LAB University of Applied Sciences

The Role of Technology in International Business Expansion

LAB University of Applied Sciences
Bachelor of International Business
2025
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Abstract

Author(s)	Publication type	Completion year
Manisha Thapa	Thesis, UAS	2025
	Number of pages 49	

Title of the thesis

The Role of Technology in International Business Expansion

Degree, Field of Study

Bachelor of International Business

Name, title and organisation of the client

Hyperce | Best Ecommerce Suite Solution

Abstract

This thesis seeks to examine the role of digital technologies in facilitating the internationalization of small and medium enterprises (SMEs) in Nepal. Globalization has increasingly been defined using digital technology, which means that firms with limited resources can now utilize low-cost and scalable platforms to participate in global markets. However, the uptake of digital technology by SMEs in developing economies such as Nepal is inconsistent. The study will investigate the opportunities and barriers that Nepali SMEs experience in their internationalization process through digital technology, drawing from three important theories: the Technology Acceptance Model (TAM), Resource-Based View (RBV), and Born Global Theory.

Data was collected using a mixed-methods approach. Primary data was collected through a structured online survey of digitally aware students and emerging professionals (n = 100+) and a semi-structured interview with the co-founder of Hyperce, a Nepal-based AI-powered e-commerce solutions company. The survey collected quantitative-directed trends in perceptions and experiences using digital tools, while the interview provided contextual data regarding SME tactics for profitably scaling internationally by utilizing automation and digital architecture. The data collected was thematically analyzed and presented in qualitative interpretation with descriptive statistics.

The results demonstrate that despite mobile payments, e-commerce apps, and automation/robotic applications offering promise, uptake levels are limited by high entry costs, the necessity for infrastructure, and the uncertainty of regulatory approaches. Nevertheless, early adopters - like Hyperce - show how digital infrastructure can support born-global behaviour even when conditions are impoverished. The study concludes with strategic suggestions for owners of SMEs, policymakers, and ecosystem players, calling for localized digital literacy programs, the design of simplified policies, and scalable technology partnerships. These findings add to knowledge within an academic context and practitioner experience of better utilizing technology to improve the competitiveness of SMEs.

Keywords

International Business Expansion, Digital Technology Adoption, Role of Technology in SMEs

Contents

List of Abbreviations

SME = Small and Medium-sized Enterprise

AI = Artificial Intelligence

TAM = Technology Acceptance Model

RBV = Resource-Based View

ICT = Information and Communication Technology

RQ = Research Question

USD = United States Dollar

API = Application Programming Interface

UI = User Interface

UX = User Experience

ERP = Enterprise Resource Planning

GDP = Gross Domestic Product

IT = Information Technology

CRM = Customer Relationship Management

FNCCI = Federation of Nepalese Chambers of Commerce and Industry

1 Introduction

The thesis on the topic “The Role of Technology in International Business Expansion” will focus on the importance of technology and communication in the expansion of international business in today’s globalised world. The thesis will also highlight SMEs (Small and Medium-sized Businesses) in Nepal and how technology might help and support growth. Technology plays a significant role in Nepal’s international business expansion and productivity improvement (Agrawal 2012). Information System and Technology also refers to the knowledge, tools, methods, and procedures needed to accomplish the goals of converting organizational ideas and concepts into the desired outputs (Panta 2006).

1.1 Research Background

Technology is a crucial part of today's global economy and has changed the way that businesses run and compete. For SMEs, digital technology like e-commerce platforms, cloud computing, and digital payment systems has created new ways to expand internationally and overcome barriers, while also expanding their global market outreach. However, while SMEs in developed economies tend to adopt and use these technologies quickly, SMEs in developing economies like Nepal are vulnerable to various difficulties, including infrastructure barriers, low digital literacy rates, and narrow access to capital (Dahal and Bhandari 2004).

In Nepal, SMEs comprise a sizable percentage of the economy, providing a significant number of jobs and contributing to the GDP. Despite the significant economic presence of SMEs, many still have a traditional model for their businesses. The adoption of digital technologies among Nepalese SMEs has been constrained, with only a small number able to achieve visibility in international markets. E-commerce platforms like Daraz, local digital wallets like eSewa and Khalti, and the development of tech-enabled startups like Hyperce are creating new pathways for growth. Systemic barriers such as ineffective and insufficient technical infrastructure and the incoherence of policy frameworks remain an impediment to growth.

The work will examine how Nepalese SMEs adopt technology to access international markets with Hyperce representing a case context; it will also identify the obstacles to further adoption described in the broader context. The overall objective of the work will be to provide actionable insights that would support owners and policymakers to improve the digital readiness of SMEs to support sustainable livelihoods and growth.

1.2 Thesis Objectives, Research Questions, and Limitations

The main objective of the study is to investigate how technology supports SMEs in their international market expansion. Its specific goal is to understand the prospects, difficulties, and tactics faced by SMEs in Nepal and similar areas. Also, the main purpose of the thesis is to provide actionable recommendations for SMEs in Nepal to successfully expand and scale into international markets using the specific technology tools mentioned above.

The main research questions are:

1. What is the role of technology in international business expansion?
2. How do technology and the internet support SMEs in the expansion of businesses globally?
3. What are the specific technological tools and platforms that enable SMEs to enter the international markets?

The sub-questions aim to address the main research question by exploring the main research question.'

1. Which technical platforms and tools are essential for SMEs to access global markets?
2. What obstacles must SMEs overcome to use technology for global expansion?
3. How can SMEs overcome the challenges and optimize the advantages of technology?

The primary scope of this thesis is focused on SMEs in Nepal and their use of specific technological tools, including e-commerce platforms, digital payment systems, and cloud-based tools. By narrowing down the scope of these key technologies, the study aims to provide detailed and actionable insights customized to the unique challenges and opportunities faced by Nepali SMEs.

The main outcome of this thesis is a set of actionable recommendations to assist Nepalese SMEs in entering international markets. These recommendations will be based on:

- A study and an analysis of the existing challenges faced by SMEs and businesses, derived from both the literature review and interviews (Dahal and Kharel 2020).
- Strategies and practical technical tools, and platforms that have been identified as effective for overcoming these challenges.

The primary drawback of the study is its geographical focus on Nepal, which can limit how broadly the results can be applied to SMEs in other areas. Furthermore, the case studies

mostly focus on companies that already have digital infrastructure and focus on E-commerce industries, which may not accurately reflect SMEs with little experience with technology. Despite these limitations, the local context is better understood and offers valuable insights and studies for policymakers of government and businesses in similar developing industries.

1.3 Theoretical Framework

The research presented in this thesis relies on the three theoretical frameworks. The Technology Acceptance Model (TAM) applies to understand how small and medium-sized enterprises (SMEs) engage with digital tools based on their perceived utility and perceived ease of use. The resource-based view (RBV) allows us to understand how internal technological resources and capabilities aid a firm's competitive positioning in international markets. Finally, the born global theory provides insight into how SMEs are capable, early on in their development, to enter global markets through various digital platforms and technology. These theories are valuable for understanding how technology enabled the internationalization of Nepalese firms.

1.4 Research Methodology and Data Collection

This thesis uses a deductive research methodology based on existing theories, such as the Technology Acceptance Model (TAM), Resource-Based View (RBV), and Born Global Theory, to explore how technology facilitates the international growth of Nepalese SMEs.

The research problem was explored thoroughly using a mixed-methods design. By integrating qualitative and quantitative aspects, this study further enhanced the scope of data analysis. The initial data were collected through a Microsoft Form-based interview that contained both open-ended and scaled questionnaire items administered to the founders of Hyperce, a Nepalese startup with international aspirations. The responses provided information that was initially evidence of SME engagement with digital tools in a real business sense.

The secondary data was gathered from literature, reports, and related case studies to support and confirm our initial results. Secondary data was necessary to contextualize Hyperce in the broader patterns of SME internationalization through technology.

Consistent with ethical research practices, participants received an account of the study's purpose and their rights before participation. All responses were collected under informed consent, and the anonymous and confidential nature of participants' responses was maintained throughout the research process according to LAB University of Applied Sciences'

ethical guidelines and the TENK standards of the Finnish National Board on Research Integrity.

1.5 Thesis Structure

The thesis contains seven chapters. In Chapter 1, the thesis introduces the research topic. It discusses the background, the objectives, the research questions, the theoretical framework, and the research methodology. In Chapter 2, the theoretical background is presented. It discusses the relevant models that were addressed in the original research, which are the Technology Acceptance Model (TAM), Resource-Based View (RBV), and Born Global Theory. Chapter 3 outlines the research design process. It describes the research approach, data collection approach, and ethical considerations. Chapter 4 provides the empirical findings based on the data collected from the case company. Chapter 5 interprets the findings, interprets the applicability of the findings, and provides suggestions and recommendations to help Nepalese SMEs proceed to become internationally able through the implementation of information technology (IT). Chapter 6 is the brief conclusion and presents the overall findings and allows for further options for future research. Chapter 7 summarizes the research study.

2 Literature Review

2.1 Evolution of Technology in International Business

The evolution of technology has been influential in transforming international business for small and medium enterprises (SMEs). Initially, telegraphs and telephones were used as communication tools that laid the foundation for cross-border trade between different countries. However, the rise of the internet and technology in the early 1990s marked a paradigm shift towards businesses to reach global international markets with ease (Tillerias et al. 2020). This technological evolution has been crucial for SMEs in Nepal, particularly with the emergence of e-commerce platforms such as Daraz and SastoDeal. This shift has enabled Nepali businesses to access international customers without the need for physical storefronts (Shrestha 2021).

