JOURNAL FOR SOCIAL SCIENCE STUDIES
An International Peer-Reviewed Open Access Journal

ISSN (Online): 3006-2071 | ISSN (Print): 3006-2063
Volume 4 • Issue 6 • October 2026

DIGITAL PAYMENT CONVENIENCE AND OVERSPENDING BEHAVIOUR THROUGH IMPULSIVE BUYING; MODERATING ROLE OF FINANCIAL SELF-CONTROL

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Orcid Id: [*1]0009-0001-5337-751X, [2]0009-0001-0584-9340

DOI: https://doi.org/10.5281/zenodo.23206455

Keywords
Digital payment convenience; impulsive buying; overspending behaviour; financial self-control; pain of paying; mental accounting

Article History
Received: *25 June 2026*
Accepted: *16 September 2026*
Published: *07 October 2026*

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Abstract

This study examined how digital payment convenience affects overspending behaviour through impulsive buying and whether financial self-control moderates this process. Drawing on the pain of paying theory, mental accounting theory and self-control theory, the study proposed a moderated mediation model in which impulsive buying links payment convenience with overspending, and financial self-control conditions both stages of this path. Data were collected through a structured questionnaire from 365 adult users of digital payment methods in five major cities of Pakistan and were analyzed using partial least squares structural equation modelling. The results showed that digital payment convenience had a positive effect on impulsive buying, and impulsive buying had a positive effect on overspending behaviour. However, digital payment convenience did not have a significant direct effect on overspending, and impulsive buying fully mediated this relationship. Contrary to expectations, financial self-control did not moderate either the relationship between payment convenience and impulsive buying or the relationship between impulsive buying and overspending. These findings suggest that convenient digital payments do not lead to overspending by themselves but do so by encouraging unplanned purchases, and that general self-control may not be enough to protect consumers in fast and frictionless payment settings. The study adds to the literature on the cashless effect by identifying the behavioural mechanism through which convenience turns into overspending. The

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findings also suggest that fintech firms and policymakers should consider design features such as spending alerts and confirmation prompts, along with financial education, to help consumers manage their spending.

INTRODUCTION

Digital payments have changed the way people buy and spend. Mobile wallets, QR-code payments, contactless cards and one-click checkouts have made spending almost effortless, and many consumers now finish a purchase in seconds without handling physical money. Users value this convenience because it
saves time, reduces the effort of carrying cash and allows transactions at any time and place. Governments and financial institutions in many emerging economies promote cashless payments as a route to financial inclusion and a more efficient economy. However, the same ease that makes digital payments attractive may also weaken the natural checks that once limited spending, and this raises concerns about household financial health, debt accumulation and long-term financial well-being.

There has been an increase in evidence over the relationship between payment instruments and spending in recent years. This phenomenon of spending more when people are not paying with cash is known as the cashless effect, and a large meta-analysis of 392 effect sizes from 71 papers found a small but significant cashless effect, with a stronger effect in conspicuous consumption scenarios and a general decline in the effect over time (Schomburgk et al., 2024). This trend is reflected in the field evidence. In the case of India, Agarwal et al. (2024) used the natural experiment of demonetization in 2016 to see how increased digital payment use affected monthly spending, finding that the effect was large and durable, driven primarily by a decrease in the attachment to money when paying digitally, and larger for temptation goods and lower-income consumers. The explanation for these findings typically goes along the lines of the pain of paying (Prelec & Loewenstein, 1998) and mental accounting (Thaler, 1999). If the payments are less tangible and less tangible, the immediate pain of giving up cash is diminished and consumers' mental accounting of what they've spent is weaker. Likewise, Pakistan's studies indicate the same. Khan et al. (2026) found that digital payments had a greater impact on spending behaviour than cash payments in their survey of 1,208 payers, while Shah et al. (2025) applied a mental accounting perspective to demonstrate how payment biases can result in overspending when using digital channels.

While this work confirms that there is a positive relationship between the use of digital payments and spending, much of it assumes that the relationship is direct and has overlooked the behavioural process by which convenience can lead to overspending. Impulsive buying provides an explanation for this process. Impulsive buying is an unplanned purchase made due to an urge to purchase and is influenced by situational factors as well as individual characteristics, as revealed in a meta-analytic study (Iyer et al., 2020). There are numerous such triggers in the digital payment world, such as instant checkout, saved card information, cashback offers and push notifications, which reduce the time between want and buy. If paying is easy, consumers don't have much time to think about it, and a spur of the moment

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decision can easily turn into a done deal. Impulsive buying can, in turn, result in repeated purchases that can exceed planned purchases and exceed the person's budget. While some recent research has demonstrated that the use of digital payment means has been correlated with impulsive buying, most of the studies have been carried out in individual markets and few have framed impulsive buying as the connection between the perceived convenience of digital payment means and overspending as a financial outcome. Convenience is also not the same as adoption or usage, as it reflects consumers' sense of how easy and effortless the payment process is, and thus is more akin to the psychological mechanism posited by the pain of paying.

