Understanding Trade Digitization Landscape of Nepal: Challenges and Opportunities

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WTO Chairs Program

Research Grant

April, 2024

Acknowledgement

We would like to acknowledge the WTO Chair Program for providing us with a Research Grant to conduct the study without which this learning would not have been possible. We would also like to thank Government Officials from the National Planning Commission and Department of Customs who provided us with an immense help during our data collection. Finally we would like to express our gratitude to all our interview respondents and survey participants for providing us with their valuable time and contributing to our studies.

Abstract

This study uses both qualitative case study method and quantitative survey design to understand the existing digital landscape of trade in Nepal. The study carried in two custom points Kerung and Sunauli border shows that proper digital border policy between Nepal and her neighboring country is hitherto lacking. Addressing this gap will improve information exchange, trade, and cooperation among the neighboring countries and further enhance the digital governance, transparency, and citizen engagement, contributing to greater accountability and efficiency in government operations. For this purpose the government should invest more on infrastructure building from the supply side. Meanwhile the survey of traders shows that from demand side degree of training and support received, frequency of glitches and ability to track goods significantly affects the satisfaction level in adopting digital technologies. In this regard, the study shows that only introducing digital platforms is not enough rather , empowering the traders in adopting it by reducing the learning curve is equally important.

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Introduction

Background

In recent years, the digital revolution has begun to reshape global trade dynamics, opening up new avenues for efficiency and expansion(Ali et al., 2018; Bakari et al., 2022). In the specific context of Nepal, where the process of digitization is still in its nascent phase and encounters distinctive obstacles, a significant void in research has been identified. The incorporation of digital technologies into trade operations has resulted in cost reduction, increased transparency, and strengthened global collaborations in various regions. However, Nepal's unique context presents specific aspects that necessitate further examination in order to fully harness the benefits of trade digitization (Escap, 2023).

The commercial digitization environment in Nepal exhibits a significant disparity in terms of inclusion and accessibility (Timalsina & Pokharel, n.d.). Given the constraints of limited digital infrastructure and disparities in technology awareness among the populace, there exists a potential for selective sectoral or regional advantages to be derived from these improvements. In order to ensure that trade digitalization serves as an equitable force, promoting economic growth across various population groups, it is crucial to comprehend the obstacles that hinder wider involvement and to provide methods for overcoming this divide (Matthess & Kunkel, 2020).

A notable study gap is evident in the context of cybersecurity and data protection inside Nepal's computerized trade systems. The incipient state of the digital ecosystem renders it prone to cyber threats and vulnerabilities(Meltzer, 2020). In the present setting, the examination of the distinct cybersecurity difficulties encountered by Nepal and the formulation of policies tailored to the country's circumstances can significantly contribute to safeguarding its digital trade initiatives. By effectively tackling these concerns, Nepal has the potential to establish a robust digital trade infrastructure that fosters confidence and credibility among both domestic and international stakeholders.

Moreover, it is imperative to carefully examine the implications of trade digitization on conventional trade practices and the local labor force, particularly within the specific context of Nepal. In light of the disruptive effects of automation and technological breakthroughs on traditional employment patterns, Nepal is confronted with the task of facilitating a seamless transition for its workforce (Agrawal et al., 2015). Undertaking research aimed at comprehending the ramifications of technical advancements on sectors in Nepal, as well as suggesting strategies for enhancing skills and facilitating adaptation, has the potential to make a substantial contribution to the socio-economic stability of the nation amidst this moment of profound shift.

Finally, the pursuit of sustainable development in Nepal through the process of trade digitalization necessitates comprehensive investigation. Although digitization has the ability to decrease environmental footprints by optimizing processes, the total influence of digitalization on Nepal's ecological balance is yet undetermined (Arnold & Fischer, 2021). The examination of the environmental consequences associated with digital trade and the development of approaches to promote sustainable digitalization can contribute to the harmonization of Nepal's trade strategy with its overarching sustainability objectives.

Objective of the study

In this regard this study attempts to understand the challenges and opportunities of trade digitalization and its potential effect on trade improvement, labor landscape and sustainability issues. The three main research question that it attempts to answer are

1. “What is the current digital landscape of trade?”
2. “How can future digitization trade affect overall growth?”
3. “How can future digitization of trade affect labor and sustainability?”

