

Promoting Sustainable Financial Services through Cashless Transactions: An Empirical Analysis of Small and Medium Enterprises (SMEs) in Nepal

Manoj Kumar Chaudhary, PhD

Associate Professor

Central Department of Management, Tribhuvan University

Email: manoj.cdmtu@gmail.com,

ORCID: 0000-0003-4515-6319

Madhav Adhikari

Research Scholar

Faculty of Management, Tribhuvan University

Email: adgmadhav@gmail.com,

ORCID: 0000-0001-8102-0000

Dinesh Mani Ghimire

Assistant Professor

Central Department of Management, Tribhuvan University

Email: dineshmanighimire18@gmail.com

ORCID: 0009-0007-2697-2800

Madan Dhungana

Research Scholar

Faculty of Management, Tribhuvan University

Email: dhmadan8363@gmail.com,

ORCID: 0009-0006-9163-9425

Abstract

Digital financial technologies are reshaping the economic landscape, enhancing financial inclusion and sustainable development. This study examines the adoption of cashless transactions among Small and Medium Enterprises (SMEs) in Nepal, focusing on factors like privacy, security, and resource availability through the Technology Acceptance Model (TAM). A structured survey was utilized to gather information from 389 SME owners in the Kathmandu Valley as part of a cross-sectional study design. Path analysis and other quantitative techniques were used to investigate the connections between the adoption of cashless transactions and the main adoption drivers, which include perceived usefulness, perceived ease of use, social influence, privacy concerns, and resource availability. Results show a strong link between these factors and adopting electronic payment systems, with privacy and security being the most significant. While perceived ease of use and usefulness drive adoption, challenges like limited digital literacy and infrastructural constraints exist, especially in rural areas. This study highlights how cashless transactions can help SMEs become more resilient and operationally efficient, which aligns with global trends. It offers practical advice on how financial service providers and legislators can remove obstacles, encourage digital inclusion, and build a strong digital ecosystem.

Keywords: Cashless Economy, Digital Finance, Fintech, SMEs, e-wallet, Nepal

Introduction

The swift transition to digital financial technologies has completely changed the financial landscape in the modern world, especially in the wake of economic upheavals from major world crises like the COVID-19 pandemic and climate-related issues. To enhance financial inclusion and foster sustainable growth, these technologies have become crucial, especially for small and medium-sized enterprises (SMEs). Research highlights the growing acceptance of fintech solutions among SMEs, driven by factors such as prior experience, brand familiarity, and perceived benefits (Gupta et al., 2022). These innovations have positively influenced financial performance and have become essential in enabling enterprises to adapt to changing market dynamics and consumer preferences (Daud et al., 2022).

The integration of digital financial inclusion has further supported the sustainable development of private and high-tech industries, particularly by alleviating financing constraints and fostering resilience against economic disruptions (Yang & Zhang, 2020). The adoption of electronic payment systems (EPS), including mobile-driven payment platforms and e-wallets, reflects a paradigm shift toward cashless economies, enabling seamless, secure, and efficient transactions. This transformation is particularly relevant in the context of Nepal, where SMEs form a significant portion of the economy but often struggle with limited capital, access to technology, and expertise (Pandey, 2004; NRB, 2021). The reports by ESCAP (2020) and Kharel and Dahal (2020) provide comprehensive insights into the financial challenges and opportunities for SMEs in Nepal, aligning closely with the objective of promoting sustainable financial services through cashless transactions. ESCAP (2020) highlights a \$3.6 billion financing gap for Nepalese SMEs, driven by stringent collateral requirements and the absence of targeted financial products for the "missing middle." The study emphasizes the transformative potential of FinTech in bridging this gap, suggesting that cashless transactions could bypass traditional banking barriers, particularly in rural areas. Furthermore, the report underscores the importance of integrating digital payment systems and financial literacy campaigns to foster a sustainable financial ecosystem for SMEs. Similarly, Kharel and Dahal (2020) identify high-interest rates, procedural complexities, and a lack of targeted policies as significant impediments to SME financial inclusion. They advocate for the adoption of digital technologies, noting that cashless systems can enhance efficiency, transparency, and competitiveness. The authors also stress the need for incentives to encourage SME adoption of cashless transactions, which can alleviate dependence on costly credit sources. Both studies converge on the view that cashless transactions, supported by FinTech innovations and policy interventions, could enhance the financial sustainability and resilience of Nepalese SMEs, making them key tools for advancing financial inclusion in the sector.

The potential of fostering public-private partnerships to address youth unemployment, which aligns with the goal of promoting cashless transactions by leveraging digital innovations to enhance the financial inclusion and sustainability of SMEs (UNDP, 2021). The COVID-19

pandemic served as a catalyst for accelerating the adoption of digital payment systems in Nepal, as social distancing measures and declining in-person interactions necessitated alternatives to traditional cash transactions. During this period, platforms like eSewa and IME Pay witnessed substantial growth, with user bases increasing by 35% and 25%, respectively, within months of the pandemic's onset (Shrestha, 2021). This surge underscores the role of digital wallets and other fintech tools in ensuring business continuity and safety during crises. Moreover, the pandemic highlighted the need for businesses to digitize operations, aligning with Nepal's Digital Nepal Framework 2019, which aims to leverage digital solutions to unlock the country's growth potential (Chaudhary, 2020; NRB, 2022). Despite these advancements, challenges persist in rural and semi-urban areas, where low digital literacy, inconsistent internet access, and trust issues hinder widespread adoption of digital financial technologies (Timalsina, 2021).

