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E-commerce payment methods in Nepal: current state and challenges

Bachelor Thesis

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BACHELOR THESIS ASSIGNMENT

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Informatics

Thesis title

E-commerce payment methods in Nepal: current state and challenges

Objectives of thesis

The objective of this thesis is to make analysis of current state and challenges of e-commerce payment methods in Nepal. Partial goals of thesis are:

- To make literature review of e-commerce payment methods.
- To analyze opportunities and challenges for e-commerce payment methods in Nepal.
- To provide conclusion and recommendations.

Methodology

Methodology of thesis is mostly based on the study and analysis of resources and information about online payment method and e-commerce. The practical part is focused on questionnaire survey with internet users of Nepal and e-commerce store owners. Descriptive analysis and MADM methods are used for the selection of optimal payment option. Based on the theoretical knowledge and result of practical study, the conclusions and recommendations will be formulated.

The proposed extent of the thesis

30 – 40 pages

Keywords

E-commerce, Nepal, Payment Gateways, Debit/credit card, Internet

Recommended information sources

BLYTHE, S. E. (2008). On top of the world and wired: a critique of Nepal's e-commerce Law. *J. High Tech. L.*, 8, 1.

LIEBANA-CABANILLAS, Francisco. *Electronic payment systems for competitive advantage in e-commerce*. 2014, 373 pages. ISBN 978-1466651906.

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Declaration

I declare that I have worked on my bachelor thesis titled “E-commerce payment methods in Nepal: current state and challenges” by myself and the thesis does not violate copyrights of any third person. I have only used the sources mentioned at the end of the thesis.

Rojan Piya

Prague, 16 March 2014

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Abstract

In this thesis report, an effort has been made to examine and provide result for the optimal payment solution that can be used in an e-commerce store, in the current context of Nepal. Review has been done for different literatures related to e-commerce payment methods, data from research report, the data from stakeholders' feedback and comments collected through questionnaires and survey. Two surveys were conducted, and Descriptive Analysis and Multiple Attribute Decision Making (MADM) methods were used to analyze and identify the most preferred payment method. Moreover, the most significant factor for choosing the most preferred payment option was determined. First survey questionnaire is focused on online shoppers' behavior in Nepal and the second survey is presented to the online e-commerce websites owners in Nepal. These questionnaire are used to collect both users and experts' opinion. Also ranking option is used using three different factors namely Social, Economic and Technical Factor.

After analyzing the survey results, it has been identified that Cash on delivery is still the most prevalent payment method used in Nepal and Reliability is the main factor for using it. Lastly, conclusion and recommendations for better implementation of payment methods has been provided which recommends merchants, online shop owners and users to be more open toward newer payment methods and help expand the Nepalese e-commerce market domestically and globally.

Keywords: E-commerce, Nepal, Payment Gateways, Internet, Debit/Credit card

Abstrakt

Tato bakalářská práce hledá a zkoumá ideální platební řešení, které může být použito v internetovém obchodě v Nepálu za současných podmínek. Hodnocení platebních metod vychází z literatury o elektronických platbách, dat sesbíraných od majitelů elektronických obchodů a jejich zákazníků a z odpovědí na dotazníky a ankety. Byly provedeny dva průzkumy, pro jejichž analýzu a nalezení nejlepšího platební řešení byly použity metody Descriptive Analysis a Multiple Attribute Decision Making (MADM). Zároveň byl nalezen nejvýznamnější faktor pro výběr preferovaného způsobu platby. První dotazník je zaměřen na chování zákazníků internetových obchodů v Nepálu a druhý na majitele webových stránek těchto obchodů. Tyto dotazníky obsahují uživatelské i odborné názory. Dále bylo použito také číselné hodnocení tří různých faktorů při platbě, jmenovitě sociálních, ekonomických a technických faktorů.

Po analýze výsledku dotazníků vyšlo najevo, že nejrozšířenější platební metodou v Nepálu je stále dobírka (platba při převzetí zboží). Důvodem je především spolehlivost této služby. Práce je zakončena doporučením na lepší implementaci platebních řešení, které radí majitelům internetových obchodů a jejich uživatelům větší otevřenost vůči novým platebním metodám, což by Nepálskému elektronickému trhu mohlo pomoci v lokálním i globálním měřítku.

Klíčová slova: E-shop, Nepál, Platební brána, Internet, Platební/debetní karta

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1 Introduction

The global proliferation of the web has led to the recent growth in e-commerce. In a similar manner, viable business models have emerged involving the e-commerce methods and technologies related to it. Generally, we can say that e-commerce involves activities that relate to buying and selling of goods and services over the Internet (1). E-commerce has facilitated customers to purchase goods and services without having to go to the stores physically. Furthermore, before purchasing the goods, customers now have the ability to compare the goods and services offered by various vendors in the comfort of their homes. E-commerce has also facilitated real-time payment transactions and other business activities due to the openness, efficiency, anonymity, pace and accessibility characteristics of the Internet (2). One recent survey by e-Market stated that Business to Consumer (B2C) e-commerce sales worldwide will reach \$1.47 trillion in 2014, increasing nearly 20 percent over 2013. As the internet usage continues to mature across the globe, e-commerce growth will slow over time, settling around 10% by the finish of their forecast period. However, with sales reaching \$2.356 trillion in 2018, a 10% growth rate still represents over \$200 billion new dollars that year (3). Hence, to supplement the growing e-commerce business, various new payment methods have been developed and also at the same time the existing payment method are being constantly improved.

The trend of e-commerce business started in Nepal more than a decade ago (4). However, the constraints of strict government monetary policies, underdeveloped banking system, technological infrastructure and lack of established payment processing system for the e-commerce development are still present and no different than before. The growth of e-commerce business has been slow due to lack of knowledge, awareness, cash culture among the customers and other several limitations in e-commerce payment systems. Way of selling and purchasing, globally, and within the country has been nearly the same every year. Several Payment Gateways are being developed but they have their limitations due to legal, infrastructural and security issues (5).

2 Objectives and Methodology

The primary objective of this thesis is to make an analysis of the current status and constraints of e-commerce payment methods in Nepal. The partial objective is to provide conclusion and recommendations for the development in e-commerce payment methods.

The methodology of the research was based on the study of the relevant books, journal, articles and analyzing information collected from the user and e-commerce store owners. Study was also undertaken by gathering secondary information from the webpages such as Google Scholar, Quora and several other online resources.

Firstly, the research tried to understand Nepalese user's perception about the e-commerce payment methods that were of avail. For this purpose, questionnaires survey method is used via forms.google.com. More than 60 responses from respondents residing in Nepal mostly between 18-34 years old were collected and analyzed. Descriptive analysis method was used in order to analyze the data as a statistical tool. Mean, Mode, Median and Standard deviation were used to identify the characteristics of the data collected.

Secondly, Analytical Hierarchy Process (AHP) matrix and scoring method is used for the data collected from the experts i.e. e-commerce website owners in Nepal. This methods is used in order to identify the current trends of e-commerce, and importance, efficiency and usability of the payment methods form the experts' point of view. Based on the theoretical knowledge and result of practical study, the conclusions and recommendations will be formulated.

3 Literature review

This chapter focuses on the relevant literature review regarding the e-commerce and its payment methods used in the context of Nepal in general. Emphasis has been given to review the previous articles, journals, books, and online materials relevant to e-commerce and its payment methods, and, thereafter, provide broad explanation of terms and important topics related to it.

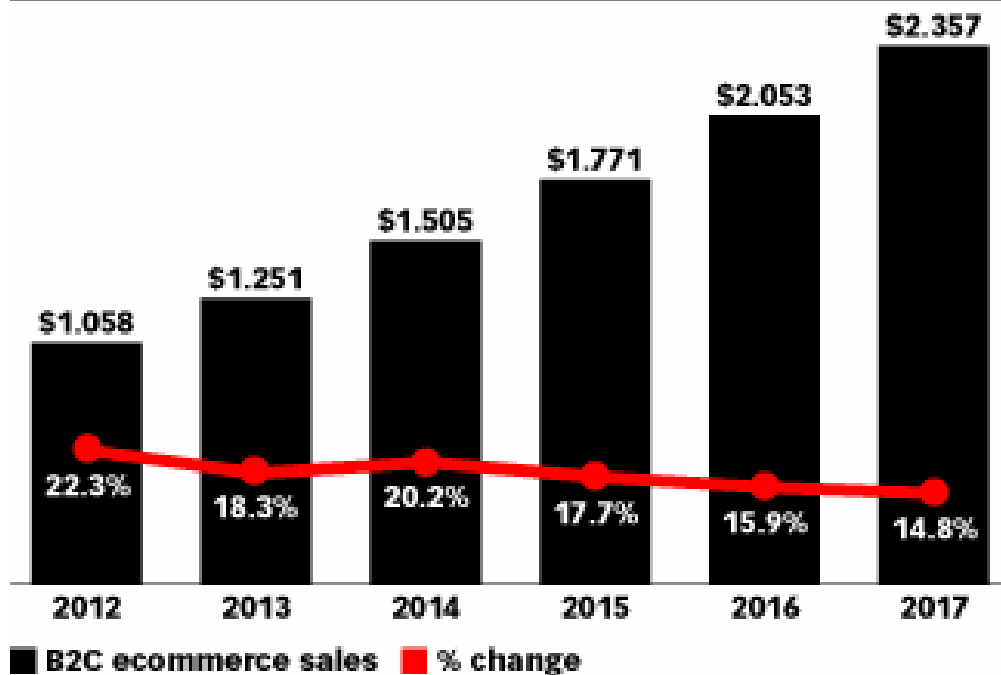
3.1 What is e-commerce?

The term “Electronic Commerce” was coined in 1883 at California State Assembly in Volcano, California (6). In the mid-1990s, e-commerce was transformed with the introduction of Amazon and eBay. Amazon started as a book shipping business, out of Jeff Bezos' garage, in 1995. eBay, which enabled consumers to sell things online, introduced online auctions in 1995 and exploded with the 1997 Beanie Babies (7). The growth of the Internet and other information technology systems continue to influence our lives and businesses. Irrespective of their size and type, all organizations and firms are rethinking their operations and strategies. However, commencing e-commerce is complex and requires understanding of a vast array of topics.