Later in the 2010s, digital payment systems such as eSewa, Khalti, internet banking, and dollar cards further simplified transactions, which reduced the reliance on traditional banking systems and enhanced the accessibility of global markets. Recent advancements in cloud computing and data analytics now allow Nepali SMEs to operate more efficiently and make decisions based on data-driven approaches to compete internationally (Ali Ahi et al. 2022). The way global corporations conduct business is being progressively changed by cutting-edge digital technologies such as augmented reality, blockchain, big data analytics, and the Internet of Things. Many academics contend that the integration of these technologies signals the start of the fourth industrial revolution because of the magnitude of this change (Schwab 2016).

Traditional technology is essential to the operations of most rural companies. Traditional technology continues to play a significant role in Nepal's social and economic landscape and cannot be completely disregarded. Additionally, the findings indicate that. In Nepal, the use of contemporary technologies is also growing. In terms of contemporary technologies, Nepalese industries and businesses have come to rely on information technology (IT), advanced technology, biotechnology and tissue culture technology, solar power, computer technology, automation, e-banking, mobile banking, locker facilities, telephone and television, and e-business (Shrestha 2021).

2.2 Traditional vs Modern Technology in Nepal

The business environment in Nepal illustrates the coexistence of traditional practices with developing digital technologies, particularly in the case of small and medium-sized enterprises (SMEs). While traditional technologies like handwritten books of accounts, cash

mode of transactions, and previous relationships dominate the business practices of long-standing businesses or rural enterprises, these characteristics are largely sustained because of limited infrastructure, illiteracy in digital literacy, and a conservative approach to change.

In cities and new organizations that are adaptive to change and are focusing on growth, changes from traditional to modern technologies are being adopted. SMEs are benefitting from digital developments such as mobile banking, eSewa, and Khalti for digital wallets, cloud accounting software, and e-commerce platforms like Daraz and SastoDeal that ease business operations, access wider markets, and enhance customer services (Shrestha 2021). Various and involved stakeholders, including the rise of smartphone use and internet access (even in semi-urban places), have contributed to growing changes in technology.

Nevertheless, the changes and the momentum towards modernization from traditional practices are uneven. Many SMEs, particularly in remote areas, do not have good access to reliable internet or technical support, or see modern systems as difficult or too expensive to adopt, while the idea of moving away from traditional practices will be met with resistance. Closing the digital divide and providing relevant support will be one of the dominant challenges to modernizing the public sector SMEs across Nepal. With ongoing developments in technologies, the link between traditional practices and modern technologies will dictate the rate of change from traditional business practices to modern business practices.

2.3 Key theories

Key theories of technology adoption, worldwide business strategy, and SME growth model serve as the foundation for the thesis. So, the important theoretical frameworks and theories include:

- **Technology Acceptance Model (TAM)**
  Fred Davies developed a theory called The Technology Acceptance Model (TAM) in 1989, which provides a strong framework for understanding why businesses adopt technology. This theory explains how people accept and use new technologies and is a widely used model in social sciences and marketing research. TAM theory can also be used to explain how consumers use new products and services and highlights the importance of users' perceptions, rather than the creator's belief about technology. This theory focuses on two key elements: perceived ease of use, which refers to the effort needed to embrace the technology, and perceived

utility, which has to do with how much technology improves job performance (Silva 2015).

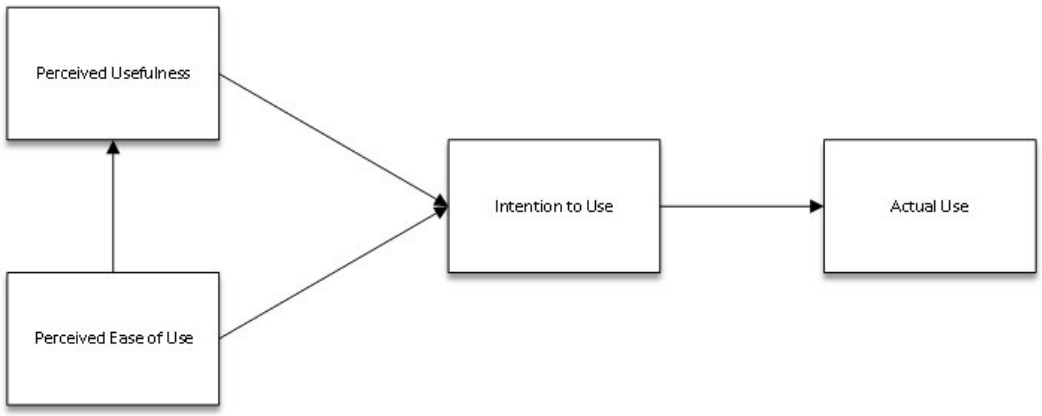

Figure 1 Technology Acceptance Model (TAM)

For SMEs in Nepal, these factors are particularly relevant. Many studies have shown that businesses in Nepal are more likely to adopt technological changes, e-commerce platforms, and digital payment systems if they perceive tangible benefits, such as increased sales, simplified operations, and a strong team foundation. Additionally, the Federation of Nepalese Chambers of Commerce and Industry (FNCCI) has taken initiatives to improve technological literacy among SME owners in Nepal as well as contributed to enhancing the perceived ease of use of these tools.

- **Born Global Theory**

Born Global Theory is one of the theories that explain why and how SMEs decide to go international early and fast after just a few years of their establishment. It is key evidence of departure from the Uppsala Model argument of stepwise gradual market entries (Arvidsson 2019).

Born Global could be at the other extreme, where firms become global players from their inception by leveraging technology, digital platform, and global network (Gabrielsson et al. 2008). That is the modern business environment in which any small firm, right from its inception, can go global using the means of digital transformation and e-commerce linked with artificial intelligence and cloud-based solutions. Born global firms were first coined by Knight and Cavusgil in 1996 to explain that mostly technology-driven SMEs skip traditional export stages and burst into multiple international markets very early on. 'Born global firms' are those, as it has been described, that break into several international markets very early, without any waiting time in their domestic markets, using technology, digital marketing, and international

partnerships. This departure challenges the 'old view' that internationalization should be a slow, resource-intensive process and demonstrates that companies can achieve global reach within very short time spans today (Knight and Cavusgil 1996).

One of the reasons why the 'Born Global' manages to succeed in its international market offerings is the ease of digital technology utilization. If old traditional business tactics involved soft expansion, trade fairs, slow networking, and the like, setting up physical operations at foreign locations, Born Global firms are really at home on electronic commerce platforms, social media, in the cloud, and with big data analytics based on artificial intelligence. In the context of SMEs from Nepal, companies using systems of digital payments, online marketplaces, and artificial intelligence in analyses are better positioned against many others under the Born Global model. For example, many startups and SMEs from Nepal have been able to penetrate international markets through e-commerce platforms such as Alibaba and Amazon, among others. They have gained a lot of success by not following a linear path of establishing their domestic success before going globally but just moving with technology-driven strategies (Gabrielsson et al. 2008).

The key principles of Born Global Theory include that knowledge-based competitive advantage drives the firm, and not the traditional factor endowments that traditional international trade theories are so much about. Most conventional models lay an infrastructure for the firm's operations in foreign markets by making capital investments and setting up physical operations; on the other hand, the Born Global firm has no bricks and mortar.

It will be able to compete and perform in foreign markets based on its know-how, digital competencies, and business model. This will be particularly more relevant to companies that are tech-driven SMEs or engaged in e-commerce businesses or offer digital services, as knowledge merely forms the core of global competitiveness in such organizations. For example, web development companies, AI solutions, and cloud services from Nepal may serve international companies without the need for physical offices in foreign markets. Another dimension that the Born Global Theory can echo itself into would be that of being innovative in internationalization among the SMEs. Born Global firms do not necessarily rely on economies of scale; rather, they compete based on the uniqueness of product offerings, digital services, and niche marketing orientation.

This is very relevant in the context of Nepal since the companies born globally in customized crafts, eco-friendly products, and AI-based technological solutions over

the last few years underscore the heightened edge most businesses have in the global marketplace. They do not need huge production infrastructures, but, on the other hand, can innovate themselves with unique characteristics, sustainable models, and digitally accessible products. Other important characteristics of Born Global firms are risk-taking and agility.

Such firms do not wait for the market to settle down, rather act in a high-paced and dynamic environment, which allows them to be able to make timely decisions and make changes with the help of digital tools. This they do by engaging in such important features as online sales, digital trade, and international partnerships, which directly enable them to make well-thought-out decisions and adapt rapidly to changing market demands. Of course, Born Global firms have a few setbacks to take care of. They stand up against lots of hurdles to have come up with several regulations, cross-border payment issues, cultural differences, and supply chain issues. Otherwise, they help businesses to overcome these challenges through digital innovations, AI-powered compliance tools, and fintech solutions. In Nepal, business SMEs that employ blockchain-based financial systems, AI-driven translation tools, and those having the same in their automated customer support solution will greatly bring down these hurdles, hence ramping up the pace toward global expansion.

2.4 Existing Studies

The existing research, case studies, and theses highlight the pivotal role of technology in expanding and scaling International Ventures. The key studies include:

2.4.1 Theme 1: Adoption of Digital Payment Systems

The acceptance and usage of digital payment systems in Nepal have received a lot of attention in recent years as the nation progresses toward adopting digital financial inclusion. This is especially beneficial for small and medium-sized enterprises (SMEs), as a digital payment solution offers faster transaction time, a larger customer base, and increased visibility. However, the accepting landscape is multifaceted. Various behavioural, infrastructural, and contextual dimensions exist that shape the specific outcomes.

