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Readiness to E-commerce Adoption by Micro and Small Enterprises in Small Town: A Case study of Vyas municipality, Nepal

by

Lekhnath Timalsena

A THESIS
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The undersigned certify that they have read, and recommended to the Institute of Engineering for acceptance, a thesis entitled "**Readiness to E-commerce Adoption by Micro and Small Enterprises in Small Town: A Case study of Vyas municipality, Nepal**" submitted by Lekhnath Timalsena in partial fulfillment of the requirements for the degree of Master of Science in Engineering in Technology and Innovation Management.

Supervisor, Dr. Sanjeev Maharjan
Assistant Professor
Department of Mechanical and Aerospace Engineering

External Examiner, Er. Surya Man Koju
Engineer
Research and Development International Green Developers

Committee Chairperson, Dr. Nawraj Bhattrai
Head
Department of Mechanical and Aerospace Engineering

Date:

ABSTRACT

E-commerce has tremendous potential to promote growth for micro and small-scale enterprises (MSEs) in both developed and developing countries. This thesis was aimed to investigate the current status and future direction to the adoption of e-commerce by micro and small enterprises.

A questionnaire survey was conducted to collect data from 70 MSEs as samples located in Vyas Municipality, Tanahun. Then the factor analysis was carried out using KMO and BTS test in SPSS software. From 29 questions variables total five factor were found naming Awareness, Human resources, Technology Use, Finance, and Market Readiness. The result show that the overall scale value of all five factors was 3.205, indicates the poor level of e-commerce adoption. Among five factor human resources availability was most supportive factor with scale value 2.749, and market readiness perception of enterprises was the most discouraging factor with scale value 3.975.

Even though 76 % of the enterprises were capable to adopt e-commerce based on technology available and knowledge of ICT, only 33% of the enterprises were ready to adopt e-commerce. In developed country only online payment system have been using for payment but from result it was clear that, in Nepal cash on delivery have been still preferred payment system compared to online transaction. Findings show that the important inhibiting variables are lack of internal trust, lack of awareness, incapability of dealing with rapid change, and lack of online transaction system. As per the preference of the respondents and literature review B2B and B2C integrated e-commerce system was proposed for the future implementation.

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First of all I would like to show my gratitude towards my thesis supervisor Dr. Sanjeev Maharjan for his support and guidance. I would like to thank all the professor(s) and core team of MSTIM program for their suggestions and support during thesis work.

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Lekhnath Timalsena

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ANOVA	Analysis of variance
AWS	Amazon Web Services
B2B	Business to Business
B2C	Business to Customers
BMC	business model canvas
BTS	Bartlett's tests of sphericity
C2C	Customers to Customers
FDI	foreign direct investment
G2G	Government to Government
ICT	Information and Communication Technology
IDI	ICT development index
ITU	International Telecommunication Union
KMO	Kaiser-Meyer-Olkin
MSE	Micro and Small Enterprises
PERM	Perceived e-readiness model
SME	Small and Medium-sized Enterprises
TAM	Technology Acceptance Model
TOE	Technology Organization Environment

CHAPETER ONE: INTRODUCTION

1.1 Background

When internet was systematically started in 1960s then lots of innovation have done in the field of Information and Communication Technology (ICT). E-commerce is one of the consequences innovation of evolution of internet. Now a day's traditional concept of buying and selling is going to be replaced by online system. In general e-commerce is buying and selling of goods and services over internet using web-portal or mobile application (Chaffey, Hemphill, & Edmundson, 2019). E-commerce has already adopted by the developed countries and also spreading over developing countries. E-commerce business are determined as most valuable business in present and near future. The evidence is the Amazon is world's largest online marketplace, defending its position as the world's most valuable brand for the third consecutive year (Finance, 2020).

E-commerce has considerable potential to promote the growth of micro, small and medium-sized enterprises (SMEs) in developed and developing countries. However, E-commerce adoption by small enterprises in developing countries has faced many challenges that have not been appropriately addressed due to the advanced nature of its adoption in such countries (Kurnia, Mahbubur, Alzagoul, & Chudrie, 2015). SME's and micro-enterprises play significant roles in Nepalese economic and social development. It also allows small and medium-sized businesses to create wealth; by growing employment opportunities and declining unemployment.

Send Gifts to Nepal was first online shopping portal, with the help of that portal people residing abroad sent gifts to their friends and families in Nepal. While this wasn't really based in Nepal, it provide people an opportunity of what it was like to buy things online. Platforms such as muncha.com, neapalibazar.com, fatafatt.com, bhatbhatenionline.com, thamel.com, giftmandu.com and so on were later introduced but couldn't get their anticipated popularity because people in Nepal were just getting friendly with the internet and ICT infrastructure. With the steady increase in the number of internet users with time, e-commerce is flourishing and gaining attraction in Nepal right now. With the aid of their smartphones, people are loving the idea of online shopping, everything from cloth, food, electronic appliances, liquor, furniture and many more.

Major advantages of e-commerce are as follows (Nagaty, 2010):

Efficiency: In many ways, online shopping is improving business performance. They present detailed information along with their prices to online customers and reduce search costs. E-business models lower the cost to businesses of both production and delivery.

Cross-selling: Based on their previous sales, businesses will maximize their demand development with their own goods by selling new products to the existing customers.

Complementariness: An e-business model will deliver the complementary items associated with the product purchased to the consumer.

Customer satisfaction: Increasing the degree to which service offerings satisfy on-line customers.

Availability: Generally shopping will be done at fixed place and fixed time but online buying and selling can be done from any place and any time.

Speed: Communication advancements allow transactions to be made almost instantaneously.

Following are the major disadvantages of e-commerce (Nagaty, 2010):

Feel and touch: Online shopping allow consumer to search and see products but not able to touch and feel them so consumer are not able to do perfect decision to choose the available options.

Trust: Privacy and security issue is another concern in e-commerce so some customer do not prefer to buy and sell online.

1.2 Problem Statement

Popularity of e-Commerce is increasing globally, so is in Nepal. As we look at the Nepali market, every week new e-commerce website is emerging. But due to lack of proper planning and vision most of them are not able to sustain in market. E-commerce is very easy to start but existing in market is difficult and expensive task.

In existence of the e-commerce system in Nepal rises many issues such as all most all are focusing on B2C business and medium and large enterprises. B2B e-commerce model is not gaining popularity in present situation. In Nepal large number of

population are involved in micro and small sized business but still they are doing business in traditional way. There is a lack of proper knowledge whether they are capable to do online business or not. This research demonstrates the factor analysis with some context, real data, and understanding of the role of e-commerce in micro and small businesses.

1.3 Research Objective

Main Objective

The main objective of this thesis is to identify the readiness to e-commerce adoption by micro and small enterprises using factor analysis in Vyas Municipality of Nepal. By analyzing those major internal e-commerce adoption factors propose suitable e-commerce business model.

Specific Objectives

i. To find e-readiness factors of e-commerce adoption by Micro and Small Enterprises in Vyas Municipality.
ii. Identify and analyze the supportive and challenging factors and find readiness status for e-commerce adoption by micro and small enterprises in Vyas Municipality.
iii. To propose e-commerce business model canvas for e-commerce implementation in Vyas Municipality.

1.4 Limitations

- This thesis was done on the basis of primary data collected by questionnaire survey.
- During the analysis only internal organizational variables were taken; external environmental variables were not considered.
- To make proper business prototype another market survey need to be conducted, but because of COVID-19 pandemic situation not possible to do site survey. So simple business model was drawn on the basis of literature and some basic variables of the survey.
- Confidence level of the research was taken 10%.

CHAPTER TWO: LITERATURE REVIEW

The Internet and computers have revolutionized electronic transactions like ownership transactions or the ability to purchase products or services online. In addition to buying and selling over the internet, e-commerce often includes connecting with business partners. This is not restricted by the time or physical location from any position that opened unrestricted new markets and can be done at any time. This is also known as the process of buying , selling, transmitting or exchanging goods , services and/or information via computer networks over internet (Shemi, 2012).

Based on the type of participant of the transection e-commerce can be categorized mainly in four type. If the users of the portal are governments' bodies, then the model is defined as the government to government (G2G). If the users are other businesses only, it is known as business to business (B2B). When participants are both businesses and consumers in the transactions, then it is referred to as the business to consumer model (B2C). If one consumer is selling goods or services to another consumer through online, it is known as Consumer to consumer (C2C) e-commerce. This process of buying and selling is generally handled by a third party platform that helps to take care of the transaction information, generally known as a marketplace.

2.1 Global E-commerce

E-commerce allows consumers to take advantage of greater options and lower prices. Global e-commerce is rapidly expanding and several trillion dollars are being exchanged annually over the web. In 2017 about 1.3 billion people (one quarter of the world's population) aged 15 years and older, shopped online (UNCTAD, 2019). In 2019 Global e-commerce sales is nearly 3.5 trillion dollars worldwide, which is about 14 percentage of total retail sales and it expected to increase in coming years (Global Ecommerce Sales (2014–2021), 2019). E-commerce adoption in developing countries is somewhat different from developed ones. Developing countries often lack the necessary physical infrastructures, financial, legal, awareness for the development of E-commerce (Tan, Tyler, & Manica, 2007).

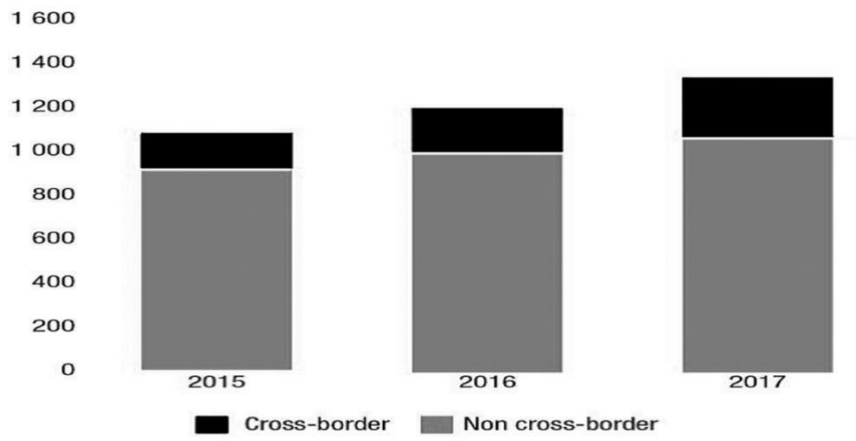


Figure 2. 1 Global online shoppers, 2015–2017 (in Million) (UNCTAD, 2019)

2.2 E-commerce in Nepal

The biggest driver for possible e-commerce adoption in Nepal is rapidly increase in use of internet and smartphones. According to Nepal Telecom Authority, mobile phone penetration has reached 145 percent. Whereas broadband internet penetration in Nepal is 72% by the end of 2019 and about 3 million of cellular mobile phone are imported in last six month of 2019 (Authority, 2019) (Customs, 2019). Out of 176 countries Nepal is in 140 position of ICT development index (IDI) with IDI value 2.88 out of 10, whereas Iceland is on top with 8.98 value (ITU, 2017). In 2019 Nepal is in 112 rank B2C e-commerce index among 152 countries with index value 35.4 out of 100 (UNCTAD, 2019).

Expansion of the ICT infrastructure have created prolific ground for the development of e-commerce. Social media sites are now commonly used for socialization. But now not only they are used for create connection with people to people, but now they are also being used to connect businesses to customers for goods and services transections. Nepalese youth have embraced the changing digital world because of their education and largely driven by family members who have gone abroad for work and education. Since young people outnumber any other age group in Nepal, they can drive economic transformation by using digital technology. Both the private and public sectors need to recognize and exploit this growing potential to develop a strong and sustainable national economy.

Despite the potential, Nepal is still struggling to adopt e-commerce as a business tool compared to other Asian countries. However, there are private-sector providers that

have been pushing digital development. Nepal's e-commerce market is getting crowded day by day as smaller startups are trying to sustain in market. Currently Daraz, Sastodeal, Hamrobazar, Foodmandu other some e-commerce business leading on Nepali market. Out of those daraz.com.np on the top, currently they are providing services in 24 major cities.

Table 2. 1 Nepalese major e-commerce sites

S. N.	Ecommerce Site	Product Available Type	Payment Methods	Main Business Model	Alexa Country rank	Delivery Area
1	daraz.com.np	Mixed	COD, C/D Card	B2C	42	Major Cities
2	hamrobazar.com	Mixed	Buyer and Seller Understanding	C2C	52	No delivery
3	thulo.com	Mixed	COD, C/D Card, other Online Payment, PayPal	B2C	177	major Cities export
4	okdam.com	Mixed	COD, Other Online payment, PayPal, Master card	B2C	241	Major Cities
5	sastodeal.com	Mixed	COD, Other Online payment, C/D Card	B2C	243	Major Cities
6	foodmandu.com	Fast food	COD	B2C	760	Inside ring road and its periphery
7	socheko.com	Mixed	COD, Other Online payment, C/D Card	B2C	1025	Major Cities
8	ugbazaar.com	Mixed	COD, C/D Card	B2C	1127	Major Cities
9	lds.com.np	Electronics	COD	B2C	1399	Kathmandu Valley
10	reddoko.com	Mixed	COD, Other Online payment, C/D Card	B2C	1427	Major Cities

S. N.	Ecommerce Site	Product Available Type	Payment Methods	Main Business Model	Alexa Country rank	Delivery Area
11	meroshopping.com	Mixed	COD, Other Online payment, C/D Card	B2C	1525	Major Cities
12	mystorenepal.com	Mixed	COD, C/D Card, other Online Payment, PayPal	B2C	1527	Major Cities
13	giftmandu.com	Gift, Mixed	COD, Other Online payment, C/D Card	B2C	1557	Major Cities
14	bhatbhatenionline.com	Mixed	COD, C/D Card, other Online Payment,	B2C	1951	Kathmandu Valley
15	merokirana.com	Groceries	COD, Other Online payment, C/D Card	B2C	2054	Kathmandu Valley
16	muncha.com	Mixed	COD, Other Online payment, C/D Card	B2C	2138	Major Cities
17	smartdoko.com	Mixed	COD, Other Online payment, C/D Card	B2C	3029	Major Cities
18	cheers.com.np	Liquor	COD, Other Online payment, C/D Card	B2C	3179	Kathmandu Valley
19	bestdealsnepal.com.np	Electronics	COD, Other Online payment, Bank Deposit	B2C	3197	Major Cities
20	style97.com	Garments, Fashion	COD, Bank Deposit	B2C	4490	Major Cities

Further prerequisite for successfully operating e-commerce is the digital payment system. It is estimated that more than 85 per cent of e-commerce purchases are currently

made using the cash on delivery process. Nepal Rastra Bank and Information and Communication Technology Ministry need to develop customer friendly online payment system. The availability of a simple and secure e-payment system may also help to improve the export sector of the country.

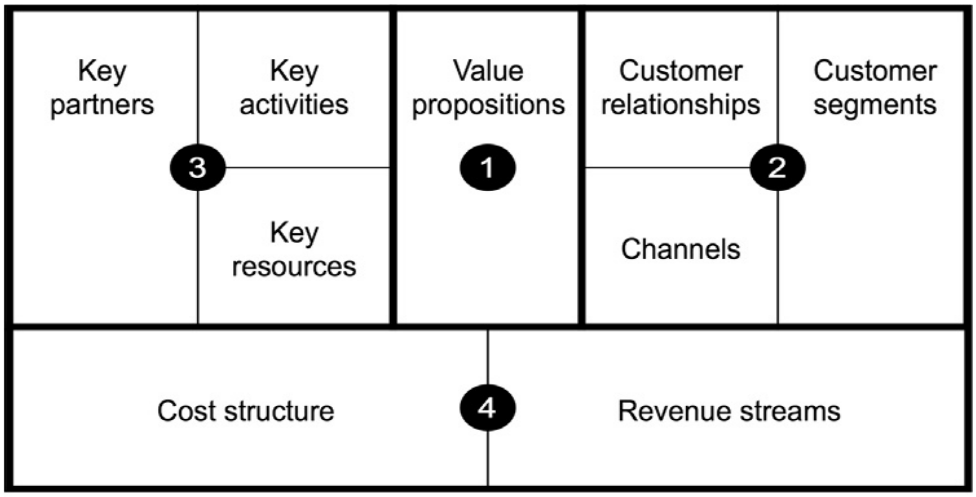
E-commerce transactions also require strict regulatory enforcement and regulation. Quality assurance regulations, protection for consumer rights, data privacy, return and refund processes and payment solutions must all be governed by legislation. Foreign direct investment (FDI) also important to grow online platform but strong legal foundations would also require to attract them.

2.3 E-commerce Business model

E-commerce business platform use the Internet to keep the company running and produce revenue. They have been built from plain text websites to interactive e-commerce platforms that use web portals and mobile devices to attract the potential customers and reach their current customers. In this technological era online business is important for companies to succeed in the global economy. Adoption of e-commerce business is a prime territory for innovation (Nagaty, 2010). Clearly, e-commerce creates enormous new income, often through business start-ups and corporate ventures. This is also changing market law in unprecedented ways for existing businesses. It would therefore anticipate the topic of e-commerce to have drawn scholars' attention in the areas of entrepreneurship and strategic development. (Amit & Zotta, 2000).

2.3.1 Business Model Canvas

To start the research on e-commerce business model first we have to understand the existing models. Osterwalder's Business Model Canvas offers a blueprint and feedback for businesses to document current business models and create new ones and it is a firm-level concept (OSTERWALDER, 2004). It has nine related elements of business information to represent the prime content doing business as seen in the Figure 2. 2 below. We understand that those elements are hard to operationalize and measure before knowing to how they are conceptually related because they do not consider the process of doing business (Zott, Amit, & Massa, 2011). But one may take an activity-system perspective on the BMC for the purposes of implementation and calculation, since operation sets support for each of its components.



Note: 1 = Product; 2 = Customer interface; 3 = Infrastructure management; and 4 = Financial aspects.