E-commerce, often known as Electronic Commerce or e-Commerce, is trading services and/or products via electronic channels, such as the Internet. E-commerce draws on technologies such as mobile commerce, electronic money transfer, supply chain management, Net promotion, online transaction processing, electronic data interchange (EDI), automated knowledge collection systems, and stock management systems. Modern electronic commerce usually makes use of the World Wide Web (WWW) for at least part of the transaction's life cycle, although it may also use other technologies such as e-mail. Online retail is convenient mainly due to its 24-hour availability, global reach and ease of customer service. “Thus, in the future, instead of buying bananas in a grocery store, you could go pick them off a tree in a virtual jungle.”- Yasuhiro Fukushima, Japanese business executive (8).

B2C Ecommerce Sales Worldwide, 2012-2017

trillions and % change



Note: CAGR (2012-2017)=17.4%; includes products and services ordered and leisure and unmanaged business travel sales booked using the internet via any device, regardless of the method of payment or fulfillment

Source: eMarketer, Jan 2014

167671

www.eMarketer.com

Figure 1: E-commerce Sales Worldwide, 2012-2017 (3)

There are four main categories of e-commerce: Business to Business (B2B), Business to Customer (B2C), Customer to Business (C2B), and Customer to Customer (C2C). Other categories include: Business to Employee (B2E), Government to Government (G2G), Government to Employee (G2E), Government to business (G2B), Government to Citizen (G2C) etc. (9).

3.2 Key components of e-commerce infrastructure

E-commerce infrastructure needs to be able to handle a large volume of data, a large volume of customer interactions, and to provide very quick response time. Lacking any of these capabilities can render the infrastructure less effective. The principal components of e-commerce infrastructure include: Web Server, Web Browser, Payment System, E-commerce software, E-mail, Mailing List Server, Database Server, Internet, Technologies for Customer and Organizational Support (9).

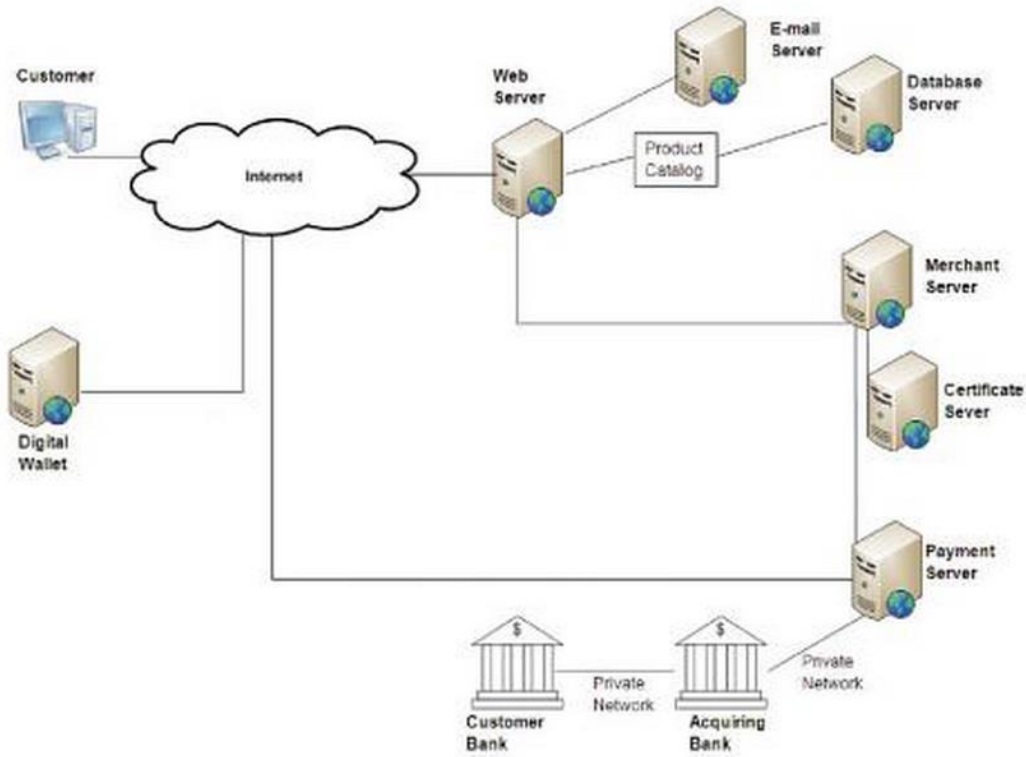


Figure 2: A typical e-commerce infrastructure (9)

3.3 What is payment method in e-commerce?

While e-commerce provides the ability of selling and purchasing products, information and services on the Internet and other various online environments, payment methods represent the various payment options available to customers during the checkout process on an e-commerce store. Payment system is the mechanism through which online transaction is processed. It is an integral part of e-commerce and undoubtedly one of the vital aspect. As in any trading activity, the issue of security and dependable money exchange between transacting parties is indispensable. In an e-commerce environment, payments take the form of money exchange in an electronic form, and hence also called e-payment (electronic payment) system.

An e-commerce payment system facilitates the acceptance of electronic payment for online transactions. Also known as an example of EDI, e-commerce payment systems have become increasingly popular due to the widespread use of the internet-based shopping and banking (10). Generally, payment methods are distinguished in 3 major categories (11).

3.3.1 Card payments

Banks and other financial institutions issue the debit-credit cards, setting interest rates and credit limits and sponsoring rewards programs accordingly. Cards could be seen as the 'key' to the consumers' bank account, whether it is a deposit (debit), a loan (credit) or a stored value (prepaid). Cards can be used to 'unlock' and transfer the customers' money to the online merchant. Widely used and accepted credit and debit card types are VISA, VISA Electron, VISA Debit, American Express, Discover, MasterCard, MasterCard Debit, Maestro, UnionPay , Diners Club International and JCB. Next to these globally recognized card brands, there are also country or region-based card brands like Dankort in Denmark, BC Card in South Korea, Carte Bleue in France, and Hipercard in Brazil etc. (11).

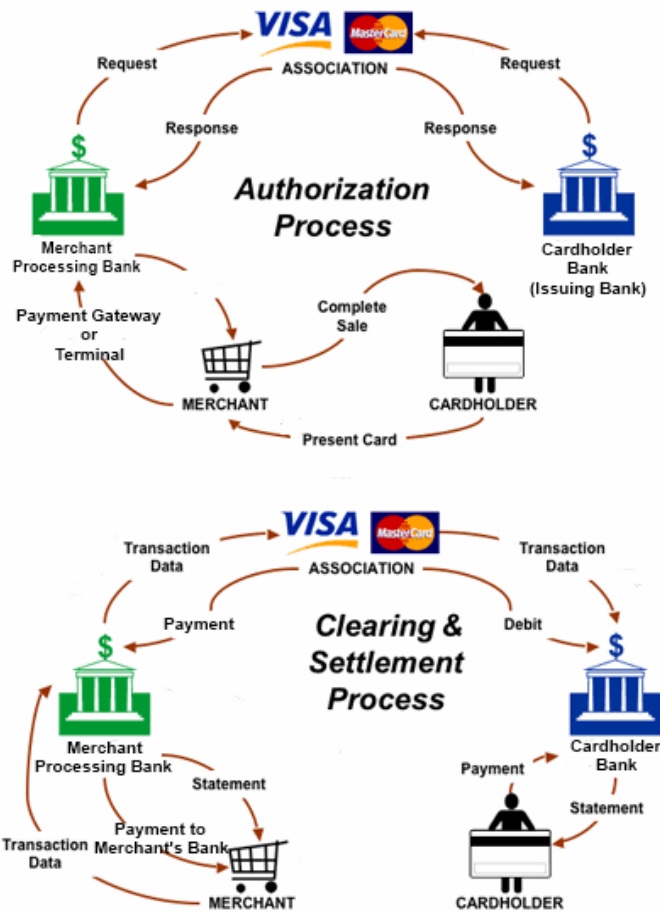


Figure 3: The anatomy of accepting credit cards (12)

3.3.1.1 American Express

American Express (AmEx), is an American multinational financial services corporation established in 1850 (13). The corporation is best known for its credit and charge cards, and travelers cheque businesses. With the US as its most important market, American Express has a global footprint. Merchants eager to accept American Express payments in their ecommerce store should turn to their local AmEx office and investigate whether their Payment Service Provider supports American Express online. American Express is available in 130+ countries (14).

3.3.1.2 MasterCard

MasterCard is a widely used card payment method which can be used for purchases at Point of Sale (POS) and online. E-commerce stores are able to accept MasterCard payments either via direct solutions like PayPal, or via MasterCard Payment Gateways, and Payment Service Providers. Merchants interested to accept MasterCard online can secure their card sales by using MasterCard Secure Code, a service that verifies the genuine cardholder during the purchase. MasterCard credit card transactions are normally charged a commission of 1-3% per transaction (varies per merchant/country). Master cards are available in 239 countries (15).

3.3.1.3 Visa Card

Similar to MasterCard, Visa is another card payment method that can be also used for purchases at both POS and online. Visa cards are known to be eligible for chargebacks; the cardholders reclaiming their money due to disputes or frauds. Merchants willing to accept Visa online can secure their card sales by using Verified by Visa, a service which verifies the cardholder's genuinity during the purchase process. Online merchants are also able to accept Visa payments either via direct solutions such as PayPal or via Payment Service Providers and Visa Payment Gateways. Visa card is available in 240 countries (16).

Though Visa and MasterCard don't issue credit cards themselves, they are two of the widely used credit card brands in the world. Banks and other financial institutions issue the cards, credit limits, setting interest rates and sponsoring rewards programs.

3.3.1.4 Pre-paid cards

Pre-paid cards are issued for a particular value by a particular merchant and are frequently used in store transactions. These cards can be given as a gift or just used as a convenient way of making purchases. Convenience and ease of use are the primary reasons for consumers to use this card. The pre-paid card is also favorable for merchants because customers tend to spend more freely when using it (17).

3.3.2 Digital Wallets payments

Digital Wallets are expected to gain global footprint rapidly. They provide improved payment experience and simplify online, as well as, mobile checkouts. Especially on mobile devices consumers appreciate an enhanced and swift payment experience. These digital wallets are now also seen as the virtual look-a-like of our physical wallet. These eWallets can contain (pre-registered) credit/debit cards, gift and loyalty cards and provide access to alternative payment methods such as online bank transfers. Some eWallets also allow the consumer to preload money into their wallets. There are 2 types of Digital Wallets which have been distinguished (some of the Digital Wallet suppliers offer both types) (18).

3.3.2.1 Preloaded Digital Wallet

A Preloaded Digital Wallet is a wallet which is prepaid and has e-money preloaded to use as a substitute to cash. Users of the wallet have to fund the wallet before they can pay for an online transaction(s). They can add funds to the wallet via various ways of payment i.e. cards or any other alternative payment methods. The balance amount on the wallet is used to pay for online and mobile transactions. This type of Digital Wallet is the traditional eWallet model.

