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Original Research Article

Customer Acceptance of Cheque Truncation and Electronic Clearing Services in Nepal

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Abstract

Efficient financial systems are vital to the economic integration of nations, with technological connectivity playing a pivotal role. In Nepal, despite the introduction of electronic cheque clearing (ECC) services in early 2012, skepticism persists among users. This study investigates the factors influencing the adoption of clearing services in Nepal, employing primary data collected using structured survey questionnaire. The research explores the relationship between independent factors such as Risk, Convenience, Trust, and Relative Advantages in determining usage patterns. With a sample size of 375 respondents, the descriptive and inferential analyses reveal a strong negative correlation between risk perception and clearing service adoption, while Trust, Convenience, and Relative Advantage exhibit robust positive relationships. Notably, convenience emerges as a key driver of adoption. The findings indicate the need for banks to mitigate risks and enhance user confidence, while also emphasizing the importance of leveraging convenience and relative advantages to promote adoption. This research offers valuable insights into the dynamics influencing the adoption of clearing services in Nepal, informing strategic interventions to boost confidence and increase usage in the financial ecosystem.

Introduction

The advent of technology has revolutionized the financial landscape, particularly in the domain of cheque processing and clearing services. Electronic Cheque Clearing (ECC) systems, such as the one implemented in Nepal, have significantly modernized traditional cheque clearing processes. ECC replaces manual, paper-based procedures with efficient electronic methods, offering benefits like increased work efficiency, operational productivity, and enhanced performance. In Nepal, the Nepal Rastra Bank (NRB) has taken strides towards enhancing the payment and settlement system through initiatives like ECC, administered by the Nepal Clearing House Limited (NCHL). The transition from manual to electronic cheque clearing underscores a critical shift in modern banking practices. While ECC streamlines processes for banks, its benefits extend equally to customers, promising time-saving, secure, and accurate transactions. Despite these advantages, the adoption of clearing services in Nepal remains a subject of debate within the financial sector. While larger banks may readily embrace ECC, smaller institutions like

cooperatives and finance companies exhibit varying levels of participation. The significance of understanding the factors driving the adoption of clearing services in Nepal cannot be overstated. This study seeks to explore the underlying reasons behind the relatively low uptake of clearing services, despite their potential advantages. The lack of comprehensive research in this area highlights the need for a focused investigation into the dynamics of clearing service adoption within the Nepalese context.

Cheques have long been a favored method of non-cash transactions globally, with ECC systems gaining prominence in both developed and developing economies (Maggiori et al., 2021). However, challenges persist in transitioning from traditional cheque processing methods to electronic alternatives. Regulatory changes, technological advancements, and evolving customer preferences necessitate a thorough examination of the factors influencing the acceptance of ECC systems by banks and customers alike. The research questions posed in this study delve into the core issues surrounding clearing service adoption in Nepal. By investigating factors such as perceived risk, trust, convenience, and comparative advantages, the study aims to shed light on the complexities of clearing service usage. Furthermore, the study seeks to evaluate the current state of ECC practices among Nepalese banks, providing insights into the challenges and opportunities within the clearing system. The objectives of this study are multifaceted, aiming to analyze the impact of perceived risk components, assess the role of trust-building factors, and explore the influence of convenience and comparative advantages on clearing service adoption (Karki & Aryal, 2019). By addressing these objectives, the study endeavors to provide a comprehensive understanding of the factors shaping the usage of clearing services in Nepal. The findings of this study hold practical implications for various stakeholders within the banking and financial sectors. Banks stand to benefit from insights into customer perceptions and barriers to clearing service adoption, enabling them to tailor their services more effectively. Business owners can leverage the study's findings to explore new avenues for economic empowerment through enhanced banking services. Additionally, software vendors and managers involved in transaction processing may use the study's insights to refine their offerings and improve service delivery. This study endeavors to fill a crucial gap in the existing literature by examining the factors influencing the adoption of clearing services in Nepal. By addressing key research questions and objectives, the study aims to provide valuable insights that can inform decision-making processes and drive positive changes within the banking and financial landscape.

Cheque truncation and electronic clearing services (ECCS) have revolutionized traditional banking systems worldwide, offering significant improvements in efficiency, cost-effectiveness, and convenience for both banks and customers (Karki, 2018). The adoption of such systems has shifted cheque processing from manual to electronic platforms, enabling faster and more secure fund transfers. In Nepal, cheque truncation and electronic clearing were introduced in 2011, marking a significant milestone in the modernization of the country's banking infrastructure. However, despite these advancements, the adoption and usage of ECCS in Nepal remain relatively low. This study aims to explore the factors influencing customer acceptance of ECCS in Nepal and provide insights for banks, regulators, and service providers. Traditionally, most banking transactions in Nepal involved physical cheque presentment for encashment and fund transfer. This system was characterized by long queues, higher operational costs, inefficiencies in archiving, and significant time consumption. The introduction of ECCS aimed to address these challenges, offering benefits such as enhanced efficiency, improved security, cost savings, and transparency (Shrestha et al., 2022). Yet, according to Nepal Rastra Bank (NRB), the adoption of ECCS by customers has not been as widespread as anticipated. Banks are struggling to realize the full advantages of this system, raising questions about the underlying factors affecting its acceptance.

