Original Research Article

Factors influencing E-payment adoption and its effect on consumer buying behaviour in Bhutan.

ABSTRACT

Aims: This study examines the factors influencing adoption of e-payment systems in Bhutan and their effects on consumer impulse buying behaviour, providing insights into a developing country's digital payment landscape.
Study Design: A quantitative research approach was used to analyse key determinants of e-payment adoption and their impact on consumer buying behaviour.
Place and Duration of Study: Data were collected from 399 respondents in Thimphu and Phuntsholing from June to August 2024.
Methodology: A structured questionnaire was distributed to selected e-payment users and regression analysis was conducted to explore the relationships among factors such as ease of use, perceived usefulness, trust, security, and social influences.
Results: The findings indicate that perceived ease of use, security, and social influences significantly drive e-payment adoption. Conversely, trust negatively impacts adoption and perceived usefulness shows no significant effect. E-payment adoption positively influences consumer impulse buying behaviour.
Conclusion: The acceptance of e-payments in Bhutan depends on ease of use, security, and social factors, with trust being a significant barrier. This research highlights the need for improved security measures and initiatives to build consumer trust, promote e-payment use and reduce impulsive buying. The findings provide insights for businesses and policymakers, including the Royal Monetary Authority and banks, to enhance digital payment infrastructure and consumer engagement in Bhutan. Future research should also examine cultural and contextual factors and rural perspective influencing e-payment adoption in emerging markets, aiding our understanding of digital payment systems in developing nations.

Keywords: E-payment; consumer buying behaviour; TAM model; trust; security; social influences; Bhutan.

1. INTRODUCTION

The evolution of the Internet has changed the traditional payment system to a digital payment system (e-payment) and in turn, it has changed people's financial behaviours [1]. Globally, the use of e-payments has been rising rapidly due to the expansion of e-

commerce, mobile commerce, and the move toward a cashless society [2], [3] which shows electronic (mobile) payment systems are an important aspect of e-commerce and are gaining popularity worldwide [4]. For instance, one of the best examples of a cashless society is China. About 943 million people in China were actively using mobile payment services as of June 2023[5]. China is almost a cashless culture, with WeChat Pay and Alipay being the two most popular payment systems [6], [7]. Similarly, in India, the Unified Payments Interface (UPI) has greatly contributed to this increase, with a record 22 billion transactions expected in 2020-21. UPI transactions are estimated to exceed 160 billion by 2025-26[8]. In the U.S., Tap-to-pay solutions have grown in popularity in recent years, with Apple Pay, Samsung Pay, and Google Pay accounting for approximately $300 billion in total [9]. According to Juniper Research, it predicts that there will be a significant surge in digital payments, with the overall transaction value expected to rise from $9 trillion in 2023 to $16 trillion in 2028, representing a significant gain of 77% [10]. This clearly shows the significant adoption of e-payment systems worldwide.

Bhutan is not exceptional. In recent times, there has been a notable surge in the acceptance of electronic payment systems among customers in Bhutan due to the rapid advancement of digital technologies [11]. Almost 80% of customers are already paying with Quick Response (QR) codes, mainly in the capital, Thimphu [12]. According to the Royal Monetary Authority Online System 4th Quarter Report of 2023, among the many methods of domestic payment, mobile banking constitutes the overwhelming share of 53.69 per cent in terms of volume, followed by Bhutan QR code with 39.97 per cent [13]. The significant rise in Bhutanese individuals' usage of e-payment systems demands an investigation into the factors driving the widespread adoption of e-payments in business transactions. Thus, researching the factors influencing e-payment acceptance among Bhutanese people is critical.

Second, the increase in e-payments has substantial effects on the purchasing behaviour of retail outlet customers, as it allows for greater reach for businesses and improved customer satisfaction[14], [15]. Furthermore, customers' online impulsive purchase behaviour has grown increasingly common in the digital era, as individuals prefer to shop online [16], [17]. Lee. et al (2023) also discovered that the perceived delight of using an E-wallet significantly influenced impulse purchase [18]. There is growing concern about the negative effects of impulsive shopping on consumer well-being and sustainability in terms of spending habits. In Nigeria, electronic payment influences consumers' purchase decisions, and the growth in consumer spending has increased [15]. Thus, e-payment influences on buying behaviour are also important.

Finally, despite the increase in e-payment trends, there is a lack of comprehensive study into the factors driving e-payment adoption and its impact on consumer purchasing behaviour in Bhutan. Policymakers, businesses, and stakeholders must grasp these dynamics in order to properly exploit e-payment technologies and design consumer-centric policies. Thus, this study seeks to address this gap by investigating the key factors influencing e-payment adoption and analysing their impact on consumer purchasing behaviour in the Bhutanese market.