E.g. Payza, Yandex money, klikandbuy, PayPal, Apple Pay, Skrill, MasterPass, DWOLLA, ZAPP (18).

3.3.2.2 Pass-Through Digital Wallet

A Pass-Through Digital Wallet is where the eWallet authenticates the user, however the transaction is being settled on a linked payment system, i.e. bank account, credit/debit or prepaid card. Users of the Wallet do not use the funds stored in the Wallet but select during the moment of payment one of the 'stored' payment methods to finalize the payment to the merchant. Traditional Preloaded Digital Wallet brands have introduced this type to their offering allowing the user to choose between either two at the point of checkout which is why we find most of the Preloaded Wallet suppliers offering both types. E.g. MyPayWizard, clickandbuy, Minitix, Paypal, MasterPass, WebMoney Transfer (18).

3.3.2.3 Paypal

PayPal is one of the best known e-commerce payment solution option in the world. With more than 148 million active accounts in 203 markets and supporting 26 currencies around the world, PayPal empowers global commerce, processing more than 9 million transactions every day. PayPal transaction costs start from 3.25% and 25 eurocent fixed per transaction fee and later on lowers based upon PayPal volume processed. Purchases on Paypal are not guaranteed to the merchants as they can be disputed by the consumer due to fraud or customer service related issues. Merchants willing to accept PayPal in their online store can opt for direct integration via the PayPal API or by using a PayPal Payment Service Provider. Countries which are not supported by PayPal include Republic of Macedonia, Afghanistan, Iraq, Pakistan, Montenegro, and Bangladesh in addition to the US economic sanction list (19).



Figure 4: Paypal Checkout (20)

3.3.2.4 Google Wallet

Google Wallet, superseded Google Checkout and is a mobile payment system developed by Google an American Multinational company. It allows its users to store credit/debit cards, loyalty cards and gift cards information among other attributes, it also allows accessing sales promotions on their mobile phones and other mobile devices. Over time more and more people

use smartphones and other mobile devices, hence the use this type of payment service to shop anytime and anywhere is increasing.

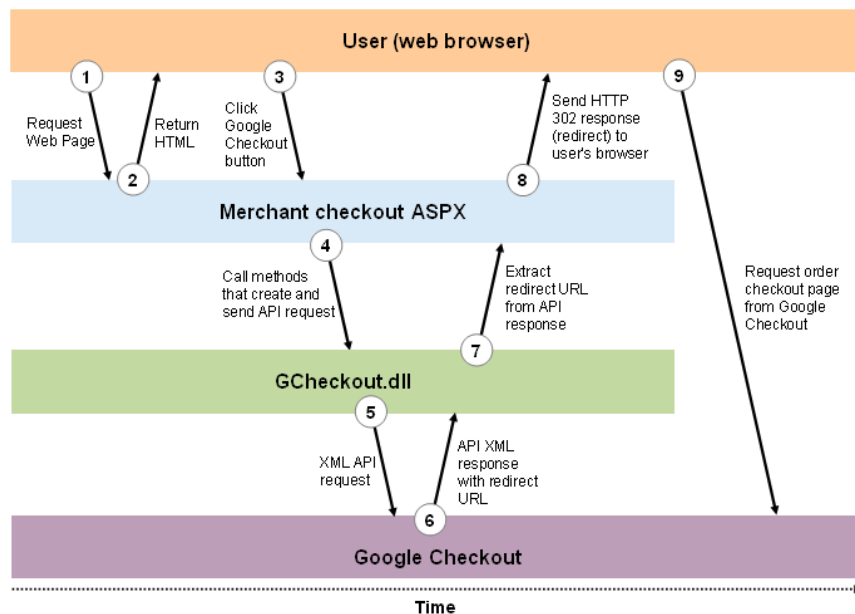


Figure 5: Google Checkout (20)

3.3.3 Alternative payments

Alternative Payments have seen an uplift in the recent years. Some of them provide great ease of mind for both consumer and merchant. Alternative Payments such as online bank transfers and direct debits are often associated with low and fixed transaction costs, secure and secure transaction methods, swift settlement and guaranteed payments. Popular alternative payment method brands are iDeal (Online Bank Transfer, the Netherlands), ACH (Checks, United States), Klarna (invoice, Sweden), and Interac (Online Bank Transfer, Canada) (21).

3.3.3.1 Crypto currencies

A crypto currency is a mechanism of exchange using cryptography to secure the transactions and to control and limit the creation of new units. Cryptocurrencies are subsets of alternative currencies, or to be specific, digital currencies. Cryptocurrencies normally feature decentralized

control (as opposed to a centralized electronic money system, such as PayPal, Google Wallet) and a public ledger (such as bitcoin's block chain) which records transactions. Examples of Crypto currencies are Bitcoin, Litecoin (22).

Among all other crypto currencies bit coin is the widely known and used crypto currencies. Bitcoin uses peer-to-peer technology to operate with no central authority or banks; managing transactions and issuing of bitcoins are carried out collectively by the network. Bitcoin is open-source system; its design is public, therefore nobody owns or controls Bitcoin and everyone can take part. Bitcoin is an inexpensive and very secure way to handle payments. Payments can be done or received using the Bitcoin network with almost no transaction fees. In most cases, fees are not strictly required but sometimes they may be recommended for faster confirmation of the transaction. The payments of Bitcoins are irreversible and wallets can be kept highly secure, meaning, the cost of theft is no longer pushed onto the shoulders of merchants (23).

3.3.3.2 Pay by Bank Transfers

These payment methods connect with the shoppers' bank where the shopper can authorize a transfer. The transfer mechanism is prepared by the merchant and only has to be authorized by the shopper within his own online banking environment. Other forms of bank transfer are wire transfer, bank deposit etc.

3.3.3.3 Mobile Payment Service

Mobile payment means that users adopt mobile terminals such as mobile phones to conduct payment for bills, goods and services. Compared to traditional and online payment, the main advantage of mobile payment is ubiquity. That is, with the help of mobile networks and terminals, users can conduct payment at anytime from anywhere. This may promote user adoption of mobile payment. However, mobile terminals have their constraints, such as small screens, inconvenient input and slow responses. These constraints may negatively affect users' experience and impede their continuance usage. In addition, service providers have invested

great effort and resources on releasing mobile payment services. If they cannot retain users and facilitate users' continuance usage, they will not recover these costs and achieve success. Further, there exists intense competition among mobile payment service providers and the switching cost is low for users. If users are unsatisfied with a service provider, they may switch to another one (24).

3.3.3.4 Cash on Delivery

Cash on delivery (COD), is the sale of goods by mail order where payment is made on delivery rather than in advance. The goods are returned to the retailer, if they are not paid for upon the delivery. Originally, the term applied only to payment by cash but as other forms of payment have become more common, the word "cash" has sometimes been replaced with the word "collect" to include transactions by credit cards or debit cards, checks etc (25). Most operators impose a limit on the amount of money that can be collected per delivery or per day using COD services. These limits may be higher for non-cash payments. Canada Post, for instance, applies a limit of C\$1000 for cash, and C\$5,000 for payment by money order or cheque (26).

3.4 Status of e-commerce in Nepal

From online shopping websites to food ordering services, Nepal has come a long way in regards to e-commerce sector. E-commerce services was introduced in Nepal over a decade ago. Established in 1999, Thamel.com is one of the first e-commerce store, which focused primarily on Nepalese expatriates (27). It was setup as sending gifts and money online and promoting “Send Gifts to Nepal” which had merely a concept of e-Commerce. As the number of internet users started to grow, numbers of e-commerce websites started emerging. According to the statistics of International Telecommunication Union (ITU) of Dec 31, 2013, there were 4,121,236 internet users in Nepal with about 13.3% of Internet penetration (28). At present, there are plethora of websites catering to the need of users. Almost any items can be bought and sold online these days. And to cater to this need, number of payment systems have also started to emerge. Though the condition is ripe for the rapid growth of e-commerce, various problems related to implementation of payment systems have slowed the pace in recent times. Some of these problems will be discussed in upcoming topics.

Despite the persisting problems related to payment methods and slow pace of user acceptance, a few online businesses have managed to run successfully at a certain level. With incorporation with some of the major IT companies and banks in Nepal, e-commerce stores have managed to develop internal payment wallet systems such as eSewa, iPay which somewhat eases the challenges in payment process. And with ever increasing demand of people in future, it is certain that e-commerce business is inevitable in context of Nepal (29). Popular e-commerce websites in Nepal are www.harilo.com, www.foodmandu.com, www.muncha.com.

3.5 Overview of e-commerce payment methods in Nepal

New payments mechanisms designed to aid electronic commerce have become routine in constantly evolving e-commerce market. However, Nepal is still in the very beginning of a wave of innovation and change. There are diverse payment systems functioning available in Nepal currently, ranging from the paper based systems where the instruments are physically exchanged and settlements worked out manually to the most complex electronic fund transfer system which are fully secured and settle transactions on a real time, gross basis. They cater to both low value retail payments and large value payments relating to the settlement of inter-bank money market (30). The retail payment systems in the country comprise both paper based as well as various electronic systems. Typically handled transactions which are low in value, but large in number, relating to individual user, firms and corporates. These transactions relate mainly to settlement of obligations arising from purchase of goods and services.

Nepal also lacks the Centralized Electronic Funds Transfer (EFT) System which is operated by Central Banks/ National Level Institutions in other countries to facilitate within country Electronic Fund Transfer between financial institutions. This is typically for single / individual payment systems which are governed by their own respective rules. Currently in Nepal, different banks and other institutions are running shared or standalone EFT System facilitating cash withdrawals and purchase transactions between different financial institutions. Those operators are normally operating entire systems at their own and are not governed by any regulations from Nepal Rastra Bank (NRB). Nearly all these electronic fund transfer systems settle on different mechanism according to the rules set by their respective operator (31).

3.5.1 Payment methods in practice

Despite the recent increase in use of e-commerce in Nepal, it is still plagued with difficulties, which has hampered the growth of payment solutions and methods. Another major problem with implementation of payment solutions is that the usage of internal card processing system is still at an early stage. Until 2014 there was no central payment system and even now it is not fully developed, therefore, it is not yet possible to pay via Debit/Credit card for online shopping (32). International payment wallets such as Paypal, Google Wallet have not yet been established in the country. Almost all of the payment solutions used by e-commerce merchant is either payment wallet systems developed for Nepal itself, such as eSewa and Payway, or through Cash on Delivery system. As payment gateways such as eSewa are still not available to larger customer base, merchants may still have dilemma whether to implement payment gateways in their online market or not (30). Below are some of the popular payment methods available in Nepal for online shopping.