Significance of the Study

Answering the above question will provide the baseline understanding of the current digital trade landscape of Nepal. This will thus create a platform for formulating the digitization policy pertaining to trade and will also be a launchpad for future research in the mentioned areas.

Literature Review

The process of trade digitization involves the incorporation of digital technologies into trade and supply chain operations. This can be examined and comprehended through various established economic and trade theories (Vogelsang, 2010). The significance of trade digitalization can be viewed through the prominent theoretical frameworks: Comparative Advantage, New Trade Theory, and the Theory of Competitive Advantage.

The concept of comparative advantage refers to the ability of a country, individual, or entity to produce a good or service at a lower (Matthess & Kunkel, 2020).The theory of comparative advantage, as postulated by David Ricardo, posits that nations need to specialize in the production of commodities and services in which they possess a comparative disadvantage, so minimizing the opportunity cost, and thereafter partake in trade to optimize the total economic well-being. The theory is significantly enhanced by the process of trade digitization in multiple ways. The digitization of trade enables countries to engage in Global Value Chains (GVCs) with enhanced efficiency (Maiti & Kayal, 2017). Moreover, digital technologies creates better enabling environment for cross-border communication and information exchange that ultimately allows nations to focus their efforts on specific stages of production thus generating comparative advantages derived from the specialized labor(Lew & Sinkovics, 2013) .

The integration of digital tools, such as supply chain management software, Internet of Things (IoT) devices, and data analytics, has been found to significantly improve operational efficiency and reduce costs across several industries. This results in maximizing benefits from trade through better alignment and utilization of comparative advantages(Ahmedov,

2020). Meanwhile, trade digitization importance can also be gauged through the New Trade Theory that explains the patterns and determinants of international trade by placing significant emphasis on the influence of economies of scale and product diversification within the context of international trade (Boikova et al., 2021).

The process of digitization has facilitated the expansion of enterprises' client reach on a global scale by utilizing e-commerce platforms, thereby eliminating the constraints imposed by geographical boundaries. This phenomenon promotes the development of specialized markets and enables small enterprises to participate in global trade by capitalizing on their distinctive offerings (Hervé et al., 2020). The advent of digital technologies has facilitated the phenomenon of mass customisation, when products may be meticulously designed to suit the unique preferences of individual consumers. This phenomenon facilitates the process of product differentiation and the broadening of commerce to encompass specialized goods that are distinct from one another, hence aligning with the forecasts put forward by the New commerce Theory (Su et al., 2023).

Meanwhile, the concept of competitive advantage as proposed by Michael Porter, centers on the determinants that contribute to the capacity of a nation or organization to engage in worldwide competition. This hypothesis is also complemented by the process of trade digitization. The utilization of digital tools enables organizations to foster innovation and enhance productivity, thereby making a significant contribution to the establishment of a lasting competitive edge. The process of digitization facilitates the emergence of novel business models, procedures, and services that have the potential to distinguish organizations within the international market(Jiang & Jia, 2022; Knudsen et al., 2021).

In this backdrop WTO has also mandated that the integration of digital technology into trade facilitation reform is not just a requirement for the majority of nations, but rather an imperative (Atkinson, 2020). Thus as outlined by WTO publication, the cost effective, efficient and expeditious transportation of goods can be influenced not only by the physical attributes of the product[1]. Further the aforementioned trend is becoming more prevalent due

to the transition towards paperless trade, which is based on the utilization of digital methods for policy distribution and compliance(Duval & Mengjing, 2017).

Despite these established knowledge, the inquiries on the role of trade digitization and its apparent effect on the trade dynamics of the least developed country in Nepal is still in incipient stage. In fact despite growing fintech industries and digital penetration , Nepal still lacks proper resources to establish digitization as the pillar for trade improvement. For instance, Study by (Acharya & Dahal, 2021) has revealed that Nepal has enacted legislation to legitimize digital activities, hence granting individual's constitutional rights to engage in cyber activities. However, there is a notable deficiency in the existing legal and policy framework to effectively tackle the evolving landscape of cyber threats(Escap, 2023) . This can be attributed to the protracted legislative process and a dearth of adequate interest and expertise among politicians. Further Nepal has introduced a digital framework that encompasses eight sectors with the goal to contribute towards economic growth. However this framework too doesn't directly address the trade sector[2]. In this regard a necessity is felt to put spotlight on identifying challenges and opportunities in digitization of trade for future improvement of digital trade.