Globally, cheques remain a widely used payment instrument despite the rapid growth of electronic payment systems, including credit cards and digital wallets (Deb & David, 2014). The continued reliance on cheques underscores the importance of developing efficient cheque processing systems. ECC, an image-based electronic cheque clearing and settlement system, enables banks to scan physical cheques and present their electronic images securely to the clearinghouse, thereby eliminating the need for physical cheque transportation. In Nepal, the Nepal Clearing House Limited (NCHL) has been instrumental in implementing the national ECC system. However, the absence of a backup ECC system poses a significant risk, as any system failure could disrupt the entire banking ecosystem. Despite the availability of ECC services, only a small proportion of Nepalese customers utilize them. This limited adoption suggests a gap in awareness and trust among users. Factors such as perceived risks, lack

of trust, and inadequate understanding of the system's convenience and relative advantages may contribute to this phenomenon. According to Cen (2013), the transition from traditional physical cheque clearing to electronic systems requires overcoming customer concerns and adapting to regulatory changes. This study investigates the key factors influencing customer acceptance of ECCS in Nepal. Specifically, it aims to address the research questions like; What are the main factors influencing the usage of ECCS? What influences users to trust ECCS? How do users in Nepal perceive risks associated with ECCS? What is the perception of ECCS users in Nepal regarding convenience? and What comparative advantages do ECCS users enjoy compared to traditional clearing methods?

The adoption of ECCS in Nepal offers numerous advantages for banks and customers alike. It increases operational productivity, enhances performance, and reduces costs (Dahal et al., 2020). For customers, ECCS provides secure, transparent, and efficient transactions, saving time and effort. Moreover, the system ensures accurate record-keeping, which is beneficial for future references. Despite these benefits, the penetration of ECCS in Nepal's financial ecosystem remains limited, particularly among cooperatives and finance companies. One of the critical challenges is the perceived risk associated with ECCS. Customers often question the reliability of the system, especially in the absence of a backup mechanism. Trust is another significant factor; users must have confidence in the security and efficiency of the system (Ghimire & Karki, 2022). Additionally, the convenience of using ECCS, such as its ability to facilitate interbank fund transfers without physical presence, needs to be effectively communicated to potential users. The Nepalese banking sector is also undergoing regulatory transformations, with NRB promoting initiatives such as Real Time Gross Settlement (RTGS) and Connect IPS (CIPS). These systems enable real-time, paperless transactions, posing a potential threat to ECCS. To ensure the sustained relevance of ECCS, it is crucial to raise awareness about its additional value and address the factors influencing customer acceptance.

The growing trend of ECCS adoption in developed and developing countries highlights its potential to become a dominant payment method (Asmah et al., 2016). For instance, in Ghana, research has identified key factors influencing the acceptance of ECCS, including perceived ease of use (PEOU), trust, and relative advantages. Similar studies in other countries emphasize the importance of understanding customer perceptions and addressing their concerns to drive ECCS adoption. In Nepal, however, research on ECCS is scarce. The confidentiality of banking operations and the backend nature of ECC processes pose challenges for data collection and analysis. Nonetheless, this study seeks to bridge the gap by providing valuable insights into the factors affecting ECCS usage in Nepal. By understanding these factors, banks and regulators can develop targeted strategies to enhance customer acceptance and optimize the benefits of ECCS.

The research is structured as follows: Section 2 reviews relevant literature, providing context. Section 3 details the research methodology, focusing on the empirical approach. Section 4 outlines the results and discusses their implications. Finally, Section 5 concludes the paper.

Literature Review

The advancement of information technology (IT) and the advent of internet technology have transformed the way businesses operate, resulting in various activities and services being conducted online—a phenomenon popularly known as e-commerce. In this context, the volume of global and cross-border financial transactions has grown significantly. Among the institutions leveraging these technological advancements are banks, leading to the emergence of electronic banking (e-banking). E-banking has garnered significant attention from both practitioners and academics due to its transformative impact on traditional banking practices. It involves the use of electronic media to conduct various banking activities (Devadevan, 2013), enabling customers to perform transactions conveniently through personal computers by accessing their bank's website (Goh et al., 2014). Polatoglu and Ekin (2001) identified two distinct strategies for internet banking. The first involves traditional banks with physical branches adopting internet banking as an additional channel to enhance customer accessibility. This strategy benefits both banks and customers by providing a hybrid model that combines physical and online services. The second strategy pertains to virtual banks, which operate entirely online without any physical presence. Virtual

banks achieve cost-efficiency by eliminating the need for physical infrastructure, which translates into lower costs for customers through reduced interest rates on loans and credit cards (Bhandari et al., 2021).

Cheque truncation refers to the process of replacing the physical movement of cheques within or between banks with electronic records. This system streamlines cheque processing by reducing the clearing cycle, facilitating faster clearance of local and intercity cheques (Lee et al, 2015). Cheque truncation, also known as the Cheque Truncation System (CTS), is an image-based cheque clearing mechanism. The cheque images and Magnetic Ink Character Recognition (MICR) data are captured at the collecting bank branch and transmitted electronically without the need to physically transport cheques (Lee et al, 2015). According to Yu (2012), electronic cheque clearing involves extracting and recognizing handwritten or user-entered data from cheque fields such as amount, date, and signature. This process enables banks to electronically capture and transmit cheques to paying banks without physical movement. Collecting banks or clearing houses play a pivotal role in transmitting transaction details electronically. Central banks and monetary agencies oversee the process, ensuring compliance with financial regulations and verifying the clearing process (Crabbe et al., 2009).

Jacob (2007) explained that the process begins when the bank of first deposit (BFD) scans a cheque and sends the digital copy to the paying bank via the central bank for technical and financial clearance. The paying bank reviews the cheque's validity and sends a response to the BFD through the central bank, indicating approval or rejection. This system enhances efficiency by enabling faster processing and better service delivery. Electronic Cheque Clearing Systems (ECCS) involve both electronic records and scanned cheque images for inter-bank settlements (Laukkanen et al., 2007). Banks leverage secure, high-speed connections to transmit cheque data, ensuring quick and reliable communication. Digital images can also be transferred using alternative media such as CD-ROM or data links (Marous, 2015).

