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## Exploring the effects of E-Banking products and services on conventional banking transactions in Nepalese commercial banks

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### Abstract

This research investigates the growing scenery of E-Banking Products and Services within Nepalese Commercial Banks and their impact on conventional banking transactions. In the context of global financial sector transformations driven by technology, this study seeks to provide insights into the specific implications for Nepal's banking industry.

To achieve this, the research employs a comprehensive framework, analyzing the range of E-Banking Products and Services currently offered by Nepalese Commercial Banks. It describes e-banking as the ATM banking, Internet banking and Mobile banking and their impacts on conventional banking transactions within Nepalese Commercial Banks. A mixed-methods approach is applied for this research to understand how E-Banking products and services affect conventional banking transactions in Nepalese Commercial Banks.

Ultimately, the objective of the research is to offer valuable insights into the complex interplay between E-Banking and conventional banking transactions in Nepalese Commercial Banks. By enhancing our understanding of this dynamic background, the study intends to provide practical recommendations and strategies for banks to influence the benefits of E-Banking while mitigating potential drawbacks. This research contributes to the broader discussion on e-banking technology adoption and its implications in emerging economies and banking practices.

**Keywords:** E-banking, ATM System, mobile banking, internet banking, conventional banking

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### Introduction

The background of banking services worldwide has undergone a reflective transformation in recent years, driven primarily by the rapid advancement of digital technology (Smith *et al.*, 2020; Jones & Brown, 2019) <sup>[21, 12]</sup>. This transformation has given rise to a new era in banking, marked by the proliferation of E-Banking products and services (Gupta & Sharma, 2018) <sup>[8]</sup>. In Nepal, a country with a growing economy and a growing banking sector, this transformation is no exception. Nepalese Commercial Banks are increasingly adopting and offering a wide range of E-Banking services, including ATM banking, Internet banking, and Mobile banking, to cater to the evolving needs and preferences of their customers (Shrestha & Bhattarai, 2021) <sup>[1]</sup>.

The adoption of E-Banking services in Nepal reflects a global trend where financial institutions are adapting new technology to enhance their operations, provide greater convenience to customers, and remain competitive in a dynamic market (Jha & Maharjan, 2017) <sup>[11]</sup>. These services cover a diverse array of offerings, ranging from basic online account access to advanced mobile payment solutions (Dahal & Shrestha, 2019) <sup>[2]</sup>. Customers in Nepal, as in many parts of the world, are increasingly embracing these digital options, as they offer the promise of efficiency, accessibility, and flexibility in managing their finances (Rai & Shrestha, 2020) <sup>[18]</sup>.

As E-Banking continues to gain prominence in Nepal, it becomes imperative to examine its influence on conventional banking transactions (Shakya & Sapkota, 2018) <sup>[19]</sup>. Conventional banking methods have been the foundation of the financial system for decades, serving as the primary means through which customers conducted their banking affairs (Poudel & Bista, 2019) <sup>[17]</sup>. The introduction of E-Banking products and services has introduced new dynamics into this traditional banking framework (Adhikari & Shrestha, 2019) <sup>[2]</sup>.

This research seeks to investigate deep into the evolving relationship between E-Banking and conventional banking transactions in Nepalese Commercial Banks. It aims to explore how the adoption and utilization of E-Banking services, including ATM banking, Internet banking, and Mobile banking, are reshaping the scenery of banking transactions (Acharya & Shrestha, 2021) <sup>[1]</sup>.

The study recognizes that while E-Banking services offer numerous advantages, they also present challenges related to security, access, and customer preferences (Poudel & Bista, 2019) <sup>[17]</sup>. By comprehensively examining the relationship between E-Banking and conventional banking transactions in the context of Nepal, this research aspires to provide valuable insights that can inform both banking institutions and policymakers (Acharya & Shrestha, 2021) <sup>[1]</sup>. The ultimate goal is to help Nepalese Commercial Banks optimize the positive effects of E-Banking while addressing potential drawbacks, ensuring that the banking sector in Nepal remains robust and responsive to the changing needs of its customers in the digital age (Jha & Maharjan, 2017) <sup>[11]</sup>.

The usage of banking services worldwide has undergone a thoughtful transformation in recent years, driven primarily by the rapid advancement of digital technology (Smith *et al.*, 2020; Jones & Brown, 2019) <sup>[22, 13]</sup>. This transformation has given rise to a new era in banking, marked by the proliferation of E-Banking products and services, including ATM banking, Internet banking, and Mobile banking. These digital channels have significantly altered the way customers interact with financial institutions, with notable impacts on conventional banking transactions.

**ATM Banking:** Automated Teller Machines (ATMs) have been a cornerstone of the E-Banking revolution (Gupta & Sharma, 2018) <sup>[8]</sup>. ATMs provide customers with convenient access to cash, fund transfers, and other basic banking services 24/7 (Dahal & Shrestha, 2019) <sup>[2]</sup>. Customers can withdraw cash, check their account balances, and even deposit funds without the need for a physical bank branch visit. This increased convenience has led to changes in customer behavior and transaction patterns (Poudel & Bista, 2019) <sup>[17]</sup>.