Research Methodology

The research technique to be employed for this study is a mix of qualitative and quantitative, utilizing case study methods and survey design. Case study is carried out at two distinct custom sites in Nepal namely Sunali in Bhaiwarawa and Kerung in Rasuwa. According to Merriam (1998), the case study method is chosen because the research scope is bounded and delimited by the social, political, cultural and geographical context of custom points of Nepal. The reason that Sunali and Kerung is chosen are as follows

Study Setting

Location	Reason of choice	Informant
Sunauli	The Sunauli-Nepal/India border is widely recognized as the busiest cross-flow route between Nepal and India This can be attributed to several factors, including its geographical proximity to Lumbini, the birthplace of Lord Buddha, as well as its easily accessible and flat terrain. Additionally, the border benefits from its convenient connections to popular tourist destinations such as Pokhara and Kathmandu, the capital of Nepal. (Paudel et al., 2018)	1 Custom Official, 1 Police officer, 2 traders, 2 journalist
Kerung	The rasuwagadhi-Kerung trade point is the sole major border crossing with a motorable road link to Kathmandu for China trade since the blockade of Tatopani border. Further Belt and Road Initiative envisages bringing the trans himalayan train through Kerung border (Kharel, 2018).	1 Custom Official, 1 Police officer, 2 traders, 2 journalist

The selection of this methodology is motivated by the need to obtain detailed and nuanced understandings of the experiences and viewpoints of the diverse individuals and groups participating in digitized trade procedures in the chosen areas. The research seeks to gain a full understanding of the various elements impacting trade digitalization inside Nepal by specifically choosing bespoke locations that possess distinct economic, geographical, and infrastructural characteristics.

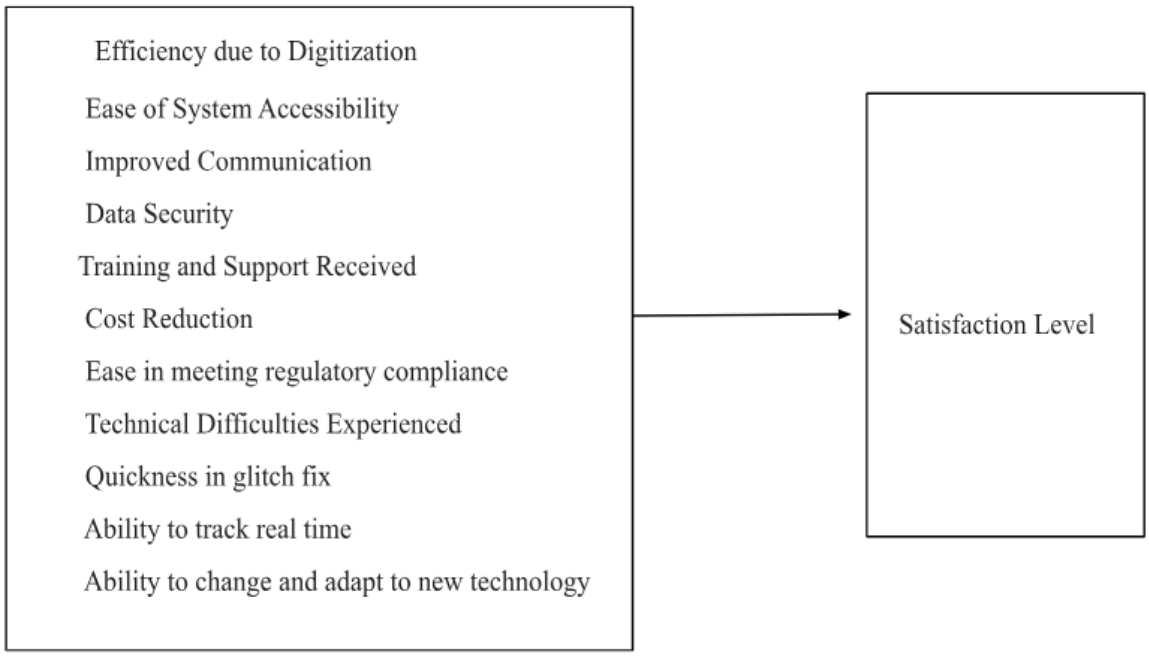
The use of thematic analysis to the interview data constitutes a fundamental component of this particular methodology. Thematic analysis facilitates the discernment of recurrent themes, patterns, and variations within the narratives of participants pertaining to the digitization of trade (Peel, 2020). Through a methodical examination of the gathered data, this study aims to elucidate the intricate intricacies linked to digitized trade practices, thereby providing insights into the barriers impeding its successful adoption and the potential it offers for economic progress.