One pivotal study conducted by Poudel et al. (2023) concentrated on how youth in Pokhara Metropolitan City adopt digital payments and provided knowledge that will be highly relevant for understanding the behaviour of SMEs (Poudel et al. 2023). The study adopted a survey-based method and found six dimensions that impact the use of digital payments: perceived

usefulness; perceived ease of use; security and privacy; subjective norms; facilitating conditions; and behavioural intention. Two of the six dimensions parallel the technology acceptance model (TAM), which the thesis uses as one of its foundations. A primary finding from the study was that perceived usefulness and availability of required infrastructure had the largest impact on due behaviour, while peer influence had a lower impact than expected.

While the research examines individual users as opposed to firms, it sheds light on the implications of an individual's behaviours toward adopting technology that may be representative behaviour of SME owners and how these behaviours are likely also aligned with trends in adoption within a semi-urban Nepali context. For instance, if youth consumer groups are adopting mobile wallets like eSewa and Khalti as 'better' alternatives, with relative convenience and security, the implication is that SMEs will, in turn, be more likely to adopt this mobile wallet technology to maintain competitive advantage. This supports the TAM feedback loop that the authors refer to, in which user expectations and perceived value drive technology acceptance. The findings indicate that security issues are the primary barrier to adoption, which echoes what some SMEs stated they are confronted with in their adoption of electronic and mobile payments, whereby they are integrating technology without IT support.

To further support this observation, Suman Pokhrel (2023) highlighted several barriers to businesses in Nepal adopting digital finance. As noted in the review of related literature, while it appears that there is an awareness of tools such as eSewa and internet banking, broader adoption is being hindered by rampant systemic issues (e.g., poor internet infrastructure, uncoordinated regulatory oversight, and low levels of digital literacy). Out of this context, systemic barriers are even more pronounced in rural areas or periphery to the leading urban centres; this widens the gap between traditionally operated SMEs and digitally enabled SMEs. Importantly, the authors note that adopting technology is more than just access to the technology or tools; it is something more substantive that includes capacity building and policy integration/coordination (Pokharel 2023).

This conclusion is especially pertinent for Nepalese SMEs attempting to penetrate the international market. In Nepal, payment systems that can process foreign currency transactions are still sparse. This limitation creates obstacles to cross-border e-commerce even for the digitally literate SMEs. The research highlights the claim that public policy and private sector innovation must go together for inclusive adoption, while also reinforcing the thesis’s core premise that digital payment tools are necessary infrastructure for internationalizing business yet need to align with local ability and contexts.

A complementary study, conducted by Jeetendra Dangol, Sunil Chitrakar, and Kee-Seon Yoo (2020), explored how SMEs selling through Daraz utilize integrated payments and delivery systems to expand their customer base. Specifically, the study notes that Daraz has simplified logistics and transaction management for SMEs utilizing its platform, particularly during the COVID-19 pandemic. Conversely, the findings indicate that using third-party platforms can also limit brand control, access to data, and customer experience. While third-party platforms have the potential to lower operational burdens, they do have trade-offs that SMEs can navigate if thoughtfully considered. The research reinforces the overall notion of the thesis, that technology provides access, but the strategic and operational decisions are what count (Dangol et al. 2020).

These studies are particularly relevant to this research for two reasons. First, the studies serve to qualify the theoretical basis of the theory of TAM, in identifying the perceptual and infrastructural drivers of adoption. Second, the studies qualify the considerations to the unique lived realities of the Nepalese business setting that distinguish those drivers. For example, international studies may reference concepts like innovation readiness or market attractiveness, whereas the Nepal-specific studies point to the fundamentals that support any innovation or advancement, including digital literacy, access to the internet, and legitimacy or trust in local platforms. These insights are important to the case company. As described, Hyperce intends to scale into international markets by utilizing digital tools. By understanding both the challenges and facilitative motivations surrounding digital payment adoption, the research qualitatively grounds the analysis of Hyperce's strategic decision trajectories and challenges.

Overall, the studies organized under this theme serve as a reminder that technical functionality and actor trust are equally significant factors that prop up the adoption of digital payment systems. The decision of SMEs in Nepal to adopt and use digital payments is not purely a technical consideration; it is also a strategic consideration for their survival in an economy that is rapidly digitizing. This contextualizes the forthcoming empirical analysis and helps support the ground for the analysis of real person behaviours, the obvious gaps in policy support, and the conditions of the market.

2.4.2 Theme 2: Impact of E-commerce on SMEs

There is a consensus that digital tools are beneficial for small and medium-sized enterprises (SMEs), but in developing countries like Nepal, the uptake of technology is often restricted by a host of structural, cultural, and organizational barriers. To evaluate why some

firms are left in lagging conditions concerning digital transformation, and others, like Hyperce, can pursue early internationalization strategies, requires understanding barriers to digital integration.

Suman Pokhrel (2023) recently reported that although there is greater recognition of digital platforms among SMEs in Nepal, these companies continue to face significant infrastructural and operational barriers. Most pressing, SMEs do not have reliable access to the internet, and particularly so outside of major urban areas. Many SMEs in Nepal are in areas that frequently experience power outages and poor mobile connectivity, which makes it difficult to operate reliably online. Because of these limitations, the usability of tools such as cloud storage systems, electronic payment systems, and e-commerce becomes limited. Before technology can be integrated, relevant infrastructure must exist, and for most SMEs in Nepal, it does not (Pokharel 2023).

Another significant issue noted in the literature is low levels of digital literacy amongst owners and employees in SMEs. Jeetendra Dangol, Sunil Chitrakar, and Kee-Seon Yoo (2020) stated that many business owners remain doubtful about the advantages they could obtain by using digital tools because of a lack of technical understanding or previous engagement. The scepticism is not only generational, but also systemic. There is limited involvement in supporting entrepreneurs by local business associations, financial institutions, and government institutions, focusing on training. Therefore, when digital platforms are available or affordable, these services become underused. This evidence supports the Technology Acceptance Model (TAM), which found that perceived ease of use is a prominent influencer of behavioural intention towards using a service for adoption. If entrepreneurs find that a tool is too difficult and do not have the feel of ease of access, the adoption of the tool diminishes, irrespective of value (Dangol et al. 2020).

In addition to the gaps in knowledge and infrastructure, there are financial challenges to slow adoption. SMEs operate on tight profit margins and cannot justify spending funds on technology investments that do not have an immediate return. Costs associated with subscriptions for software tools, transaction fees for digital wallet services, and initial costs of setting up online platforms can easily become significant hurdles for smaller operations. Poudel et al (2023) commented that SMEs with access to digital systems were those with subsidies, donors, or through partnerships with larger institutions. This underscores the role of external support structures, which might make it not worthwhile for SMEs to even consider digital investment otherwise (Poudel et al. 2023).

Cultural hurdles are yet another important dimension. In some communities, there's still a strong preference for face-to-face interactions (payments) and cash (instead of digital

methods, which can be viewed as impersonal and insecure). These perceptions are often based on negative experiences, such as failed online transactions or information on a particular website disappearing without being able to do anything about it. Trust, in this instance, may be the one key variable. From a Resource-Based View (RBV) perspective, customer relationships are an internal resource. In an environment where digital persecution may be problematic, SMEs may take the position that SDT is a threat to that relational capital (Uyanik 2023).

Finally, regulatory uncertainty has emerged in several studies as an ongoing barrier to complete digital adoption. Entrepreneurs identified issues related to tax regulations for online sales, ambiguity around cross-border payments, and a lack of government guarantees for digital financial transactions. This was consistent with the broader challenges experienced across developing economies when executing and implementing policy with a technical/technological capability far ahead of the policy readiness (Pokharel 2023).

While these barriers are noteworthy, they are not end-of-the-road barriers. They illustrate the critical need for policy solutions that are integrated, with an emphasis on infrastructure, digital literacy for SMEs, and incentive funding schemes; consideration of resource alignment as suggested by RBV. Relative to SMEs in Nepal, as SMEs are mobilising their internal capabilities, be it a technically literate workforce or access to finance, it is much more likely that they are going to navigate these systemic barriers.

In the case of Hyperce, the founders of Hyperce navigated many of these barriers by leading the market in the uptake of cloud-based services and through partnerships with local fintechs. If Hyperce can overcome its infrastructure and cultural barriers, the importance of internal resources and mindset is purposeful for digital transition in circumstances where there is less resource availability. The feedback from Hyperce will be articulated in the coming chapters to highlight how Nepalese SMEs can prepare themselves in positioning themselves for internationalisation, despite the continuing and arguably real barriers.

2.4.3 Theme 3: Challenges in Exporting and Globalization

Despite the existence of challenges to technology adoption barriers, a range of digital tools are offering strategic opportunities for SMEs in Nepal, trying to advance internationally. The opportunities can provide not only new market access and channels, but also operational efficiency, customer relationships, and enhance competitiveness internationally. Importantly, digital tools allow SMEs to overcome many traditional barriers to engaging internationally, including high market entry costs, regulatory challenges, and geographical distance.

One of the primary enablers indicated in several identified studies is established ecosystems or platform-based entry, such as Daraz, Amazon Global Selling, and Alibaba, that provide access internationally without a physical presence abroad (Challa et al. 2021). Ecosystems typically provide the means for logistics, payment, and customer service processes, which reduces the complexity of international trade significantly. Certainly, for SMEs from developing countries, from Nepal, this development is something of a game-changer. The focus for competition shifts from scale and capital investment to product quality, niche appeal, and discovery: digital visibility, where even small businesses can compete.