**Internet Banking:** Internet banking, often referred to as online banking, allows customers to access their bank accounts and conduct various transactions via the internet (Rai & Shrestha, 2020) <sup>[18]</sup>. It offers a wide range of services, including fund transfers, bill payments, and account management, all accessible from a computer or mobile device (Adhikari & Shrestha, 2019) <sup>[2]</sup>. Internet banking has not only increased banking efficiency but has also transformed customer expectations regarding the speed and convenience of banking transactions (Acharya & Shrestha, 2021) <sup>[1]</sup>.

**Mobile Banking:** Mobile banking extends banking services to smartphones and mobile devices (Shakya & Sapkota, 2018) <sup>[19]</sup>. It allows customers to perform transactions, check

balances, pay bills, and even make mobile-based payments using dedicated apps or SMS-based services (Dahal & Shrestha, 2019) <sup>[2]</sup>. The ubiquity of mobile devices has made mobile banking particularly impactful, enabling customers to conduct banking transactions from virtually anywhere, further altering traditional transaction patterns (Acharya & Shrestha, 2021) <sup>[1]</sup>.

**Impacts on Conventional Banking Transactions:** The introduction and widespread adoption of these E-Banking channels have brought about several notable impacts on conventional banking transactions:

**Account Management:** Customers now have greater flexibility in choosing how, when, and where they conduct account management and banking transactions, resulting in shifts away from traditional branch-based transactions (Smith *et al.*, 2020) <sup>[21]</sup>.

**Payment and transaction:** E-Banking has modernized many routine banking processes, reducing the time and effort required for transactions such as fund transfers and bill payments (Jha & Maharjan, 2017) <sup>[11]</sup>.

**Customer Support:** Customers now expect faster and more convenient banking services, putting pressure on banks to modernize their operations and offer continuous digital experiences and support. (Rai & Shrestha, 2020) <sup>[18]</sup>.

In light of these transformations, it becomes crucial to comprehensively explore the influence of E-Banking products and services, including ATM banking, Internet banking, and Mobile banking, on conventional banking transactions within Nepalese Commercial Banks. This research aims to provide insights into how these digital channels impact on account management, payment and transaction management and customer support on the overall banking sector in Nepal, contributing to a deeper understanding of the evolving banking industry in the digital age.

### Research Questions

E-Banking, short for Electronic Banking encompasses a range of digital financial products and services offered by Nepalese commercial banks to their customers. These services leverage technology and the Internet to provide convenient, efficient, and accessible banking solutions. Some common E-Banking products and services offered by Nepalese commercial banks are ATM banking, Internet banking and mobile banking. These three categories of e-banking services include so many e-banking services as given in the table I. By considering these major e-banking services, this study addresses the following research questions;

- What are the e-banking products and services offered by Nepalese commercial banks?
- How does ATM system impacts on conventional banking in Nepalese commercial banks?
- How does Internet banking impacts on conventional banking in Nepalese commercial banks?
- How does Mobile banking impacts on conventional banking in Nepalese commercial banks?

### Research Hypothesis

Hypothesis is formal statement that represents the expected relationship between the dependent and independent variable.

**H<sub>0</sub>:** There are no significant differences on e-banking products and services offered by Nepalese commercial banks.

**H<sub>a</sub>:** There are significant differences on e-banking products

and services offered by Nepalese commercial banks.

### Main hypothesis is

There is no significant impact of e-banking on conventional banking in Nepalese commercial banks. Main hypothesis is determined with the following hypothesis by considering e-banking as the integrated approach of use of ATM system, internet banking and mobile banking:

**H10:** ATM system does not impact on conventional banking in Nepalese commercial banks.

**H1a:** ATM system impacts on conventional banking in Nepalese commercial banks.

**H20:** Internet banking does not impact on conventional banking in Nepalese commercial banks.

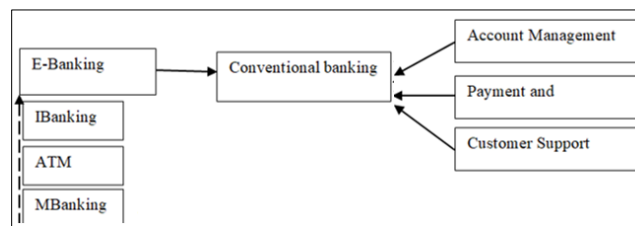
**H2a:** Internet banking impacts on conventional banking in Nepalese commercial banks.

**H30:** Mobile banking does not impact on conventional banking in Nepalese commercial banks.

**H3a:** Mobile banking impacts on conventional banking in Nepalese commercial banks.

### Conceptual Framework

A conceptual framework is a structured outline or model that depicts the relationships between different concepts, variables, or elements in a research study. It serves as a visual representation of the theoretical foundation guiding the research and provides a structured framework for organizing ideas, understanding complex phenomena, and conducting analysis. Conceptual frameworks help researchers develop hypotheses, design research methodologies, and interpret findings within a coherent theoretical framework.



**Fig 1:** Conceptual framework development by the research

### Research Design

Research design includes different procedure and technique used for research. It describes the sources of data, data collection methods, sampling technique, types of respondents, nature of data, data presentation and analysis tools and techniques. In this research researcher has used the descriptive and exploratory research design including the following process, methods, tools and technique for the research study.

### Nature of Data

In this research researcher used different tools to convert the data from qualitative to quantitative or vice versa. Data generated from the interpretative approach are mostly the qualitative data and from the survey researcher has ranked data from Likert scale and nominal data like demographic data.

### Population, Sampling period, Sampling Plan and Sample Size

#### Population

The population of the study consists of 27 commercial banks, which are operating in Nepal as on January 2022.