2. LITERATURE REVIEW

2.1 Concept of E-Payment and its Context in Bhutan

The concept of e-payment (also called D-payment [Digital payment]) has gained increasing attention in recent years due to the widespread adoption of technology and the digitalization of financial services [2], [3]. E-payment refers to any transfer of electronic payment value from a payer to a payee using an e-payment channel allows users to access and control their bank accounts and transactions remotely over an electronic network [15], [19]. It facilitates efficient money exchanges by leveraging a variety of digital channels, including

credit/debit cards, mobile wallets, online banking, electronic funds transfers (EFTs), and cryptocurrency[20], [21]. E-payment methods of transacting have gained popularity over the years and have attracted several players into the industry of digital payment systems[22], [23]. In the United States, 53% of Americans now prefer using digital wallets over traditional payment methods, indicating a substantial shift in consumer behaviour toward more convenient and technology-driven financial solutions[24]. In Africa, McKinsey anticipates that between 2020 and 2025, the e-payments market will grow by around 150 percent [25]. In 2022, the Asia-Pacific (APAC) region affirmed its position as the world's largest e-commerce market. This region's overall transaction value reached nearly US$4.2 trillion, accounting for about half of the worldwide e-commerce market [26].

These trends have been observed in Bhutan as well. In Bhutan, the central bank (i.e., Royal Monetary Authority) has undertaken initiatives to develop a safe and robust payment system infrastructure to enable the efficient functioning of economic activities [13]. The central bank of Bhutan is striving to promote financial innovation and digital transformation which is one of the key clusters of Bhutan's financial milestones[27]. Thus, Bhutan is currently transitioning to digital banking, which has been promoted by a number of major initiatives and policies. In 2016, e-money regulations were implemented; in 2018, payment and settlement systems were established; and in 2019, the Bhutan Financial Switch, electronic public expenditure management systems (ePEMS), and the global interchange for financial transactions (GIFT) payment systems were launched [28]. Almost 80% of customers in Bhutan are already using Quick Response (QR) codes for payments, particularly in the capital city of Thimphu [12]. This extensive usage of QR code payments shows the rapid move toward digital financial transactions in the country. According to the Royal Monetary Authority's Online System 4th Quarter Report for 2023, mobile banking accounts for the vast majority of domestic payments, accounting for an amazing 53.69% of total volume. This is followed by payments made using Bhutan QR codes, which comprise 39.97% of the entire volume [13]. In addition to its use in daily business transactions between buyers and sellers, e-payment initiatives have also been observed in government services in Bhutan [64]. Launched in July 2019, e-PEMS is a collaborative initiative between the Bank of Bhutan and the Royal Monetary Authority. This new e-payment system facilitates seamless, cashless transactions between the government and banking systems, enabling the delivery of salaries, pensions, payments, and benefits without manual intervention. It marks a historic step in streamlining Bhutan's Public Financial Management (PFM) system through structural and systemic changes [64] [65].

2.2 Factors Influencing the Adoption of e-payment: Technology Acceptance Model

The factors influencing the adoption of e-payment systems, particularly through the Technology Acceptance Model (TAM), are crucial in understanding consumer behaviour towards e-payment methods. Davis developed the TAM in 1986 to predict technology usage behaviour[29]. It is the most used framework in predicting information technology adoption[30]. However, there are drawbacks to this model, particularly in the context of e-payment systems. TAM primarily focuses on two main factors: perceived usefulness (PU) and perceived ease of use (PEOU)[29], [31]. This simplicity may overlook other significant factors such as trust, security, privacy, and social influences that are crucial in the context of e-payment systems[32], [33], [34]. Thus, for this study, in addition to the two factors of the TAM; PU and PEOU. The study has integrated factors such as trust, security, and social influences to investigate the effects of e-payment adoption on consumer purchasing in Bhutan (see Figure 1).

2.2.1 Perceived usefulness (PU)

According to Davis, PU is defined as "the degree to which a person believes that using a particular system would enhance his or her job performance"[29]. Studies have consistently

shown that perceived usefulness is a significant factor that impacts users' behavioural intentions and actual usage of e-payment platforms[35], [36], [37]. According to the study by [38], People's impressions of using digital payments include the cost of paying in cash, the convenience of paying, payment privacy, and payment security. Consumers value the 'convenience' provided by electronic payment systems and have a generally positive opinion toward these technical developments [37], [38], [39]. Other key usefulness of e-payments include time and money savings in addition to giving customers a convenient way to pay that includes users' capacity to spend, save, and move a currency value through the payment systems[34], [40]. However, to establish whether PU is a crucial factor in consumers' perceptions regarding e-payment adoption in Bhutan, the following hypothesis is proposed:

H1. There is a significant relationship between PU and consumers' intention to adopt e-payment.