In summary, the findings from this research suggest that digital approaches to commerce, communication, and general business operations can unlock new opportunities for SMEs in Nepal to reach global markets and avoid conventional, slower modes of internationalization. This contradicts the general belief held by many SME owners and entrepreneurs, and possibly even academics. As such, this research provides critical insight that will hopefully encourage further exploration. As we highlighted numerous times in this association with SMEs in Nepal, one can only scratch the surface when searching for alternative approaches to business that often remain impenetrable, even in our global world!

Another competitive advantage comes from cloud computing and SaaS (Software as a Service) models that allow SMEs to adopt high-end technology without high infrastructure costs. Cloud accounting, inventory management, CRM, and real-time data analytics (e.g., artificial intelligence) are available through inexpensive subscriptions. The Resource-Based View (RBV) theory is aligned with this trend. To emphasize that firms can develop a competitive advantage not just through ownership of resources but through their ability to access and use them. For instance, Hyperce has used project management and invoicing tools through cloud-based services, allowing the company to have ongoing real-time operational control, yet remain lean and location-independent (Uyanik 2023).

Likewise, fintech innovation is starting to fill the gaps with financing cross-border transactions that have long been facing Nepalese businesses. Filings, international dollar cards (even issued in partnership with the Nepal Rastra Bank), digital invoicing platforms, and linked API integrations to global payment systems are beginning to emerge. Such innovations will assist SME in being able to receive payments from abroad, which is crucial to maintaining any global activity. Research completed by Poudel et al. (2023) suggests that increasing access to finance through fintech led to increased export activity among firms that were digitally enabled (Poudel et al. 2023).

2.4.4 Theme 4: Innovation Support Programs for SMEs

Although digital tools constitute the technical architecture for SME internationalization, their effective utilization is hampered by the policy environment, institutional capacity and support, and ecosystem coordination and facilitation. For their use of digital tools to be fully effective and sustainable, SMEs in Nepal will require a broader regime of support that goes beyond simply having access to the technology itself and includes regulatory support and facilitation, education and training and public-private partnerships Internationalization in the digital economy There is strong and growing interest in digital technologies among SMEs in Nepal but like their counterparts abroad SMEs continue to face institutional challenges in leveraging their use for internationalization.

Shakya and Bajracharya (2022) conducted research that stressed that the institutional engagement to create digital readiness in Nepalese SMEs needs strengthening. Their research suggests that many SMEs in Nepal are unable or unwilling to internationalize despite the availability of digital payment systems and e-commerce platforms, and the fact that many will engage in some form of e-commerce and digital payments (albeit usually on a cash basis). However, specifically for this study, it is pertinent to mention that they suggest for most SMEs the exclusion from access to advisory services, mentorship and lack of regulation, especially regarding issues involving cross-border e-commerce, digital taxation, and data protection, escalates the perceived risk of adopting digital technology and engagement with international marketplaces. Policy uncertainty, particularly related to foreign exchange, tax reporting, and compliance for digital transactions, remains one of the most referenced constraints (Shakya and Bajracharya 2023).

There are several studies, such as Kharel (2020) and Poudel et al (2023), which highlight the significance of public-private collaboration in addressing these challenges (Poudel et al. 2023) (Kharel and Kshetri 2020). Government institutions and chambers of commerce, along with donor-funded initiatives, have begun delivering capacity-building activities for SMEs (Dahal and Kharel 2020). These activities include workshops on digital literacy, subsidized access to digital platforms, and consideration of logistics and fintech integration. Nonetheless, many of the programs remain fragmented and fail to reach rural or non-English-speaking entrepreneurs, indicating the importance of localized and inclusive delivery systems (Poudel et al. 2023).

The Born Global Theory points to the importance of enabling the orchestration of the supportive mindsets and environments required for rapid internationalization. Firms that scale globally from inception appear to do so within ecosystems, which provide local legal struc-

tures, export incentives, and digital frameworks to support global operations. Current policies in Nepal are not fully optimized to support born-global behaviour; for example, restrictions surrounding online payment gateways, foreign service contracts for ads on international digital platforms, and access to foreign currency accounts at banks limit how SMEs transact with global customers, thus limiting rapid international scaling in a manner being accomplished in other emerging markets.

In a positive turn of events, private sector and development partner initiatives have emerged to close some of these institutional gaps. Organizations such as the Federation of Nepalese Chambers of Commerce and Industry (FNCCI), Nepal Telecommunications Authority, and international donors (e.g., USAID, GIZ) have uncovered innovation hubs, digital entrepreneurship grants, and tech fairs focused on SMEs. Based on Challa, K., Sayed, A., and Acharya, Y. (2021), attending these types of programmes coincided with a higher visibility of SMEs, increased access to new markets, and an increase in the intention to invest in technology. These organizations also act as intermediaries, providing information as well as bridging SMEs to global opportunities (Challa et al. 2021).

Utilizing the lens of the Resource-Based View (RBV), these initiatives can be viewed as facilitators of getting resources, which these SMEs simply cannot afford to build in-house (for example, digital marketing, legal capabilities, etc). SMEs can effectively borrow or access these capabilities through institutional engagement. Hyperce, the case company of this study, took advantage of an early-stage exposure via these kinds of organisations, and the founders participated in a regional startup accelerator providing attention and support (mentorship, legal support, and digital strategy). These forms available in the startup accelerator programme provided fuel for Hyperce to produce opportunities that they would have struggled to attain independently.

But these systems of support need to become structured, scalable, and integrated into national SME policy to have a long-term impact. Single-transaction programs or donor-dependent programs are ineffective at replacing systemic institutional involvement. Long-term support mechanisms from SME export incubation centres, to multilingual, digital business training, to tax credits to firms that are investing in technology, would institutionalise pathways to digital internationalisation for Nepalese SMEs.

In summary, although technology provides the instruments for SMEs to create presence beyond borders, there are institutional structures that shape the extent to which these tools are developed or adopted. The clarity around policy, the facilitative regulatory structures, the availability of tailored training, and the era of access to collaborative ecosystems are critical for sustainability in digital internationalisation. The takeaway from this

theme reinforces the premise of the thesis, that not only do SMEs have to tools and platforms to grow, they also have an enabling environment to utilize those tools strategically, confidently, and capably.

2.5 Research Gap

The following literature provides valuable insights into the adoption of technology by SMEs in the expansion of business globally. There are many gaps, particularly concerning Nepali SMEs, concerning Nepali SMEs. The key research gaps are:

- There is limited research focused specifically on e-commerce, integration of technology, and digital payment systems within the Nepali market context.
- Very few studies and research provide actionable recommendations that are necessary to tackle the unique challenges faced by Nepali SMEs for expanding internationally. There might be resource constraints, a lack of digital and technology infrastructure, and regulatory hurdles, but most of the research doesn't provide unique ideas to overcome the problems and challenges.
- Most of the thesis lacks comparative analyses, which could shed light on how Nepali SME's technological adoption and business expansion compare to similar businesses in other developing countries.

The thesis aims to bridge these gaps by providing a detailed analysis of the challenges faced by Nepali SMEs in utilizing technology to expand their business globally. It will provide practical recommendations based on primary research, interviews, and surveys with SME owners and secondary data from previous studies and industry publications, and reports. The main goal is to empower Nepali SMEs to maximize their potential in the global marketplace through the effective use of technology.

While several studies of SME digitization exist around the world, little research has been conducted about the Nepalese context or the role of digital tools in stimulating early international expansion. This research gap illustrates the need for case-specific studies such as this.

3 Methodology

3.1 Research Approach

The thesis follows a deductive research approach, beginning with theoretical frameworks and leading to empirical observation and testing. Theories such as the Technology Acceptance Model (TAM), Resource-Based View (RBV), and Born Global Theory were specified in Chapter 2 and are used to evaluate how Nepalese SMEs adopt technology to assess internationalisation. The deductive approach was selected as it allows for testable hypotheses derived from a theory, accompanied by structured analysis. The approach was appropriate for this research as it aimed to determine whether global frameworks of digital adoption and internationalisation were suitable for the Nepalese SME context. A logical progression, from conceptual frameworks to real-world observable through qualitative interviews and quantitative survey responses, will become evident.

3.2 Research Design

The research design is mixed methods applied, to qualitatively get the depth and quantitatively the breadth of the insights (Creswell and Plano Clark 2011). This design seeks to synthesize interviews and case studies (qualitative) and surveys (quantitative) to generate deep insights into the adoption of technology in SMEs in Nepal. Qualitative methods deal with individual experiences and challenges, whereas quantitative methods relate to large-scale trends and perceptions. The combined methods assure detailed and generalizable findings of the research questions (Östlund et al. 2011).

3.3 Qualitative Methods

Founders, managers, and SME technology experts are interviewed about their experiences with e-commerce platforms, digital payments, and cloud-based tools. These semi-structured interviews will be open-ended to derive deep insights. On the other hand, case studies give specific examples of the international expansion of SMEs that have been successful or not successful by describing the use of technology with practical examples. With thematic analysis, one identifies recurring themes such as infrastructure impediments or policy barriers from both interview transcripts and case study data (Braun and Clarke, 2006).

3.4 Quantitative Methods

Students and professionals in the fields of business, IT, and engineering provided their perceptions through structured questionnaires. This was set to establish their perceptions regarding e-commerce tools, common challenges associated with it, and to gauge their readiness for the adoption of technology. Questions ranged from digital tool awareness to opinions about policy changes necessary for growth. Descriptive statistics, such as percentages of frequencies, will be taken of the responses, and correlation tests will be possible to determine relations between such variables as digital literacy and adoption rates.