Figure 2. 2 Business Model Canvas layout (OSTERWALDER, 2004)

There is also a relationships between those nine elements, the BMC has been suggested as a four-dimensional business strategy framework. The four factors of the BMC are labelled 1 to 4 and enclosed by heavy lines as shown in Figure 2. 2 above. The four dimensions (Zott, Amit, & Massa, 2011) in the framework were presented as following:

- Value proposition: represents the way to create value of organizations for their customers and for each entity engaged in the delivery of service.
- Value architecture: reflects how the tools and core competencies of an enterprise are designed to generate and provide benefits to customer.
- Value network: provides inter-organizational channel between value proposition and value architecture of the business model.
- Value financial: refer to the methods of revenue generation and major costs structure of complete business processes.

2.3.2 Existing Business Models

Based on Osterwalder's model we can also create canvas for existing business. By drawing any one of the competitors' business models canvas to obtain a clear understanding of their strengths, shortcomings, restrictions and what they can do or not. This can improved understanding of the challenging marketplace to draw a better business model. Before to start research in e-commerce need to understand business model of the current successful online businesses. Here we have tabulated business model canvas for existing national and international e-commerce models.

Table 2. 2 Amazon Business Model Canvas

<table>
<tr>
<td rowspan="2">Key Partners
Product developers
Logistics Partners
Subsidiaries
Seller
Banks and Financing Partners</td>
<td>Key activities
Platform design and process optimization
Merchandising
Manage Supply chain</td>
<td rowspan="2">Value Propositions
Price minimize
Fast delivery
Return and Refund Policy</td>
<td>Customers Relationships
Automated online service
Reputation
Customer Service and email</td>
<td rowspan="2">Customers Segments
Consumers
Prime subscriber</td>
</tr>
<tr>
<td>Key Resources
Artificial intelligent and Automation
Software
Big Data
AWS</td>
<td>Channels
Website and Apps
Logistics for Home delivery
Debit/ Credit card and other payment System</td>
</tr>
<tr>
<td colspan="2">Cost Structures
IT and Infrastructure
System Development and management
Fulfillment center and Warehouse management
Logistics system
Cost-Driven
Fixed and variable both cost
Economics of Scale</td>
<td colspan="3">Revenue Streams
Prime Customers
Sales Commission
High Volume Listing Fee
Promotion
Logistics
Fixed Pricing
Long term profit</td>
</tr>
</table>

Table 2. 3 Alibaba Business Model Canvas

<table>
<tr>
<td rowspan="2">Key Partners
Manufacturers and distributors
Logistics Partners
Subsidiaries
Banks and Financing Partners</td>
<td>Key activities
Platform design and process optimization
Promotion
Manage Supply chain</td>
<td rowspan="2">Value Propositions
Access to global suppliers.
Range of products
Return and Refund Policy
Alipay payment system
B2B and B2C both system</td>
<td>Customers Relationships
Automated online service
Discounts and coupons
Reputation Customer Service and email</td>
<td rowspan="2">Customers Segments
Consumers
Trade agent, Wholesalers, Retailer</td>
</tr>
<tr>
<td>Key Resources
IT and Software
Artificial intelligent and Automation
Human resources</td>
<td>Channels
Website and Apps
Logistics for delivery
Alipay and Other Payment Systems</td>
</tr>
<tr>
<td colspan="3">Cost Structures
IT and Infrastructure
System Development and management
Logistics system
Human Resources
Fixed and variable both cost</td>
<td colspan="2">Revenue Streams
Commission from sellers
Supplier special membership
Promotion
Fixed Pricing
Long term profit</td>
</tr>
</table>

Table 2. 4 Ebay Business Model Canvas

<table>
<tr>
<td rowspan="2">Key Partners
Independent Sellers
Business Sellers
Paypal, Banks and Financing Partners
Logistics partners
Subsidiaries</td>
<td>Key activities
Platform design and process optimization
Manage Supply chain
Advertising</td>
<td rowspan="2">Value Propositions
Options to auction System and fixed price
Independent seller
Return and Refund Policy
Ability to compare different products
StubHub</td>
<td>Customers Relationships
Automated online service
Discounts and coupons
Auction system
Customer Service and email</td>
<td rowspan="2">Customers Segments
Consumers</td>
</tr>
<tr>
<td>Key Resources
IT and Software System
Human Resources</td>
<td>Channels
Website and Apps
Logistics for delivery
Paypal and Other Payment Systems</td>
</tr>
<tr>
<td colspan="3">Cost Structures
System development and management
Advertising and marketing
Logistics system
Fixed and variable both cost</td>
<td colspan="2">Revenue Streams
Listing fee above 50 items Per months.
Sales Transection Fee
Advertising on classified
Fixed Pricing and Auction system
Long term profit</td>
</tr>
</table>

Table 2. 5 Flipkart Business Model Canvas

<table>
<tr>
<td rowspan="2">Key Partners
Manufacturer, distributors, and seller
Walmart
Payment Partners
Subsidiaries</td>
<td>Key activities
Platform design and process optimization
Manage Supply chain</td>
<td rowspan="2">Value Propositions
Wide Selection
Product comparison
Price minimized and trust
Return and Refund Policy
24*7 customer service</td>
<td>Customers Relationships
Automated online service
Customer review and support</td>
<td rowspan="2">Customers Segments
Consumers</td>
</tr>
<tr>
<td>Key Resources
IT and Software system
Fulfillment Centers
Human resources</td>
<td>Channels
Website and Apps
Logistics for delivery
Cash on delivery and Card system</td>
</tr>
<tr>
<td colspan="3">Cost Structures
System development and management
Logistics System
Human resources
Business promotion</td>
<td colspan="2">Revenue Streams
Sellers Commission
Shipping Service (Ekart)
Shopping fees (Flipkart Assured Program)</td>
</tr>
</table>

Table 2. 6 lazada Business Model Canvas

<table>
<tr>
<td rowspan="2">Key Partners
Manufacturers and distributors
Logistics Partners
Payment Partners
Subsidiaries</td>
<td>Key activities
Platform design and process optimization
Manage Supply Chain</td>
<td rowspan="2">Value Propositions
Access to main suppliers.
Range of products
Return and Refund Policy</td>
<td>Customers Relationships
Automated online service
Discounts and coupons
Customer Service and email</td>
<td rowspan="2">Customers Segments
Consumers</td>
</tr>
<tr>
<td>Key Resources
Software and System
Fulfillment centers
Human resources</td>
<td>Channels
Website and Apps
Logistics for delivery
Debit/ Credit card and Lazada wallet payment System</td>
</tr>
<tr>
<td colspan="3">Cost Structures
IT and Infrastructure
System Development
Logistics system
Human Resources
Fixed and variable both cost</td>
<td colspan="2">Revenue Streams
Commission from sellers
Promotion
Delivery Service
Fixed Pricing
Long term profit</td>
</tr>
</table>

Table 2. 7 Daraz Nepal Business Model Canvas

<table>
<tr>
<td rowspan="2">Key Partners
Manufacturers and distributors
Logistics Partners
Banks and Financing Partner</td>
<td>Key activities
Platform design and process optimization
Manage Supply Chain</td>
<td rowspan="2">Value Propositions
Access to main suppliers.
Range of products
Cash on delivery
Return and Refund Policy</td>
<td>Customers Relationships
Automated online service
Discounts and coupons
Customer Service and email</td>
<td rowspan="2">Customers Segments
Consumers</td>
</tr>
<tr>
<td>Key Resources
Software and System
Human resources
Fulfillment Center</td>
<td>Channels
Website and Apps
Logistics for delivery
Cash on delivery and Debit/ Credit card payment System</td>
</tr>
<tr>
<td colspan="3">Cost Structures
IT and Infrastructure
System Development
Logistics system
Human Resources
Fixed and variable both cost</td>
<td colspan="2">Revenue Streams
Commission from sellers
Delivery Service fee
Fixed Pricing
Long term profit</td>
</tr>
</table>

Table 2. 8 Hamrobazar Business Model Canvas

<table>
<tr>
<td rowspan="2">Key Partners
Independent Seller</td>
<td>Key activities
Platform design</td>
<td rowspan="2">Value Propositions
Verities of items
New and used items
Able to contact seller and buyer directly</td>
<td>Customers Relationships
Automated online service
End to end direct contact</td>
<td rowspan="2">Customers Segments
Consumers</td>
</tr>
<tr>
<td>Key Resources
Software and System</td>
<td>Channels
Website and Apps</td>
</tr>
<tr>
<td colspan="3">Cost Structures
System Development and Management</td>
<td colspan="2">Revenue Streams
Advertising</td>
</tr>
</table>

Table 2. 9 Sastodeal Business Model Canvas

<table>
<tr>
<td rowspan="2">Key Partners
Vendors
Logistics Partners
Banks and Financing Partner</td>
<td>Key activities
Platform design and process optimization
Manage Supply Chain</td>
<td rowspan="2">Value Propositions
Range of products
Multiple payment methods
Return and Refund Policy</td>
<td>Customers Relationships
Automated online service
Customer Service and email</td>
<td rowspan="2">Customers Segments
Consumers</td>
</tr>
<tr>
<td>Key Resources
Software and System
Human resources</td>
<td>Channels
Website
Logistics for delivery
Various Payment methods</td>
</tr>
<tr>
<td colspan="2">Cost Structures
IT and Infrastructure
System Development
Logistics system
Human Resources</td>
<td colspan="3">Revenue Streams
Commission from sellers
Delivery Service
Fixed Pricing
Long term profit</td>
</tr>
</table>

2.4 E-commerce Adoption Model by SMEs

Numerous models have been developed over the years to assist in the adoption of e-commerce to gain the benefits and resolve the barriers. Three of these have been described from the literature as the most widely used for research on e-commerce adoption.

1. Technology Organization Environment (TOE).
2. Technology Acceptance Model (TAM).
3. Perceived e-readiness model (PERM).

Technology Organization Environment (TOE) Framework

According to the TOE framework Technological innovation in organization is influenced by three factors (Baker, 2011). The technological context involves the availability and features of the technology. The organizational context includes informal and formal approaches, communication mechanisms, and organizational scale. The environmental background involves features like policy control, market dynamics and development infrastructure.

Technology Acceptance Model (TAM)

TAM is widely used in studies regarding the adoption of information technology. Davis and Viswanath developed it to explain the adoption by users of new technology innovation in organizations. This indicates perceived utility (PU) and perceived ease of use (PEOU) as the two key determinants of technology adoption in an enterprise. In this model, perceived usefulness is defined as the degree to which the individual is confident that continued use of a particular program will improve their job efficiency. While perceived ease of use is the way in which a person believes it will be free from mental and physical effort to use a given system.

Perceived E-Readiness Model (PERM)

A more practical model built in the sense of developing countries is Molla and Licker's Perceived E-Readiness Model (Molla & Licker, 2005). This model have two major constructs to obtain both external and internal components. The internal factor is termed Perceived Organisation E-Readiness (POER) and the external factor termed perceived Environmental E-Readiness (PEER).

From the developing countries viewpoint, the key drawback of the first two models is that they are structured to fix problems within developed nations. Issues that may seem minor in developed countries can be essential for developing region institutions.

2.5 Introduction Vyas Municipality

Vyas municipality is at 150 Km to the west from the Kathmandu and 50Km east from Pokhara on Prithivi Highway. It was formed after re-establishment of multiparty democracy in 1991 A.D.

Table 2. 10 General information of Vyas Municipality

Province	4 (Gandaki)
No. of wards	14
Total Area	247.77 Km^2
Population	71809
Population Density	290 Person/Km^2

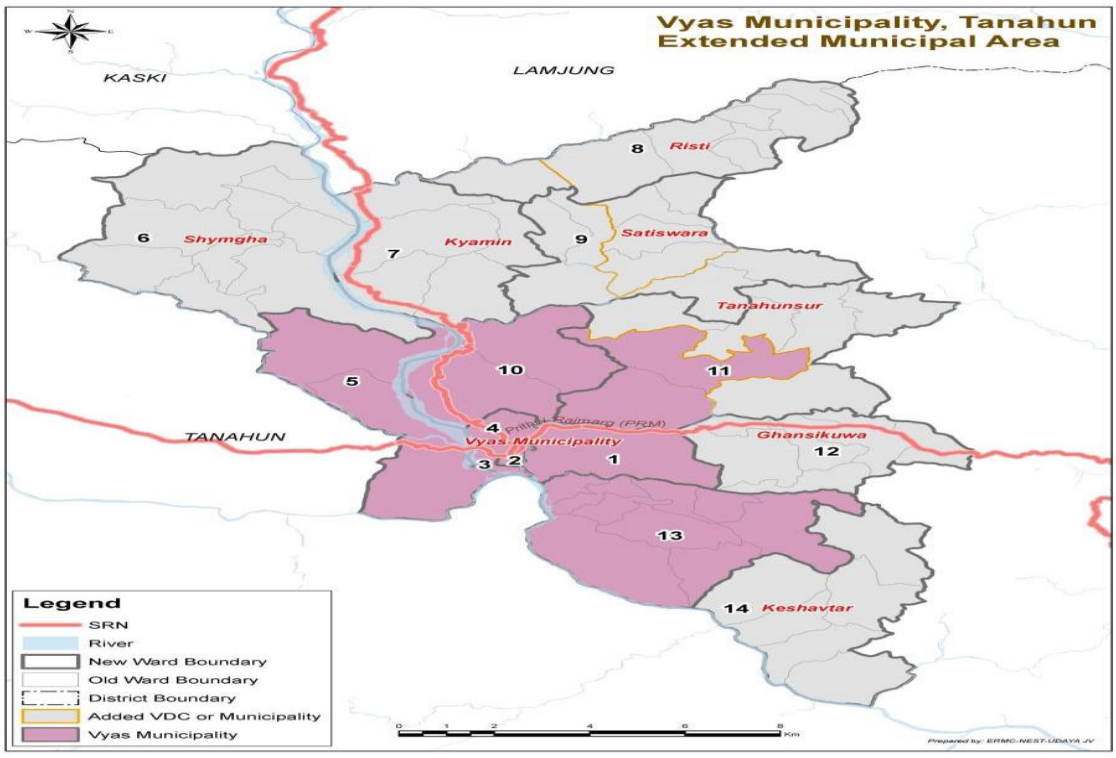


Figure 2. 3 Vyas Municipality map (Municipality, 2019)

Vyas municipality is the district head quarter of Tanahun district. Among 14 wards Ward number one, two, three and four are the urban areas. Ward five, seven, ten and

eleven are semi-urban areas and others are rural area (Municipality, 2019). Ward wise population information is given in table below.

Table 2. 11 Population Structure of Vyas Municipality (Municipality, 2019).

Ward No.	**Population**	**Male**	**Female**	**Area (Square Km)**	**Population Density (per square Km)**
1	9553	4880	4673	8.29	1152.35
2	4197	2071	2126	0.38	11044.74
3	2788	1399	1389	0.74	3767.57
4	5022	2544	2478	2.12	2368.87
5	6672	3375	3297	20.16	330.95
6	5694	2924	2770	35.34	161.12
7	4075	2111	1964	21.2	192.22
8	2733	1384	1349	20.08	136.11
9	4799	2454	2345	25.06	191.50
10	7317	3689	3628	15.11	484.25
11	5668	2882	2786	33.33	170.06
12	5656	2834	2822	15.4	367.27
13	4073	2114	1959	26.07	156.23
14	3562	1828	1734	24.49	145.45
Total	71809	36489	35320	247.77	289.82

CHAPTER THREE: METHODOLOGY

This chapter explains the methodological terms and the methods chosen to conduct this study, right from selecting the topic and carrying out the whole research work till recommendations. Research methodology drives the researchers and keep him on the right track. This mainly explores what type of research the researcher has carried out and how a researcher had done it.

The focus of this research was to perform an appropriate readiness assessment to adopt e-commerce by micro and small enterprises. This thesis also tried to get preference of those enterprises' to use e-commerce in the future.

3.1 Research Design

Descriptive research does not blend perfectly in the context of either quantitative or qualitative research techniques, but may incorporate both components, even within the same sample. The term descriptive research study corresponds to the kind of problem statement, design, and analysis of data that will be applied to a particular subject. It also say what really is, while inferential statistics seek to answer cause and effect.

Descriptive statistics use methods for data collection and interpretation that generate information on core pattern, variance, and association measurements. The integration of its characteristic description and correlation statistics, together with its emphasis on specific research issues, procedures and findings, distinguishes descriptive research from other forms of study. Three main research aims are to identify, clarify, and confirm the results. Description emerges after innovative experimentation and helps to arrange the results to match them with explanations, and then to check or verify those explanations (Krathwohl, 1993).

A case study is essentially an in-depth analysis of a particular situation, rather than a broad statistical survey. It is a tool used to narrow down a very wide area of study into one topic that is easily explored. An opinion-based case study is intended to stimulate reasoned debate. There really is no right or wrong answer in a case study (Shuttleworth, 2008). There are two different approaches to case studies; the analytical approach and problem oriented method. In analytical approach the case study is examined in order to try and understand what has happened and why. It is not necessary to identify problems or suggest solutions where in problem oriented method the case study is analyzed to

identify the major problems that exist and to suggest solutions to these problems. Researcher has followed an analytical approach for this case study.

3.2 Sampling Methods

There are so many methods of sampling, some of those are as follows:

Random Sampling

Random sampling, the simplest method of sampling under the likelihood strategy, provides equal chances for each item of the study population to be chosen.

Stratified Sampling

Under stratified sampling the population is divided into several group that are individually more homogeneous than the total population and then we select items from each stratum to constitute a sample

Systematic Sampling

In systematic sampling each N^{th} item will be picked from the intended population's list of groups. For example, the sample should include the participants from the list listed at every 5^{th}. That means the 5^{th}, 10^{th}, 15^{th} etc. will be chosen to become the sample group members.

Quota Sampling

Another non-probability method, quota sampling also identifies strata like stratified sampling, but it also uses a convenience sampling approach as the researcher will be the one to choose the necessary number of participants per stratum.

In this research random sampling was used for the data collection. There are total about 1046 MSEs are presently running in Vyas municipality (Municipality, 2019).

3.3 Sample Size

$$\text{Minimum sample size } (n) = \frac{Z^2 Npq}{NE^2 + Z^2 pq} \quad \text{..... Equation 3.1}$$

For simple random sampling Equation 3.1 will be used to find number of sample (Dansa & González, 2017).