3.5.1.1 eSewa Nepal:

eSewa is the first Nepalese online payment gateway provider developed by F1Soft International which was launched on 21 January 2010. Facilitating its users to pay and get paid online, it offers payment services to various accounts including Buddha air, Yeti airlines, QFX cinemas, harilo.com, giftmandu.com, bhatbhatenionline.com and so on. They have links with 15 Nepalese banks at most and are on the process of adding more (33).

3.5.1.2 PayWay:

PayWay is another merchant payment gateway in Nepal officially registered as Pay Way Nepal (P) Ltd. It was developed by Young Minds in Kathmandu and now has partnered with Nepal Investment Bank Limited (NIBL). It uses website encryption services provided by Comodo (34). Only NIBL customers can sign up to PayWay and utilized NIBL eBanking system for online transaction. Customers can transfer funds from their PayWay wallet to NIBL account or

vice versa. Moreover, it also allows users to make online payment on some e-commerce websites as well as send/receive money between members (35).

3.5.1.3 iPay:

Initiated by muncha.com, iPay is an online payment gateway which acts as an intermediary between the merchant and the shopper for purchase of online purchases. It is partnered with Nepal Investment Bank, Laxmi Bank, Kumari Bank, Everest Bank, Bank of Asia, Bank of Kathmandu and offers payment for DishHome balance, Ncell, NTCand UTL recharge.

iPay online payment system is incorporated in Nepal Electricity Authority (NEA), vianet communication, bazar.com.np and few others are its partner merchants offering easy way of payment.bazar.com.np and some few others are its partner merchants offering an easy way of payment (36).

3.5.1.4 ElectraCard:

ElectraCard Service (ECS) a service based in India was launched in Nepal in 2014 with the collaboration with Nepal Electronic Payment Systems (NEPS) a company that is promoted by a group of seven Nepalese Banks with the mission to establish a shared e-payment switch and card infrastructure .ECS has setup a shared switch infrastructure which enables electronic payment transactions. ECS facilitates banks and financial institutions, exchange houses, retailers, telcos to electronically process card transactions, online transactions, mobile payments and services in real time (37).

3.5.1.5 Cash On Delivery

Cash on Delivery is the most commonly and widely used payment method in Nepal. Since there are several limitations and lack of knowledge about the other payment methods, Nepalese customers prefer this option over the other available payment options. Foodmandu.com is one of the e-commerce website that offers Cash on Delivery as the only payment option to their customer and it has been doing well (38). Almost all other online stores offer Cash on Delivery payment option to their customers as well.

3.5.2 Challenges and hurdles

This section will provide brief details about the difficulties and challenges for the establishment of a proper and internationally used e-commerce payment methods in Nepal.

3.5.2.1 Government controlling currency outflow

This is one of the major hindrance for the establishment of the proper payment options in Nepal. Since Nepal Rasta Bank (NRB) which is the Central Bank of Nepal was strictly controlling the outflow of the currencies, NRB needed an explanation on every outflow of money from Nepal to other countries. Due to such restrictions, it was not convenient for international payment platforms i.e. PayPal, Google Wallet to offer its service to Nepali market. This has had a severe impact on purchasing goods from outside Nepal. However, the situation is slowly and gradually changing. In their monetary policy for 2014, declared by NRB, up to 1000\$ outflow of currency per citizen per year is allowed without any restrictions. (39).

3.5.2.2 Internal card processing system

Another major problem with implementation of payment solutions is that the usage of internal card processing system is still at early stage. Due to which we cannot purchase goods even inside Nepal using Visa, MasterCard which are offered by majority of the banks. It has been believed that due to high security deposit to cover for potential fraud required by card provider companies

i.e. Visa, MasterCard, majority of the Nepalese bank hesitate to invest that much and create such system (40).

Almost all of the payment solutions used by e-commerce merchant is either privately established payment wallet systems like eSewa and Payway or through cash on delivery process. As payment gateways like eSewa are still not available to larger customer base, merchants may still have dilemma whether to implement payment gateways in their online market or not. To resolve this major issue with the payment process in 2014 NRB has announced to develop National Payment System (NPS) adopting a strategies approach to reform the overall payment infrastructure in Nepal, starting from the legal framework (32).

3.5.2.3 Cash culture

Since the banking sector in Nepal is still under development and the use of debit/credit cards are not within the reach or not being used by majority of the Nepalese, cash is the main mechanism to carry out all general financial transaction which includes online shopping. Against the population of over 30 million in Nepal, just over 3 million Nepalese carry debit/credit card. Until mid-August 2013 debit card holders reached 3.58 million whereas the credit card holder counts to 38,700. (41). Nepalese have always found it more convenient in carrying cash rather than a debit/credit card.

3.5.2.4 Awareness

The dearth of proper knowledge and awareness among the Nepalese is the major hurdle in the flourishing of e-commerce sector. The interest of young generation in the field of Information Technology (IT) and the growth of IT companies has helped a lot in the awareness for web and IT sector, which has directly created more opportunities for the growth and development of e-commerce in Nepal. This has also influenced in the development to payment methods and technologies used in the e-commerce sector in Nepal.

3.5.2.5 Other

In addition to the above mentioned challenges, security and the cost covering for the implementation of the payment system in an online store is considered as influencing factor in the establishment of proper payment method that can be effective in context of Nepal. And to top it all, low bandwidth of internet, unreliable and unsecure usage of payment methods and ever increasing power cuts have not helped the cause at all.

4 Practical part

The practical part is carried out via quantitative research and is divided in to two sections among internet users in Nepal and among e-commerce store owners in Nepal. Internet user are presented with general multiple choice questionnaires about their use of online shopping and the methods they use and prefer to use during the payment process. E-commerce stores owners are presented with interview questionnaires along with the scoring for the payment methods given based on the technical, social and economic evaluation criteria.

4.1 Quantitative Research

Qualitative research is used in order to fulfill the main goal of the research. It is a numbers side of a market or social research. It measures and attaches numbers to the market – for instance market share, market size, penetration, market growth rate, installed base etc. It can also be used to measure attitudes, commitment, satisfaction and various other useful market data and metrics which can be tracked over time and then used to generate insights as a part or wider planning and strategy process for conducting a business (42).

4.1.1 Google Forms

Google Forms has been used to collect responses from all respondents including e-commerce store owners. It is a web-based survey tool for conducting market research, gathering customer feedbacks, evaluating educational offerings and other information in an easy and streamlined way. Responds are presented with questionnaires, survey or poll. The result can be viewed in the Google Spreadsheet which is connected to the Google Forms (43).

4.2 Evaluation Criteria

Most discussions about e-commerce payment systems emphasize mainly on technological advancement. However, economics as well as social factors are also crucial to people's decisions regarding the use of e-commerce payment schemes. It is further divided into criteria that are most instructive and mutually exclusive, which lead to a total of 12 criteria which more or less influences the performance of a payment system (44).

4.2.1 Technological Factors

4.2.1.1 Security

Since e-commerce is commenced on an open network, encryption technologies should be developed and implemented to deter potential hacker attacks. Specifically, security failures reduce people's trust in e-commerce payment systems and hinder the emergence of these systems (44).

4.2.1.2 Reliability

The e-commerce payment must be available online 24 hours a day, meaning that the operation system should not encounter failures at any point of time (44).

4.2.1.3 Non-repudiation

The basic properties of this criteria is acknowledging payment and producing receipts required for any payment system. Such evidence of payment can deter the destruction or alteration of transaction during the transmission (44).

4.2.1.4 Latency (clearing time and frequency)

Even during peak load situation, payments should be transmitted at a steady and constant pace. Both customers and merchants should be able to use the e-payment mechanisms without any significant delays in authorization and clearing the transaction (44).

4.2.1.5 Transaction completeness

Transaction must be completed; otherwise, transaction inconsistencies will occur. A simultaneous and instant clearing, and settlement instrument should be incorporated in the payment systems to avoid transaction incompleteness (44).

4.2.2 Economic Factors

4.2.2.1 Costs

There are two kinds of costs in adopting the payment systems in e-commerce: fixed and transaction costs. Fixed costs refer to those during the installation of payment equipment such as card readers and payment Software. Transaction costs are the costs incurred by customers and merchants every time they commence a business exchange. Since online transactions involve micropayment, low and fixed transaction costs are essential to the popularity of systems in e-commerce (44).

4.2.2.2 Monetary convertibility

Monetary convertibility refers to the conversion of the digital currency from the digital format to real currencies. The utility of the system should ease the degree of conversion of the currency for both customers and store owners (44).

4.2.2.3 Customer base

Compared with other criteria, the customer base by and largely determines the performance of the payment system. For a payment system which represents a certain network, its adoption relies on the number of customers and merchants using it. This is also called positive network effect (network externality) (44).

4.2.3 Social Factors

4.2.3.1 Anonymity

Although the ability to create untraceable transactions raises concerns in terms of tax evasion, money laundering, and other criminal uses, transactional anonymity is a primary right of a consumer. The identity of a consumer should not be revealed to other parties without their permission. Anonymous transactions furthermore protect consumers against price discrimination (44).

4.2.3.2 Privacy

In addition to a user's identity, customer's income sources and spending patterns should not be revealed to other parties without their consent. The legal requirement of privacy protects a user's transaction information from being revealed to other parties (44).

4.2.3.3 Convenience

Convenience is the ease with which users can spend, store, and transport a currency value using the payment system. The ability to operate e-commerce payment method on different platforms and network infrastructures (i.e., mobile devices, PCs) makes online transactions easier and quicker for users (44).

4.2.3.4 Merchant acceptance

Similar to the concept of convenience, merchant acceptance refers to the number and type of locations where an e-commerce payment method is in use. As the use of the payment scheme becomes more widespread, network effect increases the utility of the structure for users (44).

4.3 Analysis of questionnaire survey with internet users in Nepal

For this survey, internet user in Nepal are presented with 6 – 12 questionnaires based on their response to the questionnaires. The questionnaires relates to their age, gender, their choices for payment methods for online shopping on online and their comments and feedback about the existing payment options and also, for the future payment options. The survey was presented to more than 60 Nepalese internet users mostly ranging from 18 - 34 years, of which 25 users shopped online at least once.

4.3.1 Descriptive Analysis

Descriptive statistics are used to describe the basic features and characteristics of the data in a study. It simply describes what the data shows and what is. Descriptive statistics just shows what's going on the data and to show the properties of every variables included on it. It is typically distinguished from inferential statistics. Inferential statistics is used to make judgments of the probability that an observed difference between groups is a dependable one or one that have happened by chance in this study (45).