#### Sample Period

Present study relates to the period of January 2022 to April 2022 as the Nepalese banking sector adopted electronic banking system mainly during this period.

#### Sample Size

Researcher has included all 27 commercial banks for the research. It also described the characteristic of customers and employees and their perception towards the impact of e-banking products and services on conventional banking in Nepalese commercial banks.

### Research Area

Researcher has chosen the Kathmandu Valley, the Capital City of Nepal as the research area. It covers an area of about

500 sq. KM, and situated at the height of 1,350 Meter above sea level.

### Participants of the study

Customers and employees from Nepalese commercial banks were considered as the participants for this study.

### Research Instrument

A questionnaire was designed to collect data to measure the impact of e-banking on conventional banking which is related to find the impact of e-banking on conventional banking transaction. The data required for conducting this study was collected using self-administered questionnaire especially designed to achieve the said objective, which was drawn from employees and customers of government, joint venture and private banks in Kathmandu.

All together 594 respondent were taken for the research. Among them 324 were customers and 270 were bank employees approached from 27 commercial banks and 571 of them completely filled the questionnaire comprising 310 customers and 261 employees. Besides the demographic data all the items were measured on the five-point Likert scale from 5 (strongly agree) to 1 (strongly disagree). Descriptive and inferential data analysis tools and technique was used for data analysis and for the calculation of desirable results. To check the reliability of data Cronbach alpha, Fornell-Larcker Criterion to test convergent and discriminant validity test and Structured Equation Modeling (SEM) were used for data analysis.

### Status of Electronic Banking Products and Services

Each financial institution provides a range of electronic banking services, spanning from checking your account balance to the option to change your PIN.

The following table 1 exhibits the electronic banking services offered by different types of banks in Nepal.

**Table 1:** Electronic Banking products and services offered by the banks (Per cent of banks offering electronic services)

S. No	Electronic Banking Service	Types of Banks			Statistical Analysis
		Govt. Banks	Joint Venture Banks	Private Commercial banks	Average
1	Balance enquiry and statement	100	100	100	100
2	Transaction history	100	100	100	100
3	Online transfer of funds	98.2	100	100	99.4
4	Pre paid mobile recharge	100	100	100	100
5	Buy and sell Mutual Fund	94.2	98.5	98.3	97
6	Request of cheque book	94.2	98.6	98.4	97.06667
7	Stop Payment request	94.2	97.1	99.7	97
8	Deactivate/ Activate ATM/ Debit Card	84.2	91.3	93.4	89.63333
9	Change Password	100	100	100	100
10	Demat holdings	83.2	91.3	94.5	89.66667
11	Loan Details	91.2	98.6	97.8	95.86667
12	Bill Payment	95.1	97.3	98.1	96.83333
13	Online shopping	84.2	91.2	95.5	90.3
14	Mobile Top-up	94.2	98.5	98.7	97.13333
15	Share Trading	84.7	95.8	97.9	92.8
16	Online tax payments	74.2	91.5	91.9	85.86667
17	Convert to EMI	84.3	98.6	98.9	93.93333
18	Online loans	89.2	98.4	97.8	95.13333
19	Customer Correspondence	74.6	88.9	91.1	84.86667
20	Corporate Internet Banking	74.2	96.1	97.2	89.16667
Average		89.705	96.585	97.46	
<b>Phone Banking Services</b>					
21	Statement of Account	94.7	98.9	98.9	97.5
22	Enquire your Account balance	100	100	100	100
23	Request for Fund Transfer	94.1	98.9	98.6	97.2
24	Stop cheques Payment instructions	94.8	97.6	98.1	96.83333
25	Mobile Banking Registration	94.7	98.8	98.9	97.46667
26	Latest Interest and Exchange Rates	94.3	99.8	98.9	97.66667
Average		95.43333	99	98.9	
<b>Mobile Banking Services</b>					
27	Account Balance	100	100	100	100
28	Making Payment	91.2	98.4	98.1	95.9
29	Loan Information	92.2	98.1	98.9	96.4
30	Last three transactions	94.1	99.8	99.7	97.86667
Average		94.375	99.075	99.175	
<b>ATM System</b>					
31	24 hours access to Cash	100	100	100	100
32	Transfer fund between accounts	95.2	99.5	99.7	98.13333
33	View account balances and mini statement	100	100	100	100
34	Pin change option	91.1	97.4	98.9	95.8
Average		96.575	99.225	99.65	

These services are provided through bank websites. Table 1 show that e-banking services are offered to the customers in the form of internet banking services, phone banking, and mobile banking and ATM services. Internet banking services are provided to a large extent by all the banks. The most common services among internet banking are balance inquiry and transaction history. All banks provide both of these services and in addition to these, ATM services are universally offered as well. These ATM services encompass 24-hour access to cash, inter-account fund transfers, viewing of account balances and mini statements, as well as the option to change one's PIN.

Internet service comprises 20 services. Among other services, all banks offer simple transaction history, balance enquiry and statement, prepaid mobile recharge. Also, online transfer of funds (99.4 per cent), change password (100 per cent), customer correspondence (84.4 per cent), request of cheque book (97.06 per cent), bill payment (96.83 per cent), and converts to EMI (93.93 per cent). However, the services like online tax payments (85.87 per cent), loan details and payment (95.6 per cent), stop payment request (96.1 per cent)

and corporate internet banking (89.2 per cent) should also be provided by all the internet banks are having less adoption in all the banks.