The way people react to frictionless payments varies from person to person, and the extent of their self-regulation is likely to influence this. Self-control failure is well known as a key factor in impulsive buying (Baumeister, 2002) and those with higher trait self-control tend to have better outcomes in a variety of life domains (Tangney et al., 2004). Financial self-control is a personal finance term that means to avoid spending on things that you want right now in exchange for other financial objectives. Previous studies have demonstrated a positive link between self-control and financial behaviour and financial well-being (Strömbäck et al., 2017). So, it is safe to say that a person who has a high level of financial self-control will be less susceptible to the convenience of payment and more likely to prevent impulsive urges from becoming overspending. But the actual picture is mixed. Several studies on digital wallets and buy now pay later services report that self-control is a negative determinant of impulsive buying; others report weak or non-significant relationships and most studies test general self-control as a direct determinant of impulsive buying, rather than as a condition that modifies the relationships in the model. There is limited knowledge about the effect of financial self-control on impulsive buying at the convenience level, overspending level or both.

The present study aims to solve these problems by developing and testing a moderated mediation model that tests the relationship between digital payment convenience and overspending behaviour mediated by impulsive buying and that financial self-control moderates both the first and second steps of the indirect link. The study thus integrates the pain of paying and mental accounting literatures with self-regulation theory to provide a more comprehensive explanation of the link between convenient payment systems and increased spending beyond intentions among consumers. The study also addresses the fact that the cashless effect has declined over time (Schomburgk et al., 2024) by proposing that the cashless effect is more about behaviour tendencies and personal resources than about the payment method. As a practical implication, the results will help fintech companies to build payment functionalities that retain convenience and provide useful friction such as notifications or confirmation prompts. Additionally, they can help policymakers and educators in creating financial education initiatives to enhance self-control, especially in emerging economies where digital payment usage is growing quicker than financial education.

Therefore, this research will focus on studying the impact of digital payment convenience on overspending behaviour, the impact of digital payment convenience on impulsive buying, and the impact of

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impulsive buying on overspending behaviour. It also aims to examine the mediating role of impulsive buying between the convenience of digital payment and overspending behaviour. Lastly, the study seeks to identify if financial self-control moderates the relationship between digital payment convenience and impulsive buying, the relationship between impulsive buying and overspending behaviour and if the indirect effect of digital payment convenience on overspending behaviour through impulsive buying differs at different levels of financial self-control.

Theory

The study is based on the pain of paying theory, mental accounting theory and self-control theory, which explain how digital payment convenience might cause consumers to overspend by engaging in impulsive buying and how this process might vary between consumers. The pain of paying theory implies that some psychological pain occurs when consumers spend money, and that this pain is immediate at the time of purchase (Prelec & Loewenstein, 1998). This discomfort acts as a natural spending brake, since it makes the price of a purchase salient at the time of the purchase. This is because paying via mobile wallets, saved cards, and one-click checkouts is less noticeable and demands minimal effort, mitigating this discomfort and lessening the brake on spending (Schomburgk et al., 2024). This can make the convenience of digital payments make consumers more inclined to purchase without giving it much thought.

Mental accounting theory can also explain this, as it refers to the way in which people keep track of, group and evaluate their financial activities (Thaler, 1999). People typically have mental budgets for various categories of expenditures and compare expenditures against previous spending. Cash payments are easier to track as the cash is physically leaving the wallet. Digital payments, however, are more detached from the feeling of loss and make it easier for consumers to forget about the money they have spent, which makes it more difficult for them to realize when they have spent too much (Shah et al., 2025). This can cause small, unplanned purchases to accumulate over time and can cause overspending.

Self-control theory can account for individual differences in consumers' ability to withstand these pressures. Consumer behaviour can be defined as a battle between short-term and long-term benefits and self-control can be defined as the ability to postpone gratification and maintain behaviour consistent with intentions

(Hoch & Loewenstein, 1991). Baumeister (2002) suggested that impulsive buying is mostly a problem of

self-control, and the strength model of self-control posits that self-control is a limited resource that can be depleted and differs from person to person (Baumeister et al., 2007). In financial domain, individuals with higher financial self-control tend to avoid temptations to spend and exhibit good financial behaviour (Strömbäck et al., 2017). Based on this perspective, the study proposes that financial self-control will moderate the relationship between payment convenience and impulsive buying and will also help to reduce the extent of impulsive buying that escalates into overspending. All these theories together can be used as a foundation for a model in which convenience leads to a decrease in payment-related restraint, impulsive buying transfers this to overspending, and financial self-control influences the strength of these connections.