2.2.2 Perceived ease of use (PEOU)

According to TAM, PEOU is a major factor that affects the acceptance of information systems [29], [31]. PEOU is defined as "the degree to which a person believes that using a particular system would be free of effort" [29]. Several studies have shown that making technology more user-friendly can increase its perceived usefulness [31], [36], [41], [42]. For instance, a study conducted by [32] highlights PEOU as a key factor in e-payment adoption for Saudi consumers. This aligns with the efforts of e-payment providers who offer user-friendly interfaces and educational resources like tutorials to streamline the transaction process. Similarly, [34], [43] Malaysians believe that using e-payments saves them time and money because of the user-friendly interface, structured transaction procedure, and quickness. In Indonesia, a study revealed that PEOU serves as a critical mediating factor between technology readiness and the intention to continue using e-payment systems among hoteliers [66]. A user-friendly system, particularly for online payments, should have a simple interface, clear procedures, appropriate content and layout, intelligible functionalities, and notifications [33]. Thus, to determine whether PEOU is an important factor in consumers' perceptions of e-payment adoption in Bhutan, the following hypothesis is proposed:

H2. There is a significant relationship between ease of use and consumers' perception toward e-payment adoption.

2.2.3 Trust

According to [44] as citied in [34], trust is defined as the degree of risk involved in financial transactions. When trust is established, it lowers the perceived risk. This reduction in perceived risk leads to more favourable attitudes and intentions toward adopting e-payment systems[1], [34], [45]. It is found that consumers can make a rational decision based on the knowledge of possible rewards for trusting and not trusting[43]. For instance, a study conducted in Korea found that Korean consumers' perceived trust also has a positive impact on e-payment use[43]. Similarly, in the UK, trust in the provider has a positive influence on the intention to use Near Field Communication mobile payments [46]. In Jakarta, Indonesia, trust emerged as a key factor positively influencing Generation Z's adoption of e-wallets, alongside perceived usefulness, ease of use, and social norms. This highlights the pivotal role of trust in fostering confidence in digital payment systems, reinforcing its importance in driving widespread adoption among younger users [68]. However, multiple studies have found no significant relationship between trust and adopting e-payment systems among customers [32], [34], [47]. Thus, to determine whether Trust is an important factor in consumers' perceptions of e-payment adoption in Bhutan, the following hypothesis is proposed:

H3. There is a significant relationship between trust and consumers' perception toward e-payment adoption.

2.2.4 Security

According to [48] security is defined as a set of procedures and programs that validate the information source and ensure the integrity and privacy of the information. It is a type of payment processing that protects a user's financial and personal information from fraud and unauthorized access [49]. Thus, the importance of security in the adoption of e-payment has been highlighted due to the susceptibility of e-payment systems to various threats and security challenges like cyber-attacks, fraud, identity theft, and data breaches [50]. Several studies have highlighted the role of security in the adoption of e-payment systems[30], [34], [47], [50], [51]. For instance, [51], found that the security element significantly increases Indonesian customers' inclination to utilize e-payment systems. Similarly, [30] revealed that security, as an external element, strongly adds to perceived ease of use, which in turn influences the adoption of e-payment systems. However, the findings are not entirely consistent across all research. [47] noted that, despite its significance, the correlation between the intention to adopt an e-payment system and security was relatively weak. Furthermore, some studies, such as those by [32], [34], [52], found no significant relationship between security and the adoption of e-payment systems. Thus, to determine whether security is an important factor in consumers' perceptions of e-payment adoption in Bhutan, the following hypothesis is proposed:

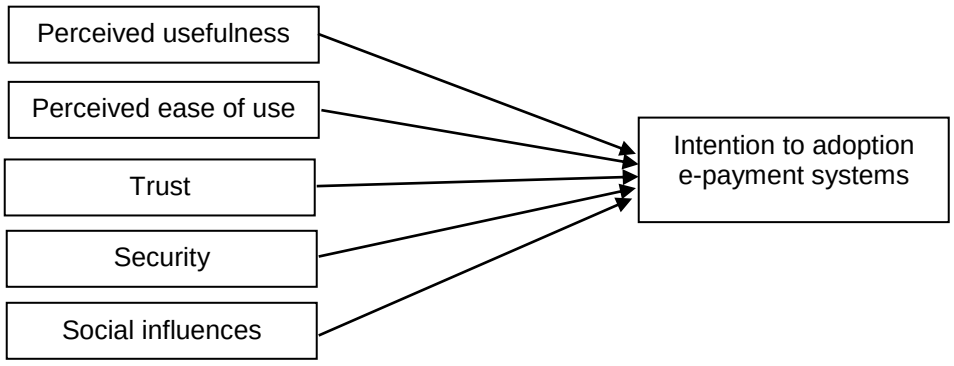
H4. There is a significant relationship between security and consumers' perception toward e-payment adoption.