Other internet banking services include buy and sale mutual fund (97 per cent), online shopping (90.3 per cent), demat holdings (89.6 per cent), loan details (95.1 per cent), share trading (92.8 per cent), request of debit cards (89.64 per cent), mobile top-up (97.13 per cent). So, from the above analysis, it is clear that there are number of internet banking services and banks are providing all in different extent.

As far as phone banking is concerned, it has been found that 100% banks provided 'enquire your account balance' and 97.5% banks offered 'statement of account' services during the period under study. The banks consider that providing the same services through two different modes, i.e., phone banking as well as ATM means extra financial burden only. The other phone banking services availed less by the customers include 'stop cheques payment instruction' (96.84.2%), 'request for fund transfer' (97.2%), 'mobile banking registration' (97.46%) and 'latest interest & exchange rates' (97.66.5%).

In mobile banking services, 97.86% banks provide 'account balance & last three transaction services'. Services like 'details of credit card balance' (100%), 'making payment' (95.5%), 'loan information' (96.4%),

In ATM banking services, 100% banks provide '24 hours access to cash'. 'Transfer fund between accounts service' (98.1%), 'view account balances and mini statement' (98.0%), 'pic change option' (95.8%),

However, the private sector banks leading in number of services in internet, mobile, phone and ATM banks. Joint venture banks are providing electronic banking services more than government banks. Government banks are offering least numbers of services to the customers. All banks are offering balance enquiry and statement services, transaction history, pre-paid mobile charging facility and change password facility in internet banking, enquire your account with phone banking, account balance enquiry using mobile services and 24 hours access to cash using ATM banking.

On the basis of extent of electronic banking it is found that internet banking services are offered by the private commercial banks is high (97.46%) followed by the joint venture bank (96.58%) and Govt. banks (89.705%). For phone banking services joint venture banks are offering high services (99%) followed by the private banks (98.9) and Govt. banks (95.43%). For mobile banking services private commercial banks are offering high services (99.175%) followed by the joint venture bank (99.07%) and Govt. banks (94.37%). Similarly, for ATM banking services private commercial banks are offering high services (99.65%) followed by the joint venture bank (99.225) and Govt. banks (96.575%).

Moreover, there is a slight deviation of offering services between private, joint venture and government banks. Table 1 describes that there is no significance differences in the services provided by joint venture and private banks but there is a slight deviation with government banks. There is a significance deviation on the services like online tax payment facilities, customer correspondence facilities, EMI convert, share trading, online loans, online shopping, demat holding etc.

### Measuring the Impact of Electronic Banking on Conventional Banking

Measuring the impact of electronic banking on conventional banking transactions has emerged as a critical area of study, driven by the rapid evolution of technology and its profound influence on the banking sector. Electronic banking, encompassing internet banking, mobile banking, and automated teller machines (ATMs), has fundamentally transformed the way customers interact with financial institutions and conduct their day-to-day financial activities. As customers increasingly adopt digital banking channels, researchers and analysts seek to quantify the effects of this transformation on various aspects of the banking landscape. In the context of measuring the impact of electronic banking on conventional banking transactions, several variables can be considered for analysis. These variables help researchers quantify the effects of digital banking adoption and understand its implications on different aspects of the banking sector. In this study, researcher has included following variables and dimensions to determine the impact of e-banking i.e. ATM system, Mobile banking and Internet banking on the conventional banking transactions.

### Methods

A set of questionnaire developed in this study was based on the comprehensive literature review to set a measurement standard to construct structural model fitted. Every each of items develops were used unique code namely AT1, AT2 and AT3 as use of ATM system, IB1, IB2 and IB3 as use of Internet Banking and MB1, MB2 and MB3 as use of Mobile Banking system. These unique codes were designed in the process of structural model design in CFA level. Each of these items (observed variables) attached to latent variable. Furthermore, the structural modeling process comprises four fundamental stages: specification, estimation, evaluation, and modification. During the specification stage, it is essential to develop, test, and transform the model into a format that can be comprehended by a computer program.

In this evaluation stage, the test of model fit and other indices of fit need to be interpreted by AMOS. In the modification stage, the original model need to be modified in accordance with the information obtained in the previous stage as well as theory. The quality of the empirical fit and the statistical significance of parameter estimates in the theoretical model are crucial factors (Olsson *et al.*, 2000). Additionally, modification indices, when used in conjunction with theoretical insights, serve as the foundation for enhancing the original model in this study.

### Demographic Data Analysis

Descriptive analysis and cross tabulation were carried out to present the profile of the employees and customers to know the relationship between different categories of employees' profile. Mean scores and standard deviation were also calculated for the items to know the impact of e-banking on employees.

### Respondents' Profile

Before formulating any effective research about the banking sector in Nepal, it is required to maintain up to date profile information of the employees in the form of respondents' based data. Last section of the questionnaire relates to the respondents' profile covering their gender, age, banking experience, education, occupation, and types of bank and ICT knowledge.