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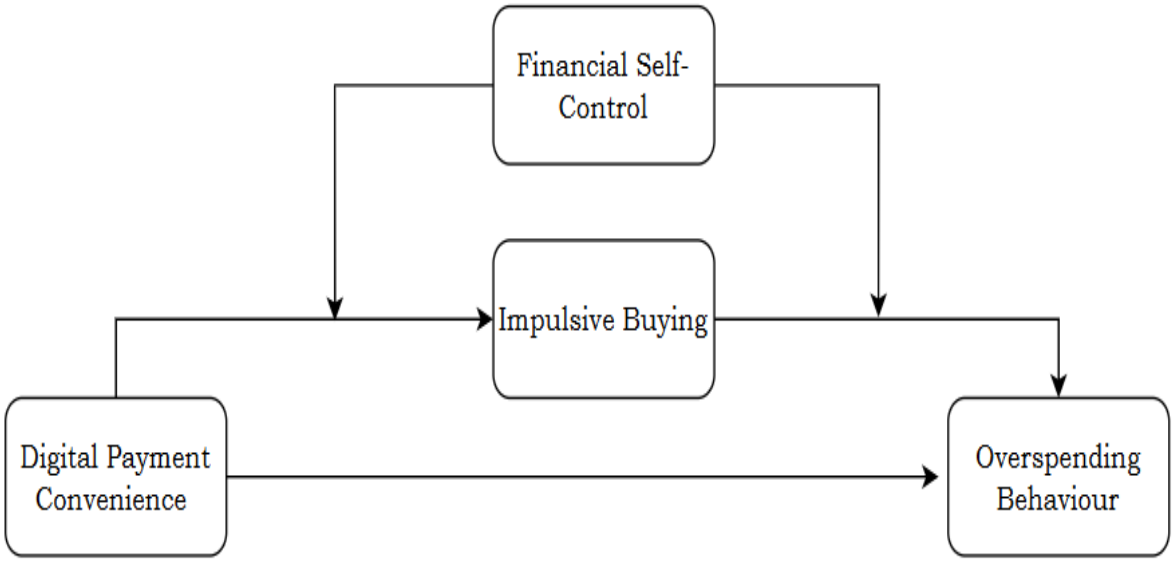


Figure 1: Research Model

Hypotheses

Digital payment convenience is the degree to which consumers perceive the ease of paying with their mobile wallets, cards, QR codes and online checkouts. This convenience is a key factor driving the speedy adoption of cashless payments, and it can also alter consumer perceptions of purchase prices. The pain of paying theory suggests that the pain of paying can help consumers exert control over their spending (Prelec & Loewenstein, 1998). This discomfort is amplified by cash transactions, as consumers literally hand over cash and the money balance on their accounts decreases. When people make digital payments, the experience is disconnected from the purchase, and the price of the purchase is less tangible and immediate. Soman (2001) demonstrated that payment modalities not requiring consumers to write or rehearse the amount paid resulted in weaker memory of the past amount paid and greater willingness to spend, whereas Raghubir and Srivastava (2008) showed that consumers were willing to spend more when using a card than when using an equal amount of cash. Recent studies also indicate that this is true for mobile payments (Liu & Dewitte, 2021). At the macro level, a study of 71 papers concluded that cashless payments are associated with increased consumer spending (Schomburgk et al., 2024), while field evidence from India found that the more digital payments replaced cash, the more spending increased on a monthly basis (Agarwal et al., 2024). Similarly, Khan et al. (2026) in Pakistan also revealed that digital payments were more influential on spending behaviour compared to cash payments. Mental accounting theory further suggests that it is difficult to monitor spending when it is less visible in relation to the mental budget, thereby raising the

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probability that the total amount spent exceeds the budgeted amount (Shah et al., 2025). If it's easier to pay, people are less likely to think about whether or not they need the item, or whether they can afford it, and this can gradually result in spending more than they earn or can afford. Based on these arguments, the following hypothesis is proposed:

H1: Digital payment convenience has a positive effect on overspending behaviour.