2.2.5 Social influences

Social influence plays a significant role in the adoption of e-payment systems. This factor encompasses peer recommendations and societal norms that shape consumers' attitudes and behaviours toward e-payment adoption[33]. Several studies have consistently shown that social influence has a positive impact on the adoption of e-payment systems [32], [33], [51], [52]. For instance, a study by [52] found that social influence is one of the critical factors influencing the adoption of e-payment systems in Malaysia. The study also found that social influence has a significant positive effect on the intention to adopt e-payment systems among polytechnic students in Malaysia. Similarly, a study by Ramli et al. revealed that social influence serves as a mediating factor in the relationship between convenience and the adoption of e-payment systems in Klang Valley, Malaysia [67]. Likewise, [33] found that social influence is a significant factor positively affecting consumers' decisions to make online payments. This influence primarily comes from close individuals such as family, friends, and colleagues. When these individuals have a positive impact on consumers, they contribute to the decision-making process regarding online payment adoption. In [32] study, it was found the most influencing factor in e-payment adoption. Thus, to determine whether social influences are an important factor in consumers' perceptions of e-payment adoption in Bhutan, the following hypothesis is proposed:

H5. There is a significant relationship between social influences and consumers' perceptions toward e-payment adoption.

Figure 1: **Study's framework**



2.3 Intention towards e-payment Adoption

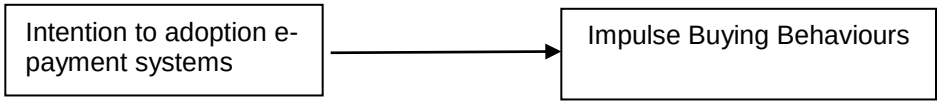
The adoption of e-payment systems has increasingly become a significant area of interest for researchers, particularly in understanding consumer behaviours and attitudes toward mobile wallets and e-payment systems[29], [31], [32], [33], [34], [38], [45], [46], [52]. A review of 25 quantitative studies via Google Scholar and Scopus [46] reveals that over half of these studies draw on Davis' (1989) TAM theory to identify factors affecting e-payment adoption behaviour. Due to the novelty of e-payment, most research uses behavioural intention as a proxy for actual usage [53]. This study also used behavioural intention to adopt e-payment as a proxy for actual usage. TAM defines technology acceptance as a three-stage process in which external factors (system design features) provide cognitive responses (perceived ease of use and perceived usefulness), which subsequently create an effective response (attitude toward using technology/intention), influencing actual use behaviours [29], [31].

2.4 Consumer Impulse Buying Behaviours

Impulse buying is a spontaneous choice by a consumer to acquire things or services, usually made immediately before the actual transaction [54]. This behaviour is distinguished by its unplanned nature, which is frequently motivated by an immediate need or emotional reaction rather than a predetermined intention[18], [55]. Impulse buying and e-payment systems are intricately tied in the digital age, with the integration of smooth, rapid payment mechanisms strongly affecting spontaneous purchasing behaviours[16]. For example, the study conducted by [18] among Malaysian customers, it was found that E-wallet users perceive the actual process of using E-wallet as pleasant, enjoyable, and fun, which subsequently induces impulse purchase intents. Similarly, [56] found that the e-payment system has a significant effect on customers' buying experience in retail outlet businesses in Nigeria. The results were similar to the study conducted by [57] among Jordanian people. However, a study conducted by Nur in Indonesia on Generation Z found that the use of e-wallets does not have a significant impact on their consumptive behaviour [68]. Thus, to determine whether e-payment facilities influence consumers' impulse buying behaviour in Bhutan (see Figure 2), the following hypothesis is proposed:

H6. There is a significant relationship between e-payment adoption and consumers' impulse buying behaviour.

Figure 2: Influences of adoption of e-payment to impulse buying behaviours.