3.5 Data Collection Methods

3.5.1 Primary Data

Data collected first-hand is obtained through interviews and surveys. Interviews are preferably done over Microsoft Forms. Surveys are conducted online using tools such as Microsoft Forms to ensure they reach a wide range of people.

3.5.2 Secondary Data

For instance, secondary data will originate from literature review readings, academic journals, industry reports, and documents that form the context of the research, enabling one to come up with a theoretical framework and identify gaps from the already available literature. Reports from the Federation of Nepalese Chambers of Commerce and Industry would help give an insight into the digital infrastructure in Nepal. For instance, there are also case studies, such as the one by Diwan in 2024, where e-commerce trends in developing countries are discussed (Diwan 2024).

3.6 Data Analysis Framework:

3.6.1 Qualitative Analysis

Thematic analysis of transcripts from interviews, as well as the identification of points of interest in case studies keyed to codes such as trust in digital payments and regulatory hurdles, characterize this second procedure (Braun and Clarke 2006). This is useful for categorizing all responses in terms of identified dominant themes within the data. The Excel sheet then deals with the organization and interpretation process of the data to guarantee that no consistency or rigor is lost.

3.6.2 Quantitative Analysis

Any data collected from the surveys would undergo analysis through the different tools available for statistical investigations, such as Excel. Principal trends in the data will be summarized in terms of descriptive statistics; for example, 70% of respondents stated that high costs are a barrier for them. Inferential statistics help examine the relationship between variables; for example, it will be analyzed whether digital literacy has anything to do with the adoption rate. Dual analysis increases the validity of the findings.

3.7 Ethical Issues

The study is ethical. All the participants provided their informed consent; most of them are also anonymous, so that their identification will not be disclosed. The study has worked on reducing bias as much as possible by including SMEs in various sectors, including retailing and handicrafts, and respondents at different levels of technology exposure.

4 Results and Empirical Findings

This section presents the empirical results of the study. The data was collected through two methods: a quantitative survey of students and early professionals in Nepal, who are considered a digitally savvy pool of potential founders and employees of small and medium enterprises (SMEs); and an individual qualitative interview with one of the cofounders of Hyperce, a Nepalese company with a prime focus on AI-driven e-commerce solutions. The results are reported thematically in a way that answers key research questions and connects key insights to the relevant theoretical framework discussed in Chapter 2.

4.1 Perceived Opportunities in Technology-Driven SME Internationalization

Empirical data asserts that technology is key and offers significant opportunities for SMEs to expand into the global market from Nepal. The same was confirmed by the outcome of the quantitative survey and a series of qualitative interviews. More than three-quarters of the participants responded in agreement that digital platforms the e-commerce websites, online marketplaces, and market-oriented social media networks, are some of how small and medium enterprises can reach customers who are normally found globally, with low investment or virtually no investment at all. Affordability, reach, and scalability were also among the serving advantages mentioned by the respondents. This aligns with the Born Global Theory, which argues that digital means enable a firm to internationalize itself early in the life cycle of the business by skipping prescribed stepwise models of the past.

The interview with the co-founder of Hyperce, an AI-focused e-commerce solution provider situated in Nepal, further espoused this view. He emphasizes that

> "AI will help SMEs in transforming their e-commerce landscape. From automated customer support to ease of developing the overall e-commerce system, AI becomes a cost-cutting factor without hassle."

Solutions offered by Hyperce, especially those on headless commerce, are a way to build and scale an e-commerce solution without burdening the company with huge teams and requisite infrastructure. It's an ideal opportunity for businesses with a lesser investment yet having the zeal to grow digitally. The founder reiterated that Nepali SMEs could indeed, using digitally enabled tools, capture niche global markets by creating brand names around products or services unique to Nepal. The rest of the respondents agreed that in today's world, technology not only makes it easier for SMEs to reach world markets and customers, but it also assures that they will run more efficiently with automation, hence ridding them of

operational bottlenecks. Here is when the perceived usefulness part of the Technology Acceptance Model comes in. In simpler terms, SMEs tend to have the strongest of beliefs that digital tools do add value directly to their business models about larger market access. Replicating online, with minimum technical hassles, the business managed to grow its operations and expand customer segments. The latter validates the proposition that an SME can be a born global if equipped correctly.

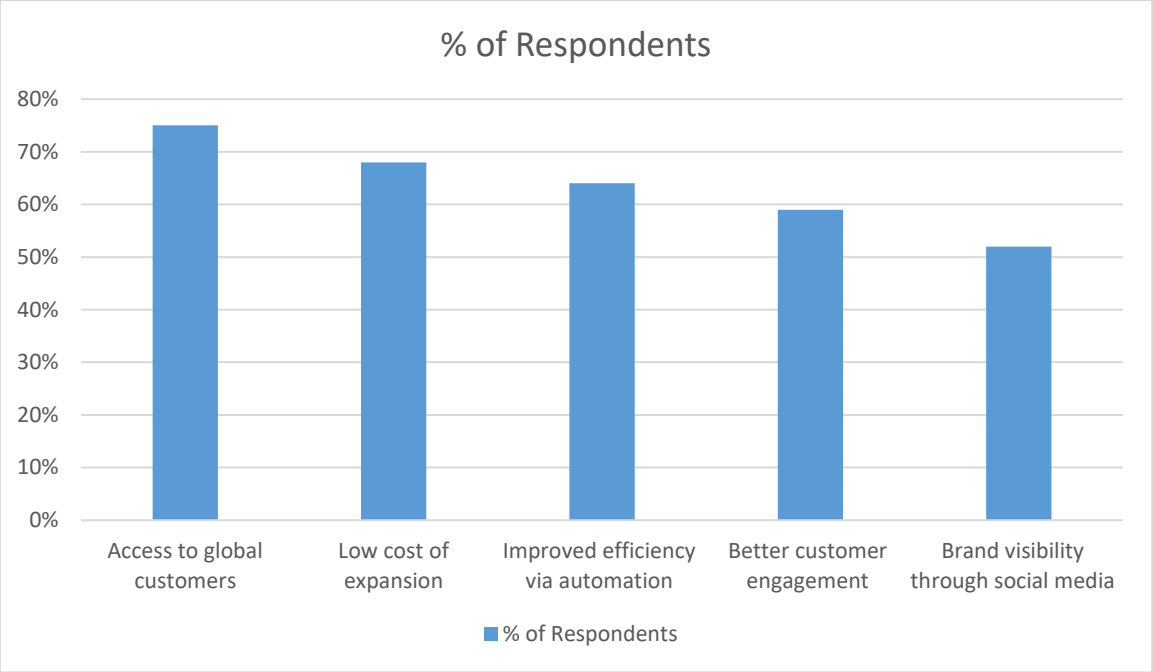

Figure 2 Perceived Opportunities from Technology

The survey picked up cloud computing, social media marketing, and mobile-friendly interaction interfaces as consistent motifs playing a significant role in furthering exposure; clearly, today's SME will require no physical presence or distribution network in accessing global clientele. In essence, the survey and interviews have affirmed that Nepalese SMEs now increasingly regard technology as a strategic enabler of international expansion. This, then, speaks directly to the main research argument: active participation in global business is quite feasible for very resource-constrained firms in least developed countries if equipped with appropriate digital tools.

4.2 Barriers to Technology Adoption Among Nepalese SMEs

Although digital tools offer certain advantages to the internationalization of SMEs in Nepal, the findings under scrutiny named different persistent obstacles in the uptake of digital tools

in this country. This was one of the common responses that came in from both the quantitative survey and the qualitative interview. Of these, the most reported issue across the survey sample was that of high costs and investment risk, at 38% of the interviewees.

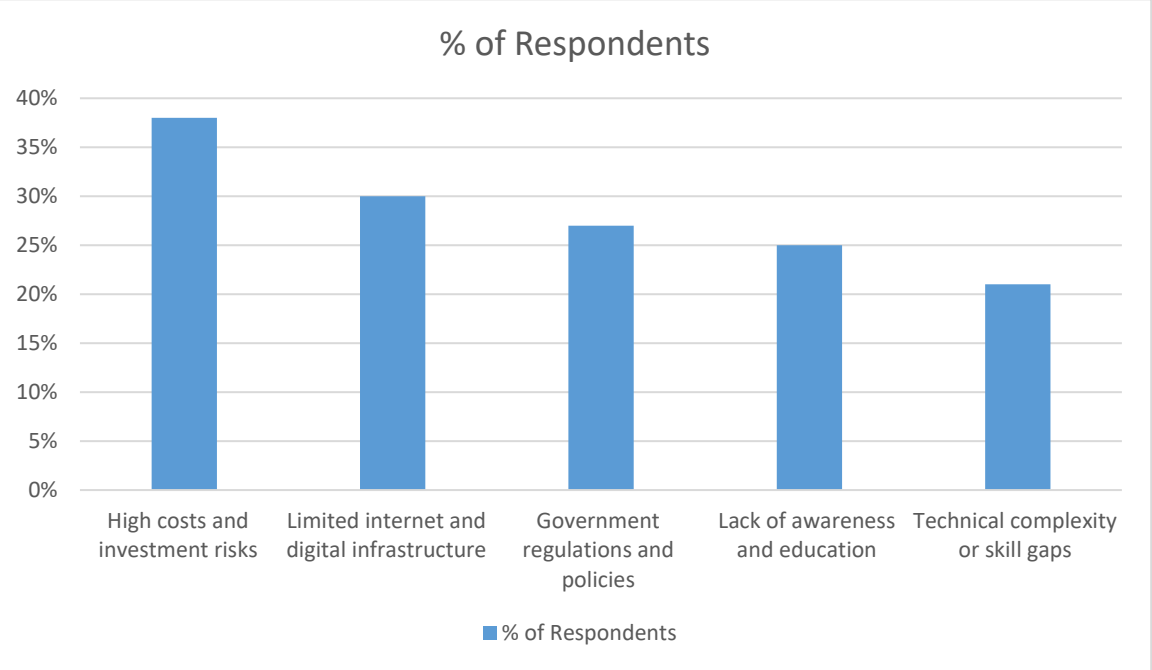

Figure 3 Reported Barriers to Technology Adoption among Nepali SMEs (Survey Data, 2025)

Most small and medium enterprises find it hard to come up with justification for these high upfront costs involved in software tools, website development, cloud infrastructure, among others, when working on thin margins. This challenge effectively corresponds to the Resource-Based View of Business Strategy, which argues that organizations low in internal financial and technological resources pose more constraints in adopting strategic innovations. The next most frequently cited barrier was poorly developed internet and digital infrastructure, mentioned by 30% of the sample.