4.3.1.1 Empirical Results

Variable	Mean	Median	Minimum	Maximum
Debit Credit	14.0000	14.0000	12.0000	16.0000
Cash on Delivery	11.5000	11.5000	9.00000	14.0000
Digital Payment Wallet	2.00000	2.00000	1.00000	3.00000
Bank Transfer	0.500000	0.500000	0.00000	1.00000
Crypto Currency	0.00000	0.00000	0.00000	0.00000
Variable	Std. Dev.	C.V.	Skewness	Ex. kurtosis
Debit Credit	2.82843	0.202031	0.00000	-2.00000
Cash on Delivery	3.53553	0.307438	0.00000	-2.00000
Digital Payment Wallet	1.41421	0.707107	0.00000	-2.00000
Bank Transfer	0.707107	1.41421	0.00000	-2.00000
Crypto Currency	0.00000	undefined	undefined	undefined

Table 1: Summary Statistics of Descriptive Analysis

4.4 Analysis of interview with e-commerce store owners in Nepal

In this second survey, 4 e-commerce stores in Nepal were interviewed and presented with options to rank the importance and usability of the common payment methods in practice. The scoring was based upon evaluation criteria i.e. Economic Factor, Technical Factor and Social Factor. The participants were asked to score the given criteria in terms of weight 1 – 5; 1 being the lowest and 5 being the highest. The e-commerce stores participated in the interview were Harilo.com, Metrotarkari.com, Foodmandu.com and Bhatbhatenionline.com.

4.4.1 Multiple Attribute Decision Making (MADM)

Multiple Attribute Decision Making is a method of making decision to select the suitable option from the provided attributes and also find the alternatives to it. MADM can be defined as the study of method and procedures concerning multiple conflicting attributes which can be formally incorporated into the management planning process (46).

	Security	Reliability	Customer Base	Convenience	Cost
Debit / Credit Card	3.75	3.5	3.25	4.25	2.25
Cash on delivery	4.5	5	4.25	3.75	4
Bank Transfer	4.25	4	2.75	3.25	3
Payment Wallet	3.5	3.75	3.25	3.5	3
	max	max	max	max	min

Table 2: Matrix form of average result

There are some process and method in MADM which are as below:

- Standard level methods
- Scoring or sequence methods
- Simple additive weighting method

Attributes was measured in the survey by using the scale of 1-5.

4.4.1.1 Selection and description of Payment Method

The main objective of this survey is to find the best current e-commerce payment method used. In this survey there is attribute and criterion, basic e-commerce payment used in Nepal are Debit/Credit Card, Cash on delivery, Bank transfer and Payment Wallet. Among many e-commerce payment method, these are commonly used in Nepal. For the use of a payment method these criteria; Security, Reliability, Customer Base, Convenience, and Cost are considered as the most influencing criteria among others in the research.

Above below table shows the average ranking scale from survey result. To show which attribute plays important role in selection of the best e-commerce payment method among different alternatives the standard method is selected. According to the standard weight.

4.4.1.2 Standard weight

Standard weight	4.5	5	4.25	3.75	4	21.5
Payment Method	Security	Reliability	Customer Base	Convenience	Cost	Total
Debit/Credit Card	3.75	3.5	3.25	4.25	2.25	17
Cash on delivery	4.5	5	4.25	3.75	4	21.5
Bank Transfer	4.25	4	2.75	3.25	3	17.25
Payment Wallet	3.5	3.75	3.25	3.5	3	17
	Max	Max	Max	Max	Min	

Table 3: Standard Weight

According, to the average value derived from survey, Cash on delivery got the exact criterion value as the standard weight with standard score. But to sort out the exact evaluation on why

expert chose cash on delivery as the best e-commerce payment method were analyzed according to AHP (Analytic Hierarchy Process).

4.4.2 AHP Model (Analytic Hierarchy Process)

AHP is one of the multiple criteria decision making methods which was first introduced by Prof. Thomas L. Saaty in 1977. AHP helps in providing procedures of judgment, deriving preference among criteria and options and simplifying preference ratings among decision criteria using pair wise comparisons (46).

4.4.2.1 Steps

- Dividing the issues into a hierarchy.
- Comparing those issues by creating pair of them.
- Creating priorities based on the elements of the hierarchy.
- Analyzing those elements in order to get the required results for achieving the objectives.

Analytical Hierarchy Process Matrix to analyze Payment Methods from the viewpoint of the experts.

	Reliability	Security	Customer Base	Convenience	Cost
Reliability	1	5	4	4	3
Security	0.2	1	4	3.5	3.5
Customer Base	0.25	0.25	1	4	3
Convenience	0.25	0.285714	0.25	1	4
Cost	0.333333	0.285714	0.333333	0.25	1
COL. TOTAL	2.033333	6.821429	9.583333	12.75	14.5

Table 4: Result from AHP method of average value from survey

	NORMALIZED SCORE RESPONSE	NORMALIZED SCORE QUALITY	NORMALIZED SCORE PACKING	NORMALIZED SCORE DELIVERY	NORMALIZED SCORE RELATIONSHIP	CUMULATIVE NORMALIZED SCORE OR ROW SUM	NORMALIZED PERCENTAGE OR PERCENT RATIO SCALE OF PRIORITY
Reliability	0.491803279	0.732984293	0.417391304	0.31372549	0.206896552	2.162800918	43.25601836
Security	0.098360656	0.146596859	0.417391304	0.274509804	0.24137931	1.178237933	23.56475866
Customer Base	0.12295082	0.036649215	0.104347826	0.31372549	0.206896552	0.784569902	15.69139805
Convenience	0.12295082	0.041884817	0.026086957	0.078431373	0.275862069	0.545216034	10.90432069
Cost	0.163934426	0.041884817	0.034782609	0.019607843	0.068965517	0.329175212	6.583504241
COL. TOTAL	1	1	1	1	1	5	

Table 5: After normalization

Normalized Percentage or percent ratio 43.25601836 % of Reliability mentioned by the data.

5 Result and Discussion

The research examines the present situation of e-commerce in Nepal and the payment methods that have been and are still being used for the payment for the purchase via online stores. Two different surveys were conducted among internet users and e-commerce store owners in Nepal, regarding e-commerce behavior and payment methods they have used and/or still using. The variation of the sample may not be representative as the data might be biased. Since the data collected may not cover all the attributes of the research topic, it can be considered as a mini version of a full scale study that is can be crucial for a decent study result.

The first survey was conducted among the internet users, where they were presented with 5 various payment methods to choose from. Firstly, they were asked about their online shopping experience, and later were asked to choose the payment method they found most convenient. From the obtained results, cash on delivery was seen as the most preferred way of making payments. Secondly and quite surprisingly, payments by card was chosen as the second most preferred method of payment although direct payment via card is not available in most of the online stores in Nepal. This represents that most of the participants of the survey were not aware of the difference between payment by wallet and card payment method.

Here, the different terms of statistics are used in order to identify the impact of the variables in the e-commerce business in Nepal. Mean and Median are higher in the Debit/Credit than cash on delivery, digital payment wallet, bank transfer and Crypto Currency. From the value of cash on delivery in terms of standard deviation we can say that cash on delivery is less concentrated. It also means the cash on delivery is farther away from the mean, on average. It means there are higher number of people who are using the cash of delivery services in Nepal. Bank Transfer and Crypto Currency are too low in terms of mean, standard deviation, covariance, skewness and kurtosis.

The second survey for the study was based on MADM, survey results were evaluated in several e-commerce payment method like Debit/Credit card, cash on delivery, Bank transfer and payment wallet to given criteria. The criteria were reliability, security, customer base, convenience and cost. In this research, standard level method was used to find standard weight. According to standard weight, Cash on delivery was analyzed as a best e-commerce payment method among the selected four payment method in Nepal. The comparison among criterion using AHP method was done as shown in Table no. 5 in which the result shows that reliability was best among criterion.

6 Conclusion and Recommendation

With the evolving nature of internet, the online shopping behavior of users have changed too. In past, many users were more inclined toward traditional ways of payment whereas these days, internet users prefer easier, faster, secure and widely available means of payment options. From the first survey and its analysis, it was known that cash on delivery is still the most preferred way of making online payments. This contradicts with the previous statement but given the situation of Nepal and the hindrance in proper implementation of better payment solutions which are mentioned in previous topic, high usages of Cash on delivery do makes some sense. Surprisingly, Card payment appeared to be the second most preferred method of payment, but this is not the case in reality. As there is no provision for Debit/Credit card usage in Nepal, this result maybe the case of users confusing payment gateways with Card payment system.

Secondly, experts' view on why Cash on delivery is more preferred method was calculated using MADM and AHP model. Amid the list of various factors, result showed that "Reliability" was the main factor for preferring Cash on delivery.

As there is a general trend of moving toward new and better payment options, the same can be said in context of Nepal. It is recommended that more and more merchants, online shop owners and users start using easier and secure methods in order to expand the market not just domestically but also internationally. Also, if government improves its banking policy, there may be more opportunities for different payment methods to flourish and provide users with wide range of options to choose from.

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8 Abbreviations

AHP: Analytical Hierarchy Process

EDI: Electronic Data Interchange

AmEx: American Express

NRB: Nepal Rastra Bank

POS: Point of Sale

IT: Information Technology

WWW: World Wide Web

EFT: Electronic Funds Transfer

NEPS: Nepal Electronic Payment Systems

ECS: ElectraCard Services

NEA: Nepal Electricity Authority

COD: Cash on Delivery

EFT: Electronic Funds Transfer

ITU: International Telecommunication Union

NEPS: Nepal Electronic Payment Systems

NPS: National Payment System

MADM: Multiple Attribute Decision Making

9 Appendix

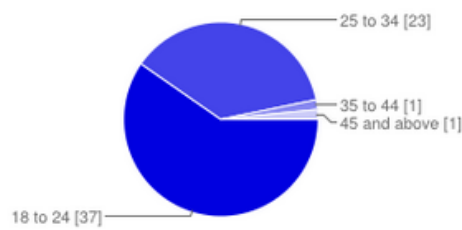
9.1 Survey questionnaires and results - Internet users in Nepal

62 responses

[View all responses](#) [Publish analytics](#)

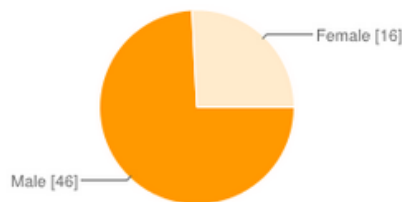
Summary

What is your age?



