limited technical support, and cybersecurity concerns continue to inhibit widespread and effective implementation.

In terms of financial factors, the study established that access to funding remains a critical determinant of e-commerce success. Although some financial support mechanisms are available, most SMEs experience challenges in accessing loans or grants tailored to digital initiatives. The availability, integration, and trustworthiness of payment gateway solutions were also found to affect SMEs' willingness to transact online.

With respect to market and customer-related factors, the study found that SMEs recognize the need to understand and adapt to customer preferences in order to remain competitive in the online marketplace. Digital marketing emerged as a crucial tool for enhancing visibility and customer engagement. However, challenges such as market saturation and intense competition necessitate deliberate differentiation strategies and continued investment in customer-centric innovations.

Lastly, legal and regulatory factors play a significant role in shaping e-commerce practices. Although many SMEs acknowledged the presence of a supportive legal framework, a substantial number expressed difficulty navigating and complying with data protection,

consumer rights, and e-commerce-related laws. Adherence to these regulations was shown to contribute to customer trust and the credibility of online businesses.

5.3 Recommendations

The study revealed that while SMEs recognize the importance of affordable and user-friendly e-commerce technologies, challenges such as limited technical support, inadequate digital literacy, and cybersecurity concerns persist. It is therefore recommended that stakeholders including government agencies, ICT authorities, and private technology providers invest in expanding access to affordable digital tools and infrastructure. SMEs should be encouraged to adopt cloud-based platforms and open-source e-commerce systems to reduce operational costs. Additionally, regular training and capacity-building workshops should be conducted to enhance employees' digital skills and promote cybersecurity awareness, thereby improving the confidence and competence required to operate online platforms effectively.

Given the difficulties SMEs face in securing financial support tailored to e-commerce initiatives, there is a clear need for targeted financial interventions. Financial institutions, in partnership with development agencies and government programs, should design flexible credit facilities, grants, and low-interest loans specifically aimed at supporting e-commerce development. Furthermore, awareness campaigns should be initiated to inform SMEs of existing funding opportunities. Payment service providers should also simplify integration processes and enhance the reliability and security of digital payment systems to foster wider acceptance and trust among SME users.

The study recommends that SMEs engage more consistently in market research to identify trends, customer behaviors, and emerging needs. This can be achieved through affordable survey tools and social media listening techniques. Moreover, investment in digital marketing should be prioritized, with support from government and business development organizations to provide training on search engine optimization (SEO), social media marketing, and content creation. Such strategies can enhance brand visibility, customer engagement, and ultimately, online sales performance.

The study findings suggest that while some SMEs find the legal environment supportive, others struggle with navigating complex and often unclear e-commerce regulations. It is recommended that regulatory bodies such as the Communications Authority of Kenya and the Data Protection Commission simplify compliance procedures and provide SMEs with user-friendly guidelines and toolkits. Additionally, awareness campaigns and legal clinics should be

introduced to sensitize SMEs on their obligations regarding data protection, consumer rights, and online dispute resolution. Encouraging transparency in consumer policies and ensuring adherence to legal requirements will help build consumer trust, which is critical to the sustainability of e-commerce ventures.

5.4 Suggestions for Further Study

To build on the findings of this study, future research is recommended in the following areas:
Regional Comparisons Conduct comparative studies across other sub-counties or counties to understand regional differences in e-commerce adoption among SMEs.

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APPENDICES

APPENDIX I: INTRODUCTORY LETTER

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

RE: RESEARCH DATA COLLECTION PERMISSION.

I am conducting a study on **THE FACTORS AFFECTING DEVELOPMENT OF E-COMMERCE FOR SMALL AND MEDIUM ENTERPRISES. A CASE STUDY OF BUSINESS ENTERPRISES WITHIN DAGORETTI NORTH SUBCOUNTY** in partial fulfilment of my award of the degree of bachelor of commerce of the Management University of Africa. I am glad to inform you that you have been selected to form part of this study. I kindly request your assistance in completing the attached questionnaire which forms a major input of the research process. The information and data will be strictly used for academic purposes only and strict confidence shall be observed on the same.

Your cooperation will go a long way in ensuring the success of this project. I would like to thank you in advance for your time and consideration.

Yours Sincerely,

David Ochieng' Adede

APPENDIX II: QUESTIONNAIRE

FACTORS AFFECTING DEVELOPMENT OF E-COMMERCE FOR SMALL AND MEDIUM ENTERPRISES IN DAGORETTI NORTH SUBCOUNTY, NAIROBI COUNTY, KENYA

Instructions: *Do not write your name or any other personal data on the questionnaire.*

Please follow instructions while answering questions in each area and tick or fill appropriately

The information given here will remain confidential.