It's very hard to have broadband penetration in the remote areas; they already have high power load shedding, and their mobile networks often remain out of order for long periods. What is more, another 27% of the respondents noted that an unclear description of the government regulations and taxation policies was taken to act as a barrier. This was about reservations that respondents expressed on some digital invoicing, foreign currency transactions, and e-commerce taxation policies, which, according to them, were unclear or inconsistently applied. This was seconded by an interviewee from Hyperce:

> "E-commerce can grow much better for Nepalese businesses as a whole if it's provided an open system of rules and policies for selling things online."

For one-quarter of respondents, a key barrier was a lack of awareness or understanding. Probably, many SME owners are not digitally literate and do not have the confidence to even first choose and then use the right tools. This insight mirrors what the TAM said, more specifically through the variable called perceived ease of use. Even if tools are available, if they are perceived to be too complicated or alien, the probability of adoption is slim.

Another problem cited by 21% of the participants was the technical skills gap. Respondents were of the view that in many cases, SMEs may not have in-house staff managing the digital systems, content creation, and data analysis of customers present online, even where the infrastructure is available. These barriers indicate that the choice to use digital tools is not only dependent on their availability in the outside world, but also on internal readiness, knowledge, and confidence elements that have been clearly emphasized in both TAM and RBV.

In summary, SMEs in Nepal do acknowledge the potential of digital transformations; however, the gap between intentions and actions is filled with cost constraints, the deficit in infrastructure, unclear policies, and knowledge shortages. It is, therefore, essential to address these if technology adoption in the wider SME sector is to be made more even-handed.

4.3 Role of AI and Automation in E-commerce

The current emerging trend in business redefinition, more specifically in businesses like SMEs in Nepal, is the use of artificial intelligence and automation in the operation of e-commerce. The most recent survey results clearly outline that AI is rapidly adopting an upward trend in e-commerce customer service, product personalization, and operational efficiency.

Figure 4 reveals that 42% of those surveyed considered it an enabler for AI in translating into future SME growth. Another 30% see it as optional yet useful. This implies that AI is still not quite there in terms of peaking to become a mainstream adoption; what is growing is readiness among future entrepreneurs and professionals to adopt these tools. Only 18% think AI tech is much too high-end for SMEs, and only 10% consider it irrelevant at present. These are further ratified through qualitative insights shared during the interviews with the co-founder of Hyperce. The founder simply stated that automation and artificial intelligence technologies have brought tremendous ease to the upside of their service offerings.

> "AI will help SMEs adopt a transformational e-commerce landscape... from automated customer support to ease of development, where AI becomes a cost-cutting factor without any hassle."

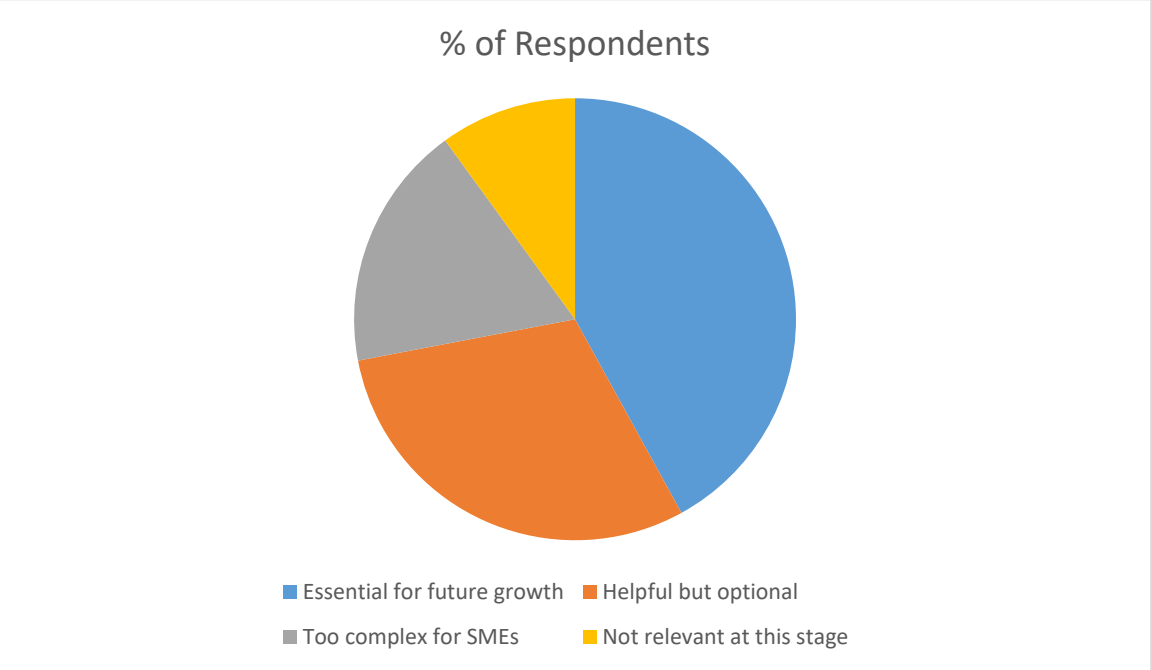

Figure 4 Perception of AI and Automation Among Nepali SME Stakeholders

Hyperce incorporates AI-powered automation for personalizing product recommendations to customers, chatbot customer service, and smart inventory systems, all of which are important components of the e-commerce process. The innovations in this way help operational teams to bring a lean, scalable business model, which is a characteristic of Born Global firms.

The founder underlined the function of automated data analytics in making SMEs understand customer behaviour for the upgradation of product offerings and demand forecasting.

> "Firstly, automation needs to be in place from the beginning of the startup if fast growth is the motto of concern."

These high levels of interest in AI, from a Technology Acceptance Model viewpoint, appear as very strong perceptions of the utmost usefulness and ease of use by the survey participants. This innovation is integral to business efficiency, customer satisfaction, and gaining a competitive edge, as stated by the study participants. This is especially relevant since SMEs are seeking ways to expand internationally without heavy resource investments.

Besides, the Resource-Based View (RBV) helps in framing the automation of strategic capability. Leveraging that companies that can buy or develop AI competencies in themselves or through partnerships, such as with companies like Hyperce, will gain an advantage that is valuable, rare, and difficult to imitate. Automated ability saving is not just a cost that brings more consistency in service, and increases scalability.

In summary, data, whether qualitative or quantitative, proves that AI and automations are significant tools through which SMEs of Nepal can further their goals in being effective in digital and international markets. The over-the-top accessibility and affordability of these technologies will make them standard components within an SME strategy, enabling firms to leap over traditional barriers and adopt born-global models of operation.

4.4 Importance of Digital Payment Systems

The importance of digital payment systems in facilitating SME digitalization and internationalization emerged as an ongoing theme in the survey and interviews. Digital payments are also the base on which online commerce is built, improving transaction speed, ease, customer trust, and scalability, among other things.

Figure 5 shows that 51% of respondents see digital payment systems as necessary for any modern business, and 28% consider digital payment systems as important for business, but not required. The results seem to suggest that, although some SMEs would consider operating without a digital payment system, most respondents recognize the importance of these tools to compete. A small proportion (13%) expressed that digital payments have limited use cases, while only 8% had issues concerning reliability or trust with digital payments.

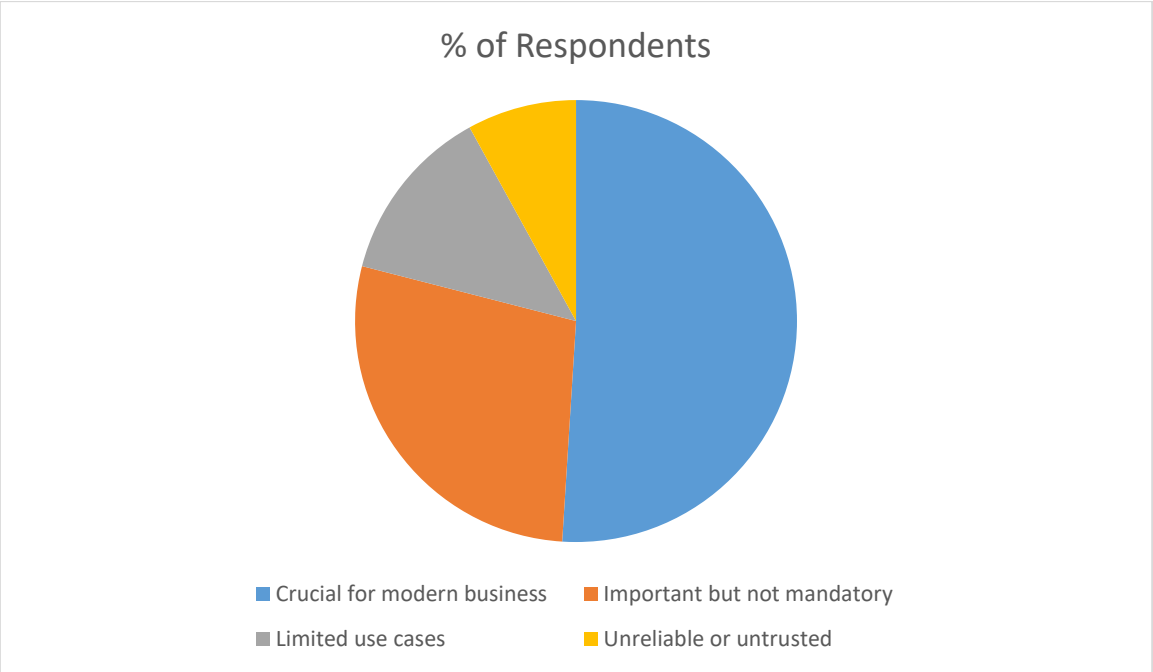

Figure 5 Perception of Digital Payment Systems Among Respondents

These findings are corroborated by the interview with the co-founder of Hyperce, who said,

> "Digital payment systems are the base for any kind of modern e-commerce systems... and you can analyze everything through digital payments."