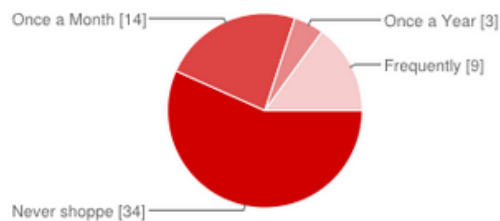
18 to 24	37	60%
25 to 34	23	37%
35 to 44	1	2%
45 and above	1	2%

What is your gender?



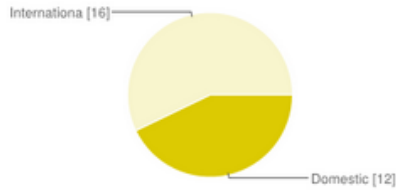
Male	46	74%
Female	16	26%

How often do you shop online?



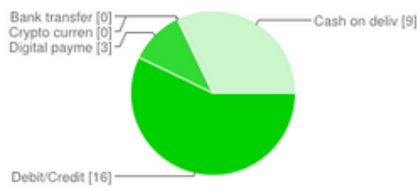
Never shopped online	34	55%
Once a Month	14	23%
Once a Year	3	5%
Frequently	9	15%

Was your last shopping domestic (within Nepal) or international?



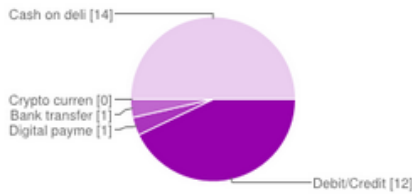
Domestic	12	19%
International	16	26%

Which payment method did you use on your last purchase?



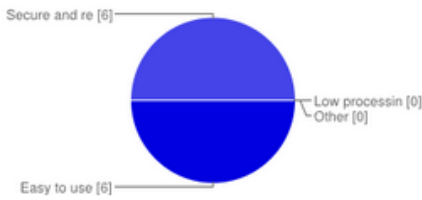
Debit/Credit card	16	26%
Digital payment wallets i.e. eSewa, Paypal, Payway	3	5%
Bank transfer	0	0%
Crypto currencies i.e. Bitcoin, Litecoin	0	0%
Cash on delivery	9	15%

Which payment method do you use most frequently when buying products/services online?



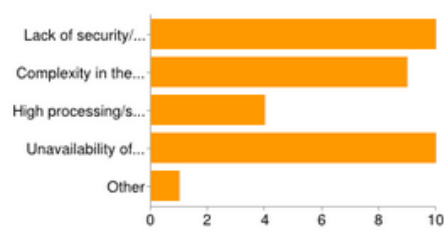
Debit/Credit card	12	19%
Digital payment wallets i.e. eSewa, Paypal, Payway	1	2%
Bank transfer	1	2%
Crypto currencies i.e. Bitcoin, Litecoin	0	0%
Cash on delivery	14	23%

Why did you choose this payment method?



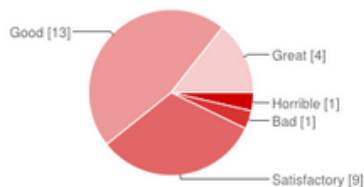
Easy to use	6	10%
Secure and reliable	6	10%
Low processing/service charge	0	0%
Other	0	0%

What do you think is/are the problem(s) related to e-commerce payment method in Nepal?



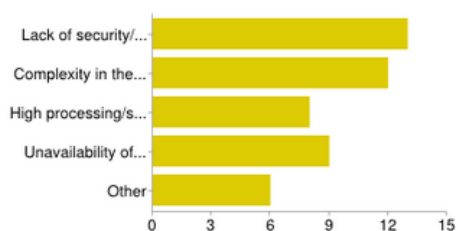
Lack of security/trust	10	16%
Complexity in the payment process	9	15%
High processing/service charge	4	6%
Unavailability of internationally recognized payment methods	10	16%
Other	1	2%

Evaluate your last online payment experience



Horrible	1	2%
Bad	1	2%
Satisfactory	9	15%
Good	13	21%
Great	4	6%

Reason why you don't shop online



Lack of security/trust	13	21%
Complexity in the payment process	12	19%
High processing/service charge	8	13%
Unavailability of internationally recognized payment methods	9	15%
Other	6	10%

Do you plan to shop online in the future?



Yes	31	50%
No	3	5%

Do you have any comments/feedback regarding e-commerce payment methods currently being used in Nepal?

no

the delivery must be even available outside the valley.

we cannot buy from appstore and apps from playstore cannot order from international wensites like ebay

There is no flexibilty in the payment system of nepal.I would say payement system compared to other country is a mesh here. we need lots of improvement.

No comment...

No.

No, thanks.

Long Process

9.2 Survey questionnaires and results – e-commerce store owners in Nepal

4 responses

[View all responses](#)

[Publish analytics](#)

Summary

Website/company name

Bhatbhateni

Harilo

Foodmandu

Durbar Margh Traders

Which e-commerce payment solutions has been incorporated in your business model? Please explain in brief.

we use eSewa and Cash on delivery for the payment option. eSewa is chosen as it is widely used payment solution in Nepal.

We have been using cash on delivery option only.

"e-sewa" an online payment solution highly popular in Nepal is incorporated in our business model. Customers have to create an account in e-sewa and the payment can be done using their account.

Payment Solutions used are Credit Card, Payment Gateways like Paypal, Payway, eSewa, Google Wallet, Amazon Payments, Bank Transfer, Cash and Cheque

What are the problems faced during or after the implementation of the payment solutions?

Use of payment gateways like Paypal and Google Wallet or international credit cards is not very effective as users from Nepal can't use it properly .
customers sometimes are unable to transfer fund to their eSewa account, hence cannot complete then payment the purchase.
We don't have much problem incorporating this service unlike other payment methods.
several authentication issues were encountered at first but the online payment system has greatly favoured the customers nationwide.

Have you used any International payment solutions in your e-commerce website? If yes, please list them.

no yet
no
not yet
Yes. Paypal, Google Wallet, Amazon Payments

How are you handling the problem at the current moment?

we encourage customers to use cash on delivery method whenever they have trouble with paying via eSewa
requesting the online payment company to launch the upgrades regularly requesting customers to provide necessary details like phone number and emails with the transactions to track the errors
since we only have cash on delivery method, we are not facing any significant problems regarding payment.
To handle these problem, we focus more on Cash-on-delivery and domestic payment gateway like e-sewa and payway.

If not, please explain the reason behind not implementing those payment solutions.

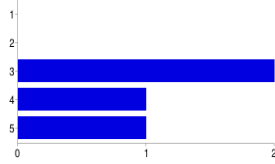
N/A
transferring funds to the international payment wallets is a major set back, also not having a payment processing system.
we have thought about implementing international payment wallets mainly Paypal, however after the initial research we found out that it wouldn't be a viable payment solution for Nepalese e-commerce market as there are several hindrances transferring fund to and via Paypal.
international payment solutions like paypal, western union, wepay etc have no direct affiliation to the local online payment systems so customers may feel little insecure about the transactions they make

Please provide some recommendation for improving the e-commerce payment process in Nepal.

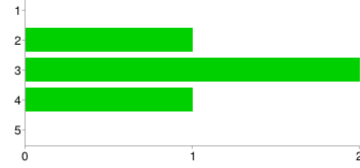
Government should relax it's monetary policy so that international credit cards and Paypal can be used easily by the customers
Nepal needs to establish a payment processing system so that all the cards issued by Nepalese banks can be processed normally as any international cards and in any market.
government or the responsible party should create a payment processing system and remove all the limitations on the outflow of currency from Nepal
awareness programs, collaborating more shops, business, companies and government with it etc

Please rank the payment solutions in terms of its weight 1 (lowest) to 5 (highest)

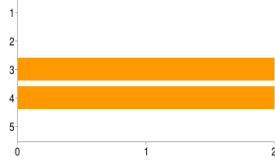
Security [Debit/Credit card]



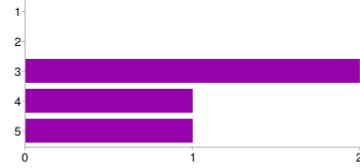
Latency [Debit/Credit card]



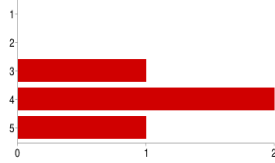
Reliability [Debit/Credit card]



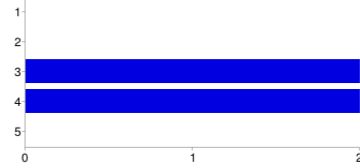
Security [Crypto-currency]



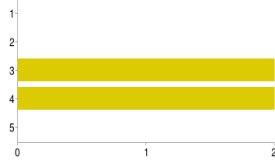
Transaction Completeness [Debit/Credit card]



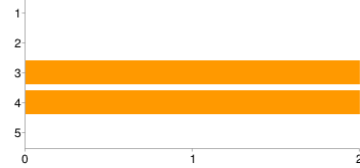
Reliability [Crypto-currency]



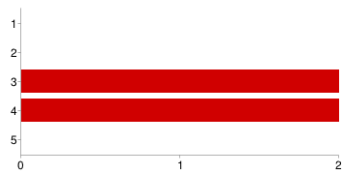
Non-repudiation [Debit/Credit card]



Transaction Completeness [Crypto-currency]

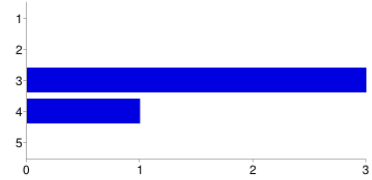


Non-repudiation [Crypto-currency]



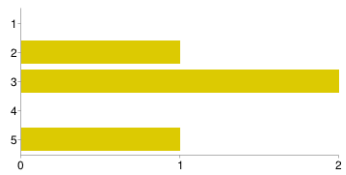
Rating	Count	Percentage
1	0	0%
2	0	0%
3	2	50%
4	2	50%
5	0	0%

Transaction Completeness [Payment wallet]



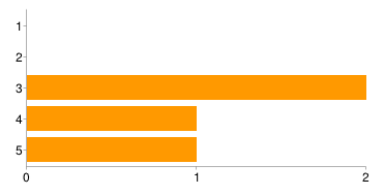
Rating	Count	Percentage
1	0	0%
2	0	0%
3	3	75%
4	1	25%
5	0	0%

Latency [Crypto-currency]