On a global scale, the push for cashless economies has been associated with enhanced transparency, lower operating costs, and environmental sustainability. However, in Nepal, where SMEs make up a sizable share of the economy, the adoption of cashless transactions is still constrained by a lack of digital infrastructure, low financial literacy, and a reluctance to embrace new technologies. This emphasizes the pressing need to investigate the effective integration of digital financial technologies, including marketing tools, payment systems, and financial services, to assist SMEs in overcoming obstacles and attaining long-term sustainability. In addition to empowering SMEs, resolving this issue is essential for Nepal to align with the UN's 2030 Sustainable Development Goals (SDGs). Thus to address these gaps, targeted interventions are required to build capacity, raise awareness, and ensure equitable access to digital tools across the diverse SMEs. This paper seeks to explore the multifaceted impact of digital financial technologies on SMEs in Nepal by leveraging primary data and analyzing trends through statistical techniques, providing actionable insights for policymakers, businesses, and stakeholders to promote sustainable financial services through the adoption of cashless transactions contributing to Nepal's journey toward a digitally empowered economy.

Review of literature and Hypothesis

Encouraging sustainable financial services in developing nations requires a shift to cashless transactions and digital financial inclusion. Formal financial institutions are still difficult to access, a major problem. However, digital financial services can solve this problem, particularly for small and medium-sized businesses (SMEs) in these countries (Bai et al., 2021). Adopting digital payment systems can promote financial inclusion, improve operational effectiveness, and stimulate economic growth, especially in underserved areas (Shrestha, 2020; Bhattarai et al., 2023).

The theoretical underpinnings of digital wallet adoption are often explained using the Technology Acceptance Model (TAM), the Motivation Model, and the Theory of Planned Behavior. TAM, developed by Davis (1989), highlights perceived usefulness and ease of use's influence on the

behavioral intention to adopt new technologies. Social influence, work relevance, and result demonstrability reinforce perceived usefulness, shaping users' attitudes toward digital payment systems. The Technology Acceptance Model (TAM) underscores the importance of perceived ease of use and perceived usefulness in shaping behavioral intention toward digital payment systems, while trust, privacy, and security remain critical factors influencing adoption (Adhikari, 2022; Iyer, 2018). Furthermore, demand and supply-side constraints, such as inadequate infrastructure, high transaction costs, and lack of financial literacy, underscore the need for tailored strategies to support SMEs (Adhikari, 2022; Bhusal, 2011). Moreover, empirical studies identify additional factors—such as social impact, facilitating conditions, trust, and lifestyle compatibility—as crucial in influencing behavioral intent and adoption (Lieu et al., 2020; Aryal, 2021; Nawi et al., 2022). As lifestyles grow busier and consumer habits evolve, the popularity of e-payment systems has surged significantly (Singh & Srivastava, 2018; Adhikari et al., 2024).

The perceived ease of use of these platforms critically influences their perceived usefulness and likelihood of adoption (Yang et al., 2021). For small and medium enterprises (SMEs), perceived ease of use and usefulness are particularly impactful in the decision to adopt cashless payment systems (Monoarfa et al., 2024; Najib & Fahma, 2020). SMEs often adopt digital payment technologies driven by factors such as prior experience, trust in established brands, and the presence of supportive government policies (Gupta et al., 2022). However, barriers such as perceived risks and high costs can hinder their adoption (Raj et al., 2023). The recently developed Cashless Transaction Adoption Model (CTAM) identifies additional motivators, such as reduced risks of economic offenses and enhanced economic security, which further incentivize the transition to digital payments (Raj et al., 2023).

The growth of electronic payment systems (EPS) has been facilitated by technological advancements, increased access to mobile and telecommunications infrastructure, and a growing population of tech-savvy young users (Marimuthu & Roseline, 2020). These attributes play a pivotal role in shaping individuals' willingness to embrace such payment methods (Karim et al., 2020). Nevertheless, challenges such as lack of awareness, limited knowledge, and concerns about security and privacy remain significant barriers. Customers may lose trust in information system providers if adequate security and privacy safeguards are not implemented, thereby discouraging them from conducting electronic transactions (Gitau et al., 2014). The rapid advancement of technology has heightened privacy and security concerns, leading to user hesitance in sharing financial information online or on e-commerce platforms (Ahmad et al., 2010). To mitigate these concerns, EPS providers must enforce robust security measures, provide clear user guidance, and disseminate relevant information to address potential vulnerabilities and cyber threats (Abdulhamid, 2018).

The widespread adoption of digital payments requires a collaborative effort. Service providers

must focus on designing secure and user-friendly platforms, while governments should implement policies that enhance financial literacy and ensure data protection (Musyaffi, 2024). As Yang et al. (2021) emphasize, intuitive and accessible app designs are crucial for driving user adoption, making usability a key factor in promoting cashless transactions. Social influence has also emerged as a significant driver of behavioral intention toward adopting digital payment systems. Additionally, facilitating conditions—such as the availability of resources and technical support—play a crucial role in encouraging the adoption of e-wallets (Yang et al., 2021; Abdullah et al., 2016).

Expanding on these insights, Raj et al. (2023) introduced the Cashless Transaction Adoption Model (CTAM), which accounts for 84.7% of the variability in behavioral intentions toward cashless transactions. This model integrates innovative factors such as Perceived Economic Offense Reduction (PEOR), Perceived Economic Benefit (PEB), and Perceived Economy Security (PES), all of which positively influence adoption behavior. Furthermore, factors like performance expectancy, trust, and perceived usefulness underscore the multifaceted nature of digital payment adoption (Yang et al., 2021; Abdullah et al., 2016).