This perspective captures the increasing usage of mobile wallets (e.g., eSewa, Khalti) and online banking assistance by digitally enabled SMEs. From a Technology Acceptance Model (TAM) standpoint, the ubiquity displayed here reflects perceived usefulness in key areas like tracking sales, enabling cross-border transactions, and offering customers varied, security-minded options.

The qualitative data also conveyed that businesses using digital payments garner analytical clout. With every digital transaction, SMEs can document structured financial data, enabling better decisions, forecasting, and planning options. Regardless of the positives, the survey and interview responses did have limitations. Several respondents indicated that smaller businesses in rural areas or informal markets generally still lack access to or trust in digital payments. The founder of Hyperce alluded to needing policy support and ecosystem alignment:

> “The government should create an open environment that fosters the adoption of digital payments and ease-of-use for businesses that are using digital payment systems."

From a resource-based view (RBV), the integration of digital payments could be viewed as an internal capability that adds to the value of a firm and performance of the business. Firms that adopt digital payment systems are better able to meet global customer expectations and operate using modern e-commerce platforms which meet the industry minimum requirements for payment ability.

In conclusion, the survey data and the interviews have made it clear that digital payments are not optional for growth-oriented SMEs because they represent the core digital business infrastructure to enable internationalization and competitiveness. The understanding and adoption of digital payments will be greater for SMEs, but the key thing will be not only the preparedness of SMEs but also the commitment of institutions to explain, educate, and develop access.

4.5 Institutional and Policy Needs

In addition to technology and internal readiness, the broader institutional and policy environment also has a significant impact on the adoption and internationalization of SMEs in Nepal. The results of this project reveal a consistent pattern of perceived demand for clearer regulations, training, and human resources, and an orchestrated support ecosystem in place to enable longer-term digital transformation.

From the survey, 27% of respondents indicated that government regulations and policies that are not clear would be a huge barrier for technology adoption (see Section 4.2). Some participants raised concerns regarding inconsistent taxation rules for digital businesses, limited support for cross-border payments, and unclear licensing or registration processes when starting e-commerce operations. While digital payments and platforms are expanding rapidly, the policy environment is deemed to be following at a much slower pace.

This was reinforced in the interview with the co-founder of Hyperce, who stated:

> “Governments need to create an open environment to promote digital payments and remove friction for businesses using these systems. Selling online should be easy."

He emphasized that businesses like Hyperce were able to overcome these challenges because they have internal capacity and external support from partners, but most SMEs won't be able to find that access. The gap is relevant to the Resource-Based View (RBV) and its emphasis on tangible and intangible assets. Policy frameworks and public infrastructure are functioning as external enablers to develop internal resources.

The survey also uncovered issues around the lack of accessible digital training or support programs for SMEs. The responses indicated that while bigger tech organizations used the advantage of accelerator programs and government-supported innovation hubs, local businesses are unaware of what is available or how to access those resources. As one participant noted:

> "It's not just about the tools, it's about how to use the tools, and to have somebody help you along in those early days."

These conclusions indicate an urgent need for systemic, inclusive, and decentralized support. That includes a Clear policy on digital business, Tax incentives for e-commerce migration, SME digital literacy campaigns (in Nepali and the simplest local languages), and Public-private partnerships to enhance access to the digital infrastructure. Such policy-level changes can be aligned with the Born Global Theory, which discusses the importance of an enabling environment. In ecosystems such as Nepal, with a developing internet infrastructure, payment systems, and a developing regulatory infrastructure, firms striving to scale activities outside of their domestic market require support and stability from the external environment to alleviate doubts and costs involved in change.

In conclusion, the experience of SMEs' technology adoption is not just predicated on the technology itself but also on the institutionalized structures that surround the uptake of technology. The institutionalized structures referred to here are policy, ecosystem collaboration, and capacity building availability. The digitization agenda relies upon these structures. If these structures do not exist and are not able to be developed, even the most transformative and innovative digital solutions may not be persevered as we are observing with Nepal's SMEs, especially small or resource-poor firms.

5 Discussion and Strategic Recommendations

5.1 Discussion of Key Findings

This section outlines the primary empirical outcomes of the study, reflecting on the alignment with the theoretical frameworks discussed in Chapter 2 and the research question proposed in Chapter 1. The research findings indicated that digital technology offers both opportunities and challenges for Nepalese SMEs in their attempts at international growth. The discussion of the findings is organized around four central themes: opportunities afforded by technology; barriers to adoption; the impact of automation and AI; and the role of digital payments.

5.1.1 Opportunities in Technology for Internationalization

The survey responses and the Hyperce case suggest that SMEs in Nepal are increasingly viewing technology as a strategic enabler of internationalization. As examples, e-commerce, social media marketing, and cloud-based systems provide avenues for SMEs to access international customers with lower infrastructure costs. More than three-quarters of the survey respondents agreed that technology made it easier to overcome traditional barriers to entry in the marketplace. Other developing economies display similar trends. For example, Rahayu and Day (2017) found that Indonesian SMEs adopted digital platforms because they were cheaper to operate and gave access to larger markets; this is consistent with the perspective in this study (Rahayu and Day 2016).

This aligns with Born Global Theory, which posits that technology-based firms can internationalize and accelerate their growth patterns earlier in the life cycle. Hyperce, specifically, builds AI-driven infrastructure to enable SMEs to scale digitally and avoid the physical and logistics barriers of global expansion.

5.1.2 Barriers to Technology Adoption

While there is growing interest, many challenges still hinder their uptake. Specifically, the survey indicated that the most common barriers were high costs, weak digital infrastructure, regulatory uncertainty, and limited digital literacy. All these findings reflect concepts of the Technology Acceptance Model (TAM), in which perceived usefulness and perceived ease-of-use are vital to acceptance and use. It is unlikely that SMEs will integrate tools if they are seen to be too costly, too complex, or simply too risky.

Additionally, the explanations provided by researchers through the context of the Resource-Based View (RBV) suggest that many SMEs would be limited by internal constraints,

whether skills, funding, or strategic awareness, which prevent them from leveraging many of the available technologies. Meaning that even if SMEs identified digital tools as valuable to their work, their limited capital resources prevented their eventual use. These logical and validated findings are consistent with worldwide findings. For instance, Ifinedo (2011) found that in even relatively advanced economies, SMEs are still plagued by similar issues such as financial constraints, an inadequate technology infrastructure, and lack of confidence in technology use (Ifinedo 2011).

5.1.3 The Role of Automation and AI

Most survey respondents acknowledged the importance or necessity of automation and AI for the future of SMEs. The indication here is a maturation in perceiving automation and AI as not simply a shiny object, but real advantages in tackling current challenges businesses face. Hyperce provided practical examples of its use of AI-enabled solutions (customer support, AI-related recommendation engines, inventory management) showing how automation helps enable lean and scalable operations.

This aligns with RBV, as automation is seen as a rare resource, and valuable resource that positively impacts operational efficiencies. Likewise, through a TAM lens, the positive view of AI being useful does posit the potential for broader adoption in the future. This supports the Technology Acceptance Model 3 (TAM3), where characteristics of the intervention strategies, like facilitating conditions and user training, significantly affect the perceived ease of use and adoption (Venkatesh and Bala 2008).

5.1.4 Digital Payments as a Strategic Enabler

Both quantitative and qualitative findings underscored the foundational role of digital payment systems. More than half of the survey respondents claimed that digital payment is important for a business operating today, and the interviewee highlighted how digital payments offer support for data analytics, customer trust, and transparency of transactions.

From a TAM perspective, the perceived usefulness of digital payments is high, particularly for e-commerce-enabled firms. Similarly, from an RBV perspective, digital payment capabilities are a competitive internal resource for SMEs to operate more effectively and scale internationally.

5.2 Strategic Recommendations

This section provides strategic recommendations for key actors in the process of digital transformation and internationalisation of Nepalese SMEs. These items are based on the

empirical results and aligned to the theoretical frameworks outlined throughout this study, i.e., the Technology Acceptance Model (TAM), Resource-Based View (RBV), and Born Global Theory, while ultimately solving the barriers noted, and allowing businesses to take advantage of opportunities presented by digital technologies.

5.2.1 For SME Owners and Managers

1. Begin with Scalable, Low-Cost Digital Tools

SMEs should start with digital tools that are low-cost and easy to adopt. Services such as eSewa, Daraz, and Meta Business Suite provide ways into online business without a large up-front investment.