Where n= sample size

N= Population = 1046

Z= Standard normal value (1.645 for 90% confidence interval)

p= proportion (0.5 for unknown)

q= 1-p

E= Estimated error margin (10%)

$$n = \frac{1.645^2 * 1046 * 0.5 * 0.5}{1046 * 0.1^2 + 1.645^2 * 0.5 * 0.5}$$

$$n \approx 64$$

3.4 Data Collection

The researcher used questionnaire as data collection tool as required. The questionnaire assessment was carried out in Vyas Municipality based on the Perceived organization e-readiness for e-commerce adoption framework from literature review. The questionnaire consists of total 29 questions that will be asked to the firm's representative.

Questions are designed by the consultation with experts and also using researcher's own past ICT related works experiences. Five likert scale was used for each questions from strongly agree (1) to strongly disagree (5). Where all the questions reflects the positive statement of the data required; then responders choose one of the five option for the given statement.

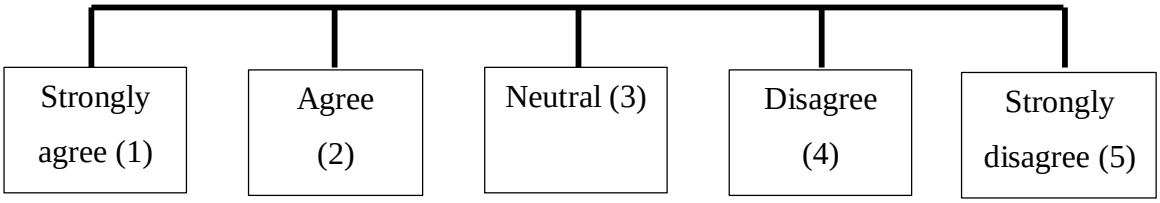


Figure 3. 1 Five Likert scale (Kothari & Garg, 2019)

3.5 Statistical Analysis Approach

The data collected from questionnaire survey was digitized in the Microsoft excel then both SPSS and excel were used to analyzed data. Firstly, we carried out the factor analysis process to identify the questions lied in the same factor.

3.6.1 Factor Analysis

The key statistical method for evaluating the information was the factor analysis. The main objective of this technique is to classify many questions into few factors based on

the relationship among questions. Factor analysis is a statistical method that is based on the correlation analysis of multivariable. The aim of factor analysis is to reduce the number of individual items to lesser parameters. Factors are created by grouping the variables which are correlated. Factor analysis usually proceeds in four steps:

First Step: The correlation matrix was computed for all variables

Correlation matrix was generated for all variables and variables were identified that was not related to other variables. If the association between variables is weak, they are unlikely to share common factors (variables must be related to each other in order to be adequate for the factor model). On the studied variables, Kaiser-Meyer-Olkin (KMO) and Bartlett's sphericity tests (BTS) were applied to verify whether the remaining variables are factorable. The KMO value should be greater than 0.4 for satisfactory factor analysis BTS, on the other hand, should show that the correlation matrix is not an identify matrix by giving a significant value.

Second Step: Factor extraction

The primary objective of this stage was to determine the factors. Initial decisions on the number of factors that underlie a collection of calculated variables can be made here. To decide on how many factors we need to represent the data were identified by setting Eigen values. The determination of the number of factors is usually done by considering only factors with Eigen values greater than one.

Third Step: Factor rotation

Usually, unrotated factors are not quite interpretable (most factors are associated to several variables). Factors are rotated to make them more relevant and easier to understand (there is a minimum number of factors associated with each variable). Different rotation methods could lead to somewhat different factors being identified. The most popular rotational method is Varimax rotations.

Fourth Step: Make final decisions to naming of the underlying factors

Then the final result can be drawn by analyzing the factor load of each variable. Proper were given to each factor by considering the factors loads.

3.6.2 Reliability Testing

Then the basic reliability analysis was performed to validate questionnaire within the factor. Cronbach's alpha (α) measures an internal consistency and reliability of items are as a group (Leontitsis & Pagge, 2006). So, α value for all five factors was calculated to validate the consistency and reliability of questions related to those factors.

$$\alpha = \frac{k(\sigma_t^2 - \sum_{i=1}^{n} \sigma_i^2)}{(K-1)\sigma_t^2}$$ .....Equation 3.2 (Leontitsis & Pagge, 2006)

Where,

k= Number of questions

σ_t^2=Total variance

σ_i^2=Variance of each item

Equation 3.2 was used to calculate Cronbach's alpha value to check the reliability and consistency of variables inside the found factor.

3.6.3 Score Analysis

The mean score and standard deviation of each indicator was calculated based on responses from participants and were depicted on column charts to give a visual representation of the results and make it easy for the MSEs to understand. Furthermore, an e-readiness scale was used to determine the readiness level of each factor in the framework

Based on central tendency of the result factors were analyzed as follows:

- Factor average between 1 and 2: The factor favored to adopt e-commerce.
- Factor average between 2 and 3: The factor favored to adopt e-commerce but can still be improved.
- Factor average between 3 and 4: The factor do not favored to adopt e-commerce; some work have to be done prior to implement e-commerce system.
- Factor average between 4 and 5: The factor do not favored to adopt e-commerce; lots of work have to be done before to implement e-commerce system.

Different charts and tables were drawn to analyze the results. Also T-test and ANOVA test was done to check correlation between different independent and dependent variables. Finally business model canvas was drawn based on the respondent preference and literature review of other e-commerce business model. Flowchart 3.2 represents the complete workflow of the methodology.

3.6 Work Flow Diagram

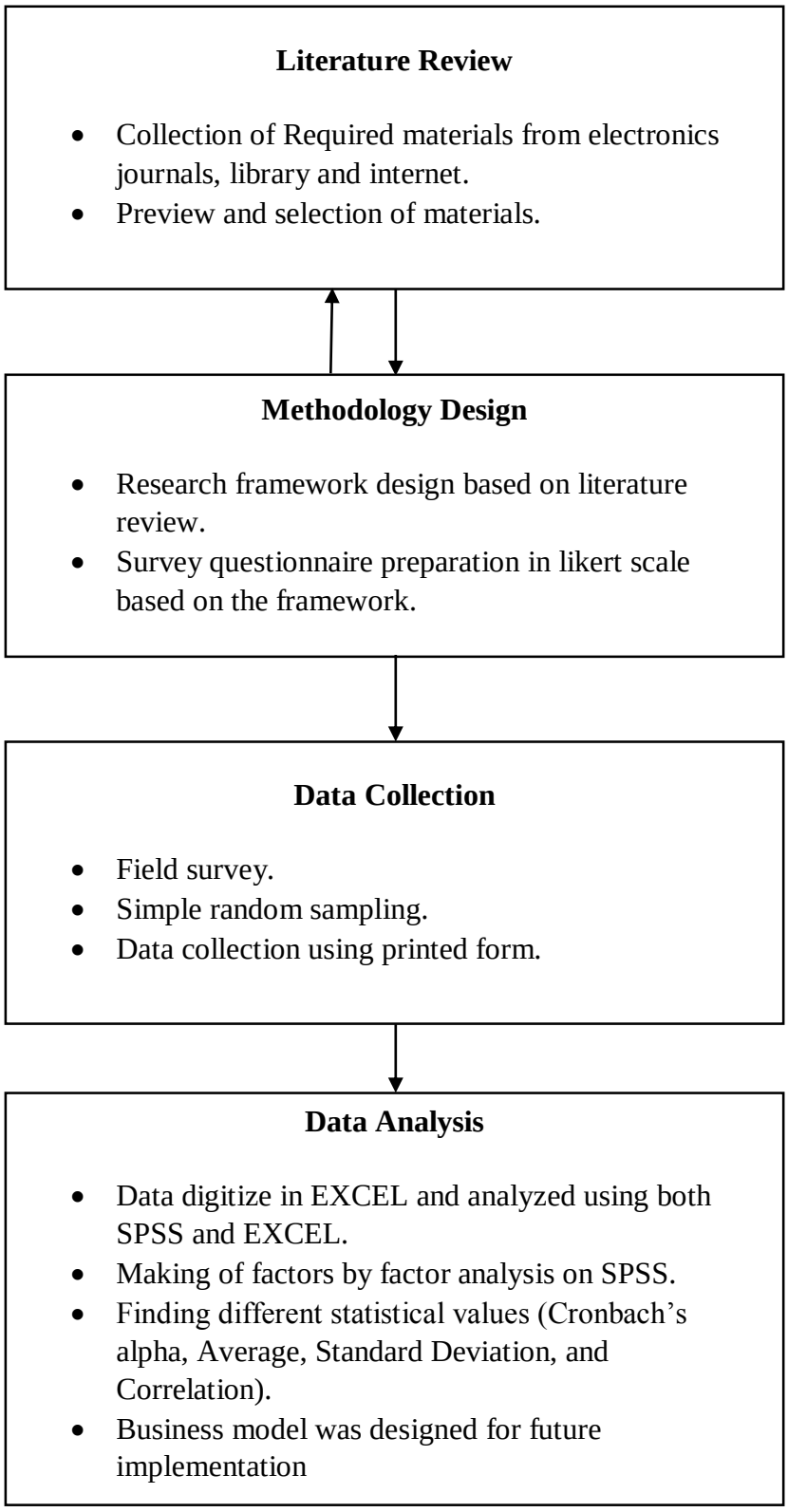


Figure 3. 2 Work flow diagram

CHAPTER FOUR: RESULT AND DISCUSSION

In this section the data collected from questionnaire survey was categorized and presented. As mentioned in the earlier chapter various tools for data analysis and interpretation are deployed in order to draw result.

4.1 Factors of E-readiness

Factor analysis is one of the powerful statistical methods or data analyzing tool among the whole data set. The e-commerce readiness factors were examined by factor analysis. Principal components analysis technique was used for extraction method and Varimax with Kaiser Normalization was Rotation Method.

Table 4. 1 KMO and Bartlett's Test

KMO and Bartlett's Test	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.720
Bartlett's Test of Sphericity Significance level	.0001

Table 4. 1 shows two tests that indicate the suitability of the data for structure detection. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was a statistic that indicates the proportion of variance in our variables that might be caused by underlying factors. High values (greater than 0.6) generally indicate that the factor analysis may be useful to those data. Whereas from BTS test check correlation of matrix, significant value less than 0.05 indicates sufficiently correlated variables.

Table 4. 2 KMO value of all 29 variables

Variables	**KMO Value**	**Variables**	**KMO Value**
Q1	0.802	Q16	0.797
Q2	0.803	Q17	0.830
Q3	0.815	Q18	0.651
Q4	0.816	Q19	0.677
Q5	0.723	Q20	0.691
Q6	0.761	Q21	0.662
Q7	0.727	Q22	0.699
Q8	0.773	Q23	0.807
Q9	0.836	Q24	0.723

Variables	KMO Value	Variables	KMO Value
Q10	0.721	Q25	0.731
Q11	0.738	Q26	0.729
Q12	0.740	Q27	0.785
Q13	0.811	Q28	0.705
Q14	0.679	Q29	0.822
Q15	0.646		

Based on the anti-image matrices, it is possible to determine whether individual variables should be removed from the factor analysis. From Table 4. 2 the anti-image correlation values were greater than 0.6 for all variables extracted from diagonal of anti-image correlation matrix of SPSS. It therefore followed that all variables can be included in the factor analysis.

Table 4. 3 Rotated Component Matrix with highest factor loading

Variables	Components				
	1	2	3	4	5
Q1	.514				
Q2	.760				
Q3	.616				
Q4	.469				
Q5	.624				
Q6	.583				
Q12	.704				
Q13	.605				
Q14	.532				
Q7		.596			
Q8		.448			
Q9		.703			
Q10		.809			
Q11		.647			

Variables	Components				
Q15			.699		
Q16			.759		
Q17			.593		
Q18			.562		
Q27			.805		
Q28			.736		
Q19				.493	
Q20				.760	
Q21				.450	
Q22				.454	
Q29				.482	
Q23					.779
Q24					.824
Q25					.843
Q26					.788

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

The rotated component matrix sometimes referred to as the loadings, is the key output of principal components analysis. It contains estimates of the correlations between each of the variables and the estimated components. As seen in Table 4. 3 total five components was extracted from the analysis. Those components were also referred to as five factors of the e-readiness model. Based on factor loading value, we found that a corresponding factor of the variables.

After finding the factors we have given appropriate name to each factor. Table 4. 4 show the naming of each factor and number of questions within those factors.

Table 4. 4 Five factors and corresponding numbers of questions

Factor Number	Factor name	Number of Questions
1	Awareness	9
2	Human Resources	5
3	Technology Use	6
4	Finance	5
5	Market Readiness	4

We have analyzed the questions within the each factors and appropriate definition was given to each factor as follows:

Awareness: It represents the information available and understanding about the e-commerce.

Human resources: It refers to the availability of appropriate education and experience of information and communication technology.

Technology Use: This is the most crucial factor than other factors. It reflects the basic ICT based infrastructure and knowledge available in the organization.

Finance: It reflects the current financial transaction methods preferred by the organization and future preference.

Market Readiness: It represents the enterprises' perception towards business partner and customers to adopt e-commerce.

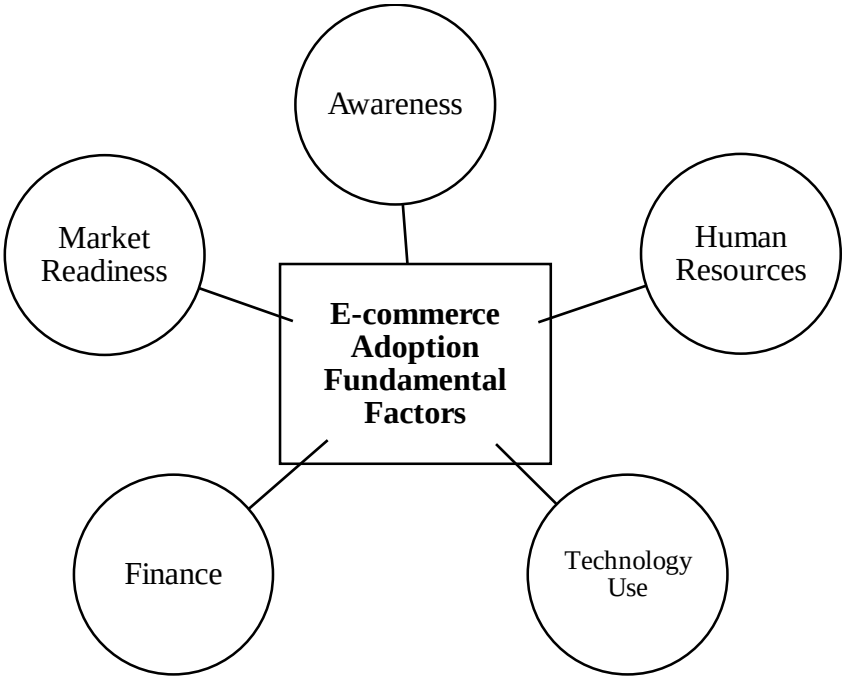


Figure 4. 1 Fundamental factors for readiness e-commerce adoption

Finally 29 questions are categorized in five factors as scene in Figure 4. 1. Now further statistical analysis was performed based on those factors.

3.1 Reliability of Questionnaire

The Cronbach's alpha coefficients range from 0.71 to 0.87, higher than the recommended 0.70 level which indicated acceptable level of reliability. So it was concluded that the construct to intend measure from the questionnaires was fit for measuring the instruments. This showed that the instrument was sufficiently reliable and could consistently capture true score variability among respondents.

Table 4. 5 Cronbach's alpha (α) value for each factor

Factor	Cronbach's alpha (α)
Awareness	0.875
Human Resources	0.806
Technology Use	0.805
Finance	0.714
Market Readiness	0.873

3.2 Readiness for E-commerce adoption

3.2.1 Factor Response Analysis

After identification of factors statistical analysis of those factor was done. Table 4. 6 shows the readiness for e-commerce by micro and small enterprises. As of the results, it was clearly seen that MSEs had a relatively low-level e-commerce adoption in the city with the overall scale mean value 3.205. Total standard deviation was 1.194, indicates that the response was not consistent to one scale. Human resource was the most supportive factor with scale value 2.749 and market readiness was the most lagging factor with factor value 3.975. From the observation, it was found that many MSEs were not interested to use e-commerce as they are selling product to the local market and others due to lack of awareness.

The mean scores of three factors Awareness, Market Readiness, and Finance were greater than 3 and less than 4 implied that those factors were defied to support e-commerce implementation. Whereas, the main two factors Technology use and Human resources have an average scale value between 2 and 3, implied to supportive factors to adopt e-commerce.

Table 4. 6 Factor mean scale of readiness for e-commerce adoption

Factor	**Mean ± S.D.**
Awareness	3.370 ± 1.101
Human Resources	2.749 ± 1.041
Technology Use	2.976 ± 1.300
Finance	3.074 ± 1.089
Market Readiness	3.975 ± 0.937
Total	**3.205 ± 1.194**

Figure 4. 2 express the percentage of response to each likert scale, Highest 28.57 percentage of respondents were indicated to the disagree scale for all questionnaire. 27.00 percentage of firms were responded to Agree option, whereas 22.81 and 15.76 percentage were responded to neutral and strongly disagree options respectively. Only 5.86 percentage of respondent were choose strongly agree scale for all questionnaire.