Table 2 describes that the male percentage (59.5 per cent) for the sample is higher than the female percentage (40.5 per cent) in the government, public and private sector banks under study. 7.0% employees are below the age of 25 years, 45.7% employees fall in the age category of 25-35 years, 37.5% in 35-50 years whereas only 9.8% fall in the age category of more than 50 years. The table reflects that majority of the employees are below the age of 25 - 35 years. 67.5% are graduate, 28.9% are post graduate degrees, and 3.6% are undergraduate. An analysis of the table reveals that maximum number of employees belong to graduate category. 11.2% employees fall in the category of banking experience below 2 years. Another 53.1% employees fall in the banking experience category of 2-5 years, 30.8% in 5-8 years category and 5% in more than 8 years category. The table reflects that majority of the respondent fall in the banking experience category of 5-10 years. An analysis of the table provides that maximum number of respondents, i.e., 61.2% from private commercial banks, whereas 27.3% and 11.5% from the joint venture and government commercial banks. An analysis of the table provides that maximum number of respondents, i.e., 56.9% have operational knowledge of ICT, whereas 21.1%

have basic knowledge, 19.5% have high knowledge and 2.1% has few knowledge of ICT.

**Table 2:** Socio-demographical Characteristics of Respondents

Characteristics	n	%
<b>Gender</b>		
Male	340	59.5
Female	231	40.5
<b>Age</b>		
Below 25 Years	40	7.0
25 - 35 years	266	45.7
35 - 50 years	214	37.5
More Than 50 Years	51	9.8
<b>Education</b>		
Undergraduate	21	3.6
Graduate	385	67.5
Post Graduate	165	28.9
<b>Banking Experience</b>		
Below 2 Years	64	11.1
2 - 5 years	315	53.1
5 - 8 years	176	30.8
More Than 8 Years	29	5.0
<b>Types of Bank</b>		
Government	66	11.5
Joint Venture Bank	156	27.3
Private	349	61.2
<b>ICT Knowledge</b>		
Few	12	2.1
Basic	120	21.1
Operational	325	56.9
High	112	19.5

### Confirmatory Factor Analysis (CFA)

Confirmatory factor analysis, a method within Structural Equation Modeling (SEM) and factor analysis, is employed to determine whether observed variables contribute to latent or unobserved variables. The objective of this study is to gauge the extent to which each of these factors influences the conventional banking transaction process. The research findings reveal that the utilization of ATM systems, Mobile Banking, and Internet Banking facilitates conventional banking transactions. To fulfill the study's objectives, all together 594 respondent were taken for the research. Among them 324 were customers and 270 were bank employees approached from 27 commercial banks and 571 of them completely filled the questionnaire comprising 310 customers and 261 employees. The questionnaire encompassed inquiries related to all the factors. Factor analysis serves as a common data reduction technique, condensing numerous variables into a set of factors for subsequent analysis. Prior to conducting CFA, various prerequisites, including multivariate normality, multicollinearity, and sample size, was examined.

### Reliability and Validity Analysis

Reliability and validity are interconnected concepts, with construct validity being assessed using Confirmatory Factor Analysis (CFA), encompassing two crucial validity examinations.

### Convergent validity, which assesses whether the constructs measure their intended attributes

Discriminant validity, which evaluates how effectively the constructs measure attributes they should not encompass. Construct validity is scrutinized in accordance with

recommended guidelines underscore the presence of convergent validity when each measure's loading concerning its latent construct is statistically significant. Discriminant validity is affirmed when the Average Variance Explained (AVE) for a construct surpasses the square of the correlation between the focal construct and other constructs. Conducting validity tests ensures that each item accurately measures its intended attribute. Complying with steps, it is imperative that the Composite Reliability (CR) value exceeds 0.7, and the AVE value is greater than 0.5. An AVE value lower than 0.5 indicates inadequate contribution of variance for the variables to converge into a single construct.

**Table 3:** Reliability and Convergent Validity

Items	Alpha	Composite Reliability	AVE
ATM System	.925	.833	.625
Mobile Banking	.959	.956	.887
Internet Banking	.935	.929	.815
Conventional Banking	.828	.937	.834

**Average Variance Extracted (AVE):** It is used to measure constructs's ability (Convergent Validity) to share items or statements used to depict it. In this context, all the variables exhibit an AVE (Average Variance Extracted) value exceeding 0.5. Specifically, the AVE values are as follows: ATM System - 0.625, Mobile Banking - 0.887, Internet Banking - 0.815, and Conventional Banking Transaction - 0.834. Consequently, this indicates that the model demonstrates convergent validity.

Additionally, Composite Reliability (CR) is employed to gauge the significance of individual items through factor loading analysis. In this case, the CR values for all constructs surpass 0.7, with the following values: ATM System - 0.833, Mobile Banking - 0.956, Internet Banking - 0.929, and Conventional Banking Transaction - 0.937. Hence, the model also exhibits a high level of composite reliability.

**Internal Consistency:** Cronbach's alpha is employed to gauge the internal consistency of factors and their interrelationships. In this study, all variables exhibit a Cronbach's alpha value exceeding 0.7, with the ATM System at 0.925, Mobile Banking at 0.959, Internet Banking at 0.935, and Conventional Banking Transactions at 0.828. This substantiates the presence of internal consistency within the model.

Discriminant validity in the study was assessed using Fornell and Larcker Criterion and Heterotrait-Monotrait (HTMT) Ratio. Discriminant validity is traditionally confirmed by Fornell and Larcker's criterion, which states that it is met when the square root of AVE for a construct exceeds its correlations with other constructs. However, a more contemporary method for assessing discriminant validity, the HTMT ratio, has gained prominence. In this study, discriminant validity is exclusively established through the Fornell and Larcker criterion. Additionally, when evaluated using the HTMT ratio, all ratios were found to be below the stipulated threshold of 0.85. Hence, discriminant validity was the results of discriminant validity are presented in Table 4.