These studies highlight the importance of addressing individual and systemic factors to promote the broader acceptance of cashless transactions in SMEs. As Nepal envisions a cashless economy aligned with the United Nations' Sustainable Development Goals 2030, leveraging fintech innovations and addressing barriers to adoption is imperative for fostering sustainable financial services and empowering SMEs. Building on these insights, this study integrates key variables from prior research to examine how these factors influence the adoption of digital wallets among SMEs in Nepal. Therefore, the following hypotheses have been put forward to test these relationships.

H1: There is a significant relationship between perceived ease of use and digital wallet adoption among Nepalese SMEs.

H2: Perceived usefulness has a significant positive effect on digital wallet adoption among Nepalese SMEs.

H3: Privacy and security concerns have a significant positive effect on the adoption of digital wallets among Nepalese SMEs.

H4: The availability of resources significantly influences the adoption of digital wallets in local businesses.

H5: Social influence has a significant positive effect on the adoption of digital wallets in local businesses.

Thus, the following research framework has been developed for the study based on the past literature discussed.

Research Framework

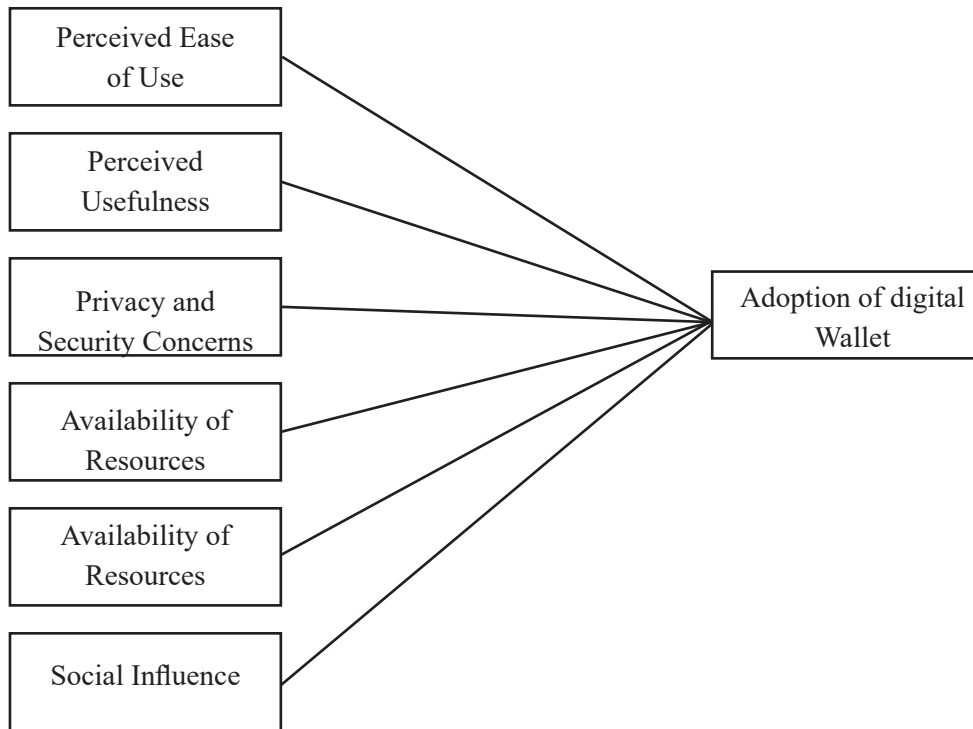


Figure 1: Research framework

Source (Nawi et al., 2022)

Methodology:

This study explores how Nepalese small and medium-sized enterprises (SMEs) promote sustainable financial services through cashless transactions. It employs structural quantitative methods and a cross-sectional survey design. A carefully crafted printed version of the questionnaire was given to 450 SME owners in the Asan, Patan, and Kirtipur regions. Before distribution, a pilot study was carried out in the Patan area with a sample size of 50 respondents. Any discrepancies found during the pilot study were addressed and fixed so that the data collection process would go smoothly and the data interpretation would remain accurate and trustworthy. After correcting for non-responses and missing data, 389 final responses were obtained for analysis, predominantly owners or promoters of small and medium local businesses registered in Department of cottage and small industries, Nepal located in traditional shopping areas of the Kathmandu Valley, including Asan in Kathmandu Metropolitan City, Patan in Lalitpur

Metropolitan City, and Kirtipur in Kirtipur Municipality. The relationship between the variables based on the research hypotheses was tested using a causal research design. The goal was to determine the precise relationship between the variables and to provide a representative model. The two sections of the structured questionnaire were questions based on sociodemographic information and variables. The sociodemographic section gathered data on respondents' age, gender, and level of education in addition to three questions concerning their use of digital wallets and preferred payment methods.

The variable-based part used a five-point Likert scale, where 1 meant "strongly disagree" and 5 meant "strongly agree." Specific Likert statements were used to evaluate each of the variables as privacy and security: eight items (Pavlou, 2003; Iyer, 2018); perceived utility: five items (Davis, 1989); perceived ease of use: four items (Davis, 1989); available resources: six items (Venkatesh et al. (2003); social influences: four items (Venkatesh et al., 2003), and Acceptance of digital wallets: Four items (Venkatesh et al., 2012).

SME owners' perceptions of the adoption of cashless transactions may be examined using the Technology Acceptance Model (TAM) developed by Davis (1989). TAM offers a framework for comprehending the cashless payment methods that SME owners prefer. The model identifies two key determinants of acceptance: perceived usefulness, which captures how SME owners think cashless systems will improve operational effectiveness and expedite business transactions, and perceived ease of use, which captures their conviction that such systems are easy to use and straightforward. These elements influence SME owners' inclination to adopt cashless technologies, affecting how well they incorporate cutting-edge financial solutions into their operations. This study builds on the conceptual framework and previous literature aimed at promoting sustainable financial services through cashless transactions. It uses the fundamental model created by Davis (1989), adding more variables as suggested by (Oney et al., 2017; Roy et al., 2014; Nawi et al., 2022).