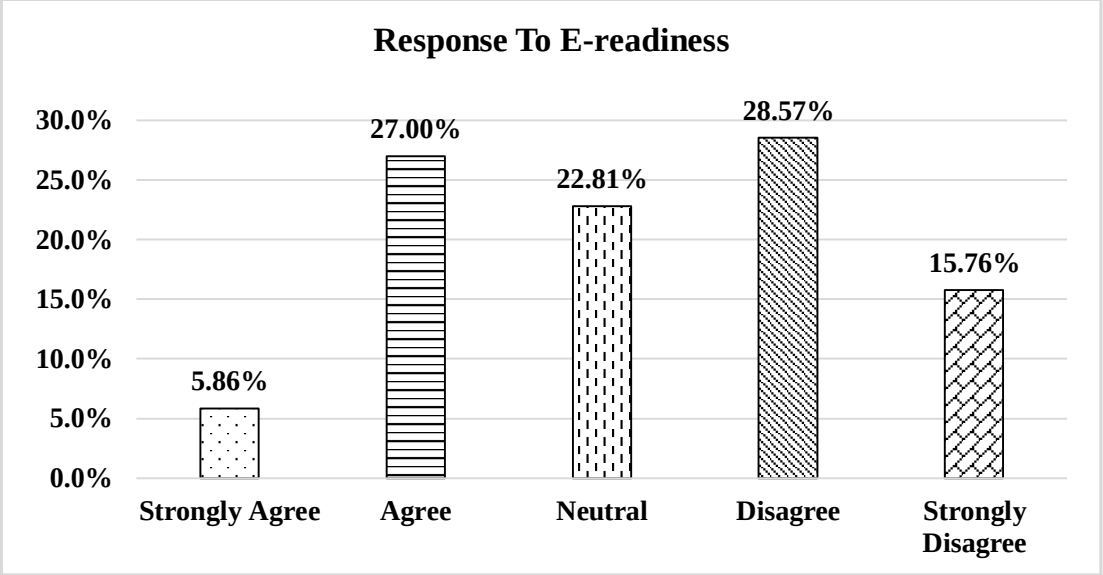


Figure 4. 2 Respondent percentage for five likert scale

While segregating the data based on owner's gender, mean respond of both male and female are lies in scale range 3 to 4.

Table 4. 7 Mean Scale value for e-readiness as owner's gender

	Female	Male
Mean	3.437	3.090

Figure 4. 3 shows that 25 % female and 37% male were strongly agreed/ agreed to e-commerce adoption based on all factors. Whereas, 53 % female and 41 % male were strongly disagreed/ disagreed to e-commerce adoption. 23 % female and 22 % male were not sure to accept or reject the e-commerce system.

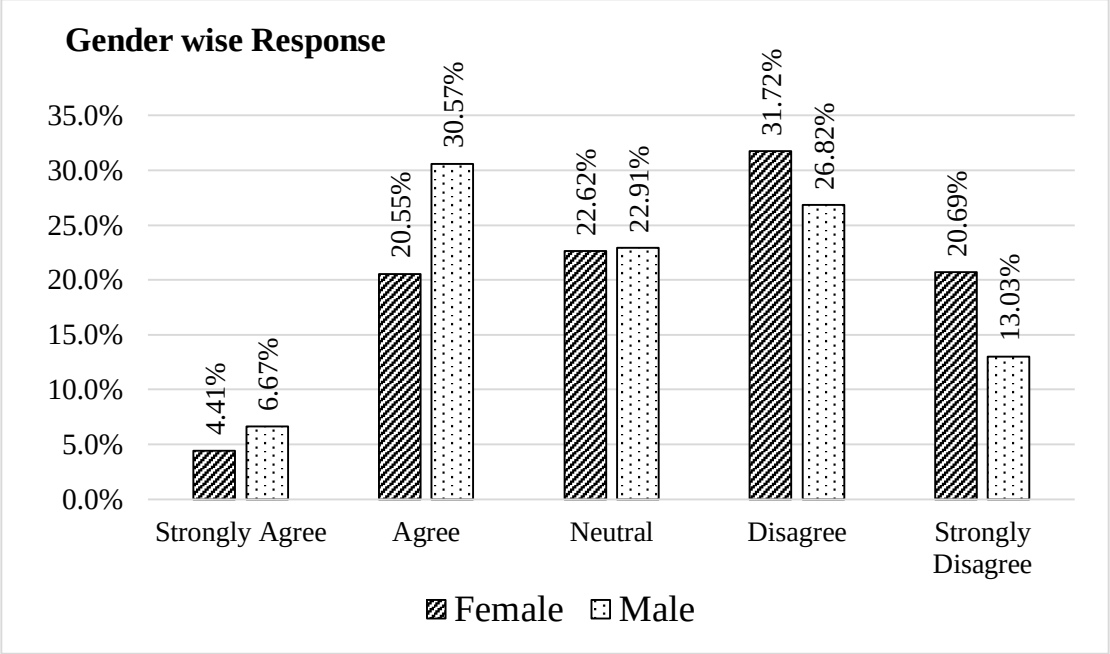


Figure 4. 3 Owners gender wise response percentage for five likert scale

Independent sample T-test was also performed to check whether there was gender wise significant difference in response or not. There was significant difference in only human resources factor and technology use factor. Higher negative mean value represents the more positive response and higher positive mean value represents the more negative response. From Table 4. 8 it was clear that men are more technology friendly and educated compared to women.

Table 4. 8 T-test for gender wise response

Group Statistics			
	Gender	N	Mean
A-R factor score 1 for analysis 1	Male	45	-0.0062
	Female	25	0.0112
A-R factor score 2 for analysis 1	Male	45	-0.1251
	Female	25	0.2251
A-R factor score 3 for analysis 1	Male	45	-0.2157
	Female	25	0.3883
A-R factor score 4 for analysis 1	Male	45	-0.0648
	Female	25	0.1167
A-R factor score 5 for analysis 1	Male	45	0.0020
	Female	25	-0.0036

Figure 4. 4 to Figure 4. 8 represents the factor wise response of participant's from micro and small enterprises. For the factor awareness highest 34% response to disagree

option, whereas the lowest two percentage indicates to strongly agree. This indicates the poor level of awareness towards e-commerce.

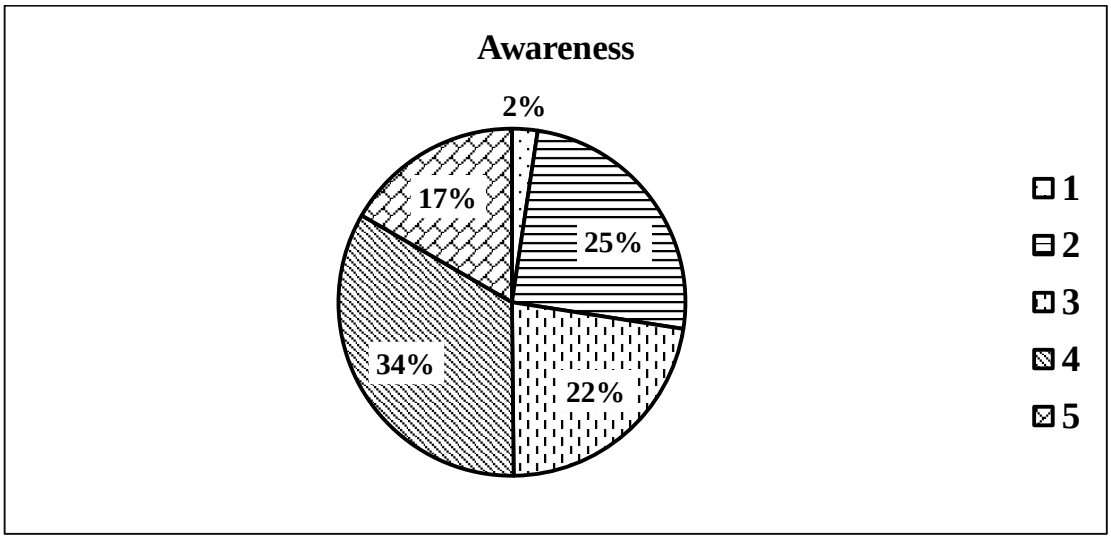


Figure 4. 4 Response to each scale for awareness

While looking to the human resources factor most 38 % pointed to the agree option, while only four percentage pointed to strongly disagree option. This represents the human resources were capable to adopt e-commerce.

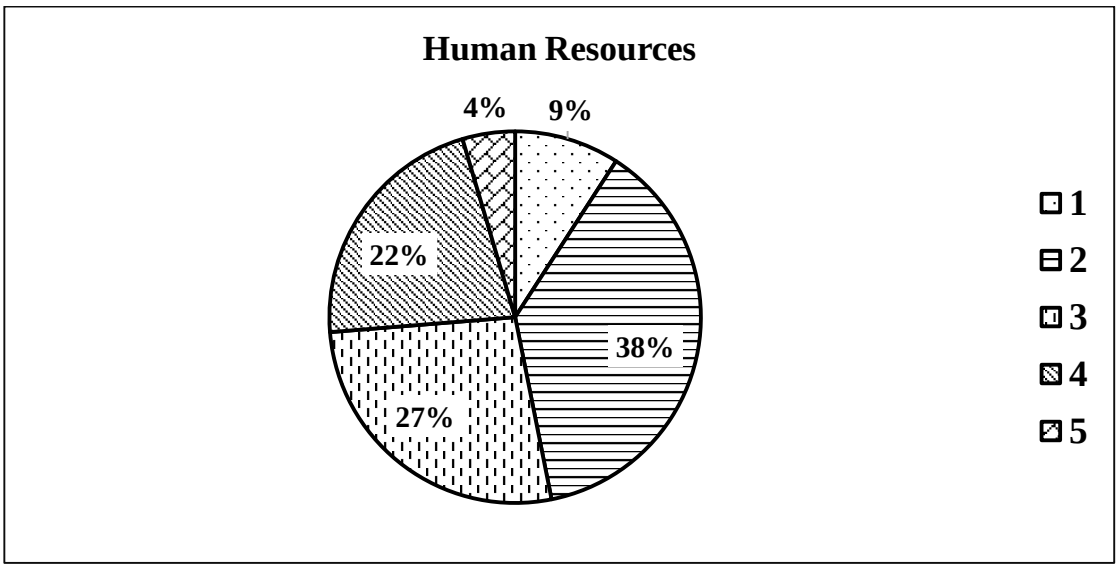


Figure 4. 5 Response to each scale for human resources

Highest 29% indicated towards agree option and only 14% towards the strongly agree option for Technology use factor. This represents that technological infrastructure and their uses was moderate available in the city.

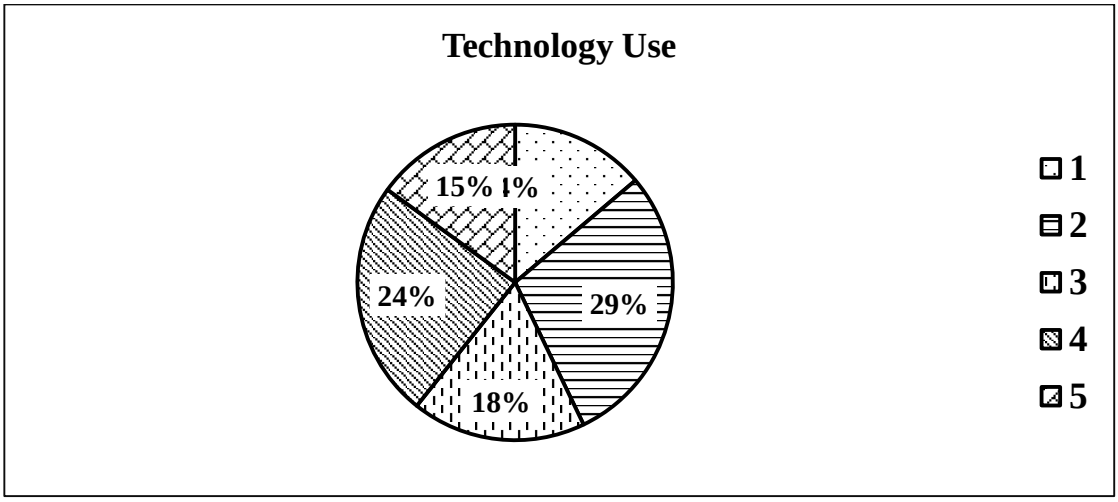


Figure 4. 6 Response to each scale for Technology use

For the finance factor highest 34% respondents choose to agree option, whereas strongly agree option was chosen by only three percentage.

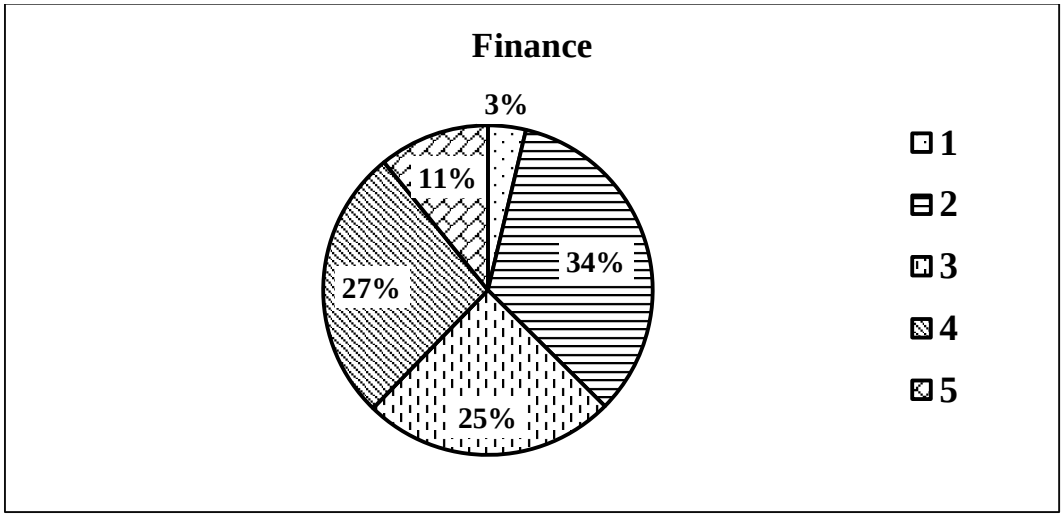


Figure 4. 7 Response to each scale for Finance

While looking at the respondent perception toward market readiness most 35% responded as strictly disagree and disagree, and no one indicated the strongly agree.

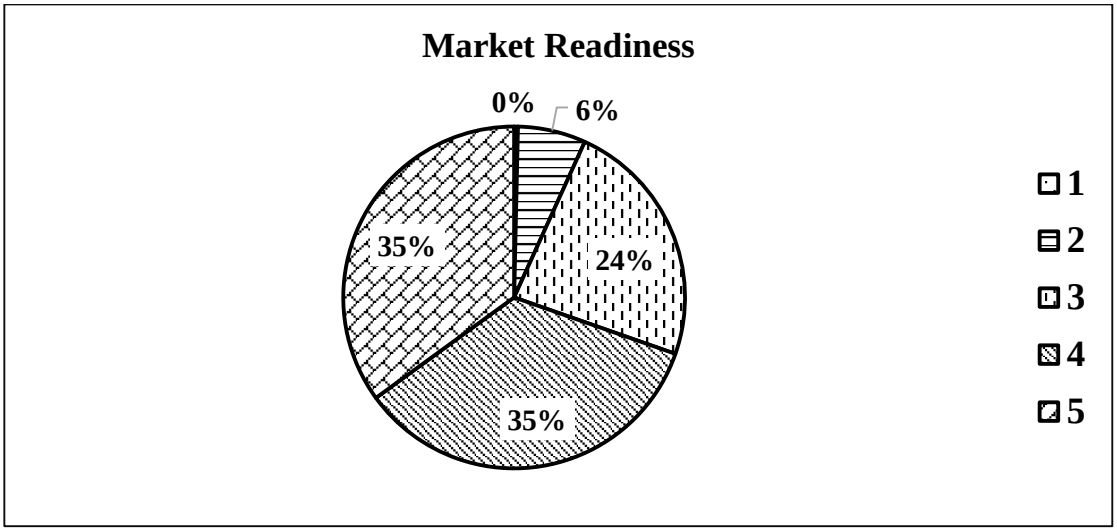


Figure 4. 8 Response to each scale for Market Readiness

While comparing all five factors human resource more supportive to e-commerce adoption compared to other factors, whereas respondents perception towards market readiness is most discouraging factor at this region.

3.2.2 Firm Type Analysis

While looking at the different types of enterprises electronics sector is more favorable to the e-commerce adoption. One way ANOVA test was done to identify whether there was significant different in factor response on the basis of firm type. If the significant different value of the factor is closed to the one response was more correlated based on firm type. Result of Table 4. 9 show that only factor three is not correlated to MSE's type but all other are correlated.

Table 4. 9 ANOVA test for factor response on the basis of firm type

Robust Tests of Equality of Means	
	Significant Difference
REGR factor score 1 for analysis Welch 1	.007
REGR factor score 2 for analysis Welch 1	.001
REGR factor score 3 for analysis Welch 1	.652
REGR factor score 4 for analysis Welch 1	.001
REGR factor score 5 for analysis Welch 1	.064

As seen in Table 4. 10 mean scale of electronics and electrical is 2.606. Also a sports and stationary firms are lies in scale 2 to 3. Which mean firms are ready in that part but

can still be improved. Response scale of other firms (Garment, Gift and Cosmetics, Grocery, Restaurant) lies on range 3 to 4 indicates that firms are not ready to adopt e-commerce some work is needed before to implement e-commerce.

Table 4. 10 Scale mean value based on firm type

Type of firm	Scale Mean ± S.D.
Electronics and Electrical	2.606 ± 1.080
Garment	3.307 ± 1.121
Gift and Cosmetics	3.374 ± 1.123
Grocery	3.074 ± 1.089
Restaurant	3.155 ± 1.235
Sports and Stationary	2.990 ± 1.067

3.2.3 Technology Used

First requirement to use e-commerce is availability of internet. From survey we found that internet was available in 93% of the enterprises.