**Table 4:** HTMT Analysis

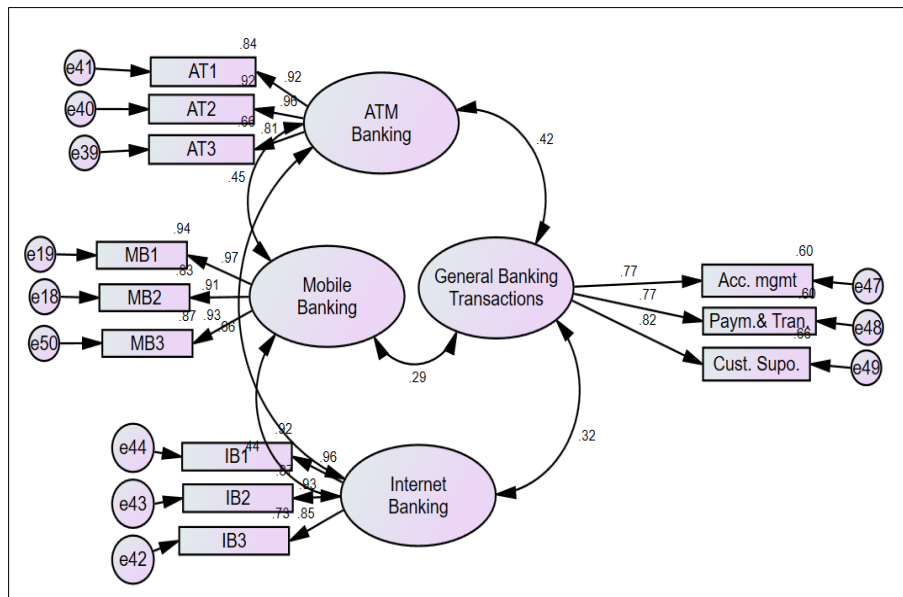
	F4	F5	F9	F10
F4				
F5	0.427			
F9	0.478	0.464		
F10	0.426	0.404	0.674	

Hence, with the fulfillment of all reliability and validity

conditions, the confirmatory factor analysis model is effective for assessing the contribution of the factors in measuring the impact of e-banking on conventional banking transaction.

**Confirmatory Factor Analysis (CFA) Model Fit**

A well-fitted model ensures consistency and prevents re-working. Therefore, it is crucial to evaluate model fitness before examining the relationships between variables.



**Fig 2: CFA Model, Generated by AMOS**

**Variables and their dimensions**

**ATM System**

AT1: ATMs provide customers with convenient and 24 hour access to banking services.

AT2: Reduced Overcrowding in Bank Branches

AT3: ATMs have encouraged self-service banking, empowering customers to handle their transactions independently.

**Mobile Banking**

MB1: Mobile banking enables fast and efficient transactions

MB2: Mobile banking reduces the need for paper-based transactions

MB3: Mobile banking apps often integrate with other financial services like utility payment.

**Internet Banking**

IB1: Internet banking enables fast and efficient transactions

IB2: Internet banking enables customers to pay bills and transfer funds between accounts quickly and securely

IB3: Internet banking provides customers with real-time access to their account information, including balances, transaction history, and pending transactions.

**Conventional Banking Transaction**

AC: Account Management

PT: Payments and Transactions

CS: Customer Support

To assess this, the model fitness is examined, and the results are presented below.

**Model Fitness for Confirmatory factor Analysis**

All the indices values are fulfilling the required criteria i.e. CMIN/Df is  $2.878 < 3$ , GFI is  $0.971 > 0.9$ , RMSEA is  $0.049 < 0.10$ , and even AGFI is  $0.952 > 0.9$ . Further, for incremental fitness too, NFI is  $0.984 > 0.9$ , CFI is  $0.989 > 0.9$ , TLI is  $0.985 > 0.9$  and IFI is  $0.989 > 0.9$ . Even for parsimonious fitness, the indices value is such that PGFI is

$0.597 > 0.5$ , PCFI is  $0.72 > 0.5$  and PNFI is  $0.715 > 0.5$ . Hence, the model as fulfill the entire requirement, thus is suitable for building linkage between factors and determining contribution of variables in measuring the impact on conventional banking transaction level.

**Must Likelihood Estimations (MLE) Result for Linkage Analysis**

It describes the linkage examination of contribution of factors to conventional banking transaction. The Maximum Likelihood Estimation (MLE) in below table shows that ATM Banking, Mobile banking, Internet banking has significance influence and supported in Conventional Banking Transactions and practices. In order to identify the factors contributing to Conventional Banking Transactions and practices level measurement, all the sub-factors were assessed separately. The results are shown in the table below Firstly, the 'p-value' is relevant in order to assess whether there is a significant relationship between the sub-factors and conventional banking transaction and practice or not. This 'p-value' must be less than 0.05 for the relationship to exist. In this case, all the sub-factors or aspects have a 'p-value' of 0.00, therefore there is a significant relationship.