The information gathered was analyzed and arranged for data processing using SPSS and MS Excel. The questionnaire also contained open-ended questions regarding the sustainability of EPS (Environmental, Psychological, and Social factors) and its implications in order to promote insightful responses and a thorough grasp of the subject. After confirming the normality of the dataset, advanced analyses were conducted using Structural Equation Modeling (SEM) with AMOS to evaluate the hypotheses outlined in the conceptual framework.

Results

Demographic Characteristics

Table 1

Demographic Characteristics

Baseline Characteristics	Frequency	Percentage (%)
Gender		
Female	148	38.04
Male	241	61.96
Age Groups		
20-30 years	145	37.27
31-40 years	185	47.56
41-50 years	54	13.88
51 years and more	5	1.29
Education Distribution		
Up to High School	189	48.58
Undergraduate Degree	132	33.93
Postgraduate Degree and above	68	17.48

Table 1 shows the demographic characteristics of the respondents in this research. Males (61.96%) clearly outnumbered females in the survey (38.04 percent). It reveals that, the local SMEs majority of male owner but 38.04 percent shows that, the female entrepreneur are also growing the involvement in SMEs. The major portion of responders (47.56% were aged 31-40, with 37.27 percent aged 20-30 years, and only 1.29 percent aged more than 51 years. It indicates that, the younger generations aggressively adopting the electronic payment systems. The majority of respondents held up to higher school. Similarly, almost 34% finished the undergraduate degree and only 18 percent respondent's involvement in SMEs after completing Post graduate degree and above.

Table 2

Factor Loadings, AVE and CR

Items	Factor Loadings	Communalities	AVE	CR
PEU1	0.889	0.898	0.872	0.608
PEU2	0.883	0.849		
PEU3	0.843	0.78		
PEU4	0.9	0.921		
PU1	0.923	0.888	0.93	0.715
PU2	0.947	0.922		
PU3	0.849	0.779		
PU4	0.929	0.886		
PU5	0.96	0.945		
PS1	0.943	0.949	0.925	0.734
PS2	0.926	0.927		
PS3	0.931	0.93		
PS4	0.907	0.888		
AR1	0.831	0.76	0.745	509
AR2	0.695	0.593		
AR3	0.874	0.785		
AR6	0.626	0.564		
SI1	0.733	0.656	0.77374	0.519
SI3	0.907	0.861		
SI4	0.84	0.743		
SI6	0.73	0.607		
ACT1	0.889	0.854	0.945	0.812
ACT2	0.863	0.766		
ACT4	0.866	0.756		
ACT6	0.932	0.889		

Extraction Method: Principal Component Analysis.

Table 2 highlights the assessment of convergent validity through metrics such as Average Variance Extracted (AVE) and Composite Reliability (CR). The results indicate that AVE values are consistently above the threshold of 0.5, while CR values exceed the recommended benchmark of

0.7, satisfying the criteria for convergent validity as outlined by Hair et al. (2010). Furthermore, all factor loadings surpass the minimum acceptable value of 0.5. The reliability analysis, reflected in Cronbach's alpha values greater than 0.7, confirms the strong internal consistency of the constructs, aligning with the standards suggested by Nunnally (1978).

Table: 03

Reliability and Validity Measures									
	CR	AVE	MSV	MaxR(H)	SI	PU	PS	PEU	AR
SI	0.774	0.519	0.099	0.974	0.720				
PU	0.930	0.715	0.067	0.977	0.085	0.846			
PS	0.925	0.734	0.088	0.977	0.210	0.259	0.857		
PEU	0.872	0.608	0.025	0.944	0.153	0.117	0.060	0.780	
AR	0.745	0.509	0.099	0.875	0.315	0.195	0.297	0.158	0.714

(PEU = perceived ease of use; PU = perceived usefulness; PS = privacy and security; AR = availability of resources; SI = Social Influence; ACT = adoption of cashless transactions)

To assess discriminant validity, the square root of the Average Variance Extracted (AVE) for each construct should be greater than the inter-construct correlations, as proposed by Barclay et al. (1995) and Fornell and Larcker (1981). Table 3 confirms this criterion, showing that the diagonal elements—representing the square root of the AVE—are consistently higher than the correlation coefficients between constructs. This indicates that each construct is more strongly related to its own measures than to those of other constructs, thereby validating discriminant validity.

Table 4 illustrates the results of the path analysis examining factors influencing the adoption of cashless transactions (ACT). The table provides estimates of path coefficients (Estimate), standard errors (S.E.), critical ratios (C.R.), and significance levels (P) for each independent variable. The analysis supports the hypothesis that all considered factors—Perceived Usefulness (PU), Privacy and Security (PS), Perceived Ease of Use (PEU), Social Influence (SI), and Availability of Resources (AR)—are positively associated with the adoption of cashless transactions. Privacy and Security (PS) demonstrates the strongest effect (Estimate = 0.228, $P < 0.001$), highlighting its critical role in fostering trust and reducing users' concerns about engaging in digital transactions. Similarly, Perceived Ease of Use (PEU) (Estimate = 0.219, $P < 0.001$) significantly influences adoption, consistent with the Technology Acceptance Model (TAM), which emphasizes usability as a fundamental driver of technology adoption (Davis, 1989). Availability of Resources (AR) (Estimate = 0.152, $P < 0.001$) and Perceived Usefulness (PU) (Estimate = 0.154, $P = 0.001$) also show significant impacts, underscoring the importance of perceived benefits and accessibility in decision-making processes.