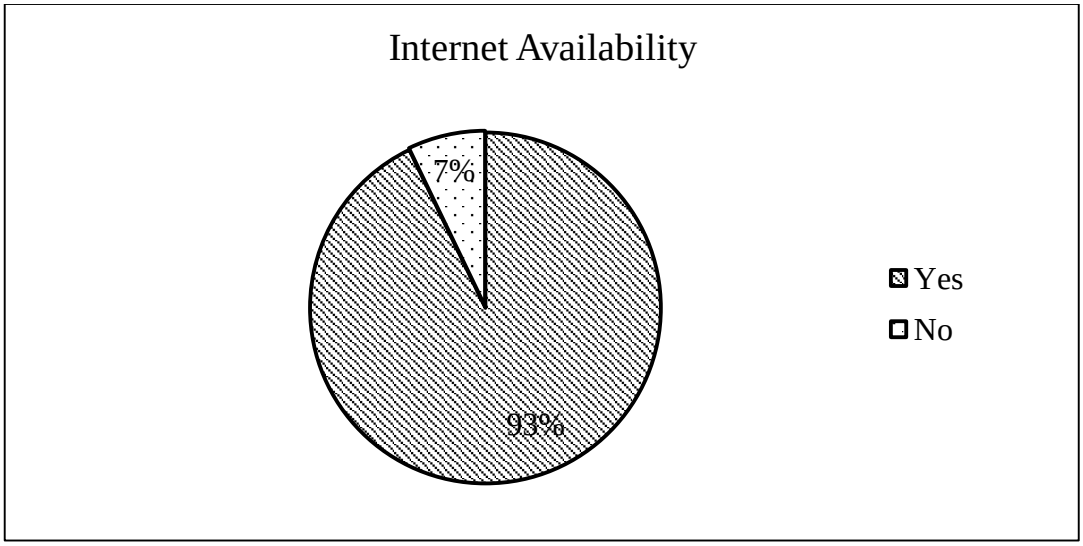


Figure 4. 9 : Uses of Internet

Use of smartphone or computer is important to use e-commerce. From research we found that 94% of responders were using smartphone. Whereas, computer was available only in 39% of enterprises.

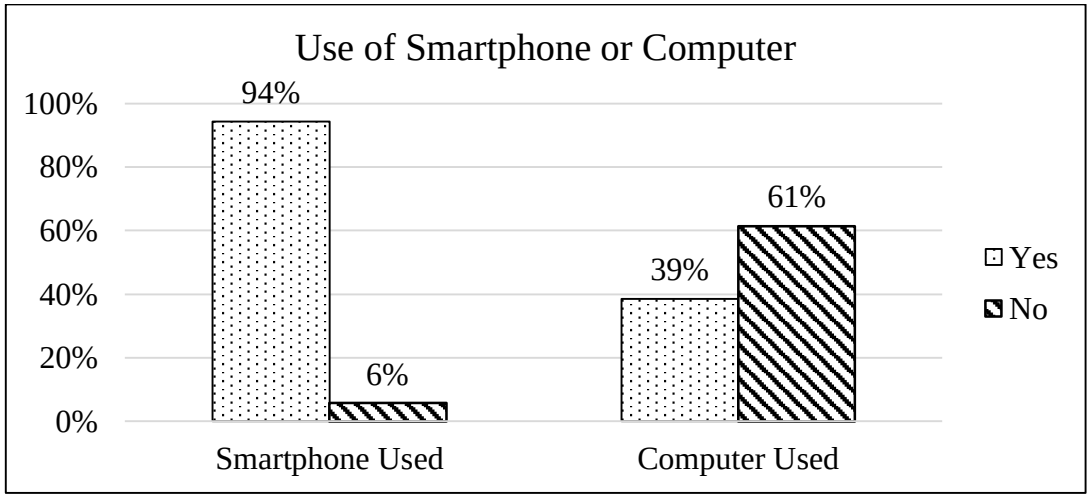


Figure 4. 10: Uses of Smartphone and Computer

Based on overall technology available and used, firms were also categorized to e-commerce adoption level into non-adopters, capable adopters, and initial adopters.

Non-Adopter: The non-adopters were organizations which have not been connected to the internet, had not been using a smartphone or laptop, and didn't have an email.

Capable Adopter: The capable adopters were organizations that have been connected to the internet, have been using a smartphone or laptop, and had email, but have not exercised to use website or e-commerce.

Initial Adopter: Initial-adopters were organizations with a static website that was used for publishing company information without interactivity or used any online method to display or to sell product.

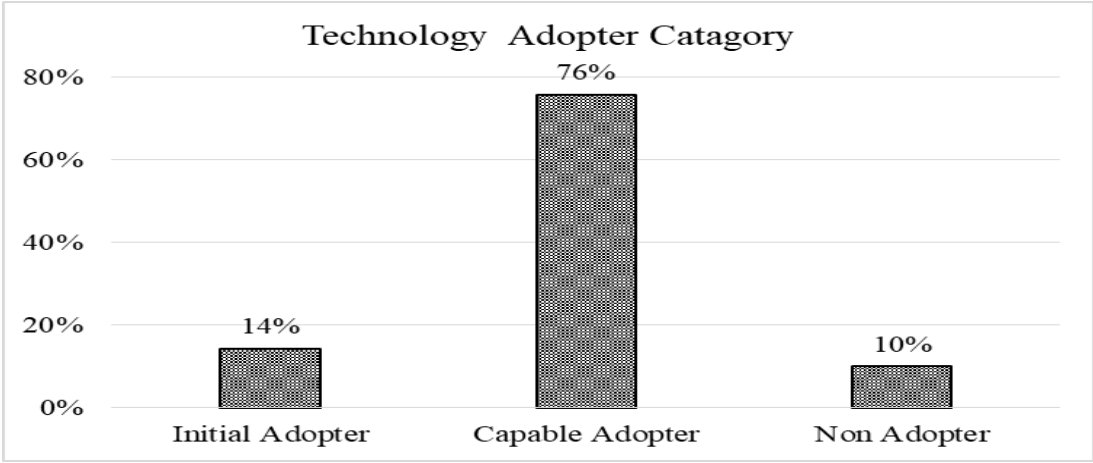


Figure 4. 11 E-commerce adopter category based on the technology used

Technology used factor was the major factor to adopt e-commerce. Only based on this factor 14 % enterprises were initial adopter, they were somehow familiar with e-

commerce system. Mostly, 76 % enterprises were capable to adopt e-commerce in future and only 10 % firms didn't have sufficient and adequate IT infrastructure for e-commerce adoption.

3.2.4 B2B and B2C Awareness

We have also analyzed the awareness about to implement the B2B online system to buy goods from supplier and B2C system to sell product. Figure 4. 12 shows that 53% of the enterprises were aware about B2C system and only 34% were aware about B2B system.

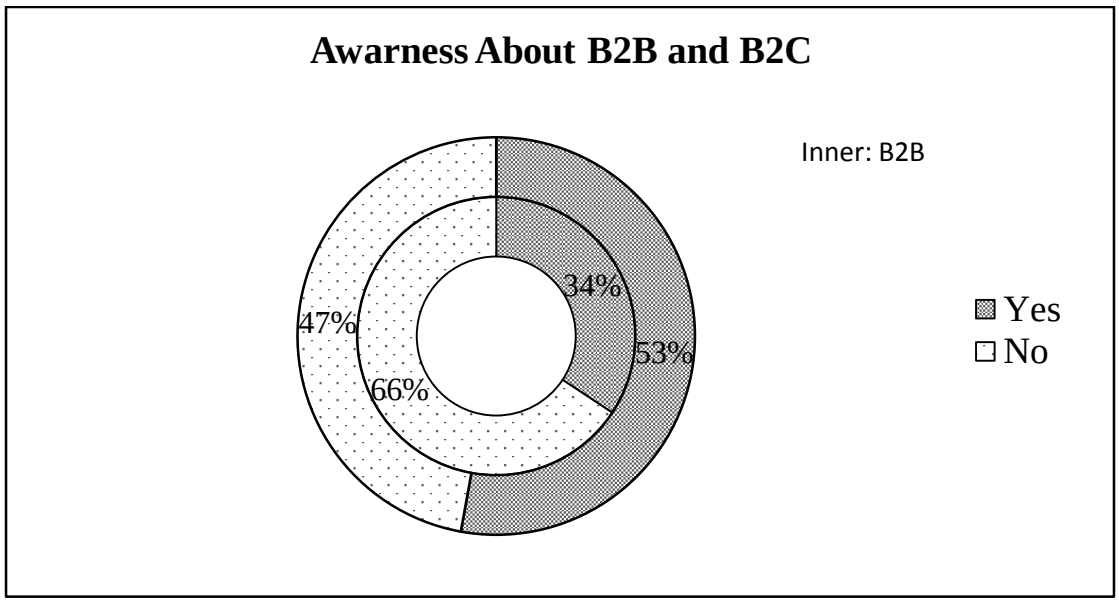


Figure 4. 12: Awareness of B2B and B2C model

3.2.5 Payment Method Analysis

Figure 4. 13 shows that 67% respondents never tried online transaction system before. Only 20% respondents were committed to use online financing system regularly. Whereas, 13% of the respondents only tried the system but have not been using regularly.

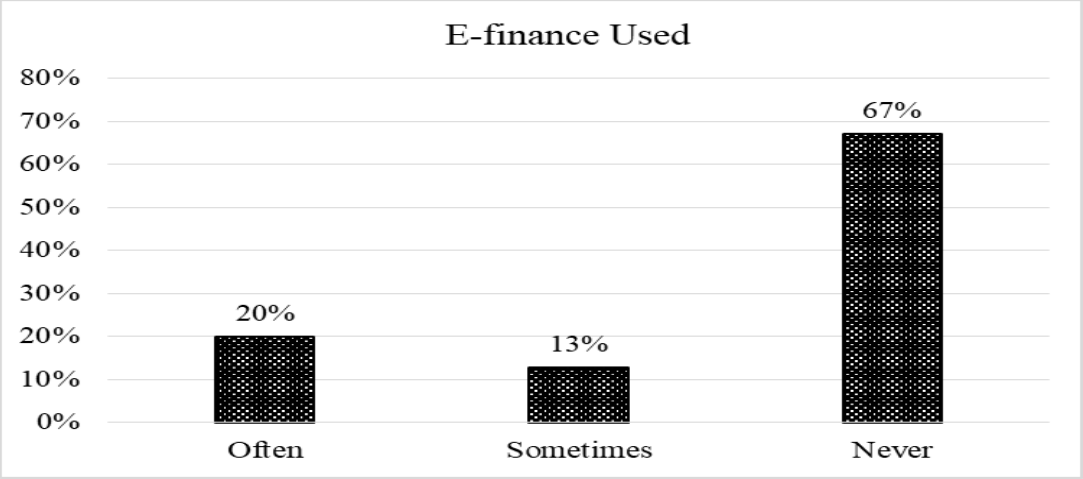


Figure 4. 13 Online transaction statistics

Since most of the respondents' MSEs were not adopted to online payment system, cash on delivery system was the preferably practiced payment system by existing e-commerce portals in Nepal. So, cash on delivery preference of the respondent was calculated, result has been shown in Figure 4. 14. Where, 33% of the respondents agreed to accept cash on delivery whereas, 44% were undecided to accept this system. Only 23% do not prefer the cash on delivery system.

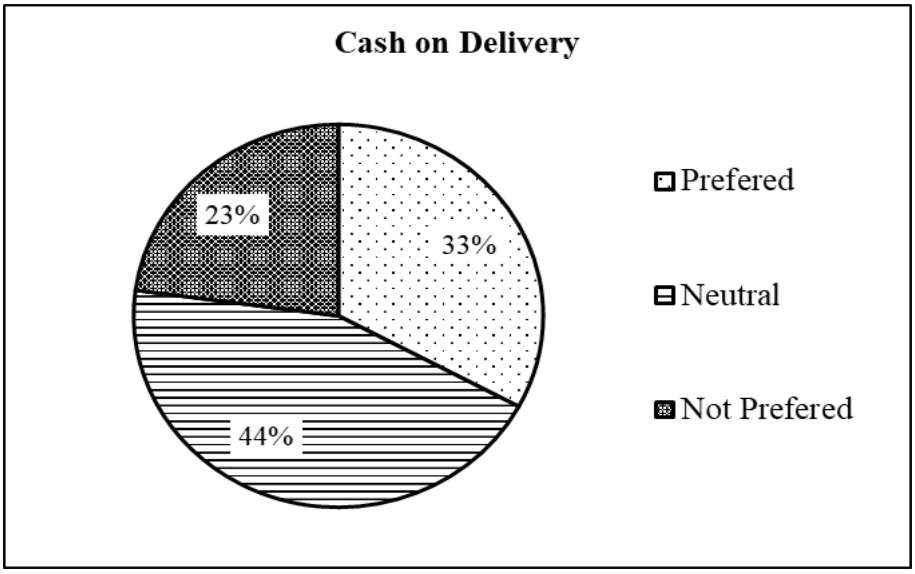


Figure 4. 14 Cash on delivery preference statistics

3.2.6 Overall Market E-ready

Based on all five factors, market readiness result has been shown in Figure 4. 15. While considering all five factors, only 33% of the market was ready to adopt online

commerce system whereas 45% were lagging behind to start online system. 22% of the enterprises were in undecided condition, they can adopt after some guidance.

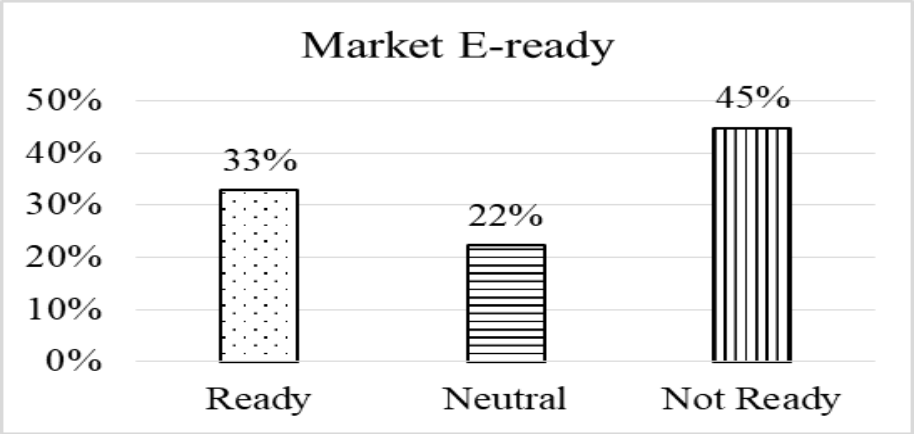


Figure 4. 15 Overall market e-readiness based on 5 factors

3.3 Proposed E-commerce Concept

From the literature review we found that all most all of the e-commerce sites are working on B2C model and also they were operated from Kathmandu valley. While customer from outside Kathmandu valley, they supply items from Kathmandu and apply high delivery charge.

Top most twenty (based on alexa ranking) e-commerce sites inside Nepal were analyze:

- In most of portal mixed product type are available,
- All support both cash on delivery and different online payment system,
- Most of them are focusing on B2C business model
- Mostly they are focusing on Kathmandu valley and other major cities as a service area.

Based on awareness factor they are not much aware about existing e-commerce system and about 30% of the respondent prefer to use both B2B and B2C e-commerce so we can implement new system for testing and later we can expand it in other city. Only to implement B2C system to make sufficient revenue buyer population is very low. People far from the city not able to buy online but they visits city area for shopping. So to address this, integrated approach of B2B and B2C system possibly suitable for those small city.

Using this portal micro and small enterprises can order from manufacturers and Importers. Likewise, they can sell product to the customer as they order. So, MSE's can be a buyer and seller at the same system. An e-commerce prototype is being designed which is a smartphone application in android version which is suitable to B2B and B2C system brought into in one web-platform

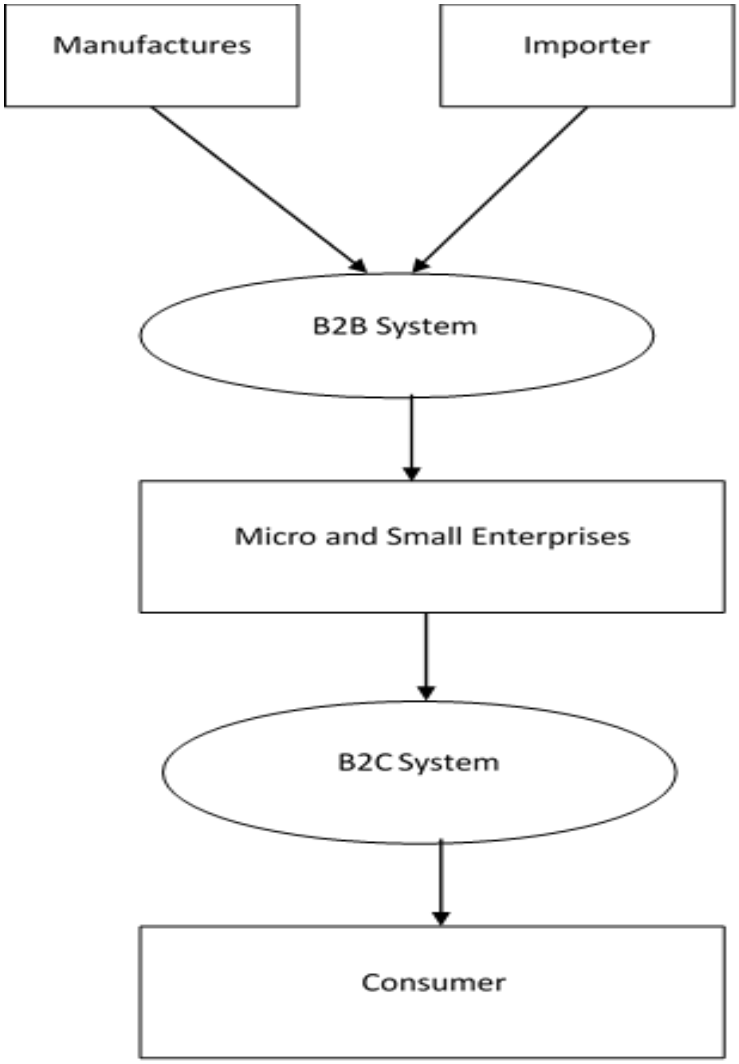


Figure 4. 16 B2B and B2C integrated e-commerce system

The B2B and B2C model is based on the above block diagram. According to this diagram there are three type of application users; one is manufacturer or importer who can managed the inventory and listed item in the portal to be sold to the MSE's in wholesale rate. MSE's can order items from their supplier in bulk amount listed it back to sell to consumer by maintaining their profit. Consumer are the end user of the portal who can buy items listed by the MSE's from their nearer location. The portal admin

team analyses, update and deliver the required order from Top supplier to MSE's and from MSE's to end users.