Furthermore, the 'Estimate' values associated with the variables hold significance in this context. In the case of numerous sub-factors such as AT1, AT2, and AT3, as well as MB1, MB2, MB3, IB1, IB2, and IB3, the factor loadings are notably high. This underscores a strong factor loading for these sub-factors. Similarly, for other constructs as well, the factor loadings exceed the threshold of 0.5. This observation suggests that the utilization of ATM System, Mobile Banking, and Internet Banking factors makes a substantial and positive contribution to assessing the extent of the impact of e-banking on conventional banking transactions and practices.

Confirmatory Factor Analysis (CFA) plays a pivotal role in gauging the effectiveness of these constructs. It serves as a

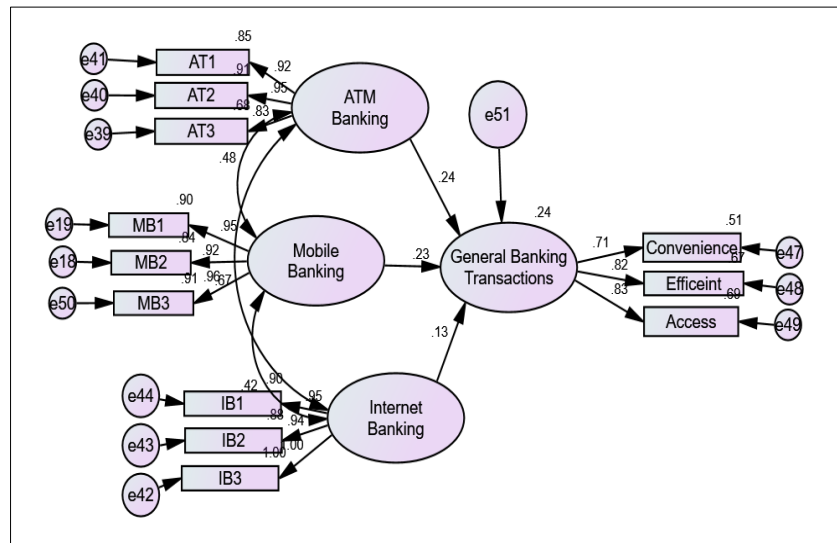
crucial step and analysis within a Structural Equation Model (SEM). Given the model's demonstrated effectiveness, each of the chosen factors plays a positive role in measuring the primary construct. In essence, the combined influence of ATM System, Mobile Banking, and Internet Banking factors collectively captures the impact of e-banking on conventional banking transactions and practices.

**Significance Testing Using SEM**

This model integrates and correlates all factors to the Conventional Banking Transaction and Practices constructs. It also provides a structural link from the e-banking process and tools to the Conventional Banking Transaction practices in figure below.

**Table 5:** Examining the Linkage and Estimation for Confirmatory factor Analysis

			Estimate	S.E	C.R	P	Label
MB2	<---	F4	.990	.020	49.350	***	Significance
MB1	<---	F4	1.000				Significance
AT3	<---	F9	1.000				Significance
AT2	<---	F9	1.040	.030	35.028	***	Significance
AT1	<---	F9	.982	.029	33.488	***	Significance
IB3	<---	F10	1.000				Significance
IB2	<---	F10	1.000	.027	36.415	***	Significance
IB1	<---	F10	1.027	.027	38.412	***	Significance
ACM	<---	F5	1.000				Significance
PAT	<---	F5	1.234	.063	19.712	***	Significance
CS	<---	F5	1.312	.066	19.815	***	Significance
MB3	<---	F4	.985	.017	57.483	***	Significance



**Fig 3:** Structural Model of E-banking and conventional banking, Generated by AMOS

**Structural Model Fit**

**Table 6:** Result of Model Fit

Model	CMIN	DF	P	CMIN/DF	GFI	AGFI	NFI	TLI	CFI	RMSEA
Default model	314.569	119	.000	2.643	.981	.975	.988	.985	.988	.046
Saturated model	.000	0			1.000		1.000		1.000	
Independence model	16502.564	153	.000	107.860	.000	.000	.000	.000	.000	.370

*Source:* Data Generated by AMOS

The fit statistics referring to this measurement model showed adequate fit represented by values of 0.9 or above for NFI, TLI, CFI and less than 0.8 for RMSEA. The chi-square of this model was 314.569, at DF of 119 ( $p=0.00$ ), also indicative of data fit. Chi-square / degrees of freedom are represented by the value 2.643, which is less than 5.0. Other less favorable indicators were  $GFI=.981$  and  $AGFI=.975$ , which were greater than 0.9. Therefore, the goodness of fit statistics illustrated that the structural model fitted well with the data.

**Regression Analysis**

Regression analysis is fundamental tool in statistical analysis, providing valuable insights into data relationships and helping researchers and analysts make informed decisions based on the evidence present in the data. The results of the regression analysis using AMOS indicated a significant positive relationship between use of ATM System and conventional banking transaction process and practices ( $\beta =$

0.70,  $p < 0.001$ ). The coefficient of determination ( $R^2$ ) was 0.241, indicating that 24.1% of the variance in conventional banking transaction process and practices can be explained by the use of ATM system.

**Table 7:** Regression Analysis

			Estimate
GB	<---	ATM	.241
GB	<---	MB	.233
GB	<---	IB	.131

The results of the regression analysis using AMOS indicated a significant positive relationship between use of mobile banking system and conventional banking transaction process and practices ( $\beta = 0.75$ ,  $p < 0.001$ ). The coefficient of determination ( $R^2$ ) was 0.233, indicating that 23.3% of the variance in conventional banking transaction process and practices can be explained by the use of mobile banking system.