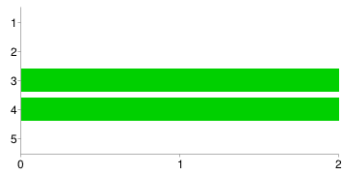
Rating	Count	Percentage
1	0	0%
2	1	25%
3	2	50%
4	0	0%
5	1	25%

Non-repudiation [Payment wallet]



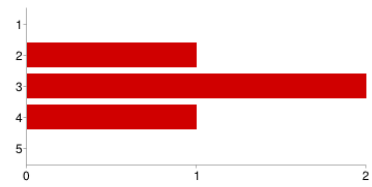
Rating	Count	Percentage
1	0	0%
2	0	0%
3	2	50%
4	1	25%
5	1	25%

Security [Payment wallet]



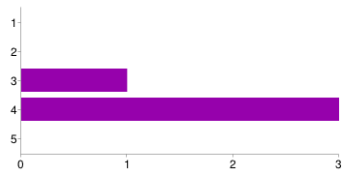
Rating	Count	Percentage
1	0	0%
2	0	0%
3	2	50%
4	2	50%
5	0	0%

Latency [Payment wallet]



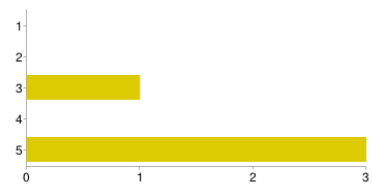
Rating	Count	Percentage
1	0	0%
2	1	25%
3	2	50%
4	1	25%
5	0	0%

Reliability [Payment wallet]



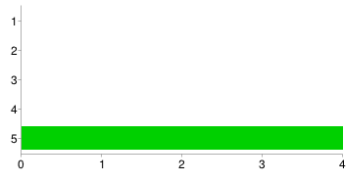
Rating	Count	Percentage
1	0	0%
2	0	0%
3	1	25%
4	3	75%
5	0	0%

Security [Cash-on-Delivery]



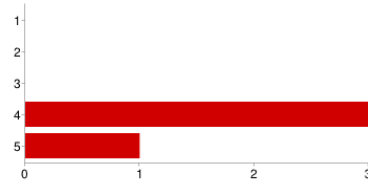
Rating	Count	Percentage
1	0	0%
2	0	0%
3	1	25%
4	0	0%
5	3	75%

Reliability [Cash-on-Delivery]



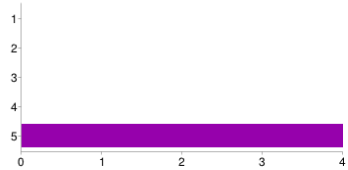
1	0	0%
2	0	0%
3	0	0%
4	0	0%
5	4	100%

Security [Bank Transfer]



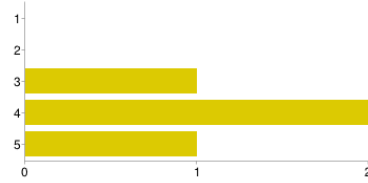
1	0	0%
2	0	0%
3	0	0%
4	3	75%
5	1	25%

Transaction Completeness [Cash-on-Delivery]



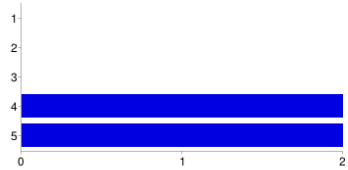
1	0	0%
2	0	0%
3	0	0%
4	0	0%
5	4	100%

Reliability [Bank Transfer]



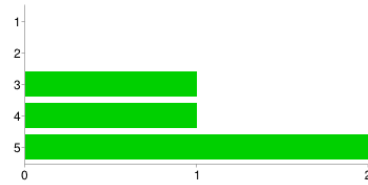
1	0	0%
2	0	0%
3	1	25%
4	2	50%
5	1	25%

Non-repudiation [Cash-on-Delivery]



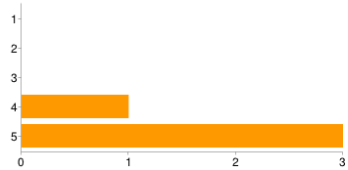
1	0	0%
2	0	0%
3	0	0%
4	2	50%
5	2	50%

Transaction Completeness [Bank Transfer]



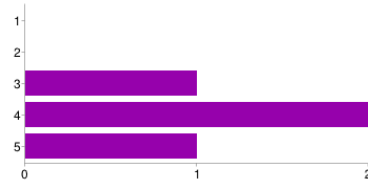
1	0	0%
2	0	0%
3	1	25%
4	1	25%
5	2	50%

Latency [Cash-on-Delivery]



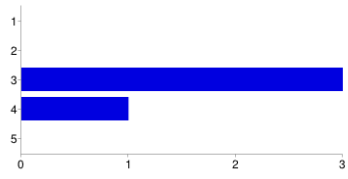
1	0	0%
2	0	0%
3	0	0%
4	1	25%
5	3	75%

Non-repudiation [Bank Transfer]



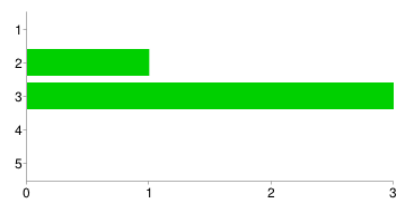
1	0	0%
2	0	0%
3	1	25%
4	2	50%
5	1	25%

Latency [Bank Transfer]



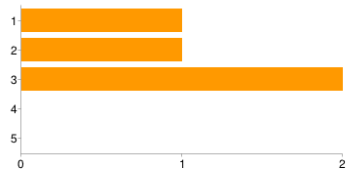
1	0	0%
2	0	0%
3	3	75%
4	1	25%
5	0	0%

Peer-to-Peer Payment [Debit/Credit Card]



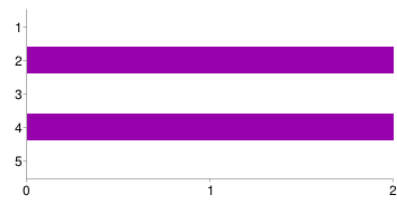
1	0	0%
2	1	25%
3	3	75%
4	0	0%
5	0	0%

Cost [Debit/Credit Card]



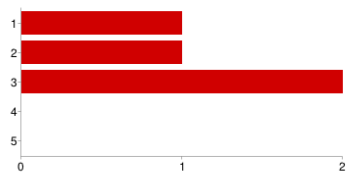
1	1	25%
2	1	25%
3	2	50%
4	0	0%
5	0	0%

Cost [Payment Wallet]



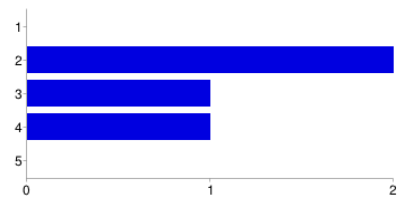
1	0	0%
2	2	50%
3	0	0%
4	2	50%
5	0	0%

Monetary Convertibility [Debit/Credit Card]



1	1	25%
2	1	25%
3	2	50%
4	0	0%
5	0	0%

Monetary Convertibility [Payment Wallet]



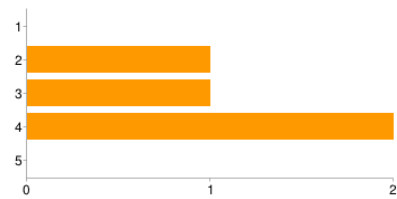
1	0	0%
2	2	50%
3	1	25%
4	1	25%
5	0	0%

Customer Base [Debit/Credit Card]



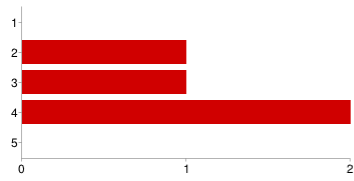
1	1	25%
2	0	0%
3	1	25%
4	1	25%
5	1	25%

Customer Base [Payment Wallet]



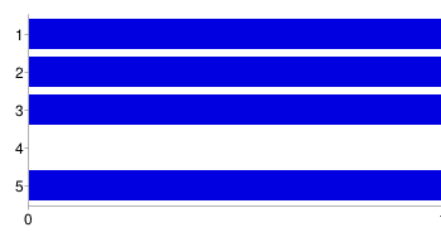
1	0	0%
2	1	25%
3	1	25%
4	2	50%
5	0	0%

Peer-to-Peer Payment [Payment Wallet]



1	0	0%
2	1	25%
3	1	25%
4	2	50%
5	0	0%

Peer-to-Peer Payment [Crypto-currency]



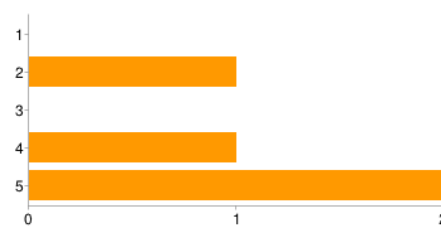
1	1	25%
2	1	25%
3	1	25%
4	0	0%
5	1	25%

Cost [Crypto-currency]



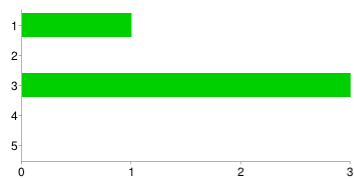
1	0	0%
2	1	25%
3	1	25%
4	1	25%
5	1	25%

Cost [Cash-on-Delivery]



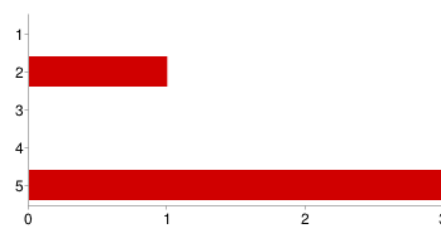
1	0	0%
2	1	25%
3	0	0%
4	1	25%
5	2	50%

Monetary Convertibility [Crypto-currency]



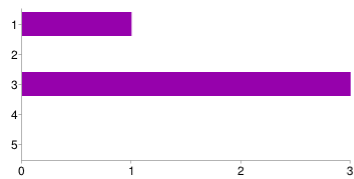
1	1	25%
2	0	0%
3	3	75%
4	0	0%
5	0	0%

Monetary Convertibility [Cash-on-Delivery]



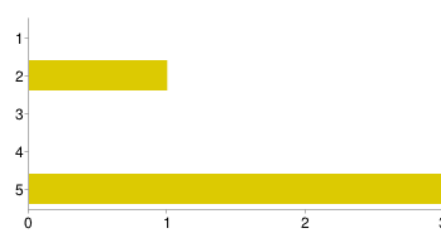
1	0	0%
2	1	25%
3	0	0%
4	0	0%
5	3	75%

Customer Base [Crypto-currency]