Impulsive buying is defined as purchases made in response to an urge to purchase (Rook, 1987) with little thought given to the consequences. These purchases are typically made out of emotion in response to products, offers or the shopping environment instead of careful consideration of needs. Studies have indicated that impulsive buying is influenced by personal traits and situational factors that make it easier to make purchases or more tempting to buy (Iyer et al., 2020). One such situational factor can be the convenience of digital payment. Once payment information is stored, transactions can be made with a single tap and purchases can be made anytime, anywhere, and the time between the urge and the action is very short. This gives consumers less opportunity to stop and shop around or second guess a purchase. The pain of paying theory proposes that the less pain that accompanies a digital payment, the less pain that will be associated with an impulse buy (Prelec & Loewenstein, 1998). Similarly, mental accounting theory suggests that when the cost of a purchase is not obvious or documented, consumers are less inclined to compare the price to their budget when they make the purchase (Thaler, 1999). Digital payment platforms also frequently have the added convenience of cashback offers, limited time discounts and instant notifications, all of which incentivize hasty and spur-of-the-moment decisions. This is backed up by empirical studies. Liu and Dewitte (2021) discovered that cashless payment methods have a positive effect on consumers' willingness to spend and emerging market studies revealed that young consumers' use of digital wallets and quick payment services is associated with impulsive buying. Schomburgk et al. (2024) also reported that the cashless effect is more pronounced when consumption is motivated by desire, rather than necessity. Combined, these arguments indicate that consumers who consider digital payments more convenient are more likely to follow their impulses to purchase without thinking. Therefore, the following hypothesis is proposed:

H2: Digital payment convenience has a positive effect on impulsive buying.

Overspending behaviour is a pattern of consumers spending more than they had intended or more than their income and financial situation can support. Impulsive buying is likely to be repeated, and the costs can add up over time, although it may be a small amount at a time. By definition impulsive purchases are unplanned and therefore they are seldom part of a consumer's budget. If these purchases occur frequently, the difference between intended and actual expenditures increases and consumers may discover they have been spending money that was intended for saving or paying bills or other expenses. This is explained by the mental accounting theory. Consumers typically allocate their resources into mental budgets for various purposes and evaluate new purchases according to these budgets (Thaler, 1999). These purchases are made quickly and without such comparison, and are therefore not entered into the mental

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account of the purchase until later on, when the total amount spent is known. Self-control theory also proposes that impulsive buying is a lack of control over behaviour to achieve long-term goals (Baumeister, 2002), and if this occurs repeatedly it may result in broader financial issues. According to Hoch and Loewenstein (1991), consumers tend to yield to the urge of the moment even when it runs counter to the spending plans they had in mind earlier, and thus spend in a way that leads to regret. Previous research has identified a
relationship between impulsive buying and financial consequences like credit card debt, reduced saving, financial stress (Iyer et al., 2020) and the meta-analysis by Iyer et al. (2020) revealed that impulsive buying is linked to negative consequences for consumers' well-being. In the digital environment, where the cost of
purchases is less apparent and the act of purchasing is quicker, the impact of impulse purchases might be even more difficult to see until consumers check their statements. Therefore, those consumers who are more likely to be impulsive buyers are more likely to spend more than they plan and afford. Accordingly, the following hypothesis is proposed:

H3: Impulsive buying has a positive effect on overspending behaviour.

As argued above, digital payment convenience can not only directly influence overspending but also in the form of impulsive buying. Although much previous research has focused on the question of whether digital payments lead to greater spending, less attention has been paid to the behavioural process that links these two. A mediating role for impulsive buying offers one explanation for how this process takes place. If payment is easy and fast, the pain of paying is less and the cost of a purchase is less pronounced at the time of purchase (Prelec & Loewenstein, 1998). This makes it easier for consumers to give in to impulsive urges to purchase, and thus impromptu purchases. Impulsive purchases are unplanned and typically not subject to mental budgeting (Thaler, 1999), so when consumers repeatedly make such purchases it leads to increased spending that was not originally planned, leading to overspending. As such, convenience does not automatically result in overspending, but rather, it results in overspending by the change it creates in consumer purchase decision making. This is in line with the notion of Baumeister (2002) that a lot of consumer spending issues stem from moment-to-moment lapses of self-control, and not from conscious decisions. It also aligns with evidence showing that the use of digital payments is linked to increased impulsive buying and increased spending (Liu & Dewitte, 2021; Schomburgk et al., 2024). A few recent research in emerging markets has found that impulsive buying is related to increased consumption, with digital payment characteristics playing a role in this relationship, but the research has rarely examined overspending as a financial outcome. This is why it is important to test impulsive buying as a mediator, it also shows that there is a point at which this process can be halted, such as by sending consumers a spending alert or providing financial education. Direct mediation is possible as digital payment convenience is also assumed to have a direct impact on overspending. Based on this reasoning, the following hypothesis is proposed:

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H4: Impulsive buying mediates the relationship between digital payment convenience and overspending behaviour.