Typical Cheque Truncation Model

The structure of an electronic cheque clearing system varies between banks but generally involves scanning paper cheques into digital formats. These digital representations include crucial details such as account numbers, cheque dates, and transaction amounts. The electronic cheques are securely transmitted along with image cash letters for further processing (Lee et al, 2015). The cheque truncation process comprises several steps. First, physical cheques are scanned, and essential data is captured, including the account number, cheque number, payee name, and amount (Chung & Kwon, 2009). Next, the digital cheque is transmitted to a central clearinghouse managed by the central bank. There, incoming cheques are sorted and made accessible to paying banks for verification. The paying bank assesses the validity of the cheque by checking factors such as signature authenticity, fund availability, and matching of written details with scanned images. Valid cheques are approved, and payment is confirmed, while invalid cheques are returned with reasons such as insufficient funds or signature mismatches (Jacob, 2007).

Security

Ensuring information security is crucial in electronic clearing systems. Security measures safeguard data from unauthorized access, modification, and unavailability (Goswami & Raghavendran, 2009; Ghimire et al., 2023). A private network dedicated to electronic clearing enhances security, as demonstrated by Nepal Clearing House's supervision of ECCS servers under the Nepal Rastra Bank (NRB). However, establishing such networks incurs significant costs due to the need for new infrastructure and installation of secure communication lines (Joseph & Stone, 2003). Despite the security advantages, these networks have vulnerabilities. Malicious actors could potentially exploit communication cables responsible for data transfer, posing risks to the payment system.

Storage

Once an electronic cheque is created, the physical cheque is no longer required. Banks may store the original cheque in warehouses for a limited duration or return it to customers with account statements. In Nepal, paper cheques are typically stored for up to 10 years as mandated by regulatory authorities. Similarly, electronic cheques

are stored in virtual databases for specified periods, with Nepal Clearing House managing long-term storage beyond three months for retrieval (NCHL).

The transition from physical to electronic cheque clearing systems offers significant benefits in terms of efficiency, security, and convenience. However, it also presents challenges such as high initial setup costs and vulnerability to cyber threats. Despite these challenges, the implementation of CTS and ECCS represents a transformative advancement in banking, enhancing customer satisfaction and operational efficiency in Nepal's financial sector.

Cheque Truncation Model in Nepal

Nepal Clearing House Ltd. (NCHL), a public limited company established on December 23, 2008, operates under the direction and supervision of Nepal Rastra Bank (NRB), the central bank of Nepal. It includes equity contributions from NRB, commercial banks, development banks, finance companies, and Smart Choice Technologies (SCT), a private card switch operator. NCHL is dedicated to enhancing efficiency and productivity within Banks and Financial Institutions (BFIs) by providing technology-driven payment services without requiring substantial infrastructure investments by BFIs. The NCHL-ECC system revolutionizes cheque clearing by replacing the traditional physical exchange of cheques with an electronic system that securely transmits cheque images. This innovation has significantly reduced the time and effort involved in manual cheque clearing processes, benefitting both banks and customers. The cheque clearing process is illustrated in Figure 1.