3. MATERIAL AND METHODS

3.1 Research Design

The study adopted a quantitative approach to investigate the factors influencing e-payment adoption among Bhutanese people in Thimphu and Phuentsholing[1]. The study included a structured questionnaire to obtain data from participants, ensuring that the information was systematic and dependable. The research design was based on the TAM, which identifies perceived usefulness and perceived ease of use as the primary determinants of technology adoption. The study aimed to broaden this model by incorporating additional factors like trust, security, and social influences. Using a cross-sectional approach, the study obtained an overview of opinions and behaviours at a certain point in time, allowing for the investigation of the relationships between various factors and e-payment adoption.

3.2. Sampling Design

The total population for this research comprised 142,209 individuals, with 114,551 residing in Thimphu Thromde[2] and 27,658 in Phuentsholing Thromde[58]. The reason for selecting the population from these two Thromdes is mainly because it is more developed than other regions in Bhutan. This study used simple random sampling. To ensure adequate representation across different subgroups within the population, the sample was proportionally allocated based on the population size (see Table 1).The calculated sample size was 399, derived using Yamane Taro's formula[59].

Table 1. Calculation of sample based on proportionate

Thromde	Proportionate calculation	Sample number
Thimphu	114,551/142,209*399	321
Phuntsholing	27,658/142,209*399	78
Total		399

3.3. Data Collection

This study's data was collected from two cities, Thimphu and Phuentsholing, and focused on persons who utilize e-payment systems. 399 responses were collected from e-payment users, including representation from urban and semi-urban areas to capture varied perspectives. The data was collected using a structured questionnaire on a five-point Likert scale, with 1 being the highest disagreement and 5 representing the strongest agreement. This scale allowed for the objective measurement of attitudes, beliefs, and behaviours linked to e-payment uptake and usage. The questionnaire sought insights into the different elements that influence e-payment acceptance, such as user experiences, ease of use, and perceived benefits. The study's methodology guaranteed that data collecting followed ethical guidelines, with respondents participating voluntarily.

3.4. Data analysis method

SPSS has been used for the statistical analysis in this study. The reliability and validity were tested using Cronbach's alpha, composite reliability, and average variance extracted (AVE), as these are the most commonly used tools. Multiple regression analysis is used to know the

[1] Thimphu and Phuentsholing are two major urban centers in Bhutan, with Thimphu serving as the capital city and Phuentsholing as a key commercial hub located near the Indian border.

[2] Thromde refers to an administrative division in Bhutan, typically urban municipalities that are classified as Class A, or B.

relation between the factors influencing the adoption of the e-payment system in Bhutan and to examine the relationship between e-payment adoption to consumer buying behaviour.

3.5. Statistical tool validation

To assess the questionnaire's reliability and validity, the following indicators are used: Cronbach's alpha, composite reliability, average variance extracted (AVE), and square roots of AVE of the construct and its association with other constructs. The construct's reliability was assessed using the most common instrument tests, Cronbach's alpha and composite reliability. Table 2 shows that the Cronbach's alpha for each construct spans between 0.796 and 0.922. According to the research, value levels above 0.7 are acceptable [60].

The convergent validity is verified with the AVE for each construct and the result reveals that the AVE of each construct is between 0.505 to 0.629, which is above the acceptable level of 0.5[61]. The discriminant validity of the constructs is validated based on Fornell and Larcker (1981) criteria[62].They recommend that the construct's √AVE be higher than the constructs' correlation estimates. As shown in Table 3, the result supports Fornell and Larcker's criteria for discriminant validity.

Table 2: Cronbach's alpha, composite reliability, and AVE of the constructs

Constructs	Items	Composite reliability	Cronbach alpha	AVE
IA	3	0.806	0.803	0.580
PU	6	0.895	0.922	0.505
PEOU	4	0.748	0.874	0.580
T	5	0.821	0.877	0.520
S	4	0.796	0.804	0.504
SI	4	0.871	0.873	0.629

Note: Intention to adoption (IA), Perceived usefulness (PU), Perceived Ease of Use (PEOU), Trust (T), Security(S), Social influences (SI)

Table 3: Discriminant Validity

	IA	B	T	SE	EU	S
IA	***0.762***					
PU	.548**	***0.711***				
T	.576**	.681**	***0.721***			
SE	.713**	.307**	.439**	***0.793***		
EU	.721**	.707**	.657**	.332**	***0.762***	
S	.684**	.434**	.375**	.337**	.457**	***0.709***

Notes: ** p<0.01; the number in the ***bold italic*** is the √AVE; the remaining values are the bivariate correlation between constructs.