One of the primary ways we have seen organizations use the business model canvas is in their regular strategic planning and development cycles. We have used it to create a blueprint of our strategy for future implication. The BMC provides a very clear foundation and direction for the conversation at hand, whether done in a corporate offsite with the executive team. Table 4. 11 is the model of BMC for proposed e-commerce business and figure 4.17 to 4.19 are the block diagrams based on this model.

Table 4. 11 Business model canvas for proposed model

<table>
<tr>
<td rowspan="2">Key Partners
Product manufacturer and importers
Logistics Partners
Micro and small enterprises
Banks and Financing Partners</td>
<td>Key activities
Develop User friendly B2B and B2C integrated system
Manage Supply chain</td>
<td rowspan="2">Value Propositions
Price minimize
Fast delivery
Promote firm’s product to B2C system if they use B2B system.
Return and Refund Policy</td>
<td>Customers Relationships
Automated online service
Fast delivery Service
Mail and Social media</td>
<td rowspan="2">Customers Segments
Micro and Small Enterprises
Consumer</td>
</tr>
<tr>
<td>Key Resources
Software
Human Resources</td>
<td>Channels
Website and Apps
Logistics for Home delivery
Online and Cash on delivery payment system</td>
</tr>
<tr>
<td colspan="3">Cost Structures
System Development and management
IT and Infrastructure
Logistics system</td>
<td colspan="2">Revenue Streams
Sales Commission From manufacturer and importer or sales commission from MSE.
Promotion</td>
</tr>
</table>

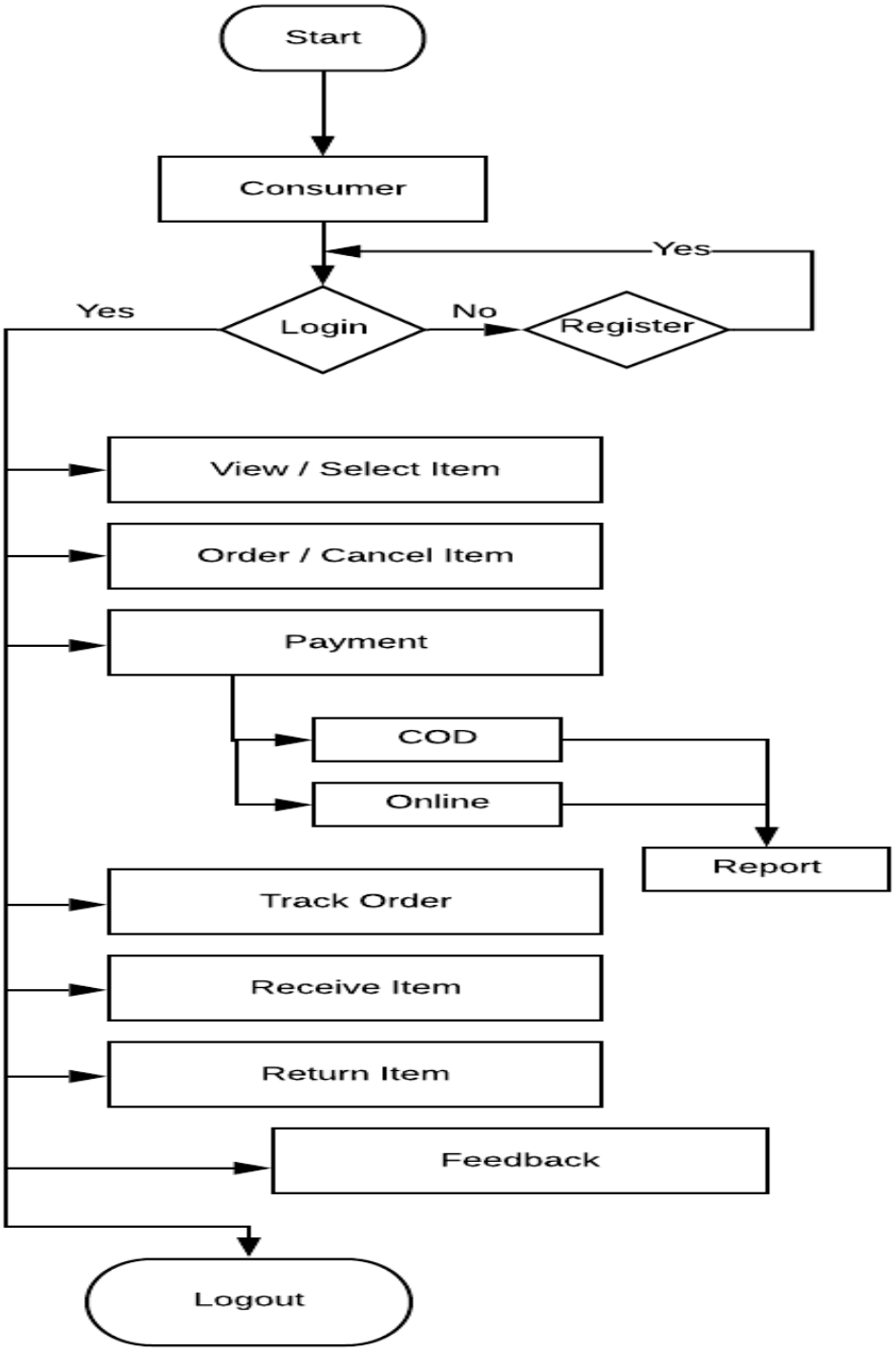


Figure 4. 17 Block diagram for consumer section

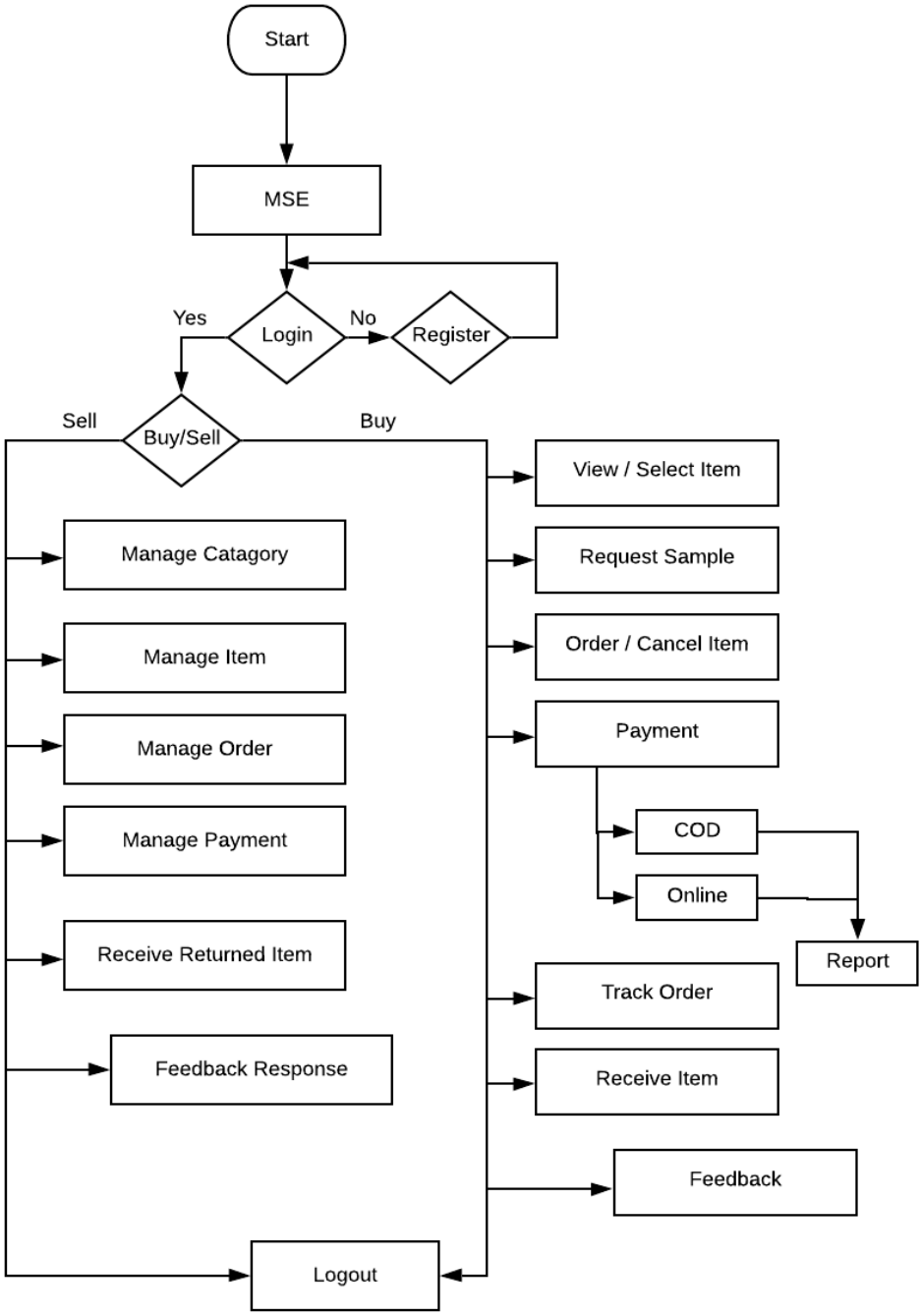


Figure 4. 18 Block diagram for micro and small enterprises section

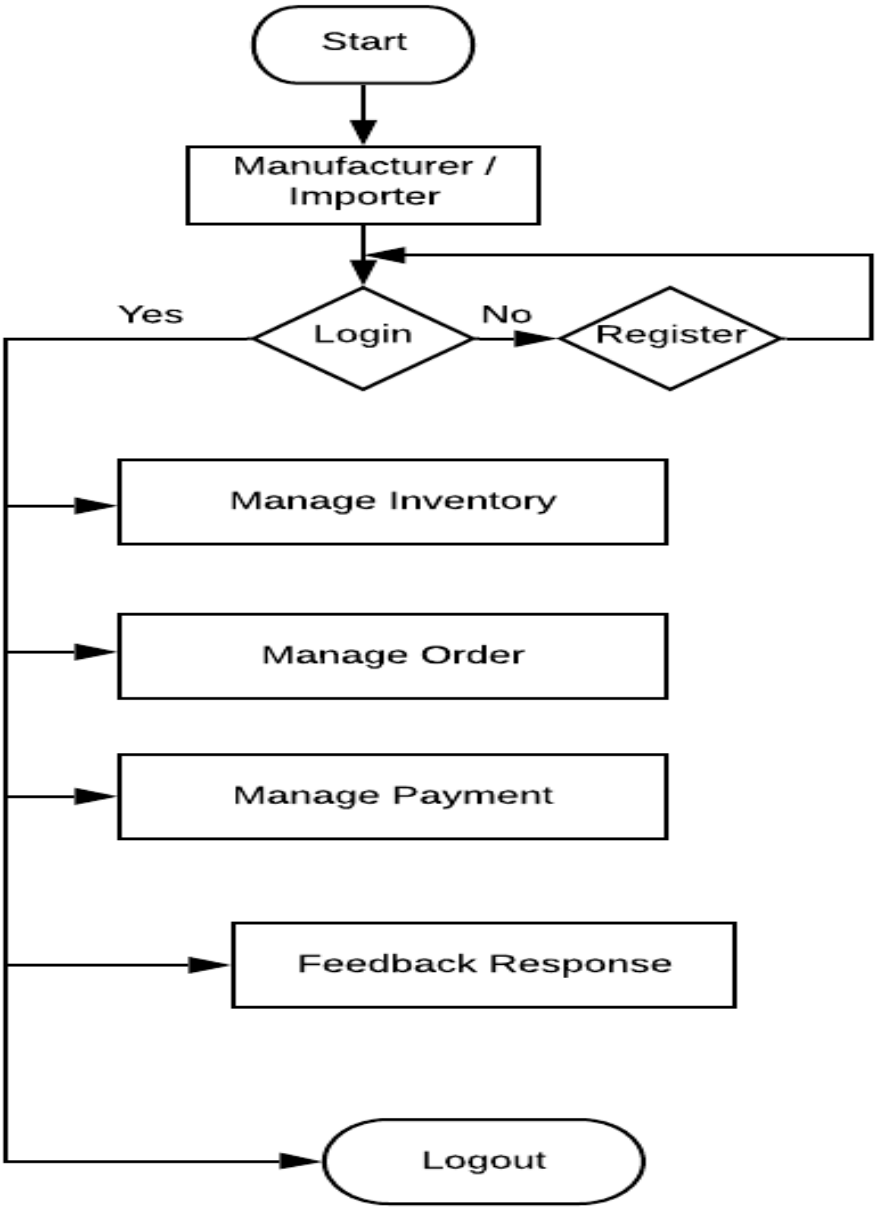


Figure 4. 19 Block diagram for Main Supplier section

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusion

Evidence from the literature has shown that e-commerce adoption has proven to be a potential tool for improving a business's productivity and effectiveness as it helps businesses to respond to emerging market opportunities and stay competitive in the growing global marketplace. The main purpose of this study was to investigate the current status of micro and small enterprises to adopt e-commerce for Vyas Municipality, Tanahun. The conclusion has been drawn based on factor analysis from the questionnaire survey in Vyas municipality.

Factor analysis process was done in SPSS software to identify number of factors and question variables reside into it. Five factors were identified for further analysis which were Awareness, Human resource, Technology Use, Finance, and Market Readiness. From result it was seen that overall scale value of all five factors was in between 3 and 4, it indicates the poor level of e-commerce adoption. Based on the technology used factor, majority 76% were capable to adopt e-commerce. Even though, most of the enterprises were capable to adopt e-commerce based on technology available and knowledge of ICT, only 33% of the enterprises were ready to adopt e-commerce in Vyas Municipality, because of the lack of awareness and perception towards e-commerce. This result proves that awareness and intuition towards e-commerce are essential factors to adopt e-commerce.

It was seen that only 20% of respondents had on hand practice to use electronics transection and only 33% preferred to use cash on delivery. There was 34% of MSEs were aware about to implement B2B e-commerce system where as 53% were aware about B2C system. Integrated system of cash on delivery and electronics transection has been suggested for future implementation. The analysis of existing literature on e-commerce adoption and survey result leads to the generation of an integrated e-commerce business model, which combine both B2B and B2C model in a single portal in the future.

5.2 Recommendation

i. External environmental factors are also affects the business implementation so those factor can also be analyzed.

ii. Basic technology and knowledge are available in Vyas Municipality, proper awareness and guidance can lead to establishment of the e-commerce system in future.

iii. More sample size recommended for the more accurate and reliable result.

iv. There are more other small cities near to highway between big cities, by incorporating those small towns new e-commerce model can be implemented.

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PUBLICATION

Timalsena, L. and Maharjan, S. (2020). Readiness to E-commerce Adoption by Micro and Small Enterprises in Small Town: A Case study of Vyas municipality, Nepal. *Proceedings of IOE Graduate Conference. (Accepted)*

APPENDIX A: INITIAL FIELD SURVEY QUESTIONNAIRE

Readiness to Ecommerce Adoption by Micro and Small Enterprises (MSEs) Questionnaire

General

Business/Firm Name (व्यवसाय / फर्म नाम):

Business Type (व्यवसायको किसिम): □Garment, □Shoes, □Sports, □Stationary, □Electronics, □Gift, □Cosmetics, □Restaurant, □Grocery, Others…….

Numbers of employee (कार्यरत कर्मचारी संख्या):

Name of owner (संचालकको नाम):

Gender (लिङ्ग): □Female □Male

Age of owner (संचालकको उमेर): □20-30 □30-40 □40-50 □50-60 □60 above

Note: - Ecommerce भन्नाले उत्पादन, सामाग्री तथा सेवाहरु अनलाइनबाट खरिद तथा बिक्रि गर्ने भन्ने बुझ्नु पर्दछ।

Mark 1 to 5 inside ( ) based on following scale
(सबै प्रश्नको १, २, ३, ४, ५ मध्ये कुनै एक उत्तर छान्नुहोस्).