The selected research technique is well-suited for examining the current research gap pertaining to the difficulties and potential of trade digitization in Nepal. In light of Nepal's challenges pertaining to infrastructure, technical disparities, and regional variances, it is imperative to recognize the importance of a context-specific comprehension of digitized trade dynamics. The primary objective of this research is to utilize in-depth interviews and structured questionnaires to gain a comprehensive understanding of the barriers that impede the effective integration of digitized trade processes, which cannot be fully captured through quantitative analysis alone(Tuckett, 2005). By adopting this qualitative approach, the study aims to provide a holistic perspective and identify recommendations that can facilitate the successful implementation of digitized trade processes.

The main interviewee were information rich informants that included traders, customs officials, journalists and police personnel in the selected custom points. The use of thematic analysis aids in the recognition of shared obstacles as well as distinct situations encountered by various custom locations, ultimately leading to the development of customized suggestions.

Conceptual Framework

In the second stage of the study, a quantitative approach of regression analysis is used. For this purpose a questionnaire is designed that gauges the satisfaction level of the traders vis a vis their use of digital platform across following conceptual framework



The structured questionnaire measured the dimension in terms of Likert Scale ranging from 1 to 5. The sample of 119 respondents were chosen randomly for the survey that included traders from different formally registered businesses that use Telegraphic Transfer in banks. The questionnaire used is presented in the annex.

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[1] https://www.wto.org/english/res_e/publications_e/wtr18_e.htm

[2] Frost and Sullivan, 2019 DIGITAL NEPAL FRAMEWORK (2019).

Results and Findings

A. Qualitative Research (Indepth Interview)

Participants Profile

S.N	Participants	Gender	Organization	Location	Province	District	Capital	Map
1	Custom Officer	Male	Custom Office	RasuwaGadhi - Kerung	3	Rasuwa	Dhunche	
2	Custom Officer	Male	Custom Office	Kathmandu				
3	Armed Police	Male	Armed Police	RasuwaGadhi - Kerung				
4	Journalist	Male	Newspaper	Kathmandu				
5	Trader	Male	Import/Export (Four wheeler)	RasuwaGadhi - Kerung				
6	Trader	Male	Service Industry (Hotel)	RasuwaGadhi - Kerung				
7	Custom Officer	Male	Custom Office	Sonauli	5	Kapilvastu	Taulihawa	
8	Custom Officer	Female	Custom Office	Sonauli				
9	Armed Police	Male	Armed Police	Sonauli				
10	Journalist	Male	Newspaper	Butwal				
11	Trader	Male	Electronics	Butwal				
12	Trader	Male	Service Industry (Procurement)	Butwal				

Major Themes	Sub Themes	Quotes
Incompatibility in Data Exchange	Currently used ASYCUDA system not directly compatible with trading partners	China and India has chosen to develop and use its own system that is tailored to its specific needs and requirements -Interviewee 1 China has an interpreter to assist with communication between the checkpoints and border crossing facilities While Nepal has a huge challenge to establish the common practice of communication and direct interactions with Chinese officials due to the lack of interpreters. - Interviewee 2 Tax offices use whatsapp and viber as medium of communication on the Indian border. - Interviewee 5 There is no single system that connects custom with regulating agencies such as Department of Drug Administration, police and quarantine office. - Interviewee 4
	Language barrier while communicating with Chinese Counterparts	
	Lack of direct information exchange between domestic agencies	
	Reliance on third party tool such as WhatsApp and Viber	
Lack of timely upgradation of digital system	Timely adoption of new technologies such as drone and QR code	China is using QR codes and drone technology at the Nepal border to enhance border security and monitor movement of people and goods. QR codes are being used to track and verify the identity of individuals crossing the border, while drones are being used for
	Lack of digital app that communicates directly with the server	