Table 4:

Path Analysis

Path			Estimate	S.E.	C.R.	P	Remarks
ACT	<---	PU	0.154	0.047	3.271	0.001	Accept
ACT	<---	PS	0.228	0.043	5.293	***	Accept
ACT	<---	PEU	0.219	0.052	4.25	***	Accept
ACT	<---	SI	0.107	0.055	1.934	0.053	Accept
ACT	<---	AR	0.152	0.042	3.6	***	Accept

Table 4 reveals that Social Influence (SI) (Estimate = 0.107, P = 0.053) has a marginally significant effect, suggesting that while societal norms and peer pressure play a role in adoption decisions, their impact may vary based on user context or demographic factors. These findings collectively support a holistic view of users' willingness to adopt cashless transactions. The results provide actionable insights for policymakers and service providers to design strategies prioritizing security, ease of use, and resource availability while leveraging social influence to promote digital financial inclusion.

Table 5. Confirmatory factor analysis summary

Model	χ^2 / df	CFI	TLI	GFI	IFI	RMSEA
Six-factor model (PU,PS,PEU,AR,SI, ACT)	2.354	0.943	0.96	0.902	0.93	0.049
Threshold (Fetscherin, 2019)	≤ 3.00	≥ 0.900	≥ 0.900	≥ 0.900	≥ 0.900	≤ 0.060

Confirmatory factor analysis was conducted to evaluate the structural validity of the measurement model, and the findings identified the six-factor model as the best fit for the data. This conclusion is supported by the model fit indices outlined in Table 5. The Chi-Square value divided by the degrees of freedom (X^2/df) is 2.354, indicating a strong alignment between the sample data and the model after accounting for any discrepancies. Other fit indices further confirm the model's suitability: the Comparative Fit Index (CFI) is 0.943, the Tucker–Lewis Index (TLI) is 0.96, and the Goodness-of-Fit Index (GFI) is 0.902. These values reflect the model's ability to capture the variance and covariance in the data effectively. Additionally, the Incremental Fit Index (IFI) of 0.93 demonstrates that the sample size is appropriately aligned with the model's complexity.

The Root Mean Square Error of Approximation (RMSEA) is reported at 0.049, which is well within the acceptable range, indicating a good fit for the model. RMSEA's value close to zero further reinforces the model's robustness. Importantly, no other model presented in Table 5 meets the acceptable fit thresholds, underscoring the superiority of the six-factor model. Overall, the

analysis confirms that the variables in this study demonstrate strong validity and reliability, meeting established standards for measurement models.

Discussion

This study investigates the factors influencing the adoption of cashless transactions among small and medium-sized enterprises (SMEs) in Nepal. The findings reveal a strong positive association between key determinants—perceived ease of use (PEU), perceived usefulness (PU), privacy and security (PS), resource availability, and social influence (SI)—and the adoption of digital payment systems. These results align with global studies, highlighting the transformative potential of cashless transactions in enhancing financial inclusion and operational efficiency for SMEs (Yang et al., 2021; Kilay et al., 2022).

Perceived ease of use emerged as a critical driver of digital wallet adoption, emphasizing the importance of intuitive, user-friendly systems that save time and streamline operations for SME owners. These findings are consistent with the Technology Acceptance Model (TAM), which identifies usability as a key predictor of technology acceptance (Davis, 1989; Raj et al., 2023). Similarly, perceived usefulness significantly influences adoption behavior, as SMEs recognize the practical benefits of cashless transactions in enhancing cost efficiency and productivity. Privacy and security concerns moderately impact adoption, reflecting ongoing trust issues and fears regarding data protection. This finding underscores the importance of robust cybersecurity measures and transparent communication to foster user confidence (Abdulhamid, 2018; Marimuthu & Roseline, 2020). In Nepal, these concerns are compounded by limited digital literacy, particularly in rural areas, necessitating awareness campaigns and technical support initiatives. Resource availability, while significant, exhibited a weaker influence on adoption, reflecting the infrastructural challenges faced by Nepalese SMEs, such as inconsistent internet connectivity and limited access to affordable digital tools. Similar barriers have been identified in other developing economies, including Malaysia and India (Rahman et al., 2022; Marimuthu & Roseline, 2020).

The study validates the transformative potential of cashless transactions in empowering SMEs, enhancing financial inclusion, and driving sustainable economic growth in Nepal. However, addressing persistent challenges such as digital literacy gaps, trust deficits, and resource constraints is crucial to achieving widespread adoption. Aligning technological advancements with targeted policy interventions and stakeholder collaboration can help Nepal create a robust and inclusive digital ecosystem, as a model for other developing economies navigating similar transitions. This study also contributes to the global conversation on digital financial inclusion by presenting empirical data from small and medium-sized businesses in Nepal. It provides useful information to help SME managers in developing nations create plans for e-wallet adoption. Additionally, it emphasizes how crucial policies, fintech firms, and banks work together to create a strong and inclusive digital ecosystem. Overcoming these challenges requires expanding

digital infrastructure and providing SMEs with accessible technological solutions. Social influence also plays a notable role, with societal norms and peer networks significantly shaping SME decisions to adopt digital systems. Leveraging community-based marketing and promoting early adopters as role models can amplify the acceptance of Cashless transactions.