2. Focus on automation and move to expand efficiency

Introducing a little bit of automation into some parts of the business, such as customer support, inventory management, or invoicing, can be a game-changer for productivity. As evidenced by the Hyperce case, to scale, a business needs to lessen the complexity of how operations are managed.

3. Invest in digital literacy and strategy development

Business owners need to invest in learning about digital tools and trade practices, including digital marketing and e-commerce strategy development. Learning can take different forms, including building a digital marketing strategy via a YouTube video or webinar. Many digital marketing partnerships, like Hyperce, have educational components and encourage access to ongoing learning, which can build basic competencies in digital marketing.

4. Innovate with technology allies

SMEs might consider partnerships with solution providers like Hyperce to gain access to technical infrastructure, AI capabilities, and e-commerce know-how that would be challenging to develop when providing satisfaction for customers and cost value for a viable business.

5.2.2 For Government and Policymakers

1. Make e-commerce regulations clear and easy to understand

Unclear rules surrounding taxation, digital licensing, and payment compliance were reported as impediments. A simplified and clear regulatory system for SMEs could eliminate confusion and act as a catalyst for forming more digital businesses.

2. Create financial incentives for SMEs to adopt digital

Financial programmes such as digital grants, tax deductions, subsidized cloud services would help offset costs and perceptions of risk for SMEs to bring their businesses online.

3. Localize and scale digital skills training

Digital literacy programs should be more accessible, particularly outside of Kathmandu. Programs should be localized, and trainings need to be available in local languages and especially for women and disadvantaged groups, as part of an equitable path to development.

4. Support the growth of physical infrastructure

Expanding broadband internet access and mobile payment infrastructure in rural areas would not only help reduce the urban-rural divide but also allow more SMEs to participate in digital commerce within the economy.

5.2.3 For Ecosystem Actors and Development Partners

1. Scale Innovation Hubs and Accelerators

Support for local incubators, accelerators, and SME Mentoring programs can help elevate innovation, provide technical advice, and link firms to regional and global markets.

2. Facilitate Cross-Border Connections

Programs linking Nepali SMEs with export buyers, overseas Nepali communities, or international digital marketplaces help to expand brand visibility and access to markets.

3. Promote AI and E-commerce Toolkits for SMEs

Large multi-lateral development organizations or business associations can co-construct SME-friendly toolkits (in Nepali) on how to adopt AI, create a digital storefront, and use analytic tools.

5.3 Concluding Discussion

This research has investigated how small and medium enterprises (SMEs) in Nepal are using various digital technologies to achieve international growth. The results show that, while odds of action are shifting toward SMEs achieving this, how much they can exploit these technologies is based on their internal resources, the external ecosystems they compete in, and the perspectives they have on the value and usability of the technology.

The discussion has indicated that digital technologies such as e-commerce platforms, mobile payments, and automation can be used by SMEs to remove traditional access and scaling barriers. Hyperce is one example of using technology to create not only a competitive advantage for itself but also for other SMEs through accessible infrastructures. This confirms that Born Global Theory is still applicable in the Nepali context and that firms can internationalize relatively early if they are digitally capable and supported.

Nevertheless, the study also demonstrates systematic limitations to broad usage. There are regulatory aspects, limited infrastructure, and the digital literacy divide, which disproportionately affects businesses located in rural and resource-poor environments, that will stifle the broader implications of digital transformation without support from policymakers and other ecosystem partners. So, the discussion highlights the double-edged nature of digital technologies for SMEs in developing countries like Nepal: they are both facilitators of SMEs and barriers to their usage. The degree to which SMEs will turn them into long-term viable and sustainable growth depends on the alignment of internal readiness, digital accessibility, and the institutional structures that support their use.

This reflection discussion establishes the boundaries towards the next chapter, which aims to synthesize the study's main contributions, respond to the research objectives, and suggest future opportunities.

6 Conclusion

The thesis originally aimed to explore how digital technologies are supporting the internationalisation of small and medium-sized enterprises (SMEs) in Nepal. By using quantitative survey data, supplemented by a qualitative interview with a tech-based SME, the findings revealed that digital payment options and e-commerce, AI-based automation, and cloud-based technology offer unique opportunities for Nepali SMEs to address traditional challenges to expanding beyond their domestic market. This is consistent with OECD (2021), which emphasizes that digital transformation will be crucial for SMEs to increase productivity and remain competitive in the changing global economy (OECD 2021).

The case of Hyperce demonstrated that early-stage firms can take a born-global approach, as they rapidly leverage digital infrastructure and low cost to access international markets. Conversely, the study highlighted challenges SMEs still endure, such as high adoption costs, poor internet access, vague regulatory frameworks, and low digital literacy levels. These challenges, illuminated through the Technology Acceptance Model (TAM) and Resource-Based View (RBV), show that digital adoption is affected by business access to internal capabilities and support structures. While Nepalese SMEs have a strong desire to digitise, their ability to do so effectively will depend on ecosystem approach interventions, particularly policy reform, digital training, and infrastructure access.

In summary, the research finds that future efforts should concentrate on developing digital capacity, harmonizing policy frameworks, and enhancing ecosystem collaboration to ensure the sustainable development of SMEs. Bayraktar and Algan (2021), indicate that SMEs represent more than 90% of the population of businesses and are recognized as catalysts of innovation, job creation, and broader economic growth inclusivity, in developed and developing economies (Bayraktar and Algan 2021).

The thesis adds to research by using worldwide theories, revealing contextual significance, and offering actionable recommendations for stakeholders to improve SME competitiveness through technology. In the future, collaboration across sectors will be critical for ensuring that digital transformation becomes not only an option for a handful of market leaders but truly an option enabling inclusive growth for the entire SME community in Nepal.

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APPENDICES

APPENDIX 1: Interview Questions for Hyperce Founders

(FOCUS: General Technology Tools for International Expansion)

1. Can you describe Hyperce's mission and vision in supporting Nepali SMEs with technology-driven e-commerce solutions?

2. How do you see technology (e.g., e-commerce platforms, digital payments, cloud tools) transforming the global expansion of Nepali SMEs?

3. What are Nepali SMEs' key challenges when adopting technology tools (e.g., e-commerce platforms and digital payments) for international business expansion?

4. How does Hyperce assist SMEs in overcoming these technological and operational challenges?

5. What strategies do you recommend for Nepali SMEs to leverage technology for entering international markets?

6. How do you evaluate the readiness of Nepali SMEs to adopt digital tools (e.g., e-commerce platforms and cloud-based solutions) for scaling globally?

7. What role do digital payment systems play in facilitating cross-border transactions for Nepali SMEs?

8. Can you share success stories of SMEs that expanded internationally using Hyperce’s technology solutions?

9. What policy or infrastructural changes would accelerate the adoption of technology tools in Nepal’s e-commerce sector?

10. What future trends in digital commerce should Nepali SMEs prepare for to compete globally?

Note:

The responses have been summarized and thematically analyzed in Chapter 4. Full raw responses are available upon request to protect confidentiality.

APPENDIX 2: Survey Questionnaire on Technology Adoption Perception among Students (Focus: General Technology Adoption and E-commerce Trends, “All participants were informed about the purpose of the study and gave their consent.”)

1. What is your age?

a) Under 18
b) 18-24
c) 25-34
d) 35-45
e) Above 50

2. What is your Gender

a) Man
b) Woman
c) Non-binary
d) Prefer not to say

3. What is your education level?

a) Secondary/Higher Secondary
b) Diploma/ Graduate
c) Postgraduate or Higher

4. What is your field of study?

(a) Business

(b) Information Technology

(c) Engineering

(d) Other (please specify)

5. How familiar are you with digital tools used in e-commerce (e.g., online platforms, digital payments)?

(a) Very familiar

(b) Somewhat familiar

(c) Neutral

(d) Not very familiar

(e) Not familiar at all

6. Do you believe technology can positively impact Nepal's e-commerce industry for global expansion?

(a) Yes, significantly

(b) Yes, to some extent

(c) No, not necessary

(d) Not sure

7. What are the biggest challenges preventing Nepali SMEs from adopting technology for international expansion?

(a) Lack of awareness and education

(b) High costs and investment risks

(c) Limited internet and digital infrastructure

(d) Government regulations and policies

(e) Other

8. Are you interested in researching technology-driven solutions for Nepal's SME growth?

(a) Yes

(b) No

(c) Maybe, need more information

9. What role do you see yourself playing in advancing technology adoption in Nepal's e-commerce sector?

(a) Researcher/Academic

(b) Entrepreneur/Startup Founder

(c) Developer/Technical Expert

(d) Policy Maker/Consultant

(e) Other (please specify)

10. Would you be willing to participate in further research or discussions on technology and SME growth in Nepal?

(a) Yes

(b) No

(c) Maybe

11. How often do you use e-commerce platforms for online shopping in Nepal?

(a) Frequently

(b) Occasionally

(c) Rarely

(d) Never

12. What factors influence your trust in an e-commerce platform?

(a) Data privacy and security

(b) User-friendly experience

(c) Customer reviews and ratings

(d) Brand Reputation

13. What improvements do you think are necessary for Nepal's e-commerce sector to expand globally?

(a) Better infrastructure and logistics

(b) Government support and favourable policies

(c) Increased digital literacy and awareness

(d) More investment in technology tools (e.g., cloud platforms)

Note:
Survey responses have been analyzed in aggregate form in Chapter 4. Raw data is stored securely and not publicly included due to anonymity and ethical considerations.