	Double manual entry required resulting in increased paperwork, time loss and hassel	aerial surveillance to detect any illegal activities. This technology is helping to improve border control and ensure the safety and security of the border region. - Interviewee 3 Delays in processing tax returns and refunds. This can be frustrating for taxpayers and can lead to longer wait times for assistance from tax office staff. It is important for the tax office to address these technical issues promptly to ensure efficient and timely service for taxpayers. - Interviewee 11 Whatever has been entered in Indian custom again has to be entered in ours. This double entry creates confusion and it is not possible to verify whether same information has been entered - Interviewee 12
	Because of increased computation server are invariably down	
	Current system is not very user friendly	
Lack of proper manpower	Efficient ground level manpower with technical skill lacking	Nepal depends upon international experts workers. From ADB,World Bank and UN. - Interviewee 6 Nepal may face a shortage of 3.6 million workers by 2030 if people continue to take up jobs in foreign labor markets. - Interviewee 4 Though qualified engineers are hired they are not provided with ample of training in time - Interviewee 9 Job rotation happens every 2
	Lack of timely capacity building among qualified engineers	
	HR Management	

		years but there is no mechanism to succession management - Interviewee 10
Lack of proper infrastructure	Unreliable internet	The rugged terrain and remote locations make it difficult to build and maintain infrastructure, leading to frequent power outages and unreliable services. - interviewee 1 Servers are not upgraded timely to handle increased data flow causing increased down time and delay in service - interviewer 6 It would have been better if organization like WTO provide assistance in building the infrastructure - interviewee 10
	Problem with electricity	
	Operation and maintenance of server	
	Geographical remoteness	
	Delay in service delivery	
Under budgeting	Shortfall in O&M budget	Efficient,effective and timely service have become a huge challenge due to the inadequate technical support system. - interviewee 7 Since information within police organizations is sensitive, the government
	Lack of Budget for new feature request	

	Development of inhouse defense industry	should develop defense industry within the country in order to avoid reliance to foreign powers. - interviewee 9 It has become a trend among the youth that right after their graduation either they migrate within a geopolitical entity or cross border migration due to higher earnings abroad. Investment in local land is not just a challenge but they fear the ROI - Interviewee 10

Thematic Analysis

B. Qualitative Research Finding

B.1 Descriptive Statistics

Description	Measure
a.Gender (No. of Respondent)	
Male	30
Female	89
b. Nature of Business	
Art Studio	6
Automobile	6
Clothing	12
Decore	6
Electronics	18
Furniture	12
Hardware	6

Home appliances and accessories	6
Hotel	5
Information Techology	6
Kitchen appliances	6
Machinery	6
Pharmaceutical	6
Printing and press	6
Transport	6
Water Pump	6

Dimension/Measures	**Mean**	**Median**	**Mode**	**Std Dev**	**Minimum**	**Maximum**
Efficiency due to Digitization	2.80	3.00	3.00	1.13	1.00	5.00
Ease of System Accessibility	2.38	2.00	1.00	1.31	1.00	5.00
Improved Communication	3.61	4.00	4.00	1.34	1.00	5.00
Data Security	2.55	2.00	2.00	1.33	1.00	5.00
Training and Support Received	2.99	3.00	3.00	1.15	1.00	5.00
Cost Reduction	2.98	3.00	2.00	1.09	1.00	5.00
Ease in meeting regulatory	2.55	2.00	1.00	1.37	1.00	5.00

compliance						
Technical Difficulties	3.69	4.00	4.00	1.30	1.00	5.00
Promptness in glitch fix	3.75	4.00	5.00	1.36	1.00	5.00
Ability to track real time	4.01	5.00	5.00	1.15	2.00	5.00
Ability to change and adapt to New	2.80	3.00	3.00	1.13	1.00	5.00