Part 1: SOCIO-DEMOGRAPHIC CHARACTERISTICS

1. How old are you? (In completed years)
 - a. Below 30 years
 - b. 30 to 39 years
 - c. 40 to 49 years
 - d. 50 years and above
2. What is your gender?
 - a. Male
 - b. Female
3. What is your level of education?
 - a. Primary
 - b. Secondary
 - c. Diploma
 - d. Degree
 - e. Masters
4. How long have operated the business
 - a. Less than 5 years
 - b. 5-9 years
 - c. 10-14 years
 - d. More than 14 years
5. Do you currently use e-commerce (buying/selling goods or services online)?
 - a. Yes

- b. No
6. If yes, what platforms do you use? (Tick all that apply)
- a. Website
 - b. WhatsApp
 - c. Instagram
 - d. TikTok
 - e. Facebook
 - f. Jumia/Kilimall
 - g. Other (specify): _____

PART 2: TECHNOLOGICAL INFRASTRUCTURE

7. Kindly respond to the following statement on technological factors influencing e-commerce adoption among small and medium enterprises by putting a tick (✓) on appropriate response.

Key SD=Strongly disagree, D=Disagree, N=Neutral, A=Agree, SA=Strongly Agree

Statement	SD	D	N	A	SA
The availability of affordable e-commerce technologies (e.g., website builders, online store platforms) facilitates e-commerce adoption in our SME.					
Our SME has access to technological infrastructure (e.g., internet connectivity, servers) necessary for implementing e-commerce solutions.					
The availability of user-friendly e-commerce tools influences our decision to adopt e-commerce.					
Our SME faces challenges in accessing up-to-date e-commerce technologies.					
The cost of acquiring and maintaining e-commerce technologies is reasonable for our SME.					
Accessibility to technical support for e-commerce systems affects our ability to effectively use these technologies					

Our employees possess the necessary skills and knowledge to effectively utilize e-commerce technologies.					
Training programs or workshops on e-commerce technologies are readily available to our employees.					
The level of digital literacy among employees influences our adoption and utilization of e-commerce solutions					
Concerns about cybersecurity prevent our SME from fully embracing e-commerce.					
We prioritize cybersecurity measures when selecting e-commerce technologies.					
Our SME has experienced cybersecurity incidents related to e-commerce activities					

PART 3: FINANCIAL FACTORS

8. Kindly respond to the following statement on financial factors affecting e-commerce implementation in small and medium enterprises by putting a tick (✓) on appropriate response.

Key SD=Strongly disagree, D=Disagree, N=Neutral, A=Agree, SA=Strongly Agree

Statement	SD	D	N	A	SA
The availability of financial support (e.g., grants, loans) facilitates the adoption of e-commerce in our SME					
Our SME finds it easy to secure funding specifically for e-commerce initiatives					
Financial incentives from government or private sectors positively influence our decision to adopt e-commerce					
There are sufficient funding options tailored for SMEs looking to invest in e-commerce technologies					
We face challenges in accessing appropriate funding for our e-commerce projects					
Funding availability significantly impacts our ability to invest in and maintain e-commerce infrastructure					

The availability of reliable payment gateway solutions is a critical factor in our decision to engage in e-commerce					
I have encountered difficulties in integrating suitable payment gateway systems for our e-commerce platform					
The security and reliability of available payment gateways influence our trust in e-commerce transactions					

PART 4: MARKET AND CUSTOMER RELATED FACTORS

9. Kindly respond to the following statement on market and customer-related factors affecting e-commerce growth in small and medium enterprises by putting a tick (✓) on appropriate response.

Key SD=Strongly disagree, D=Disagree, N=Neutral, A=Agree, SA=Strongly Agree

Statement	SD	D	N	A	SA
Understanding customer preferences is crucial for the success of our e-commerce initiatives.					
Our SME conducts regular surveys or market research to gauge customer preferences in e-commerce.					
Flexibility in adapting to changing customer preferences influences our e-commerce strategy					
Competition from other e-commerce businesses affects our SME's growth in the online market.					
Our SME faces challenges due to market saturation in our industry/niche.					
Differentiating our products/services from competitors is a priority for our e-commerce strategy					
Effective digital marketing strategies are essential for attracting and retaining customers online.					

Our SME invests sufficiently in digital marketing activities (e.g., SEO, social media marketing) for our e-commerce platform.					
Digital marketing campaigns have a significant impact on our e-commerce sales and customer engagement.					

PART 5: LEGAL AND REGULATORY FACTORS

10. Kindly respond to the following statement on legal and regulatory factors impacting e-commerce for small and medium enterprises by putting a tick (√) on appropriate response.

Key SD=Strongly disagree, D=Disagree, N=Neutral, A=Agree, SA=Strongly Agree

Statement	SD	D	N	A	SA
The existing legal framework (e.g., e-commerce laws, consumer protection laws) adequately supports our SME's e-commerce activities.					
Our SME finds it challenging to navigate and comply with current e-commerce regulations.					
Clear and updated legal guidelines positively influence our decision to engage in e-commerce					
Ensuring compliance with data protection regulations (e.g., GDPR, CCPA) is a priority for our e-commerce operations.					
Our SME has implemented measures to protect customer data in accordance with legal requirements.					
Concerns about data breaches or privacy issues impact our approach to e-commerce data management.					
Upholding customer rights (e.g., right to information, right to refund) is integral to our e-commerce policies.					
Our SME provides transparent information about customer rights and policies on our e-commerce platform.					

Customer satisfaction and trust are influenced by our adherence to legal requirements regarding consumer rights					
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Thank you for your responses and the time you spent