While digital payment convenience can lead to impulsive purchases, consumers are not likely to react the same. Financial self-control is the capacity of the individual to avoid the impulse to spend in the present and maintain his or her financial conduct in alignment with long-term objectives. According to the self-control theory, individuals with higher self-control are more likely to control the conflict between the short-term desires and long-term plans (Hoch & Loewenstein, 1991; Tangney et al., 2004). The strength model of self-control assumes that self-control is a resource that varies between individuals, with individuals having more of this resource being better able to inhibit their responses to impulsive urges (Baumeister et al., 2007). Vohs and Faber (2007) demonstrated that in a low self-regulatory resource state, individuals experienced more urges to buy, and were more willing to spend, indicating that self-control is a key factor in curbing impulsive purchasing. Convenience eliminates external obstacles that used to hinder purchase, in the case of digital payments. With these external barriers being less prevalent, consumers have to rely on their internal control more than ever to not make unplanned purchases. High financially self-controlled
consumers will still appreciate the convenience of digital payments, but they are more likely to slow down before purchasing, verify that it is affordable and avoid offers that tempt them to make hasty choices. Low financial self-control consumers, however, are more susceptible to the temptations that convenient payment gives. Strömbäck et al. (2017) revealed that individuals with high self-control have a better financial behaviour, supporting the idea that self-control can mitigate the negative consequences of easy spending. A few Digital Wallets and Buy Now Pay Later studies have also indicated that self-control reduces the relationship between payment attributes and impulsive purchase. However, the findings have not always been consistent. Therefore, it can be assumed that financial self-control will decrease the impact of convenience of digital payment on impulsive buying. Thus, the following hypothesis is proposed:

H5: Financial self-control moderates the relationship between digital payment convenience and impulsive buying.

Financial self-control can be important when impulsive purchases become over spending. Although some consumers may be tempted to make a few impulse buys, the results of their purchases could be determined by how they spend their money after the purchase. Those who have high financial self-control tend to keep track of their financial expenditures, notice when they have purchased something they didn't plan for and adjust their subsequent purchases to fit within their budget. For these consumers, an impulsive purchase could be a one-time occurrence and not a sign of a larger problem with overspending. Low financial self-control consumers, on the other hand, might not make such adjustments, and impulsive purchases can accumulate to spending more than one can afford. The mental accounting theory is consistent with this perspective, since those who actively monitor their mental budgets are more likely to incorporate unplanned purchases by making reductions in other categories (Thaler, 1999). Self-regulation is also thought to include the ability to monitor one's behaviours over time and to correct them when they stray from

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one's goals (Baumeister, 2002; Baumeister et al., 2007) as well as resisting temptation at the moment of choice. Strömbäck et al. (2017) found that the more self-controlled a person is, the more likely they are to save, plan and avoid financial problems, which indicates that they are better equipped to reduce the impact of occasional lapses on their finances. This capacity to track and modify behavior may be particularly significant in digital payment environments, where spending is not as obvious, and consumers can only discover overspending by reviewing their statements. Previous studies have primarily regarded self-control as a direct determinant of impulsive buying, and there is limited understanding of the effect of self-control on the relationship between impulsive buying and broader financial outcomes. Based on this reasoning, the following hypothesis is proposed:

H6: Financial self-control moderates the relationship between impulsive buying and overspending behaviour.

Methodology

The research was quantitative, cross sectional with a positivist philosophy and a deductive approach. It explored the relationships between digital payment convenience, impulsive buying, financial self-control and overspending behaviour, mediation and moderation effects. The data was gathered by a structured self-administered questionnaire.

The population consisted of adults in Pakistan using digital payment methods for their personal purchases, such as mobile wallet, mobile banking, cards, Raast and QR-code payments. Purposive sampling was used to collect data from Lahore, Karachi, Islamabad, Rawalpindi and Faisalabad. The respondents were required to be 18 years or older and to have used a digital payment method to make any purchases in the past three months. Using the G*Power 3.1 software, the required sample size was estimated to be 129 respondents with an effect size of 0.15, $\alpha = 0.05$, power = 0.95, and four predictors. A larger sample was aimed for to ensure the stability of the estimates. After data screening, 365 data were found to be usable and were included in the analysis. The questionnaires were administered online and on paper for eight weeks. Questionnaires were sent online via Google Forms and paper questionnaires were sent in the universities, shopping areas, banks and offices. The participation was voluntary, the respondents were informed of the study, and the anonymity of the respondents was maintained.