B.2 Regression Analysis

The regression analysis on the trader's level of satisfaction across each eleven-dimension stated in methodology was carried out using following equation i)

$$\square\square\square\square\square\square\square\square\square\square\square\square\_\square\square\square\square\square$$
$$= \square + \square 1 * \square\square\square\square\square\square\square\square\square\square\_\square\square\square\square\square\square\square\square\square\square\square\square\square\square + \square 2 * \square\square\square\square\_\square\square\square\square\square\square\_\square\square\square\square\square\square\square\square\square\square\square\square\square\square$$
$$+\square 3 * \square\square\square\square\square\square\square\square\_\square\square\square\square\square\square\square\square\square\square\square\square\square\square + \square 4 * \square\square\square\square\_\square\square\square\square\square\square\square\square + \square 5 * \square\square\square\square\square\square\square\square + \square 6 * \square\square\square\square\_\square\square\square\square\square\square\square\square + \square 7 * \square\square\square\square\square\square\square\square\square\square\square\_\square\square\square\square\square\square\square\square\square\square\square + \square 8 * \square\square\square h\square\square\square\square\square\_\square\square\square\square\square\square\square\square\square\square\square\square\square + \square 9 * \square\square\square\square\square\square\_\square\square\square\square\square h + \square 10 * \square\square\square\square\square\square\square\_\square\square\_\square\square\square\square\square + \square 11 * \square\square\square\square\square\square\square\_\square\square\_\square\square\square\square\square$$

Description	**Measure**	**Standard Error**	**p-value**
Adjusted R2	0.742371	0.581716	
ANOVA			
F-Model	31.91110404***		0.00
	Coefficient	**t-stat**	**p-value**
Intercept	1.198409738	2.634669	
Efficiency	0.03673	0.681434	0.50

due to Digitization			
Ease of System Accessibility	0.002735	0.054403	0.96
Improved Communication	-0.02875	-0.58605	0.56
Data Security	0.059729	1.35591	0.18
Training and Support Received	0.166274***	2.314707	0.02
Cost Reduction	0.037073	0.86563	0.39
Ease in meeting regulatory compliance	0.016576	0.344015	0.73
Technical Difficulties	-0.12086***	-2.36425	0.02
Promptness in glitch fix	-0.04339	-1.08116	0.28
Ability to track real time	0.239623***	3.303984	0.00
Ability to change and adapt to New	0.379331***	5.403792	0.00

Discussion

Qualitative Analysis

The in-depth interviews reveal several patterns that explains the contours of the digital landscape of trade of Nepal viz a viz its neighboring countries. Following section discusses these findings along with the possible solutions presented

1. Incompatibility in Data Exchange

Data exchange issues between Nepal and its neighboring countries, such as China and India, provide substantial hurdles for commerce and the government. Nepal utilizes the Automatic System of Custom Data (ASYCUDA) system, which is employed in around 80 nations globally. Nevertheless, its primary trading partner use a technology that is not directly compatible with ASYCUDA. China's customs clearance system is overseen by the General Administration of Customs of the People's Republic of China (GACC), but India operates its

own customs clearance system known as the Indian Customs EDI System (ICES). This presents real time information exchange problem as documented in prior studies(Mikuriya, 2007; Urciuoli et al., 2013)

Meanwhile India has created a customized system to meet its unique requirements, and at same time China is utilizing cutting-edge technologies such as big data analytics and artificial intelligence. In such situations common standards, interoperability solutions, and specialized data conversion tools or protocols are necessary to address these difficulties arising from technological changes (Grainger, 2008; Vogel et al., 2008). Moreover, reliance on third party apps such as Whatsapp and Viber may result in potential dangers because of possible security breaches, a concern which has been raised before(Carter, 2019) . Further the finding is aligned with (Scott & Gong, 2021) which shows that domestic agencies operating in different silos invariably leads to delay in service and bottlenecks in custom points thus creating a need to have an integrated system that connects custom points, security agencies, and drug and quarantine control.

2. Lack of timely upgradation of digital system

The study has found that China is employing QR codes and drone technology at the Nepal border to enhance border security and oversee the movement of people and products. These technologies aid in verifying the identity of individuals crossing the border, while drones are utilized for overhead surveillance to identify criminal activities which is aligned with previous findings (Faye et al., 2004). Meanwhile, one of the main troublesome issues stemming from incompatibility of the system is the need for double manual entry that results in heightened paperwork, time wastage, and inconvenience, causing delays in tax return and refund processing. Similar impediments have been reported in prior studies by (Gomez-Herrera et al., 2014) .