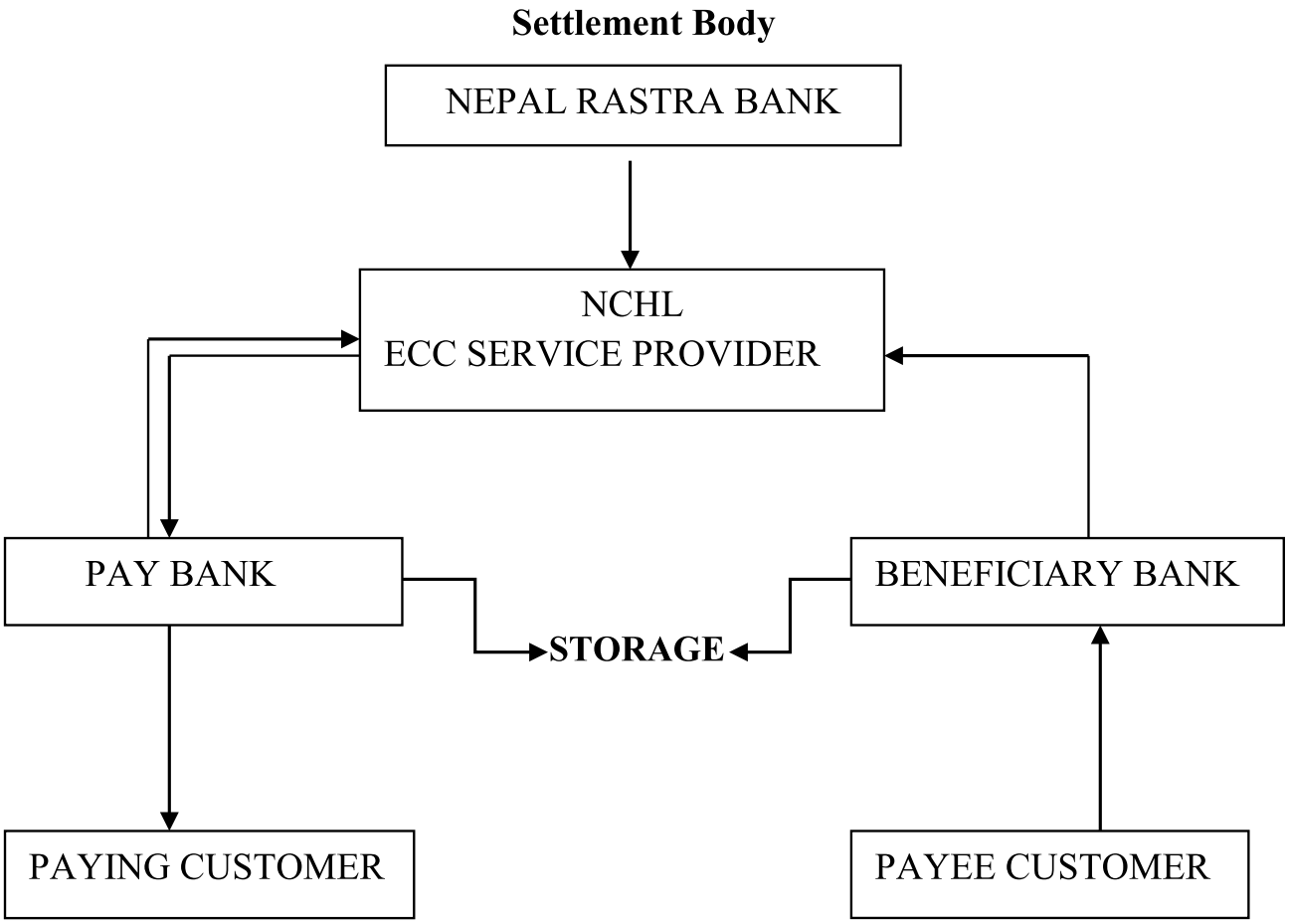

Figure 1: *Clearing Process in Nepal*

Factors Affecting Usage of Clearing Service in Nepal

Several factors influence the adoption of the Electronic Cheque Clearing System (ECCS) in Nepal. These factors include perceived usefulness, perceived ease of use, trust, system quality, and information quality, which play

crucial roles in customer acceptance. Moreover, trust, information, banking facilities, complexity, compatibility, awareness, and interest are critical for adapting to clearing services (Singh, 2014; Sulaiman et al., 2007). Developing countries often face challenges like inadequate IT knowledge, insufficient government support, and weak regulatory frameworks, which negatively influence technology adoption (Prameela, 2013).

Trust

As ECCS is a new concept in Nepal, building trust is essential for encouraging its adoption. Trust mitigates uncertainty regarding the motives and actions of others (Zhou, 2012) and enables reliance on a secure cheque clearing process. Pavlou (2001) identified trust as a willingness to become vulnerable based on confident expectations, while Chung and Kwon (2009) emphasized trust in the reliability and integrity of exchange partners. Banks and customers rely on ECCS with the expectation of seamless and secure cheque clearing. Institutional trust, shaped by legal provisions and corporate reputation, facilitates confidence in ECCS adoption.

Relative Advantages

The relative advantage of using ECCS, such as improved service quality and efficiency, significantly impacts its adoption. Studies indicate that compatibility with user needs and past experiences enhances acceptance (Asmah et al., 2016). However, perceived risks and complexity may hinder adoption, necessitating banks to align services with customer expectations and design reliable systems (Teo et al., 2012; Thakur, 2014; Karki, 2020).

Convenience

Ease of use is vital for technology adoption in Nepal, where technological literacy is limited. Davis (1989) defined perceived ease of use as the degree to which a system is free of effort. Users prefer technologies that are simple to use and align with their needs (Prameela, 2013; Maharjan et al., 2022). Compatibility with customers' banking activities increases the likelihood of adoption.

Perceived Risk

Security concerns and system quality significantly impact ECCS adoption in developing countries like Nepal (Laforet & Xiaoyan, 2005). Regulatory frameworks and government support also influence user confidence (Purwanegara et al., 2014). Consumers prioritize security and privacy while adopting electronic services. Banks must address these concerns to build trust and enhance customer satisfaction.

While concerning the theorical foundation, this study is more relates to three prominent theories including; Technology Acceptance Model (TAM), Theory of Reasoned Action (TRA) and Innovation Diffusion Theory (IDT). The Technology Acceptance Model (TAM), introduced by Davis (1989), extends the Theory of Reasoned Action (TRA) by focusing on perceived usefulness (PU) and perceived ease of use (PEOU). Perceived usefulness refers to the belief that using a technology enhances performance, while perceived ease of use indicates that the technology is simple to operate. Studies on ECCS adoption, such as Chen (2013), found that PU, PEOU, system quality, and information quality positively influence user acceptance. Theory of Reasoned Action (TRA), developed by Fishbein and Ajzen (1975) and Ajzen and Fishbein (1980), posits that behavior is determined by behavioral intentions influenced by attitudes and subjective norms. Subjective norms represent an individual's perception of social expectations (Chhetri & Karki, 2023). TRA effectively predicts user intentions and behavior in technology adoption (Luarn & Lin, 2005; Karki, 2017). In Innovation Diffusion Theory (IDT), Rogers (1995) defined innovation as a new idea or tool and diffusion as the process of communicating this innovation among users. IDT highlights five characteristics: relative advantage, compatibility, complexity, trialability, and observability. These factors, though distinct, influence technology adoption. Studies suggest that IDT aligns with TAM in addressing PU and PEOU (Moore & Benbasat, 1991). Pavlou (2001) and Prameela (2013) emphasized IDT's relevance in educational and technological environments.