Measures for all constructs were taken on a 5-point Likert scale from 1 = strongly disagree to 5 = strongly agree, and were based on established scales. Items adapted from Kim et al. (2010) and Seiders et al. (2007) were used to measure digital payment convenience. Impulsive buying was assessed with items from Rook and Fisher's (1995) scale, financial self-control was assessed with items from Tangney et al. (2004) and Strömbäck et al. (2017), and overspending behaviour was assessed with items adapted from Khan et al. (2026). Age, gender, monthly income and education were included as control variables. The questionnaire was presented in English and Urdu (back-translated). A pilot study was carried out with 40 respondents and slight changes in wordings were incorporated in the light of the responses.

To minimize common method bias, anonymity was guaranteed, simple wording was used, and items were listed in separate sections. Harman's single factor test and complete collinearity test were also

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performed. The results showed that common method bias was not a significant problem. The data were analyzed with the software SmartPLS 4 and PLS-SEM.

Data Analysis and Results

Data Screening

For the final analysis, there were 365 responses. The data set was analyzed for missing values, consistency and variation of responses to the measurement items. There were no missing observations and each measurement item had variability across the five response categories. So, all 365 responses were kept for further analysis. Partial Least Squares Structural Equation Modelling (PLS-SEM) was used to analyze the data. The analysis was carried out in two stages: first the measurement model was assessed and then the structural model was assessed as outlined in the study.

Descriptive Statistics

Descriptive statistics were calculated for the four main constructs. The results indicate that the mean values of all constructs were close to the midpoint of the five-point scale.

Construct	Mean	SD	Minimum	Maximum
Digital Payment Convenience	2.913	1.028	1.00	5.00
Impulsive Buying	2.920	1.011	1.00	5.00
Financial Self-Control	2.957	1.081	1.00	5.00
Overspending Behaviour	2.956	1.068	1.00	5.00

Digital payment convenience recorded a mean of 2.913, while impulsive buying had a mean of 2.920. Financial self-control showed a mean of 2.957, and overspending behaviour recorded a mean of 2.956. The standard deviations ranged from 1.011 to 1.081, indicating adequate variation in respondents' perceptions and behaviours.

Assessment of the Measurement Model

The measurement model was assessed in terms of indicator reliability, internal consistency reliability, convergent validity and discriminant validity. The assessment followed the criteria specified in the methodology.

Internal Consistency Reliability and Convergent Validity

Cronbach's alpha, composite reliability (CR), outer loadings and average variance extracted (AVE) were examined.

Construct	Cronbach's Alpha	CR	AVE
Digital Payment Convenience	0.849	0.893	0.625
Impulsive Buying	0.912	0.928	0.590
Financial Self-Control	0.904	0.927	0.678
Overspending Behaviour	0.872	0.908	0.664

The results demonstrate satisfactory internal consistency across the constructs. Cronbach's alpha values ranged from 0.849 to 0.912, while composite reliability values ranged from 0.893 to 0.928. The AVE values ranged from 0.590 to 0.678, exceeding the recommended minimum of 0.50. Thus, the constructs demonstrated satisfactory convergent validity.

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The indicator loadings also showed satisfactory reliability. The observed loadings ranged approximately from 0.730 to 0.861 across the four constructs, exceeding the commonly applied threshold of 0.708. Therefore, the measurement indicators adequately represented their respective latent constructs.

Discriminant Validity

Discriminant validity was assessed using the Heterotrait-Monotrait (HTMT) ratio. The results are presented below.

	DPC	IB	FSC	OB
Digital Payment Convenience				
Impulsive Buying	0.353			
Financial Self-Control	0.197	0.315		
Overspending Behaviour	0.182	0.487	0.423	

The highest HTMT value was 0.487 between impulsive buying and overspending behaviour. All values were substantially below the conservative threshold of 0.85. These findings provide evidence that the constructs were empirically distinct from one another.

Common Method Bias

Harman's single factor approach and full collinearity assessment were used to test for common method bias. The first factor (unrotated) explained about 31.53% of the total variance, far less than the 50% criterion. This means that one factor did not explain most of the variance of the measurement items.

The complete collinearity checks also resulted in VIF values that were less than the commonly used threshold of 3.3. The VIF value of the principal predictors was 1.117 for digital payment convenience, 1.179 for impulsive buying and 1.099 for financial self-control. Thus, common method bias was not likely to be a serious threat to the results.

Assessment of the Structural Model

Following validation of the measurement model, the structural model was assessed. The analysis considered collinearity, path coefficients, coefficient of determination (R^2), effect size (f^2), mediation and moderation effects.