4. RESULTS AND DISCUSSION

4.1. Demographics Analysis

Table 4 shows the demographic analysis. It shows a variety of respondent characteristics. The gender distribution is slightly skewed towards females (54.6%), with the majority aged 24-31 years (41.9%). Most participants reside in Thimphu (80.5%), Bhutan's capital, reflecting urban representation. Academically, nearly half (49.9%) possess a bachelor's degree, and an additional 29.3% have completed higher secondary school, indicating a well-educated sample. Employment status reflects diversity: civil servants comprise the largest group (22.1%), followed by self-employed individuals (16.3%), while 10% are unemployed. Monthly income analysis finds that 28.8% earn between Nu. 20,001 and Nu. 30,000, with 22.8% reporting no income, indicating a range of economic conditions.

Regarding e-payment systems, 52.4% use several platforms, indicating extensive digital payment use. MBoB is the most popular single platform (43.1%). The majority of participants (65.7%) utilize electronic payment systems for all transactions, suggesting a high integration of digital tools into financial activities. However, a small percentage (0.5%) never use these systems.

Table 4: Demographics Analysis

Characteristics		Frequency	%
Gender	Male	181	45.4
	Female	218	54.6
Age	18-23 years	143	35.8
	24-31 years	167	41.9
	32-40 years	65	16.3
	Above 40	24	6
Current Location	Thimphu	321	80.5
	Phuntsholing	78	19.5
Educational Qualification	No schooling	6	1.5
	Middle Secondary school or less	6	1.5
	Higher Secondary school	117	29.3
	Diploma	46	11.5
	Bachelor	199	49.9
	Masters	20	5.0
	Any Other	5	1.3
Employment Status	Unemployed	40	10.0
	Student	55	13.8
	Part-time worker	27	6.8
	Self Employed	65	16.3
	Civil Servant	88	22.1
	Any Other	124	31.1
Monthly Gross Income	No Income	91	22.8
	Less than Nu. 20,000	108	27.1
	Nu. 20,001-Nu. 30,000	115	28.8
	Nu. 30,001-Nu. 40,000	57	14.3
	Nu. 40,001-Nu. 50,000	10	2.5
	More than Nu. 50,000	18	4.5
Type of E-payment system used	MBoB	172	43.1
	MPay	6	1.5
	TPay	9	2.3
	GoBoB	1	0.3
	MyPay	1	0.3

Transition Frequency	Any Other	1	0.3
	More than 1	209	52.4
	100% (Every Transaction)	262	65.7
	50% (Some Transactions)	114	28.6
	25% (Few Transactions)	21	5.3
	0% (Never)	2	0.5

4.2. Regression analysis: Factors Influencing the Adoption of e-payment

Table 5 shows the results of the multiple regression analysis examining the relationship between independent variables and the adoption of e-payment systems. The analysis is guided by the study objectives and hypotheses. The Variance Inflation Factor (VIF) values for all variables are below 5, with the highest VIF at 2.469, indicating minimal multicollinearity, indicating no multicollinearity issues, making the model reliable for hypothesis testing [34], [63]. The model's R^2 a value of 0.701 indicates that the independent variables account for 70.1% of the variance in e-payment adoption. The model's robustness is confirmed by an adjusted R^2 value of 0.698. Additionally, the model is statistically significant (F = 184.68, *P <.00*).

The results reveal that Perceived Ease of Use (β =.538, *P <.00*), security (β =.238, *P <.00*), and social influences (β =.339, *P <.00*) are significantly positive associated with e-payment adoption, accepting H2, H4, and H5. These findings emphasize the relevance of system simplicity, safe platforms, and societal factors in increasing the adoption of e-payments. However, the perceived usefulness (β =.003, *P =.94*) does not significantly affect adoption, hence H1 is not accepted. Trust (β = -.101, *P =.02*) has a substantial but negative influence on e-payment adoption, suggesting that low levels of trust discourage consumers. Therefore, H3 is not supported. Thus, ease of use, security, and influence on society all play important roles in e-payment adoption. However, the lack of support for perceived usefulness, as well as the negative effect of trust, reveal areas that need to be investigated further in order to improve consumer confidence and adoption approaches.