The adoption of ECCS in Nepal is influenced by multiple factors, including trust, relative advantages, ease of use, and perceived risks. The Technology Acceptance Model, Theory of Reasoned Action, and Innovation

Diffusion Theory provide valuable frameworks for understanding user behavior and acceptance of ECCS. By addressing security concerns, enhancing system quality, and promoting awareness, banks can foster trust and encourage the widespread adoption of ECCS, ultimately contributing to the modernization of Nepal's banking sector.

Theoretical Framework

Based on the literature review, the theoretical framework of figure 2 illustrates the dependent and independent variables of this study:

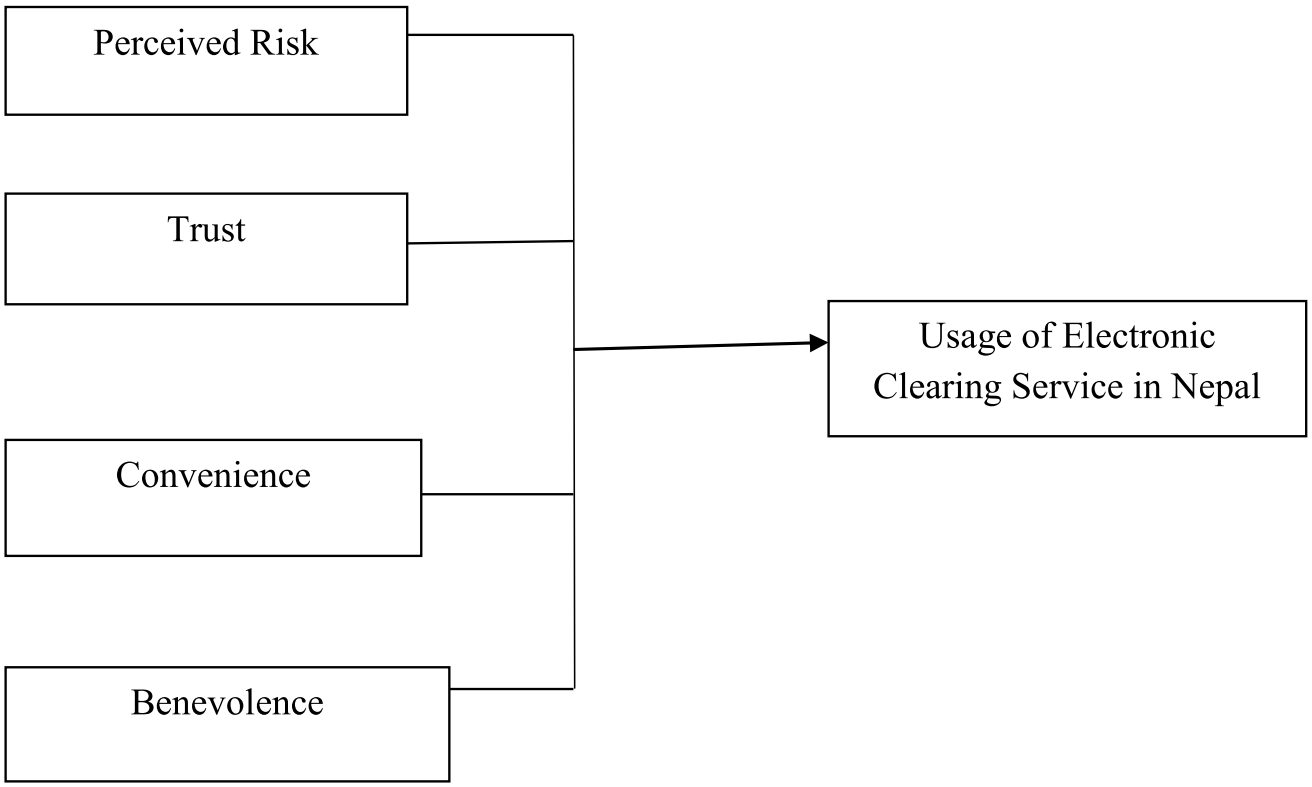

Figure 2. *Theoretical Framework of the Study*

Dependent Variable

Usage: Usage refers to the decision-making process regarding the optimal utilization of any innovation. In this study, it represents the factors influencing the clearing services in Nepal. The concept of usage has often been linked to intention, utilization, implementation, and satisfaction in the literature. Many researchers have selected satisfaction as the dependent variable in studies related to information technology (Laukkanen & Kiviniemi, 2010). Satisfaction, due to its high degree of face validity, has frequently been used as a measure of accomplishment (Ehrlich, 2003).

Independent Variables

The following independent variables have been identified based on the literature review:

Perceived Risk: Perceived risk encompasses five facets of risk: performance risk, security/privacy risk, time/convenience risk, social risk, and financial risk (Lee at al., 2015; Karki, 2022). These risks, in the context of clearing services, can be described as:

Performance Risk: Losses incurred due to deficiencies or malfunctions in the clearing servers.

Security/Privacy Risk: Potential losses resulting from fraud or hacker activities compromising the security of clearing service users.

Time/Convenience Risk: Inconvenience or time loss due to delays in receiving payments or difficulty in navigation.

Social Risk: Disapproval from peers, family, or colleagues for using clearing services.

Financial Risk: Possible monetary loss due to transaction errors or misuse of bank accounts.

Trust: Trust is categorized into three dimensions: ability, integrity, and benevolence. It is observed from the perspectives of the bank, clearing network provider, and clearing service provider. Trust impacts bank acceptance through perceived ease of use and usefulness (Pavlou, 2001).

Ability: The consumer's perception of the clearing service provider's competence and expertise in delivering the expected service.

Integrity: Users' perception of fairness, honesty, and adherence to reasonable transaction conditions by the service provider.