The results of the regression analysis using AMOS indicated a significant positive relationship between use of internet banking system and conventional banking transaction process and practices ( $\beta = 0.77, p < 0.001$ ). The coefficient of determination ( $R^2$ ) was 0.131, indicating that 13.1% of the variance in conventional banking transaction process and practices can be explained by the use of internet banking system.

These findings support the hypothesis that electronic banking i.e. use of ATM system, mobile banking and internet banking significantly predicts conventional banking transaction process and practices in Nepalese commercial banks.

### Hypothesis Testing Using Analysis of a Moment Structures Using AMOS

Hypothesis testing using analysis of moment structures (AMOS) is a statistical technique that allows researchers to evaluate the validity of theoretical models and relationships between variables within a structural equation modeling (SEM) framework. AMOS serves as a powerful tool in various fields, including management sciences, business applications, social sciences, psychology, and marketing, enabling researchers to test hypotheses regarding the adequacy of their proposed models in fitting observed data. Through the analysis of moment structures and the examination of connections between latent and observed variables, AMOS facilitates the assessment of model fit and the determination of the significance of hypothesized paths and coefficients. This valuable approach provides researchers with meaningful insights into the interactions of variables, supporting the drawing of sound conclusions from their data and promoting advancements in theoretical understanding within their respective area.

The Hypothesis for studying the impact of e-banking (ATM System, Mobile Banking and Internet Banking) on the conventional banking transaction and practices.

H01: There is no significance impact of e-banking on the conventional banking transaction and practices.

H1: There is a significance impact of e-banking on the conventional banking transaction and practices.

In this study the term e-banking is studied as the use of ATM system, Mobile banking and Internet banking so the above hypothesis can be written as:

H10: There is no significance impact of ATM system on the conventional banking transaction and practices.

H1A: There is a significance impact of ATM system on the conventional banking transaction and practices.

H20: There is no significance impact of mobile banking on the conventional banking transaction and practices.

H2A: There is a significance impact of mobile banking on the conventional banking transaction and practices.

H30: There is no significance impact of Internet banking on the conventional banking transaction and practices.

H3A: There is a significance impact of Internet banking on the conventional banking transaction and practices. The results of estimates are shown below:

The S.E. shows that there is a small deviation in the computation of ATM system as the value of ATM is .042, Mobile banking as the value of MB is .027 and the deviation in the computation of the Internet banking as the value of IB is 0.039. The P-value shows that for each variable the significance value is less than the significance level of the study i.e. 0.05.

**Table 8:** Results of Estimates

Variable	Estimate	S.E.	C.R.	P	Label	Remarks
GB<--- ATM	.193	.042	4.538	***	par_12	Significance
GB<--- MB	.147	.027	5.469	***	par_13	Significance
GB<--- IB	.082	.039	2.092	.036	par_14	Significance

Thus, the first null hypothesis of having no significant impact of ATM system on the conventional banking transaction and practices has been rejected. Second null hypotheses of having no significant impact of mobile banking on the conventional banking transaction and practices have been rejected. Similarly, third null hypothesis of having no significant impact of internet banking on the conventional banking transaction and practices has been rejected. This result is further verified by the z-score value i.e. 4.538 for ATM System, 5.469 for mobile banking and 2.092 for Internet banking which is greater than the tabulated Z-value of 1.96. Hence, for the present study, the analysis of the perception of the people shows that ATM System application, mobile banking and Internet banking practices have a significant impact on the conventional banking transaction and practices.

### Conclusions

The primary aim of this paper is to outline the research objectives and the procedure in Structural Equation Modeling (SEM) followed by developing questionnaire scales to measure the impact of ATM System, Mobile banking and internet banking on the conventional banking transaction and practices. The scales are measured for each of use of AMT, Mobile banking and Internet banking. To measure the impacts using Confirmatory Factor Analysis (CFA), it is revealed that these e-banking practices (ATM, mobile banking and internet banking) have a significance impact with a higher cut-off Goodness-of-Fit Index (GFI) >.95 and RMSEA (spec. < 0.08). Moreover, the results prove that the structural model of e-banking applications have strong relationship between conventional banking transaction and practices. In fact, all three hypotheses were discussed earlier indicates a significant relationship. Different types of researches support the findings of this study.

Different research describe that there is a positive impact of e-banking on conventional banking transactions. It increases convenience and accessibility by enabling remote transactions and access to account information. Efficiency and time savings are observed as e-banking accelerates transaction processing, while cost reductions occur due to decreased operational expenses related to traditional paper-based methods. However, this shift alters customer-bank relationships, reducing personal interactions and highlights the need to address digital literacy and security concerns to maintain customer trust for conventional banking transactions.

### Conclusion

Study confirms the substantial impact of ATM System, Mobile Banking, and Internet Banking on conventional banking transactions. Through robust confirmatory factor analysis and structural equation modeling, it is evident that these electronic banking practices significantly influence the efficiency, accessibility, and operational dynamics of conventional banking services. The model demonstrates high levels of reliability and validity across all constructs, ensuring the accuracy and consistency of measurements. These findings underscore the transformative role of e-banking in

modernizing banking practices, enhancing service delivery, and necessitating adaptation to evolving customer expectations and technological advancements in the banking sector.

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