Table 5: Regression result for the adoption of e-payment systems

Model 1	Unstandardised coefficients		Standardised coefficients			Collinearity	
	B	SE	β	t	Sig	Tolerance	VIF
Constant	-.039	.139		-.281	.78		
PU	.003	.046	.003	.070	.94	.405	2.469
PEOU	.576	.045	.538	12.735	.00	.425	2.352
T	-.109	.046	-.101	-2.399	.02	.431	2.322
S	.348	.037	.339	9.433	.00	.589	1.699
SI	.199	.027	.238	7.325	.00	.720	1.389
R	.838						
R^2	.701						
Adjusted R^2	.698						
F	184.68						
P-value	.00						

**Dependent variables; Intention to adoption (IA), Independent variables; Perceived usefulness (PU), Perceived Ease of Use (PEOU), Trust (T), Security(S), Social influences (SI).*

4.3. Regression analysis: Influences of adoption of e-payment to impulse buying behaviours

Table 6 shows the regression analysis results for the influence of intention to use e-payment systems (IA) on impulse buying behaviours (IBB). The unstandardized coefficient (β=0.430) shows a strong positive association between IA and IBB, indicating that higher IA levels lead

to higher IBB. This connection is statistically significant (t=7.453, P =.00). IA accounts for 12.3% of the variation in IBB (R^2 = 0.123). Although the model's explanatory power is limited, its overall significance (F=55.55, P=.00) reveals IA's significant contribution to the dependent variable.

Furthermore, the tolerance and VIF values for IA are 1.00, indicating the lack of multicollinearity and proving the regression model's robustness. These findings highlight how adopting e-payment systems has a substantial impact on customers' buying behaviours. The convenience and accessibility of e-payment options may reduce psychological and practical barriers to spending, encouraging impulsive buying behaviours.

Table 6: Regression result for Influences of adoption of e-payment to impulse buying behaviours

Model 2	Unstandardised coefficients		Standardised coefficients			Collinearity	
	B	SE	β	t	Sig	Tolerance	VIF
Constant	1.721	.224		7.695	.00		
AI	.430	.058	.350	7.453	.00	1.00	1.00
R	.35						
R^2	.123						
Adjusted R^2	.121						
F	55.55						
P-value	.00						

**Dependent variables; Impulse buying behaviours (IBB). Independent variables; Intention to adoption (IA).*

4.4. Summary of findings

The demographic analysis reveals that the sample is predominantly female (54.6%), with a significant portion (41.9%) aged between 24-31 years. Most respondents have a bachelor's degree (49.9%). In terms of e-payment usage, 52.4% of participants use multiple platforms, with MBoB being the most popular (43.1%). A large proportion (65.7%) uses e-payment systems for all transactions, indicating high integration of digital payments.

The regression analysis indicates that Perceived Usefulness (H1) has no significant relationship on e-payment adoption (β = 0.003, P = 0.94). Perceived Ease of Use (H2) shows a significant positive effect on adoption (β = 0.538, P < 0.01), indicating its relevance. Trust (H3) has a negative influence (β = -0.101, P = 0.02), showing that poor trust affects adoption. Security (H4) is positively connected to e-payment adoption (β = 0.238, P < 0.01), emphasizing its importance. Social influences (H5) significantly impact adoption (β = 0.339, P < 0.01).

The regression analysis on impulse buying behaviours demonstrates a strong positive association with e-payment adoption (β = 0.430, t = 7.453, P < 0.01), suggesting that implementing e-payment systems enhances impulse buying behaviours.

4.5. Discussion

This study examines the factors that impact impulsive buying behaviours and the adoption of e-payment systems, based on the TAM framework. The findings emphasize the importance of PEOU, security, and social influences in determining consumer attitudes toward e-payment adoption, but trust has a complex relationship and PU appears to be less relevant in the Bhutanese environment. These findings have both theoretical and practical significance for understanding and supporting e-payment systems in emerging economies such as Bhutan.

PEOU, a major component of the TAM framework[29], has emerged as a significant predictor of e-payment adoption. According to studies, user-friendly technologies increase adoption rates, especially when interfaces are intuitive and processes are streamlined[32],

[36]. This is consistent with the notion that Bhutanese customers value ease of use in digital transactions, indicating that simplifying system design and providing educational tools, such as tutorials, might effectively drive adoption rates.

Security, defined as the protecting of personal and financial data [48], has a substantial impact on e-payment adoption. The findings are consistent with earlier research identifying security concerns as a significant obstacle[50], [51]. Improving encryption techniques, tackling cybersecurity threats, and raising public understanding of security measures can help to reduce risks and encourage trust. These steps are critical in situations where consumers are particularly sensitive to data breaches and fraud.

Social influences, including societal conventions and peer endorsements, have a beneficial impact on customer inclination to use e-payment systems. This is consistent with the findings of Nguyen and Nguyen, and Shafie et al., who emphasize the impact of social networks in affecting adoption habits[33], [52]. In Bhutan, family, friends, and society acceptance are all important, implying that social endorsement-focused promotional tactics could increase acceptance.