Benevolence: The service provider's demonstration of empathy and goodwill toward users, prioritizing their concerns over profit motives.

Convenience: Convenience reflects the extent to which the electronic clearing service meets users' needs and is measured through the following dimensions:

Perceived Usefulness: Defined as the users' belief that using the system will enhance job performance (Davis, 1989). Perceived usefulness affects users' attitudes, which, in turn, influence their behavioral intention to use the clearing system.

Perceived Ease of Use (PEOU): Defined as the degree to which a person believes the system is effortless to use (Davis et al., 1989). A system that is easier to use is more likely to be adopted by users.

Relative Advantage: Relative advantage refers to the comparative benefits users derive from using clearing services over traditional banking methods (Mishra & Bisht, 2013). It includes two components:

Perceived Cost Savings: The transaction cost associated with clearing services, such as bank charges, clearing network fees, and other related costs (Laukkanen & Kiviniemi; 2010).

Perceived Time Savings: The time efficiency offered by clearing services, as users can avoid repeated visits to the bank for transactions. Lee et al. (2015) emphasized that time plays a significant role in users' adoption of electronic clearing services.

Based on these research questions, this framework gives rise to specific research hypotheses that guide empirical investigations into the factors influencing usages of electronic cheque clearing services Nepal:

H_{01}: There is no significant relationship between perceived risks and the usage of ECCS in Nepal.
H_{02}: There is no significant relationship between trust and the usage of ECCS in Nepal.
H_{03}: There is no significant relationship between convenience and the usage of ECCS in Nepal.
H_{05}: There is no significant relationship between comparative advantage and the usage of ECCS in Nepal.

These hypotheses highlight the research's focal point, aiming to determine the effects of various factors on cheque truncation and the usages of electronic cheque clearing services Nepal. Rooted in the identified research gaps and theoretical framework, these hypotheses serve as guiding principles for empirical analysis and subsequent discussions.

Methodology

This study adopts a descriptive and causal-comparative research design, with a primary focus on quantitative data collection and analysis. The descriptive design is used to explore the facts and gather sufficient information about the impacts of clearing services on various dependent variables, while the causal-comparative approach investigates relationships between variables. A structured, closed ended questionnaire serves as the main instrument for gathering data. The data for the study were collected from respondents representing various commercial banks in Nepal. The questionnaire captured respondents' personal details (e.g., gender, age, educational qualification, employment status, and monthly income) and their perceptions of clearing services. It included yes/no questions, multiple-response items, ranking questions, and Likert scale-based questions to comprehensively assess key factors. The study employed SPSS for statistical analysis.

Sampling Technique

The sample size of 375 respondents was determined using a convenience sampling technique to adequately represent the population under study. The respondents were divided into two groups:

Bank customers: Random sampling was used to approach individuals, as it was difficult to identify who had prior knowledge of electronic clearing services.

Bank employees: A purposive sampling technique was applied, targeting key staff members, including branch managers, supervisors, and employees from various departments (Bhattarai et al., 2024). This strategic approach ensured that data were collected from knowledgeable participants. Sampling refers as the selection of a part to represent the whole. For this study, the sample was deliberately selected to investigate the properties of the target population.

Validity and Reliability of Research Instruments

Validity: Validity refers to the accuracy and meaningfulness of the inferences drawn from the study's results. To ensure the validity of the questionnaire, feedback was sought from academic supervisors and colleagues. Ambiguous questions were revised or discarded to enhance clarity and relevance.

Reliability: Reliability indicates the consistency of findings over repeated tests. The study employed Cronbach's Alpha Coefficient to assess the reliability of the questionnaire. A value above 0.5 was considered acceptable for further analysis.

Model Specification

The study builds on models from Asmah et al. (2016) to develop a conceptual framework. The models demonstrate how factors like Perceived Risk (PR), Trust (T), Perceived Usefulness (PU), and Perceived Ease of Usefulness (PEOU) influence the behavioral intention to use clearing services. It uses ANOVA to compare means between dependent and independent variables and applies multiple regression analysis to determine the relationships among variables.

The multiple regression equation is specified as:

$UCS = \alpha_1 + \beta_1 PR + \beta_2 T + \beta_3 C + \beta_4 R$

Where: UCS = Usage of Clearing Service, PR = Perceived Risk, T = Trust, C = Convenience, R = Relative

Advantage

α_1 = Usage of Clearing Service in the absence of the independent variables

β_1, β_2, β_3, β_4 = Partial change in UCS due to a one-unit change in the corresponding independent variable, holding other variables constant

This model aims to explain the relationship between the dependent variable (UCS) and independent variables (PR, T, C, and R).

Results and Discussion

The data collected for this study were analyzed from the perspective of a bank employee and customer through the administration of a structured questionnaire. The results are presented through tables and diagrams, which enhances the clarity of the data. Various analytical techniques including correlation coefficients, regression analysis, and ANOVA were applied for in-depth analysis.

Demographic Analysis

The demographic statistics are illustrated in Table 1.