Coefficient of Determination (R^2)

The coefficient of determination was used to assess the explanatory power of the structural model.

Endogenous Construct	R^2	Explained Variance
Impulsive Buying	0.152	15.2%
Overspending Behaviour	0.258	25.8%

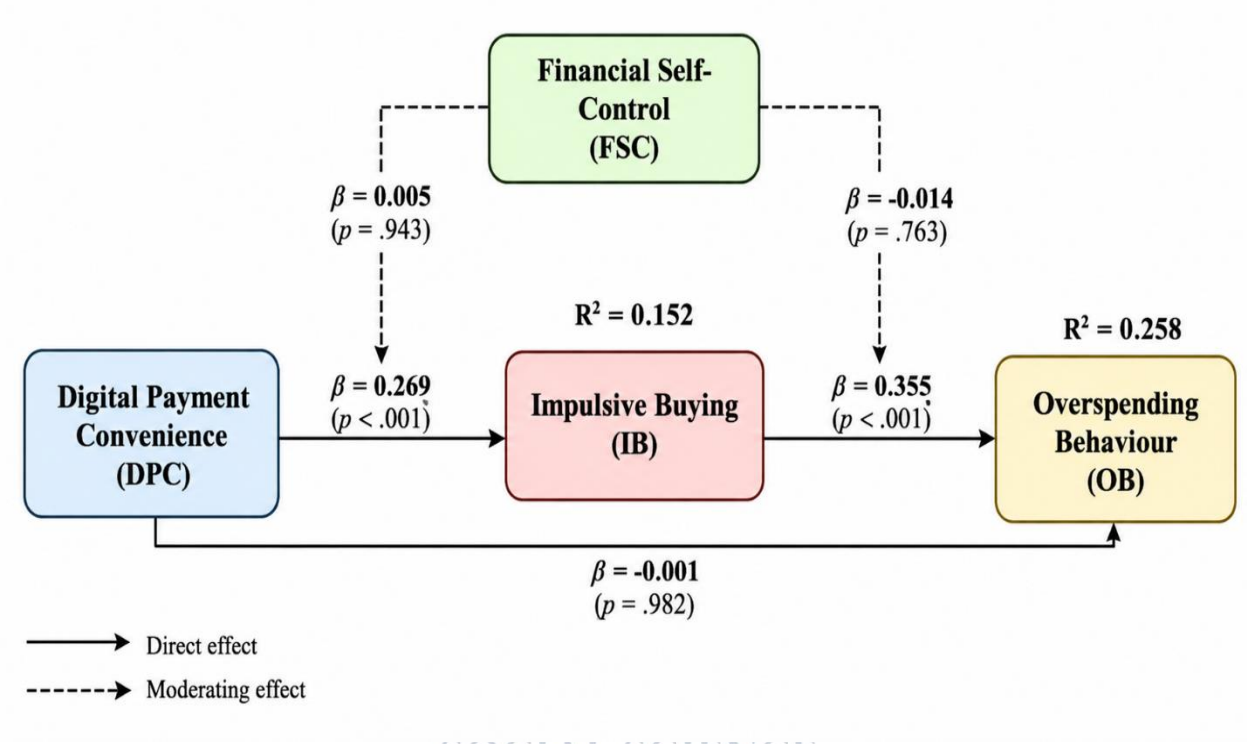
The model explained 15.2% of the variance in impulsive buying. Digital payment convenience and financial self-control jointly contributed to the explanation of impulsive buying. For overspending behaviour, the model explained 25.8% of the variance. Thus, the predictors included in the structural model accounted for approximately one-quarter of the observed variation in overspending behaviour.

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Direct Effects and Hypothesis Testing

The structural path coefficients were examined using bootstrapping. The results are presented below.



Hypothesis	Relationship	β	95% CI	p-value
H1	DPC → OB	-0.001	-0.092, 0.095	.982
H2	DPC → IB	0.269	0.173, 0.364	< .001
H3	IB → OB	0.355	0.255, 0.454	< .001
H5	DPC × FSC → IB	0.005	-0.088, 0.099	.943
H6	IB × FSC → OB	-0.014	-0.104, 0.072	.763

The direct impact of digital payment convenience on overspending behaviour was not statistically significant (β = -0.001, p = .982). Zero was also in the confidence interval. So, H1 was not supported in the complete model of the structure. Digital payment convenience positively and significantly influenced impulsive buying (β = 0.269, p < .001). The 95% confidence interval for the difference μA – μB was (0.173, 0.364) and did not contain 0. Hence, H2 was supported. Impulsive buying was positively and significantly related to overspending behaviour (β = 0.355, p < .001). The 95% confidence interval was (0.255, 0.454). So, H3 was accepted.