In parallel, security authorities encounter difficulties in providing efficient security services because of inadequate technical requirements. Overall, the government faces considerable issues in efficiency, data security, and service delivery due to insufficient funds and delayed updates to digital infrastructure. This finding of not adopting new technology which leads to missed chances for innovation, economic advancement, and enhanced governance is well documented.(Kaigai, 2018; Oyieke, 2021) .

3. Lack of proper manpower

Nepal primarily depends on external IT consultants and organizations such as ADB, World Bank, and WTO. However, its IT expertise is not fully employed because of insufficient digital infrastructure and limited access to technology resources. These issues lead to inefficiencies in data processing, reduced productivity, and missed deadlines for enterprises. The findings show the need to enhance their performance of indigenous manpower so as to reduce the cost of external experts and interlocking dependencies (Howard et al., 2017).

4. Infrastructure challenges

Better infrastructure is imperative for improved trade (Francois & Manchin, 2013). However Nepal encounters difficulties in constructing and upkeeping infrastructure because of its rough terrain and isolated areas, resulting in frequent power failures and inconsistent services. The obsolete and ineffective power system is leading to technical losses and excessive transmission expenses. The need for investment in modernization of infrastructure, diversification of energy sources, and enhancement of transmission and distribution networks to provide access to reliable electricity and foster improved trade across borders. Public-private partnerships can attract more investment and creativity in infrastructure development (Garvin & Bosso, 2008). Partnering with regional and international entities such as WTO in developing such infrastructure can be beneficial.

5. Under Budgeting

Meanwhile one particular issue of under-budgeting emerged invariably as a cross-cutting problem across all themes. Under budgeting or inadequate financial support was the major cause for lack of timely upgradation of infrastructure, adoption of new technologies, as well as infusing new manpower. Furthermore the confusion among three tiers of government regarding the responsibilities of custom points and trade is another recurrent aspect. Because of which the operation and maintenance of existing infrastructure are often neglected leading to malinvestment. This finding is again in line with the literature (Whitney and Daniels 2013; Nawi et al. 2011; Patanakul 2014)

In addition our findings showed concern that while enhancing the security related technologies, Nepal heavily relies on foreign donors, companies and agencies. This is generally not advisable as it can create potential breach of information which are sensitive from a national security view point. In this regard a national defense industry should be setup that can create indigenous military industrial complex that can protect national security and at same time create employment opportunities (Dunne and Sköns 2014; Hoyt 2006).

Quantitative Analysis

The regression analysis shows that Training and Support Received during the adoption of new digital system ASYCUDA is positively significant towards customer satisfaction. This validates the idea that ample training and support programs along with refresher courses should be designed to gear towards the capacity building of the traders.

The respondent analysis also shows that frequency of technical glitches negatively affects the customer satisfaction level. With the rise in bugs traders are less inclined to use the system. This shows that service providers that can troubleshoot the technical glitches should be available and their prompt response can improve the adoption of the digital system.

Another factor that was found to affect the trader level of satisfaction with digital platforms was ability to track the goods being traded real time. The real-time tracking of the status of goods in a custom yard is found to be positively significant towards customer satisfaction. This is aligned with the fact that real time tracking allows traders to be able to check the goods status as and when necessary and removes the unnecessary hassle.

Finally, the traders' own ability to adopt change while transitioning to digital systems from manual systems was also found to be a significantly positive factor in improving customer satisfaction level. This shows that the authorities should not only focus on introducing digitization but also check the ability of the users to be able to adapt to new changes. This again connects with the aforementioned need of training and development requirement

Conclusion and Recommendation

In conclusion Nepal being a landlocked and least developed country has to rely heavily on her neighboring countries China and India for trade and commerce. However, as Nepal is poor and has difficulties in investing in its infrastructure, it is having a hard time to keep pace with the changing digital landscape. The system Nepal uses is not directly compatible with its neighbors causing bottlenecks in cross border trade. In this regard our finding shows that a proper digital border policy between Nepal and her neighboring country could improve information exchange, trade, and cooperation. It could include data exchange standards, cybersecurity measures, and protocols for digital interactions. Collaborative efforts between the two countries and stakeholders are needed for effective implementation. A digital communication portal and interpreters can help establish direct communication with Chinese officials. Addressing language barriers can improve tax compliance and tax officers' interactions with Chinese taxpayers. A budget allocation for a communication portal could enhance digital governance, transparency, and citizen engagement, contributing to greater accountability and efficiency in government operations.