Conclusion

With an emphasis on their contribution to the advancement of sustainable financial services, this study thoroughly analyzes the variables influencing Nepali SMEs' adoption of cashless transactions. The study sheds light on the factors affecting the adoption of digital payments in developing economies by concentrating on key determinants, including perceived social influence, privacy and security, perceived ease of use, perceived utility, and resource availability. The study highlights the variables affecting SMEs' adoption of cashless transactions (ACT). According to the path analysis, adoption is positively impacted by each of the variables that were looked at: perceived usefulness (PU), privacy and security (PS), perceived ease of use (PEU), social influence (SI), and availability of resources (AR). The most important factor was found to be privacy and security (PS), which highlights the necessity of strong measures to foster trust and allay users' worries about online transactions.

The Technology Acceptance Model (TAM) and Perceived Ease of Use (PEU) support the significance of intuitive and user-friendly systems in promoting adoption. Perceived Usefulness (PU) and Availability of Resources (AR) also impact adoption, emphasizing how crucial it is to show concrete advantages and guarantee accessibility to encourage the use of cashless systems.

This research provides an in-depth exploration of the factors influencing the adoption of cashless transactions among SMEs in Nepal, highlighting their potential to promote sustainable financial services. By focusing on critical determinants such as perceived ease of use, perceived utility, privacy and security, resource availability, and social influence, the study sheds light on the drivers and barriers shaping digital payment adoption in a developing economy context.

The findings underline the transformative role of cashless transactions in improving financial inclusion and operational efficiency for SMEs, while also addressing systemic challenges like limited digital literacy and infrastructure deficits. The significant influence of perceived ease of use and utility reflects the need for digital wallet providers to prioritize user-friendly designs and tangible benefits. Privacy and security remain pivotal, calling for robust measures to build user trust and mitigate concerns around data protection.

The results highlight the potential of cashless transactions in improving SMEs' operational efficiency and financial inclusion while tackling issues like low digital literacy, a lack of trust, and logistical obstacles. Given the importance of perceived utility and ease of use, digital wallet providers must emphasize user-friendly, intuitive systems and offer observable advantages.

However, privacy and security concerns also underscore the importance of strong cybersecurity measures to address data protection issues and foster trust.

Furthermore, the COVID-19 pandemic has accelerated the shift toward digital payments, marking a behavioral change that is likely to persist. While a fully cashless society may remain aspirational, the increasing adoption of technologically assisted payment systems presents an opportunity for Nepal to enhance financial sustainability and competitiveness. This shift, however, must be supported by collaborative efforts between digital wallet providers, policymakers, and educational institutions to address infrastructural gaps and promote equitable access to digital tools.

Implications of the study

Comparing these findings with global contexts highlights both commonalities and unique challenges. While usability and perceived benefits are universal drivers, infrastructural and trust-related barriers are more pronounced in Nepal. This emphasizes the need for localized digital transformation strategies to address country-specific constraints. Nepal's Digital Framework 2019 provides a promising blueprint for fostering innovation and bridging digital divides through investments in education, infrastructure, and policy support. This study underscores the significant opportunities presented by the adoption of cashless transactions for SMEs in Nepal. By addressing the identified barriers and leveraging the drivers of adoption, Nepal can create a model for sustainable financial growth that balances technological innovation with socio-economic realities. The pathway to a digitally empowered SME sector lies in fostering trust, inclusivity, and resilience, setting the foundation for long-term economic transformation.

The study also contributes to the broader discourse on digital financial inclusion by providing empirical evidence from Nepalese SMEs. It offers actionable insights for SME managers in emerging economies to devise strategies for e-wallet adoption. It emphasizes the importance of partnerships between banks, fintech companies, and policymakers in fostering a robust digital ecosystem. Thus, the research enriches existing literature and guides developing countries aiming to transition toward a more inclusive and efficient cashless economy.

Limitations and direction for future research

This study offers valuable insights into the variables driving the adoption of cashless transactions by Nepali SMEs, but it must be noted that it has some limitations. First, because the study only looks at SMEs in Nepal, its conclusions cannot be applied to other situations. Other regions' cultural, economic, and infrastructure variations could produce different outcomes. Subsequent studies may broaden the geographic focus to incorporate cross-national comparisons, providing a more comprehensive understanding of adopting cashless transactions in various contexts.

Secondly, a cross-sectional design is used in the study to collect data at a single moment in time. This methodology restricts the capacity to evaluate shifts in the behavior of SMEs and the

changing influence of the factors under investigation over time. In addition to offering a more dynamic perspective of adoption trends, longitudinal studies would assist in determining how outside variables, like policy changes or technological breakthroughs, affect adoption patterns. Third, the study is based on self-reported data, which can be biased by the respondents' social desirability or inaccurate perceptions. Mixed-method approaches, such as qualitative interviews or observational data, could be used in future research to confirm and enhance the results.

Finally, even though the study highlights important elements like perceived usefulness, privacy and security, and resource availability, it ignores other moderating or mediating factors like organizational culture, demographics, or the significance of digital literacy that might help to explain the adoption process further. Future research could examine these variables to comprehend better the intricate factors affecting the adoption of cashless transactions.