Table 1: *Demographic Statistics*

Particulars	**Frequency (N)**	**Percentage (%)**
Gender		
Male	255	68.0
Female	120	32.0
Total	375	100.0
Age Group		
Below 25	69	18.4
25-39	117	31.2
40-55	96	25.6
Above 55	93	24.8
Total	375	100.0
Education		
Below secondary level	117	31.2
Intermediate level	48	12.8
Bachelors level	183	48.8
Masters and above	27	7.2
Total	375	100.0
Occupation		
Self-employed	45	12.0
Business person	210	56.0
Student	30	8.0
Service	90	24.0

Particulars	Frequency (N)	Percentage (%)
Total	372	100.0
Clearing Service-User		
Yes	360	96.0
No	5	4.0
Total	375	100.0

The analysis in Table 1, revealed a diverse sample of 375 participants, comprising 195 (52%) bank customers and 180 (48%) bankers. The majority of respondents were male, accounting for 68.0% of the total participants, while females constituted 32.0%. This indicates that male respondents showed greater interest in the study compared to females. Respondents were categorized into four age groups. The largest proportion of participants belonged to the 25–39 years age group, comprising 31.2% of the total sample. On the other hand, the below 25 years category had the least representation, with only 18.4% of respondents. Participants were classified based on their highest level of education. The findings revealed that respondents with a Bachelor's degree were the largest users of clearing services, accounting for 48.8% of the total sample. Based on their occupational background, businesspersons emerged as the largest group of clearing service users, making up 56.0% of the total respondents. Out of all participants, a remarkable 96.0% reported using clearing services. This high percentage reflects the widespread adoption and potential significance of clearing services among the respondents (Rajbhandari et al., 2020).

Descriptive Statistics

In this study, descriptive statistics have been utilized, incorporating measures like mean, minimum, maximum, and standard deviation. These statistical techniques are instrumental in extracting insights from the collected data, providing a clear understanding of its characteristics and distribution.

Table 3: Descriptive Statistics

Factors	Mean	Std. Dev.
Performance risk	3.20	1.11
Security risk	3.66	1.29
Financial risk	3.35	1.19
Time risk	4.17	0.885
Ability	3.08	0.85
Integrity	3.54	0.73
Benevolence	3.62	0.87
Perceived ease of use	4.04	0.71
Perceived usefulness	3.50	0.67
Perceived cost saving	3.07	1.59
Perceived time saving	3.28	0.80

The results highlight the perception of respondents in 5-point Likert scales on various factors influencing the use of clearing services in Nepal. Performance risk, with an average mean value of 3.20, reflects significant concerns regarding potential errors in payment processing and network issues. Security risks, rated at 3.66,

emphasize apprehensions about the safety of personal information, while financial risks, with a mean value of 3.35, indicate fear of monetary loss due to transaction errors. Time risk emerged as the most influential factor, with a mean value of 4.17, underscoring concerns about fixing payment errors and ensuring timely payment schedules. Trust dimensions also played a crucial role, with the ability of service providers scoring 3.08, integrity 3.54, and benevolence 3.62, all contributing significantly to trust-building. Regarding convenience, perceived ease of use scored 4.04, reflecting users' preference for user-friendly services, while perceived usefulness scored 3.50, indicating its practical benefits. In terms of relative advantage, perceived cost saving scored 3.07, and perceived time saving scored 3.28, both showing a moderate influence on service adoption. These findings collectively demonstrate that risks, trust, convenience, and relative advantage are critical determinants of clearing service usage in Nepal.

Inferential Statistics

In this section, the research hypotheses are tested through inferential statistics. Analytical techniques, including correlation, multiple regression analysis, and ANOVA tests, have been employed to examine the relationships and differences within the data.

Correlation Analysis

Table 4: *Correlation Matrix of Study Variables Regarding Usages of Electronic Clearing Services*

	UCS	Perceived risk	Trust	Convenience	Relative advantage
UCS	1				
Perceived risk	0.835**	1			
Trust	-0.751**	-0.635*	1		
Convenience	0.617**	0.653*	0.710**	1	
Relative advantage	0.874**	0.890	0.695*	0.705**	1

'**' and '*' denote that the correlation is significant at the 0.01 and 0.05 level (2-tailed).

Use clearing service is positively correlated with Perceived Risk (0.835). There is a significant association between use of clearing services and perceived risk, since the p-value is less than $\alpha = 0.05$. Use clearing service is negatively correlated with trust (-0.751). A p-value of 0.05 indicates a significant relationship between use of clearing services and trust. The correlation between use clearing service and convenience is 0.617, indicating a favorable link. The p-value of 0.00, below the level of significance (α) of 0.05, indicates a substantial correlation between use of clearing services and trust. Use of clearing service is positively correlated with relative advantage (0.874). Significant correlation between recommending clearing services and relative benefit is shown by a p-value of 0, which is below the level of significance (α) of 0.05.

Multiple Regression Analysis

Table 5: *Regression Analysis of Study Variables on Usage of Electronic Clearing Services (UCS)*

	Beta	T-value	Sig	VIF
(Constant)	2.375	0.195	0.001	
Perceived risk (P)	-0.751	0.216	0.005	1.536
Trust (T)	0.617	0.090	0.65	1.544
Convenience (C)	0.874	0.067	0.188	2.230
Relative advantage (R)	0.835	0.018	0.003	1.120

	Beta	T-value	Sig	VIF
R-square	0.885	Adj. R Square		0.861
F	143.02		Sig.	0.000

Based on the regression analysis presented in Table 5, the following regression equation has been developed:
UCS = 2.375 - 0.751 PR + 0.617 T + 0.874 C + 0.835 R ---------- (i)

Regression analysis reveals significant relationships between the dependent variable and independent variables. Perceived risk (P) negatively impacts clearing service usage, with a coefficient of -0.751, indicating a decrease of 0.751 units in usage for each unit increase in risk. Trust (T), with a coefficient of 0.617, positively influences usage, meaning a one-unit increase in trust boosts usage by 0.617 units. Convenience (C) also positively affects usage, with a coefficient of 0.874, indicating a 0.874-unit increase in usage for each unit increase in convenience. Lastly, relative advantage (R) has a positive impact, with a coefficient of 0.835, meaning a one-unit increase in relative advantage raises usage by 0.835 units.