Scale: (1) Strongly agree; (2) Agree; (3) Neutral; (4) Disagree; (5)Strongly disagree.
(१) एकदम सहमत (२) सहमत (३) तटस्थ (४) असहमत (५) एकदम असहमत

Q.1. We have information about Business to business (B2B) ecommerce. ( )
मलाई दुई व्यवसाय बीच अनलाइनबाट व्यापार गर्न मिल्छ भन्ने बारेमा जानकारी छ।

Q.2. We have information about Business to Customer (B2C) ecommerce. ( )
मलाई कुनै व्यवसायले उपभोक्तासँग अनलाइनबाट व्यापार गर्न मिल्छ भन्ने बारेमा जानकारी छ।

Q.3. We have information about online/mobile banking. ( )
मलाई अनलाईन / मोबाइल बैंकिंग बारे जानकारी छ।

Q.4. We are aware of our supplier implement ecommerce. ( )

हामी हाम्रो आपूर्तिकर्ताले ecommerce लागु गर्छ कि भन्ने बारे सजक छौँ।

Q.5. We know about Small and Medium Enterprises (SMEs) of developed countries are getting benefit from ecommerce. ( )

विकसित देशका साना तथा मझौला व्यवसायहरुले ecommerceबाट फाइदा लिईरहेका छन् भन्ने बारे जानकारी छ।

Q.6. We understand and prefer B2B and B2C ecommerce can be applicable in our business. ( )

हाम्रो व्यवसायमा पनि B2B and B2C ecommerce लागु गर्न सकिन्छ भन्ने बारे जानकार छौँ।

Q.7. Owner of this business is educated. ( )

यस व्यवसायको संचालक शिक्षित हुनुहुन्छ।

Q.8. Owner of this business is computer literate. ( )

यस व्यवसायको संचालकलाइ कम्प्युटर चलाउने राम्रो ज्ञान छ।

Q.9. Most of our employee are educated. ( )

हाम्रा धेरैजसो कर्मचारी शिक्षित छन्।

Q.10. Most of our employee are computer literate. ( )

हाम्रा धेरैजसो कर्मचारीलाइ कम्प्युटर चलाउने राम्रो ज्ञान छ।

Q.11. Owner/Employees of this business is/are smart phone friendly. ( )

यस व्यवसायका संचालक र कर्मचारीहरू स्मार्टफोन मैत्री छन्।

Q.12. We are aware of our competitor implement ecommerce. ( )

हामी हाम्रो प्रतिस्पर्धीले ecommerce लागु गर्छ कि भन्ने बारे सजक छौँ।

Q.13. We are aware of opportunities and threats of ecommerce implementation.( )

हामि ecommerce संचालन गर्दा आउने अवसर र खतराहरूबारे जानकार छौँ।

Q.14. I understand the potential benefit of ecommerce. ( )

मलाई ecommerceको सम्भावित फाइदाबारे जानकारी छ।

Q.15. We have regular internet access. ( )

यहाँ नियमित इन्टरनेट सेवा उपलब्ध छ (व्यवसायको प्रयोजनको लागि) ।

Q.16. We have smartphone and using regularly. ( )

हामीसँग स्मार्टफोन छ र नियमित रूपमा प्रयोग गर्दछौं।

Q.17. We have Computer/laptop and using it regularly. ( )

हामीसँग कम्प्युटर अथवा ल्यापटप छ र नियमित रूपमा प्रयोग गर्दछु।

Q.18. We have email address and using it regularly. ( )

इ-मेल छ र नियमित रूपमा प्रयोग गर्दछु।

Q.19. Owner have personal bank account and use it for organization purpose. ( )

संचालकको व्यक्तिगत बैंक खाता छ र यसलाई व्यवसायको उदेश्यको लागि प्रयोग गर्दछौं।

Q.20. We have Organization bank account and use it regularly for organization purpose. ( )

व्यवसायको बैंक खाता छ र यसलाई व्यवसायको उदेश्यको लागि प्रयोग गर्दछौं।

Q.21. Owner is using online/mobile banking for personal purpose. ( )

संचालकले अनलाईन / मोबाइल बैंकिंग व्यक्तिगत उदेश्यको लागि प्रयोग गर्नुहुन्छ।

Q.22. We are using online/mobile banking for business purpose. ( )

हामिले व्यवसायको प्रयोजनको लागि अनलाईन / मोबाइल बैंकिंग प्रयोग गरिरहेको छौं।

Q.23. We believe that most of our customers are ready to do business on the internet. ( )

हामी विश्वास गर्दछौं कि हाम्रा धेरै जसो ग्राहकहरु इन्टरनेटमा व्यापार गर्न को लागी तयार छन्।

Q.24. We believe that our Supplier partners are ready to do business on online.( )

हामी विश्वास गर्दछौं कि हाम्रा आपूर्तिकर्ता पार्टनरहरु अनलाइनमा व्यापार गर्न को लागी तयार छन्।

Q.25. We believe that most of our customers are ready to do online payment.( )

हामी विश्वास गर्दछौं कि हाम्रा अधिकांश ग्राहकहरू अनलाइन भुक्तानी गर्न तयार छन्।

Q.26. We believe that our Supplier partners are ready to use online payment system. ( )

हामी विश्वास गर्दछौं कि हाम्रा आपूर्तिकर्ता पार्टनरहरू अनलाइन भुक्तानी प्रणाली प्रयोग गर्न तयार छन्।

Q.27. We are using ecommerce to buy products from supplier. ( )

हामीले आपूर्तिकर्ताबाट उत्पादन, सामाग्री अथवा सेवाहरु खरीद गर्न ecommerce प्रयोग गरिरहेका छौँ।

Q.28. We are using ecommerce to sell my products. ( )

हामीले हाल ecommerce प्रयोग गरेर उत्पादन, सामाग्री अथवा सेवाहरु बेचिरहेका छौँ।

Q.29. Cash on delivery system can be applicable for my business. ( )

सामान पुर्याउदा पैसा लिने प्रणाली हाम्रो व्यवसायमा लागु गर्न सकिन्छ ।

APPENDIX B: QUESTIONNAIRE AND THEIR FACTORS

A. Awareness

A1. I have information about Business to business (B2B) ecommerce. ( )

मलाई दुई व्यवसाय बीच अनलाइनबाट व्यापार गर्न मिल्छ भन्ने बारेमा जानकारी छ।

A2. I have information about Business to Customer (B2C) ecommerce. ( )

मलाई कुनै व्यवसायले उपभोक्तासँग अनलाइनबाट व्यापार गर्न मिल्छ भन्ने बारेमा जानकारी छ।

A3. I have information about online/mobile banking. ( )

मलाई अनलाईन / मोबाइल बैंकिंग बारे जानकारी छ।

A4. We are aware of our supplier implement ecommerce. ( )

हामी हाम्रो आपूर्तिकर्ताले ecommerce लागु गर्छ कि भन्ने बारे सजक छौँ।

A5. We are aware of our competitor implement ecommerce. ( )

हामी हाम्रो प्रतिस्पर्धीले ecommerce लागु गर्छ कि भन्ने बारे सजक छौँ।

A6. We are aware of opportunities and threats of ecommerce implementation. ( )

हामि ecommerce संचालन गर्दा आउने अवसर र खतराहरूबारे जानकार छौँ।

A7. I understand the potential benefit of ecommerce. ( )

मलाई ecommerceको सम्भावित फाइदाबारे जानकारी छ।

A8. We know about Small and Medium Enterprises (SMEs) of developed countries are getting benefit from ecommerce. ( )

विकसित देशका साना तथा मझौला व्यवसायहरुले ecommerceबाट फाइदा लिईरहेका छन् भन्ने बारे जानकारी छ।

A9. We understand and prefer B2B and B2C ecommerce can be applicable in our business. ( )

हाम्रो व्यवसायमा पनि B2B and B2C e-commerce लागु गर्न सकिन्छ भन्ने बारे जानकार छौँ।

B. Human resources

B1. Owner of this business is educated. ( )

यस व्यवसायको संचालक शिक्षित हुनुहुन्छ।

□Masters □Bachelors □Secondary □Primary □Uneducated

B2. Owner of this business is computer literate. ( )

यस व्यवसायको संचालकलाइ कम्प्युटर चलाउने राम्रो ज्ञान छ।

B3. Most of our employee are educated. ( )

हाम्रा धेरैजसो कर्मचारी शिक्षित छन्।

B4. Most of our employee are computer literate. ( )

हाम्रा धेरैजसो कर्मचारीलाइ कम्प्युटर चलाउने राम्रो ज्ञान छ।

B5. Owner/Employees of this business is/are smart phone friendly. ( )

यस व्यवसायका संचालक र कर्मचारीहरू स्मार्टफोन मैत्री छन्।

C. Technology Use

C1. We have regular internet access. ( )

यहाँ नियमित इन्टरनेट सेवा उपलब्ध छ (व्यवसायको प्रयोजनको लागि) ।

C2. We have smartphone and using regularly. ( )

हामीसँग स्मार्टफोन छ र नियमित रूपमा प्रयोग गर्दछौँ।

C3. We have Computer/laptop and using it regularly. ( )

हामीसँग कम्प्युटर अथवा ल्यापटप छ र नियमित रूपमा प्रयोग गर्दछु।

C4. We have email address and using it regularly. ( )

इ-मेल छ र नियमित रूपमा प्रयोग गर्दछु।

C5. We are using ecommerce to buy products from supplier. ( )

हामीले आपूर्तिकर्ताबाट उत्पादन, सामाग्री अथवा सेवाहरु खरीद गर्न ecommerce प्रयोग गरिरहेका छौँ।

C6. We are using ecommerce to sell my products. ( )

हामीले हाल ecommerce प्रयोग गरेर उत्पादन, सामाग्री अथवा सेवाहरु बेचिरहेका छौँ।

D. Finance:

D1.Owner have personal bank account and use it for organization purpose. ( )

संचालकको व्यक्तिगत बैंक खाता छ र यसलाई व्यवसायको उदेश्यको लागि प्रयोग गर्दछौं।

D2.We have Organization bank account and use it regularly for organization purpose. ( )

व्यवसायको बैंक खाता छ र यसलाई व्यवसायको उदेश्यको लागि प्रयोग गर्दछौं।

D3.Owner is using online/mobile banking for personal purpose. ( )

संचालकले अनलाईन / मोबाइल बैंकिंग व्यक्तिगत उदेश्यको लागि प्रयोग गर्नुहुन्छ।

D4.We are using online/mobile banking for business purpose. ( )

हामिले व्यवसायको प्रयोजनको लागि अनलाईन / मोबाइल बैंकिंग प्रयोग गरिरहेको छौँ।

D5.Cash on delivery system can be applicable for my business. ( )

सामान पुर्याउदा पैसा लिने प्रणाली हाम्रो व्यवसायमा लागु गर्न सकिन्छ ।

E. Market readiness

E1. We believe that most of our customers are ready to do business on the internet. ( )

हामी विश्वास गर्दछौं कि हाम्रा धेरै जसो ग्राहकहरु इन्टरनेटमा व्यापार गर्न को लागी तयार छन्।

E2. We believe that our Supplier partners are ready to do business on online. ( )

हामी विश्वास गर्दछौं कि हाम्रा आपूर्तिकर्ता पार्टनरहरु अनलाइनमा व्यापार गर्न को लागी तयार छन्।

E3. We believe that most of our customers are ready to do online payment. ( )

हामी विश्वास गर्दछौं कि हाम्रा अधिकांश ग्राहकहरू अनलाइन भुक्तानी गर्न तयार छन्।

E4. We believe that our Supplier partners are ready to use online payment system. ( )

हामी विश्वास गर्दछौं कि हाम्रा आपूर्तिकर्ता पार्टनरहरू अनलाइन भुक्तानी प्रणाली प्रयोग गर्न तयार छन्।

APPENDIX C: SURVEY RESPONDENTS

SN	Business/Firm Name	Business Type	Numbers of employe	Owner's Gende
1	Sushil Mobile House	Electronics and Electrical	1	Male
2	Juni Electric Pasal	Electronics and Electrical	1	Male
3	Sandesh Enterprises and Traders	Electronics and Electrical	2	Female
4	Jan Sewa Electronic Enterprise	Electronics and Electrical	2	Male
5	Nasa Computer Center	Electronics and Electrical	2	Male
6	Everest Electronics	Electronics and Electrical	2	Male
7	AP Electronics	Electronics and Electrical	3	Male
8	Risti Electronics	Electronics and Electrical	1	Male
9	Thapa Electronics	Electronics and Electrical	2	Male
10	NP Electronics	Electronics and Electrical	2	Male
11	Mobile House	Electronics and Electrical	3	Male
12	Gandaki Mobile Center	Electronics and Electrical	2	Male
13	Aliza Collection	Garment	2	Male
14	Pradhan Brothers	Garment	5	Male
15	Prince Fashion Center	Garment	2	Male
16	New Pandey Complex	Garment	2	Female
17	Shrestha Unik House	Garment	2	Male
18	Aachal collection	Garment	2	Female
19	Bhattarai Suppliers	Garment	3	Male
20	A.T Collection	Garment	2	Male
21	Unika Bag House	Garment	2	Male
22	Shrestha Store	Garment	3	Male
23	Manani fency	Garment	2	Male
24	Sweta Fency	Garment	2	Female
25	Fashion and Style	Garment	4	Female
26	Samjhana Store	Garment	1	Female
27	Dip Collection	Garment	3	Male
28	Madina Store	Garment	3	Female
29	Welcome Fashion Home	Garment	2	Female
30	Kathmandu Fancy	Garment	1	Male
31	New Sumi Cosmetic Center	Gift and Cosmetics	1	Female
32	New Unique Supplier	Gift and Cosmetics	3	Male
33	Aasina Stores	Gift and Cosmetics	2	Female
34	Pratikshya Cosmetics Center	Gift and Cosmetics	2	Male
35	Sarina Cosmetic	Gift and Cosmetics	1	Female
36	Parbati Fancy and Magar Collection	Gift and Cosmetics	2	Female
37	Amisha & Prashna Fancy Store	Gift and Cosmetics	3	Male
38	Sita Shopping Center	Gift and Cosmetics	1	Male
39	Laxmi Cosmetic Pasal	Gift and Cosmetics	2	Female
40	Ambika Cosmetics	Gift and Cosmetics	1	Female
41	Manakamana Cosmetics	Gift and Cosmetics	1	Female
42	Megha Cosmetic	Gift and Cosmetics	1	Female
43	Gutung Kirana Pasal	Grocery	1	Female
44	Shrestha Shop	Grocery	1	Female
45	Ashwin Kirana Pasal	Grocery	1	Female
46	Srijan Kirana pasal	Grocery	1	Male
47	Reema Aale Kirana Pasal	Grocery	2	Female
48	Shambhu Lal Shreshtha Kirana Pasal	Grocery	2	Male
49	Anjita Kirana Pasal	Grocery	2	Male
50	Didi Bahini Store	Grocery	2	Male
51	Anjila Store	Grocery	2	Female
52	Sanumaya Kirana Pasal	Grocery	2	Female
53	Rasid Pasal	Grocery	2	Female
54	Shrestha Kirana Pasal	Grocery	1	Male
55	Ganesh Store	Grocery	2	Male
56	Mutton Tass Restaurant	Restaurant	6	Male
57	Gandaki Hotel	Restaurant	5	Male
58	Tiger Restaurant	Restaurant	10	male
59	New Highway Restaurant	Restaurant	8	Male
60	Kohinur Restaurant and Lodge	Restaurant	7	Female
61	Damauli Hotel	Restaurant	9	Male
62	Himalayan Tourist	Restaurant	10	Male
63	Sukla Gandaki Restaurant	Restaurant	6	Male
64	Shubham Enterprise	Sports and Stationary	2	Male
65	We Suppliers	Sports and Stationary	2	Female
66	Anup Store	Sports and Stationary	2	Male
67	Wagle Enterprises	Sports and Stationary	2	Male
68	Ali Enterprise	Sports and Stationary	5	Male
69	Sapkota Stationary Stores	Sports and Stationary	2	Male
70	Shrestha Stationary	Sports and Stationary	3	Male

APPENDIX D: SURVEY RAW DATA

Form ID	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29
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V003	3	3	3	4	4	4	3	4	3	3	2	4	4	2	1	1	1	1	2	4	2	2	2	1	3	4	5	4	5
V004	5	2	4	4	4	4	4	4	4	4	3	4	3	2	2	2	2	2	2	4	3	2	1	2	3	4	4	3	5
V005	2	1	2	2	3	4	2	3	2	1	1	2	1	2	1	1	2	4	4	4	1	2	2	1	3	4	3	3	5
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V008	2	1	1	4	4	4	3	2	3	2	2	2	2	1	1	1	1	4	4	4	3	2	2	2	3	5	3	5	3
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V015	2	3	3	3	3	2	2	2	2	1	1	1	3	1	1	2	2	2	3	4	3	3	2	3	3	3	3	3	5
V016	3	2	2	5	5	5	5	5	5	2	2	2	2	2	2	2	2	2	5	5	4	5	5	5	3	5	5	5	5
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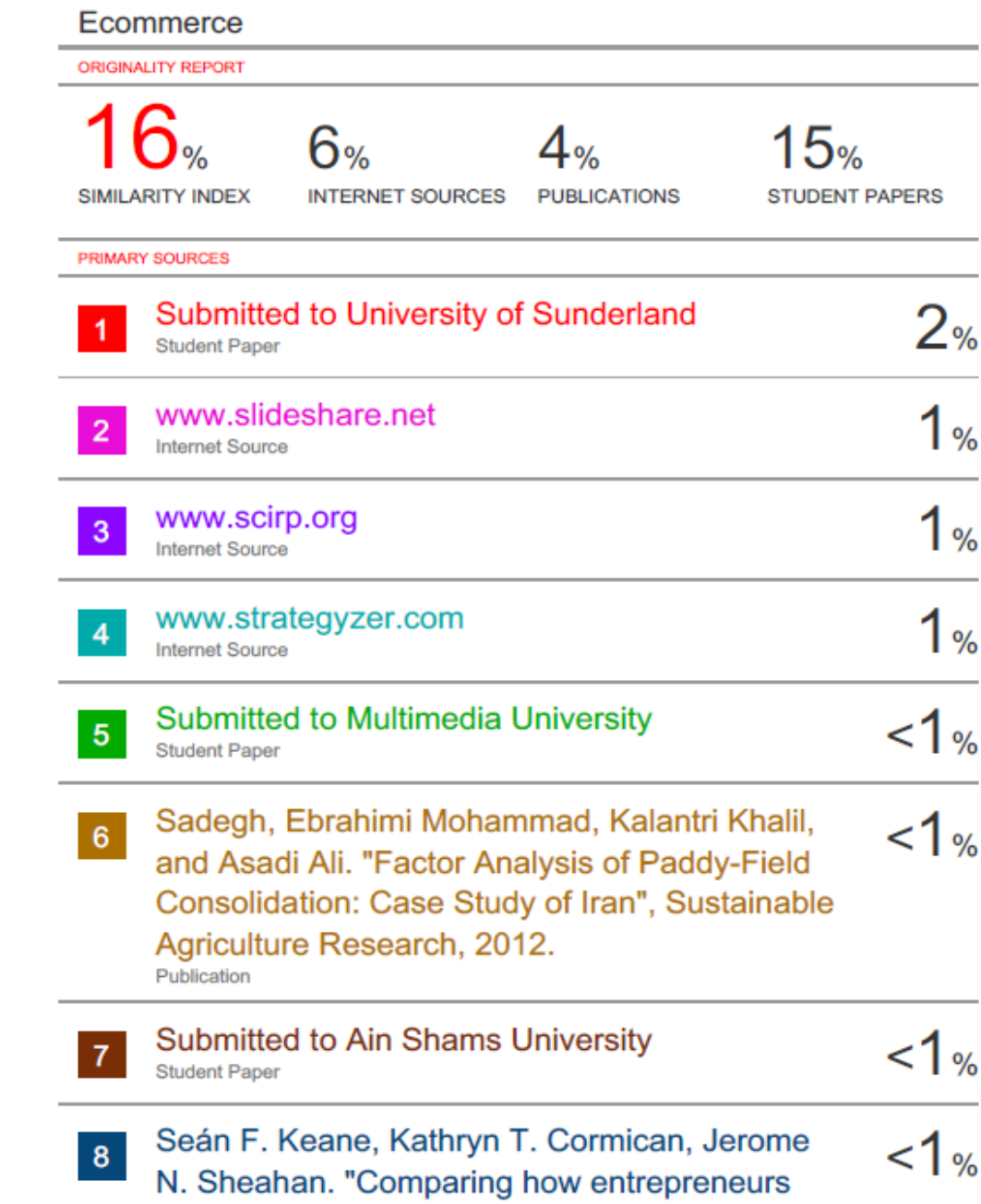
APPENDIX E: PLAGIARISM REPORT