References

- Abdulhamid, S. M. (2018). *Cybersecurity strategies for electronic payment systems: Addressing vulnerabilities and threats*. *Journal of Information Security*, 9(1), 45-59.
- Abdullah, F., Ward, R., & Ahmed, E. (2016). Investigating the influence of the most commonly used external variables of TAM on students' Perceived Ease of Use (PEOU) and Perceived Usefulness (PU) of e-portfolios. *Computers in human behavior*, 63, 75-90. <https://doi.org/10.1016/j.chb.2016.05.014>
- Adhikari, J. (2022). Expanding Access to Finance for Small and Medium Enterprises: An Analysis of Demand and Supply Side Constraints of Nepal. *Journal of Economic Concerns*, 13(1), 67–81
- Aryal, S. (2021). The role of trust and lifestyle compatibility in technology adoption: A case study of Nepal. *Journal of Technology and Society*, 12(3), 78-89.
- Bai, C., Quayson, M., & Sarkis, J. (2021). COVID-19 pandemic digitization lessons for sustainable development of micro-and small-enterprises. *Sustainable production and consumption*, 27, 1989-2001. <https://doi.org/10.1016/j.spc.2021.04.035>
- Barclay, D., Higgins, C., & Thompson, R. (1995). The partial least squares (PLS) approach to causal modeling: Personal computer adoption and use as an illustration. *Technology Studies*, 2(2), 285–309.
- Bhattarai, B., Shrestha, R., Maharjan, S., Malla, S., & Shakya, S. (2023). Effectiveness of Digital Payments in the Performance of Nepalese Micro, Small and Medium Enterprises (MSMEs). *New Perspective Journal of Business and Economics*, 6(1), 9–22
- Bhusal, R. (2011). *Financial Services to SMEs in Nepal: Relevance of Bootstrapping Finance*. Queen Margaret University
- Chaudhary, A. (2020). *Nepal's Digital Nepal Framework 2019: Unlocking growth potential through digital solutions*. Kathmandu: Ministry of Communication and Information Technology.
- Chawla, D., & Joshi, H. (2020). Role of mediator in examining the influence of antecedents of mobile wallet adoption on attitude and intention. *Global Business Review*. <https://doi.org/10.1177/0972150920924506>

- Che Nawi, N., Mamun, A. A., Hayat, N., & Seduram, L. (2022). Promoting Sustainable Financial Services Through the Adoption of eWallet Among Malaysian Working Adults. *Sage Open*, 12(1). <https://doi.org/10.1177/21582440211071107>
- Daud, I., Nurjannahe, D., Mohyi, A., Ambarwati, T., Cahyono, Y., Haryoko, A. E., ... & Jihadi, M. (2022). The effect of digital marketing, digital finance and digital payment on finance performance of Indonesian SMEs. *International Journal of Data and Network Science*, 6, 37-44.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340.
- ESCAP. (2020). Micro, small and medium-sized enterprises' access to finance in Nepal. United Nations Economic and Social Commission for Asia and the Pacific. Retrieved from <https://www.unescap.org/resources/micro-small-and-medium-sized-enterprises-access-finance-nepal>
- Fornell, C., & Larcker, D. F. (1981). *Evaluating structural equation models with unobservable variables and measurement error*. *Journal of Marketing Research*, 18(1), 39-50.
- Gitau, L., & Nzuki, D. (2014). Analysis of determinants of m-commerce adoption by online consumers. *International Journal of Business, Humanities and Technology*, 4(3), 88-94.
- Gupta, U., Agarwal, B., & Nautiyal, N. (2022). Financial Technology Adoption—A Case of Indian MSMEs. *Finance: Theory and Practice*. 26(6), 192-211. <https://doi.org/10.26794/2587-5671-2022-26-6-192-211>
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis: A global perspective*. Upper Saddle River, NJ: Pearson Education.
- Iyer, G. S. (2018). Measuring privacy and security perceptions in digital environments: A Likert scale approach. *Journal of Consumer Behavior*, 15(4), 78-92.
- Iyer, L. S. (2018). Adoption of digital wallets by petty vendors post demonetization in India: a prediction approach. *Asian Journal of Research in Social Sciences and Humanities*, 8(6), 117-130. <https://doi.org/10.5958/2249-7315.2018.00095.3>
- Jin, C.C., Seong, L.C., & Khin, A.A. (2018). Factors affecting the consumer acceptance towards fintech products and services in Malaysia. *International Journal of Asian Social Science*, 9(1), 59-65. <https://doi.org/10.18488/journal.1.2019.91.59.65>
- Karim, M. W., Haque, A., Ulfy, M. A., Hossain, M. A., & Anis, M. Z. (2020). Factors influencing the use of E-wallet as a payment method among Malaysian young adults. *Journal of International Business and Management*, 3(2), 01-12.
- Kesumastuti, T. M. (2020). The process of adoption interest in using digital wallet in central Jakarta (case study on Go-Pay users). *International Journal of Multicultural and Multireligious Understanding*, 7(2), 277-286. <https://ijmmu.com/index.php/ijmmu/article/view/1463>
- Kharel, P., & Dahal, K. (2020). Small and medium-sized enterprises in Nepal: Examining constraints on exporting. ADBI Working Paper Series No. 1166. *Asian Development Bank Institute*. Retrieved from <https://www.adb.org/publications/sme-nepal-examining-constraints-exporting>