Further Nepal government should create a comprehensive IT infrastructure investment plan, prioritizing key areas like broadband connectivity, digital platforms, cybersecurity, and e-government services. The plan should allocate a portion of the national budget for IT infrastructure, partner with private sector companies, and seek international assistance to finance and implement IT initiatives.In addition from security perspective too, the government should seek to enhance and upscale technology budget along with capacity building. Since security agencies such as the police and military are sensitive and vital from a

national security point of view, the government should encourage developing inhouse defense industry from public private partnership. These strategies will enhance law enforcement capabilities, ensure public safety, and improve efficiency in the digital age.

From the demand side of the traders the study found that only digitization is not enough, rather it should be introduced in a way that there is less learning curve for the users. Removal of technical glitches and provision of training and development is instrumental towards smooth usage. Further the real-time tracking feature can enhance the product and its adoption. In addition, the government agency should also assess the trader's capacity of adoption and change management before introducing anything new. This is extremely important as most traders lack capacity resulting in steep uphill climb towards digitization.

Likewise, Nepal can reduce its dependence on external consultants and organizations by investing in local IT expertise, fostering partnerships between academia, government, and the private sector, and international collaboration. A continuous learning culture and mentorship can also contribute to this. To address the shortage of technically skilled manpower at the Nepal border, investing in vocational training programs and education initiatives can improve border security measures and manage the flow of goods and people across borders.


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Appendix

Questionnaire

1. Number of Years in Trading:

2. Gender: [] Male [] Female [] Other

3. Types of Business:

4. Main Questions

i.Digital Documentation Efficiency: The digital documentation process has significantly reduced the time required for customs clearance.

[] Strongly Disagree [] Disagree [] Neutral [] Agree [] Strongly Agree

ii. System Accessibility: I find the digital platforms used for customs processes to be user-friendly and easy to navigate.

[] Strongly Disagree [] Disagree [] Neutral [] Agree [] Strongly Agree

iii. Customs Communication: Digital channels for communication with customs officials are effective and responsive.

[] Strongly Disagree [] Disagree [] Neutral [] Agree [] Strongly Agree

iv. Data Security: I am confident in the security of my data when using digital customs platforms.

[] Strongly Disagree [] Disagree [] Neutral [] Agree [] Strongly Agree

v. Training and Support: Adequate training and support are provided for using digital customs platforms.

[] Strongly Disagree [] Disagree [] Neutral [] Agree [] Strongly Agree

vi.Cost Reduction: Digital customs processes have significantly reduced the costs associated with exports and imports.

[] Strongly Disagree [] Disagree [] Neutral [] Agree [] Strongly Agree

vii.Regulatory Compliance: The digital platforms make it easier to comply with the various regulations and laws in international trade.

[] Strongly Disagree [] Disagree [] Neutral [] Agree [] Strongly Agree

viii. Real-time Tracking: I can efficiently track the status of my shipments and customs clearance in real-time through digital systems.

[] Strongly Disagree [] Disagree [] Neutral [] Agree [] Strongly Agree

ix. Problem Resolution: In case of any issues, digital platforms facilitate quick and effective resolution.
[] Strongly Disagree [] Disagree [] Neutral [] Agree [] Strongly Agree

x. Technical Difficulties: I frequently encounter technical issues (like system downtime, bugs, etc.) when using digital platforms for customs processes.
[] Strongly Disagree [] Disagree [] Neutral [] Agree [] Strongly Agree

xi. Change Management and Adaptation: The transition from traditional to digital methods in customs processes has been challenging for my organization in terms of training, adapting to new systems, and change management.
[] Strongly Disagree [] Disagree [] Neutral [] Agree [] Strongly Agree

xii. Overall, I am satisfied with the digital transformation in the customs process for international trade.

[] Strongly Disagree [] Disagree [] Neutral [] Agree [] Strongly Agree