Ecommerce

ORIGINALITY REPORT

16%	6%	4%	15%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to University of Sunderland Student Paper	2%
2	www.slideshare.net Internet Source	1%
3	www.scirp.org Internet Source	1%
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5	Submitted to Multimedia University Student Paper	<1%
6	Sadegh, Ebrahimi Mohammad, Kalantri Khalil, and Asadi Ali. "Factor Analysis of Paddy-Field Consolidation: Case Study of Iran", Sustainable Agriculture Research, 2012. Publication	<1%
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10	Onofrio Rosario Battaglia, Benedetto Di Paola, Claudio Fazio. "A New Approach to Investigate Students' Behavior by Using Cluster Analysis as an Unsupervised Methodology in the Field of Education", Applied Mathematics, 2016 Publication	<1%
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APPENDIX F: RESEARCH PAPER

IOE Graduate Conference, 2020-Summer
[Placeholder for Publication Information]

Readiness to E-commerce Adoption by Micro and Small Enterprises in Small Town: A Case Study of Vyas Municipality, Nepal

Lekhnath Timalsena [a], Sanjeev Maharjan[b]

[a, b] *Department of Mechanical Engineering, Pulchowk Campus, IOE, TU, Nepal*

Corresponding Email: [a] 074mstim006.lekhnath@pcampus.edu.np, [b] sanjeevworldnpl@gmail.com

Abstract

E-commerce has substantial potential to foster the growth of micro and small-sized enterprises (MSEs) in developed and developing countries alike. The survey was aimed to investigate the current status and future direction to the adoption of e-commerce by micro and small enterprises. A questionnaire survey was conducted to collect data from 70 MSEs as samples located in Vyas Municipality, Tanahun. The result shows that the overall scale value of all five factors was 3.205, indicates the poor level of e-commerce adoption. Even though 76 % of the enterprises were capable to adopt e-commerce based on technology available and knowledge of ICT, only 33% of the enterprises were ready to adopt e-commerce. Findings show that the important inhibiting factors are lack of internal trust, lack of awareness, intolerance towards failure, incapability of dealing with rapid change, and lack of online transaction system.

Keywords

E-commerce - Micro and Small Enterprises - E-commerce Adoption

1. Introduction

When internet was systematically started in 1960s, lots of innovation have taken place in the field of Information and Communication Technology (ICT). E-commerce is one of the consequences innovation of evolution of internet. In simple terms, e-commerce is buying and selling of goods and services over internet using website or mobile application [1]. E-commerce has already been adopted by the developed countries and has been spreading over developing countries.

E-commerce has substantial potential to foster the growth of micro, small and medium-sized enterprises (SMEs) in developed and developing countries. However, E-commerce adoption by small enterprises in developing countries has faced many challenges that have not been adequately addressed due to the complex nature of its adoption in such countries [2]. SMEs and micro-enterprises play significant roles in Nepalese economic and social development. It also allows small and medium-sized businesses to create wealth; by growing employment opportunities and declining unemployment. Send Gifts to Nepal was set up around a decade ago, with it's help, people residing abroad sent gifts to their loved ones in Nepal. While this wasn't really based in Nepal, it provided people an opportunity of what it was like to buy things online. Platforms such as Muncha.com, neapalibazar.com, fatafatt.com Bhatbhatenionline, Thamel.com, Giftmandu, and so on were later introduced but couldn't get their anticipated popularity because people in Nepal were just getting friendly with the internet back then and there are many wonders. With the steady increase in the number of internet users with time, e-commerce is flourishing and gaining attraction in Nepal right now. With the aid of their smartphones, people love the idea of shopping, not just clothes but everything from furniture to food, liquor to electronic appliances.

2. Literature Review

The internet and computers have revolutionized electronic transactions that include ownership transactions or the right to use online goods or services. E-commerce not only involves buying and selling over the internet but also collaborating with business partners. It is not constrained by time or

physical location it can be conducted at any time from any place which opened unlimited new markets. It is also defined as the process of buying, selling, transferring, or exchanging products, services, and/or information via computer networks, mostly the internet and intranets [3]. It is presented in different dimensions with different business models based on the participants of the transactions. For instance, if the participants are governments, the model is known as the government to government (G2G). If it is businesses, it would be business to business (B2B). When participants in the transactions are business and consumers, it is thus referred to as the business to consumer model (B2C).

2.1 Global E-commerce

E-commerce allows consumers to take advantage of greater options and lower prices. Global e-commerce is rapidly expanding, several trillion dollars are being exchanged annually over the web. In 2017 about 1.3 billion people (one quarter of the world's population) aged 15 years and older, shopped online [4]. In 2019 Global e-commerce sales was nearly 3.5 trillion dollars worldwide, which is about 14 percentage of total retail sales and it expected to increase in coming years [5]. The adoption of E-commerce in developing countries differs greatly from developed countries. Developing countries often lack the necessary physical infrastructures and awareness for the development of E-commerce [6].

2.2 E-commerce in Nepal

The greater adoption of internet and smartphones is the biggest driver of e-commerce in Nepal. According to Nepal Telecommunications Authority (NTA), mobile phone penetration has reached 145 percent. Whereas broadband internet penetration in Nepal is 72 percentage by the end of 2019 and about 3 million of cellular mobile phone are imported in last six month of 2019 [7],[8] . In 2019 Nepal is in 112th rank B2C e-commerce index among 152 countries with index value 35.4 out of 100 [4] . Expansion of the information and communication technology have created prolific ground for the development of e-commerce. Social media sites such as Facebook, Instagram and Viber are now commonly used for socialization. Not only are they used for establishing people to people contacts, but now they are often being used to connect businesses to people or other businesses as well. The use of smartphones and different mobile apps is growing fast, mostly amongst the youth and in urban areas. Nepali youth, because of their education, and largely influenced by family members that have gone abroad for work or study, have embraced the evolving digital landscape. Since the young outnumber every other age group in Nepal, they have the potential to drive economic transformation by employing mobile technology. Both the public and private sectors have to understand this emerging opportunity and tap it to build a robust and thriving national economy.

Despite the potential, Nepal is already lagging behind in localizing e-commerce as a business tool compared to other Asian countries. However, there are private-sector providers that have been pushing digital development. Nepal's e-commerce market is getting crowded day by day as smaller startups are trying to sustain in the market. Currently Daraz., Sastodeal, Hamrobazar, Foodmandu, some other e-commerce business are leading in Nepali market. Among those daraz.com.np on the top, currently they are providing services in 24 major cities.

The digital payment system is another requirement for running e-commerce effectively. It is estimated that, currently, over 85 percent of the payments for e-commerce transactions are done using the cash on delivery method. Nepal Rastra Bank and Nepal Telecommunications Authority (NTA) have to build ground for customer-friendly payment gateways. The availability of an easy e-payment system in export can also help promote the export sector. E-commerce transactions require strong legal protection and regulation as well. Provisions of quality control, respect of customers' rights, data privacy, return and refund systems and payment solutions; all have to be regulated by law. Strong legal foundations will also help attract foreign direct investment (FDI) and domestic investment in this sector.

2.3 E-commerce Adoption Model by SMEs

Numerous models have been developed over the years to assist in the adoption of e-commerce to gain the benefits and resolve the barriers. From the literature three of these have been identified as the most commonly used in SMEs e-commerce adoption research.

- Technology Organization Environment (TOE)
- Technology Acceptance Model (TAM)
- Perceived e-readiness model (PERM)

According to the TOE framework Technological innovation in organization is influenced by three factors such as Technology available, organizational structure and External Environments [9]. TAM is commonly used in information technology adoption research. It suggests perceived usefulness (PU) and perceived ease of use (PEOU) as the two most important determinants of technology adoption in an organization. A more useful model that has been designed in the context of developing countries is the Perceived E-Readiness Model (PERM) by Molla and Licker [10]. The model includes two major constructs to access both internal and external factors. The internal factor is termed Perceived Organisation E-Readiness (POER) and the external factor termed perceived Environmental E-Readiness (PEER).

The main limitation of the first two models from the perspective of developing countries is that they are designed to address issues in developed nations. Issues that might seem insignificant in developed countries may be important to organizations in the developing region. Perceived E-Readiness Model affirmed that determining adoption level of an organization was an essential part of e-readiness assessment.

3. Methodology

The focus of this research was to perform an appropriate readiness assessment to adopt e-commerce by micro and small enterprises. This paper also tried to get preference of those enterprises' to use e-commerce in the future. The questionnaire assessment was carried out in Vyas Municipality based on the Perceived organization e-readiness for e-commerce adoption framework from literature review.

Research Technique

The questionnaire was designed by using factors identified in the framework. Total 29 questions were prepared for the survey, comprised for each of the five factors. Each question was assessed against a 5 point likert scale ranging from (1) strongly agree to (5) strongly disagree.

Awareness: It represents the information available and understanding about the e-commerce. There were total 9 questions for this factor.

Human resources: It refers to the availability of appropriate education and experience to information and communication technology. There were total 5 questions for this factor.

Technology Use: This is the most crucial factor than other factors. It reflects the basic ICT based infrastructure and knowledge available in the organization. There were total 6 questions for this factor.

Finance: It reflects the current financial transaction methods preferred by the organization. There were total 5 questions for this factor.

Market Readiness: It represents the enterprises' perception towards business partner and customers to adopt e-commerce. There were total 4 questions for this factor.

There were total 1046 firms as a population in the city which limits in this survey category. Total minimum required sample size was 64, but for error minimization total 70 samples were taken for the study. Random sampling was used to select enterprises for collecting the information.

Statistical Analysis Approach The data collected from the survey were tabulated according to factors from the framework. The basic reliability analysis was performed to validate questionnaire within the group. Cronbach's alpha (α) measures an internal consistency and reliability of items are as a group [11]. So, α value for all five factors was calculated to validate the consistency and reliability of questions related to those factors.

$$\alpha = \frac{k(\sigma_i^2 - \sum_{i=1}^{n} \sigma_i^2)}{(k-1)\sigma_i^2} \quad \ldots equation\ (1)$$

$where,$

$k = Number\ of\ items\ in\ a\ group,$

$\sigma_i^2 = Total\ Variance,$

$\sigma_i^2 = Varaince\ of\ each\ item$

The mean score and standard deviation of each indicator was calculated based on responses from participants and were depicted on column charts to give a visual representation of the results and make it easy for the MSEs to understand. Furthermore, an e-readiness scale was used to determine the readiness level of each factor in the framework. Five likert scale was used for each question to determine the readiness level of each factor.

Figure 1: Likert Scale

Based on central tendency of the result factors were analyzed as follows:

- Factor average between 1 and 2: The factor favored to adopt e-commerce.
- Factor average between 2 and 3: The factor favored to adopt e-commerce but can still be improved.
- Factor average between 3 and 4: The factor do not favored to adopt e-commerce; some work have to be done prior to implement e-commerce system.
- Factor average between 4 and 5: The factor do not favored to adopt e-commerce; lots of work have to be done before to implement e-commerce system.

Based on technology used factor, firms were also categorized to e-commerce adoption level into non-adopters, capable adopters, and initial adopters.

Non-Adopter: The non-adopters were organizations which have not been connected to the internet, had not been using a smartphone or laptop, and didn't have an email.

Capable Adopter: The capable adopters were organizations that have been connected to the internet, have been using a smartphone or laptop, and had email, but have not exercised to use website or e-commerce.

Initial Adopter: Initial-adopters were organizations with a static website that was used for publishing company information without interactivity or participated in other e-commerce platforms.

4. Result and Discussion

The Cronbach's alpha coefficients range from 0.71 to 0.87, higher than the recommended 0.70 level which indicated acceptable level of reliability. So it was concluded that the construct to intend measure from the questionnaires was fit for measuring the instruments. This showed that the instrument was sufficiently reliable and could consistently capture true score variability among respondents.

Table 1: Alpha value and factor's scale value

Factors	Alpha Value	Mean and S.D.
Awareness	0.86	3.370 ± 1.101
Human Resources	0.81	2.749 ± 1.041
Technology Use	0.75	2.971 ± 1.350
Finance	0.71	3.029 ± 1.140
Market Readiness	0.87	3.975 ± 0.937
Total		3.205 ± 1.194

As of the results, it was clearly seen that MSEs had a relatively low-level e-commerce adoption in the city with the overall scale mean value 3.205. Total standard deviation was 1.194, indicates that the response was not consistent to one scale. Human resource was the most supportive factor with scale value 2.749 and market readiness was the most lagging factor with factor value 3.975. From the observation, it was found that many MSEs were not interested to use e-commerce as they are selling product to the local market and others due to lack of awareness.

The mean scores of three factors Awareness, Market Readiness, and Finance were greater than 3 and less than 4 implied that those factors were defied to support e-commerce implementation. Whereas, the main two factors Technology use and Human resources have an average scale value between 2 and 3, implied to supportive factors to adopt e-commerce.

Figure 2 shows that 25% female and 37% male were strongly agreed/ agreed to e-commerce adoption based on all factors. Whereas, 53% female and 41% male were strongly disagreed/ disagreed to e-commerce adoption. 23% female and 22% male were not sure to accept or reject the e-commerce system.

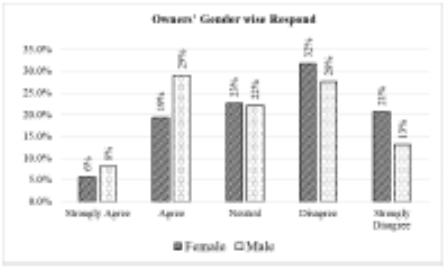

Figure 2: Owners' gender wise response

Technology used factor was the major factor to adopt e-commerce. Only based on this factor 14% enterprises were initial adopter, they were somehow familiar with e-commerce system. Mostly, 76% enterprises were capable to adopt e-commerce in future and only 10% firms didn't have sufficient and adequate IT infrastructure for e-commerce adoption.

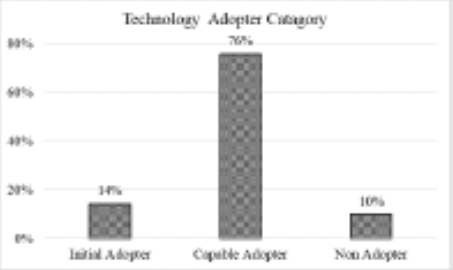

Figure 3: E-commerce adopter category based on the technology used

Figure 4 shows that 67% respondents never tried online transaction system before. Only 20% respondents were committed to use online financing system regularly. Whereas, 13% of the respondents only tried the system but have not been using regularly.

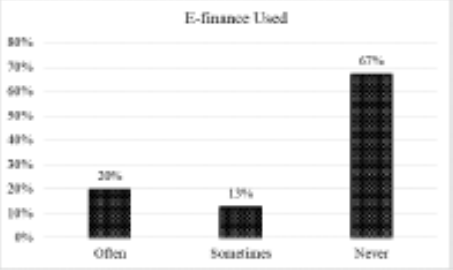

Figure 4: Online payment system used statistics

Since most of the respondents' MSEs were not adopted to online payment system, cash on delivery system was the preferably practiced payment system by existing e-commerce portals in Nepal. So, cash on delivery preference of the respondent was calculated, result has been shown in figure 5. Where, 33% of the respondents agreed to accept cash on delivery whereas, 44% were undecided to accept this system. Only 23% do not prefer the cash on delivery system.

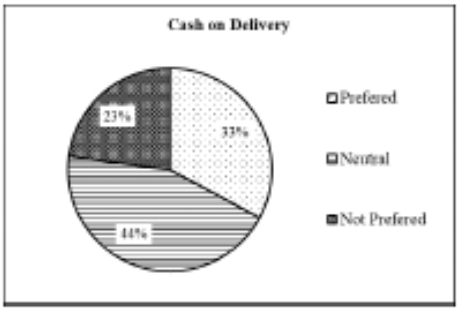

Figure 5: Cash on delivery preference statistics

Based on all five factors, market readiness result has been shown in figure 6. While considering all five factors, only 33% of the market was ready to adopt online commerce system whereas 45% were lagging behind to start online system. 22% of the enterprises were in undecided condition, they can adopt after some guidance.

Figure 6: Overall market e-readiness based on 5 factors

5. Conclusion

Evidence from literature has shown that the adoption of e-commerce has proven to be a potential method of boosting the efficiency and effectiveness of a business as it allows organization to adjust to new market opportunities and remain competitive in the ever-growing global market. The main purpose of this study was to investigate the current status of micro and small enterprises to adopt e-commerce. Conclusion has been drawn based on the questionnaire assessment in Vyas municipality. Five factor analysis was carried out which are Awareness, Human resource, Technology use, Finance, and Market Readiness.

From result it was seen that overall scale value of all five factors is in between 3 and 4, it indicates the poor level of e-commerce adoption. Based on the technology used factor, majority 76% were capable to adopt e-commerce. Even though, most of the enterprises were capable to adopt e-commerce based on technology available and knowledge of ICT, only 33% of the enterprises were ready to adopt e-commerce because of the lack of awareness and perception towards e-commerce. This result proves that awareness and intuition towards e-commerce are essential factors to adopt e-commerce.

It was seen that only 20% of respondents had on hand practice to use electronics transection and only 33% preferred to use cash on delivery. So integrated system of cash on delivery and electronics transection has been suggested for future implementation. The analysis of existing literature on e-commerce adoption leads to the generation of an integrated e-commerce business model which encompasses both B2B and B2C model in a single portal in the future.

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