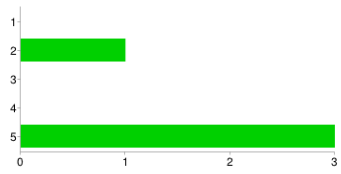
1	1	25%
2	0	0%
3	3	75%
4	0	0%
5	0	0%

Customer Base [Cash-on-Delivery]



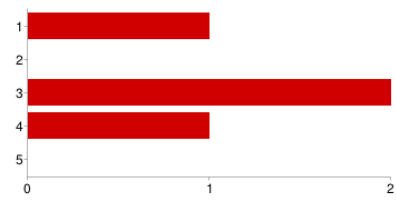
1	0	0%
2	1	25%
3	0	0%
4	0	0%
5	3	75%

Peer-to-Peer Payment [Cash-on-Delivery]



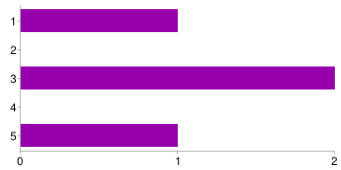
1	0	0%
2	1	25%
3	0	0%
4	0	0%
5	3	75%

Peer-to-Peer Payment [Bank Transfer]



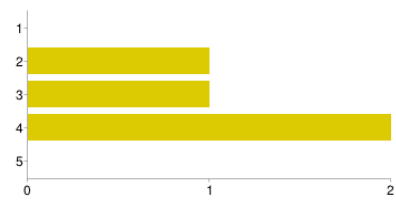
1	1	25%
2	0	0%
3	2	50%
4	1	25%
5	0	0%

Cost [Bank Transfer]



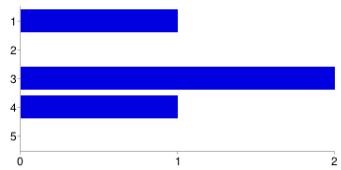
1	1	25%
2	0	0%
3	2	50%
4	0	0%
5	1	25%

Anonymity [Debit/Credit Card]



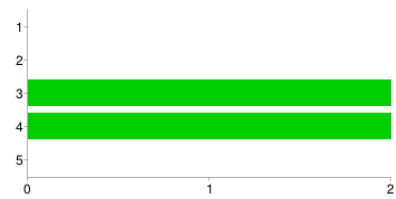
1	0	0%
2	1	25%
3	1	25%
4	2	50%
5	0	0%

Monetary Convertibility [Bank Transfer]



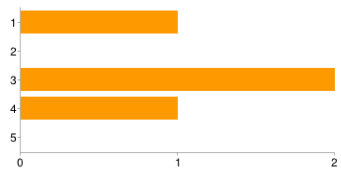
1	1	25%
2	0	0%
3	2	50%
4	1	25%
5	0	0%

Privacy [Debit/Credit Card]



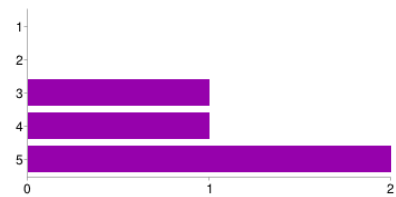
1	0	0%
2	0	0%
3	2	50%
4	2	50%
5	0	0%

Customer Base [Bank Transfer]



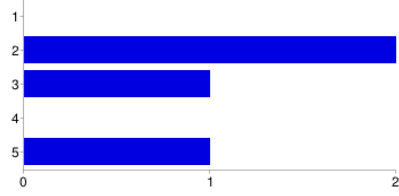
1	1	25%
2	0	0%
3	2	50%
4	1	25%
5	0	0%

Convenience [Debit/Credit Card]



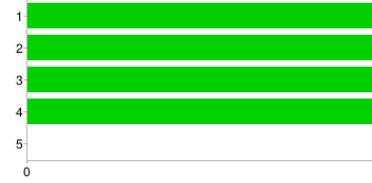
1	0	0%
2	0	0%
3	1	25%
4	1	25%
5	2	50%

Merchant Acceptance [Debit/Credit Card]



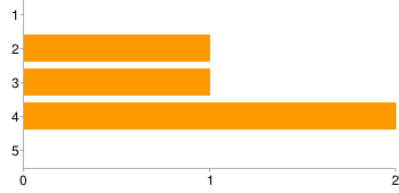
1	0	0%
2	2	50%
3	1	25%
4	0	0%
5	1	25%

Merchant Acceptance [Payment Wallet]



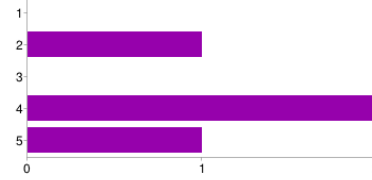
1	1	25%
2	1	25%
3	1	25%
4	1	25%
5	0	0%

Anonimity [Payment Wallet]



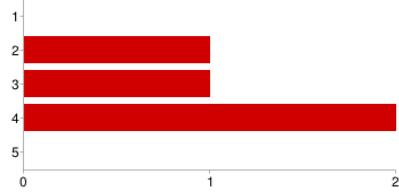
1	0	0%
2	1	25%
3	1	25%
4	2	50%
5	0	0%

Anonimity [Crypto-currency]



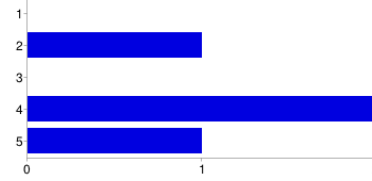
1	0	0%
2	1	25%
3	0	0%
4	2	50%
5	1	25%

Privacy [Payment Wallet]



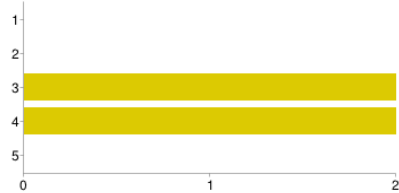
1	0	0%
2	1	25%
3	1	25%
4	2	50%
5	0	0%

Privacy [Crypto-currency]



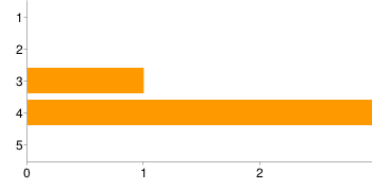
1	0	0%
2	1	25%
3	0	0%
4	2	50%
5	1	25%

Convenience [Payment Wallet]



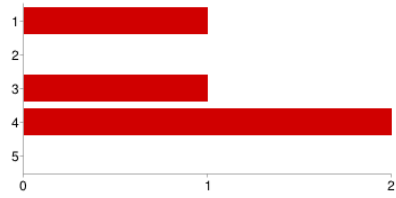
1	0	0%
2	0	0%
3	2	50%
4	2	50%
5	0	0%

Convenience [Crypto-currency]



1	0	0%
2	0	0%
3	1	25%
4	3	75%
5	0	0%

Merchant Acceptance [Crypto-currency]



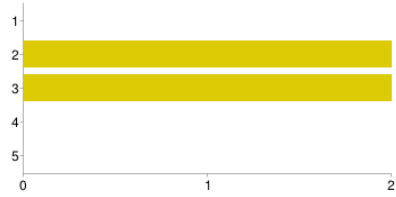
1	1	25%
2	0	0%
3	1	25%
4	2	50%
5	0	0%

Convenience [Cash-on-Delivery]



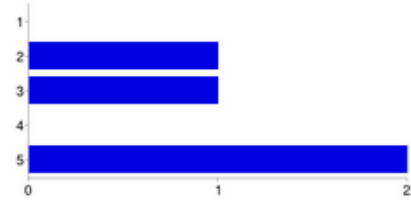
1	0	0%
2	1	25%
3	1	25%
4	0	0%
5	2	50%

Anonimity [Cash-on-Delivery]



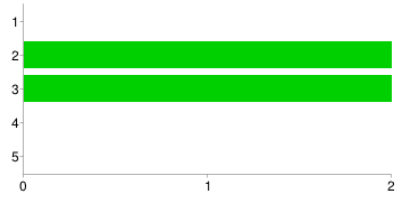
1	0	0%
2	2	50%
3	2	50%
4	0	0%
5	0	0%

Merchant Acceptance [Cash-on-Delivery]



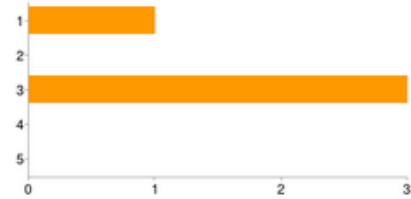
1	0	0%
2	1	25%
3	1	25%
4	0	0%
5	2	50%

Privacy [Cash-on-Delivery]



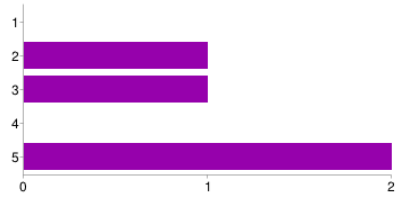
1	0	0%
2	2	50%
3	2	50%
4	0	0%
5	0	0%

Anonimity [Bank Transfer]



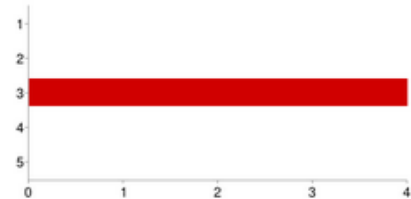
1	1	25%
2	0	0%
3	3	75%
4	0	0%
5	0	0%

Convenience [Cash-on-Delivery]



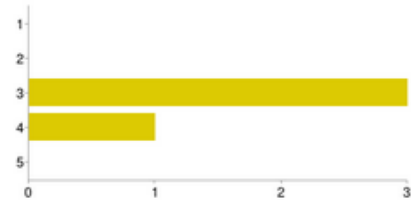
1	0	0%
2	1	25%
3	1	25%
4	0	0%
5	2	50%

Privacy [Bank Transfer]



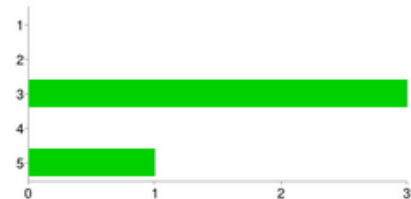
1	0	0%
2	0	0%
3	4	100%
4	0	0%
5	0	0%

Convenience [Bank Transfer]



1	0	0%
2	0	0%
3	3	75%
4	1	25%
5	0	0%

Merchant Acceptance [Bank Transfer]



1	0	0%
2	0	0%
3	3	75%
4	0	0%
5	1	25%