ANOVA Test and One-Sample T-test:

The results of the One-Sample T-test and ANOVA Test, shown in Table 6, offer valuable insights into the heterogeneity among demographic factors and their impact on usage of electronic clearing services in financial market. This analysis focuses on demographic dimensions including Gender, Age, Education, and Occupation, aiming to explore their potential impact on use of clearing services.

Table 6. *Analysis of Mean Differences (Heterogeneity) Across Demographic Factors Influencing Usages of Electronic Clearing Services*

Independent Sample T-test					
Gender	**n**	**Mean**	**Std. Dev.**	**T-value**	**P-Value**
Male	255	2.98	0.82	-3.32	0.002
Female	120	3.25	0.70	-3.29	0.001
Total	375	3.12	0.76	F = 17.81 (P = 0.000)	

ANOVA Test					
	Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
Age					
Between Groups	867.137	4	216.568	4.500	0.038
Within Groups	5821.901	370	48.870		
Total	6689.038	374			
Education					
Between Groups	1875.297	4	625.099	6.661	0.021
Within Groups	11354.643	370	93.840		
Total	13229.94	374			
Occupation					
Between Groups	764.214	4	191.053	2.757	0.01

Within Groups	8314.187	370	69.284
Total	9078.401	374	

The results presented in Table 6 reveal statistically significant differences ($p < 0.05$) among demographic variables including gender, age, education, and occupation of the respondents. These findings suggest that demographic factors play a crucial role in shaping the adoption of electronic clearing services (ECS) in the Nepalese financial market. Respondents, including bank customers and bankers, exhibit diverse perception and decision-making patterns based on their gender, age group, educational background, and occupation. Notably, these variations imply that respondents with different demographic profiles make varying decisions concerning the adoption of ECS in Nepal. These results are consistent with prior research indicating the influence of demographic variables on customers behavior in decision making. Specifically, the observed significance aligns with studies highlighting the importance of demographic factors (Asmah et al., 2016; achieng & Ingari, 2015; Chen, 2013; Deb & David, 2014; Devkota et al, 2023). Table 7 shows the summary of hypothesis testing results.

Table 7: *Summary of Hypothesis Testing*

Hypotheses	**Findings**
H_{01}: Perceived risks significantly influence the usage of ECCS services in Nepal.	Accepted
H_{02}: Trust significantly influences the usage of ECCS services in Nepal.	Not supported
H_{03}: Convenience significantly influences the usage of ECCS services in Nepal.	Not supported
H_{04}: Relative advantage significantly influences the usage of ECCS services in Nepal.	Accepted

The study's findings reveal that perceived risk and relative advantage play significant roles in determining the adoption of clearing services. Specifically, three independent variables—Trust, Convenience, and Relative Advantage—positively influence usage, while Perceived Risk has a negative impact. Among these factors, Relative Advantage exerts the strongest and most statistically significant influence on the adoption of clearing services. These findings align with those of Achieng and Ingari (2015), who noted that a lack of understanding of clearing systems and perceived risks negatively impact adoption. Similarly, a study in Ghana by Asmah et al. (2016) highlighted that perceived usefulness, ease of use, trust, system quality, and information quality significantly affect the acceptance of ECCS services. Trust, along with information and system quality, influences adoption through perceived ease of use and usefulness. Our study's results suggest that the physical money transfer market in Nepal may be nearing maturity, highlighting the growing importance of digital solutions in financial services.

Conclusion

The study explored factors influencing customer acceptance of cheque truncation and electronic clearing services (ECCS) in Nepal, addressing the initially raised research questions. The primary objective was to analyze the determinants affecting ECCS usage, utilizing the modified Technology Acceptance Model (TAM). Findings revealed that perceived risk and relative advantage significantly impact ECCS adoption, with relative advantage exerting the strongest positive influence, while perceived risk negatively influences usage. Trust and convenience showed positive but non-significant impacts. These findings align with Achieng and Ingari (2015), who highlighted perceived risks and a lack of understanding as barriers to ECCS adoption, and Asmah et al. (2016), who emphasized trust, system quality, and perceived usefulness as critical factors for ECCS acceptance in Ghana. Despite the rapid growth in financial institutions and technological advancements in Nepal, financial inclusion remains below the regional average, underscoring the need for targeted interventions. From a policy perspective, the study emphasizes the importance of coordinated efforts by public and private sectors to address the low adoption of clearing services. Initiatives such as national financial literacy programs, as recommended by the findings, could raise awareness of the benefits of formal financial services, including ECCS. The Nepal

Rastra Bank (NRB) should prioritize creating comprehensive ECCS guidelines and safety measures to enhance user confidence. Banks and service providers must adopt user-centric approaches by offering less risky, cost-effective, and user-friendly clearing services, while addressing customer concerns about perceived risks and relative advantages. These efforts could help integrate ECCS into Nepal's financial system, promoting economic stability and growth.

The study offers valuable insights for banks, regulators, and policymakers, highlighting critical factors that influence customer decisions regarding ECCS. However, it also acknowledges its limitations. The study considered only four factors—relative advantage, trust, convenience, and perceived risk—to evaluate behavioral intentions, excluding other potential variables that might further explain ECCS adoption. Additionally, the study employed a cross-sectional design, limiting the understanding of long-term behavioral changes. Future research could explore the structural relationships among constructs, including mediation and indirect effects, and extend to other demographic groups to enhance generalizability. Longitudinal studies could also provide deeper insights into how customers' perceptions and behaviors evolve over time as they gain experience with ECCS.

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