- Kilay, A. L., Simamora, B. H., & Putra, D. P. (2022). The Influence of E-Payment and E-Commerce Services on Supply Chain Performance: Implications for the Digitalization of MSMEs. *Journal of Open Innovation: Technology, Market, and Complexity*, 8(3), 119. DOI: 10.3390/joitmc8030119.
- Kilay, A. L., Simamora, B. H., & Putra, D. P. (2022). The Influence Of E-Payment And E-Commerce Services On Supply Chain Performance: Implications Of Open Innovation And Solutions For The Digitalization Of Micro, Small, And Medium Enterprises (MSMEs) In Indonesia. *Journal of Open Innovation: Technology, Market, and Complexity*, 8(3), 119. <https://doi.org/10.3390/joitmc8030119>.
- Lieu, T. T., Nguyen, A. P., & Tran, Q. H. (2020). Facilitating conditions and social impact on digital payment adoption in Southeast Asia. *Asian Journal of Economics and Business*, 8(2), 45-60.
- Ligon, E., Malick, B., Sheth, K., & Trachtman, C. (2019). What explains low adoption of digital payment technologies? Evidence from small-scale merchants in Jaipur, India. *PLoS One*, 14(7), e0219450. <https://doi.org/10.1371/journal.pone.0219450>
- Marimuthu, M., & Roseline, A. (2020). A study on consumer perception towards e-wallet, *Our Heritage*, 68(17), 283-288.
- Mombeuil, C. (2020). An exploratory investigation of factors affecting and best predicting the renewed adoption of mobile wallets. *Journal of Retailing and Consumer Services*, 55, 102127. <https://doi.org/10.1016/j.jretconser.2020.102127>
- Monoarfa, F. D., Sutrisno, B., & Hartono, M. (2024). Adoption of cashless payment systems among SMEs: The role of perceived ease of use and usefulness. *Journal of Small Business Innovation*, 18(1), 12-23.
- Najib, M., & Fahma, F. (2020). Investigating the adoption of digital payment system through an extended technology acceptance model: An insight from the Indonesian small and medium enterprises. *International Journal on Advanced Science, Engineering and Information Technology*, 10(4), 1702-1708.
- Nawi, N. M., Razak, A. Z. A., & Hasan, M. N. (2022). Behavioral intent and adoption of fintech tools: A perspective from emerging markets. *International Journal of Digital Finance*, 14(1), 34-52.
- Nawi, N. M., Razak, A. Z. A., & Hasan, M. N. (2022). Behavioral intent and adoption of fintech tools: A perspective from emerging markets. *International Journal of Digital Finance*, 14(1), 34-52.
- Nunnally, J. C. (1978). *Psychometric theory* (2nd ed.). New York, NY: McGraw-Hill.
- Oney, E., Oksuzoglu-Guven, G., & Altintas, F. (2017). The determinants of electronic payment systems' adoption: An extended technology acceptance model. *Journal of Innovation Management*, 5(3), 35-52.
- Pandey, I. M. (2004). *Financial management: Theory and practice* (9th ed.). New Delhi: Vikas Publishing House.
- Parimita, W., Monoarfa, T. A., Rahmi, R., Wibowo, S. F., & Musyaffi, A. M. (2024). Enhancing Green Economic Circular Ecosystem Growth through AI-Based Waste

- Management Gamification. *International Review of Management and Marketing*, 15(1), 249–256. <https://doi.org/10.32479/irmm.17494>
- Pavlou, P. A. (2003). Consumer acceptance of electronic commerce: Integrating trust and risk with the technology acceptance model. *International Journal of Electronic Commerce*, 7(3), 69-103.
- Rahman, M., Ismail, I., & Bahri, S. (2022). An Empirical Analysis of Cashless Payment Systems for Business Transactions. *Heliyon*, e09766. <https://doi.org/10.1016/j.heliyon.2022.e09766>.
- Raj, L. V., Amilan, S., Aparna, K., & Swaminathan, K. (2023). Factors influencing the adoption of cashless transactions during COVID-19: an extension of enhanced UTAUT with pandemic precautionary measures. *Journal of Financial Services Marketing*, 1-20. 488-507. <https://doi.org/10.1057/s41264-023-00218-8>
- Roy, S. K., Balaji, M. S., Kesharwani, A., & Sekhon, H. (2014). Predicting Internet banking adoption in India: A perceived risk perspective. *Journal of Strategic Marketing*, 22(2), 141-157. <https://doi.org/10.1080/0965254X.2013.876081>
- Ryu, H. S. (2018). What makes users willing or hesitant to use Fintech?: the moderating effect of user type. *Industrial Management & Data Systems*. <https://doi.org/10.1108/IMDS-07-2017-0325>
- Shrestha, P. K. (2020). Changing Dimension of Financial Inclusion in Nepal: A Comparative Analysis. *NRB Working Paper No. 50*
- Singh, S. and Srivastava, R.K. (2018). Predicting the intention to use mobile banking in India, *International Journal of Bank Marketing*, 36(2), 357-378. <https://doi.org/10.1108/IJBM-12-2016-0186>
- Timalsina, P. (2021). *Challenges of digital financial inclusion in rural Nepal*. *Economic Perspectives*, 10(4), 56-67.
- Uduji, J. I., & Okolo-Obasi, E. N. (2018). Adoption of improved crop varieties by involving farmers in the e-wallet program in Nigeria. *Journal of Crop Improvement*, 32(5), 717-737.
- UNDP. (2021). Kathmandu Business Hub: Incubating public and private partnerships to address youth unemployment. United Nations Development Programme. Retrieved from <https://www.undp.org/nepal/blog/kathmandu-business-hub-incubating-public-and-private-partnerships-address-youth-unemployment>
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425–478. <https://doi.org/10.2307/30036540>
- Venkatesh, V., Thong, J. Y., & Xu, X. (2012). Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology. *MIS quarterly*, 157-178. <https://doi.org/10.2307/41410412>
- Yang, L., & Zhang, Y. (2020). Digital financial inclusion and sustainable growth of small and micro enterprises—evidence based on China’s new third board market listed companies. *Sustainability*, 12(9), 3733. <https://doi.org/10.3390/su12093733>
- Yang, M., Mamun, A. A., Mohiuddin, M., Nawi, N. C., & Zainol, N. R. (2021). Cashless transactions: A study on intention and adoption of e-wallets. *Sustainability*, 13(2), 831. <https://doi.org/10.3390/su13020831>