Interestingly, PU, which TAM cites as a main driver of technology adoption [29], [31], had no significant influence on e-payment acceptance in this study. This conclusion differs from those reported by Shree et al. and Wulandari et al., who cite convenience and time savings as significant motivators[37], [38]. The disparity could be attributed to cultural or contextual variables in Bhutan, where usability and trust may exceed utility in driving consumer behaviour.

Trust, a component that reduces perceived risk in financial transactions[44], showed a negative connection with e-payment usage, showing persisting trust shortcomings among Bhutanese consumers. This is consistent with studies [34], [47] that identify trust-related hurdles in e-payment systems. To address these concerns and increase consumer confidence, regulatory frameworks should be strengthened, transparency ensured, and prompt customer service provided.

Finally, e-payment adoption has a major impact on impulsive buying behaviours, as indicated by the strong positive association. The findings are consistent with Halim et al. and Lee et al., who explain this trend to the convenience and speed of digital payments[16], [18], [56]. In Bhutan, e-payment technologies lower transactional barriers, allowing consumers to make spontaneous purchases that businesses can capitalize on through focused marketing campaigns.

5. CONCLUSION

This study investigates the factors influencing Bhutan's e-payment system adoption and how they affect customer behaviour, especially impulse buying. PU and trust show slighter or fewer evident effects, but PEOU, security, and social influences are identified as important drivers of e-payment acceptance using the TAM as a framework. The results highlight the value of strong security measures, user-friendly interfaces, and social networks in promoting the adoption of e-payments.

Also, the study finds a positive relationship between e-payment adoption and impulse buying behaviour, emphasizing digital payment systems' revolutionary impact in altering buying behaviours. The immediacy and ease of e-payments stimulate spontaneous purchases, allowing businesses to tailor marketing efforts to this trend. Despite these positive findings, trust remains a barrier to widespread adoption, highlighting the need for improved regulatory frameworks, transparency, and consumer education to encourage trust in e-payment platforms.

5.1. Limitations

This study has some limitations. First, it only focused on two cities (Thimphu and Phuentsholing), which may not fully represent the entire population of Bhutan, especially rural areas where access to technology and e-payment systems may differ. Second, the

study did not consider cultural factors, which can significantly influence technology adoption. Bhutan's unique cultural context may affect perceptions of e-payments, trust in digital platforms, and preferences for traditional payment methods. These factors were not fully explored and could be addressed in future research on e-payment adoption and consumer behaviour in Bhutan. Lastly, while trust was found to have a negative impact on adoption, the specific factors contributing to this lack of trust, such as past experiences or regional variations, were not explored in detail.

5.2. Future Research Directions

Future research can extend this study by exploring the impact of e-payment adoption in rural areas of Bhutan, where technology adoption may vary. It would also be beneficial to examine the role of demographic factors such as age, income, and education in shaping attitudes toward e-payment systems. Additionally, the impact of cultural factors, such as trust in digital platforms and preferences for traditional payment methods, could be explored. Research on specific trust-related factors influencing e-payment adoption could uncover strategies to improve consumer confidence. Lastly, studying the psychological factors behind impulse buying behaviours and how these can be influenced by technological or economic changes would also be valuable.

5.3. Implications

The findings of the research have important implications for both banks and Royal Monetary Authority of Bhutan. Banks should prioritize increasing the accessibility and security of their e-payment systems. Banks can encourage more people to use e-payments by making digital platforms more user-friendly, straightforward, and safe. Furthermore, educating customers on the benefits of digital transactions and their security can help develop trust and overcome mistrust, resulting in increased usage. For the Royal Monetary Authority, the study highlights the importance of creating a comprehensive regulatory framework to govern e-payment systems. The RMA should focus on setting standards for security, privacy, and transparency to safeguard consumers and promote confidence in the digital payment infrastructure. Furthermore, the RMA could support financial literacy initiatives that help consumers understand how e-payment systems work, the advantages they offer, and how to navigate potential risks.

COMPETING INTERESTS DISCLAIMER:

Authors have declared that they have no known competing financial interests OR non-financial interests OR personal relationships that could have appeared to influence the work reported in this paper.

CONSENT (WHERE EVER APPLICABLE)

As the paper is a social research paper, this part does not apply to this study.

ETHICAL APPROVAL (WHERE EVER APPLICABLE)

The study involves human subjects, the informed consent, protection of privacy, and other human rights are obtain before data collection. It is mentioned in the questionnaire.

Disclaimer (Artificial intelligence)

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Details of the AI usage are given below:

1. Grammarly

2.

3.

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