The indirect effect of digital payment convenience on overspending behaviour via impulsive buying was examined as the mediating effect of impulsive buying. The indirect effect was positive and statistically significant: the confidence interval does not

JOURNAL FOR SOCIAL SCIENCE STUDIES
An International Peer-Reviewed Open Access Journal
ISSN (Online): 3006-2071 | ISSN (Print): 3006-2063
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contain zero, which indicates a statistically significant indirect effect. Thus, H4 was accepted. Financial self-control was suggested as a moderator between the relationship between digital payment convenience and impulsive buying, and between impulsive buying and overspending behaviour. Digital payment convenience and financial self-control did not have a statistically significant interaction (β = 0.005, p = .943). The 95% confidence interval was (0.088, 0.099) and contained the value of zero. Hence, H5 was not accepted. There was also no significant relationship between impulsive buying and financial self-control (β = -0.014, p = .763). The confidence interval contained zero and was (–0.104, 0.072). Hence H6 was not accepted.

Discussion

The results indicated that the direct effect of the convenience of digital payments on overspending behaviour was not significant, thus H1 was not supported. This finding is contrary to some studies that reported increase in spending with cashless payments (Agarwal et al., 2024), but consistent with the meta-analysis by Schomburgk et al. (2024) that found no evidence of the cashless effect being determined by the features of cashless payment methods, but rather by the consumption situation and the context, and that the effect has been fading over time. In the future, convenience alone will likely not be enough to get consumers to spend more than they originally intended to spend, unless it alters the way consumers make purchasing decisions.

The results showed that H2 was supported, meaning that the convenience of digital payment positively affected impulsive buying. This finding is consistent with the pain of paying theory, which suggests that the more people pay less pain, the less they will stop themselves from spending it (Prelec & Loewenstein, 1998). This is also in line with Agarwal et al. (2024) who reported that spending on temptation goods and by low-income consumers increased after the adoption of digital payments, indicating that the ease of payment primarily leads to impulsive and desire-driven purchases.

H3 was also supported as impulsive buying positively affected on the overspending behaviour. Impulsive purchases are unplanned, and they are usually not compared to mental budgets (Thaler, 1999), so when they are repeated, the overall amount of spending exceeds consumers' intentions. This finding aligns with Iyer et al. (2020) finding that impulsive buying is associated with adverse outcomes for consumers, as well as the findings of Hoch and Loewenstein (1991) which described how consumers surrender to their immediate wishes and end up spending in a way that is inconsistent with their previous plans.

The mediation results were in support of H4. The direct path of convenience to overspending was not significant while the indirect path of convenience to overspending through impulsive buying was significant, indicating that impulsive buying acted as a complete mediator in this relationship. This implies that convenience is only a problem because it encourages impulsive spending, and thus reinforces the notion of Baumeister (2002) that it is failures of moment-to-moment restraint, and not the payment method itself, that cause spending problems.

H5 and H6 were not supported as expected, financial self-control did not moderate the relationship of convenience and impulsive buying or the relationship of impulsive buying and overspending. A possible answer

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is that trait self-control operates primarily as a direct determinant of behaviour and not as a condition which alters the strength of other relationships. Galla and Duckworth (2015) demonstrated that the advantage of high self-control is mostly due to the habits people have developed and de Ridder et al. (2012) uncovered a consistent connection between trait self-control and a variety of behaviors. Moreover, digital payments are extremely rapid and the purchase might be made before conscious control has a chance to intervene, and Vohs and Faber (2007) demonstrated that buying urges are momentary in nature and not necessarily captured by a trait measure. These results indicate that external devices like spending alerts are more effective and useful in a digital environment than relying on consumers' self-control (Strömbäck et al., 2017).

Limitations and future research directions

There are also some limitations to this study that need to be taken into account when interpreting the results and that indicate the ways in which this study could be expanded upon. First, the study was cross-sectional, meaning that the causal relationships between digital payment convenience, impulsive buying and overspending cannot be completely established. Future research could employ longitudinal designs or experiments, for instance, by comparing the groups who pay in cash, with cards and mobile wallets, or by testing whether features like spending alerts and confirmation prompts lead to less impulsive spending. Second, all variables were assessed by self-reported questionnaires, and consumers may underestimate their impulsive buying or overestimate the amount they spend on these purchases due to social desirability. Future studies might integrate survey data with the actual transactional data of the banks or the mobile wallet providers, and this would provide a better understanding of spending behaviour.

Thirdly, the data have been gathered by purposive sampling from five big cities of Pakistan, and the findings of the study may not be generalized to rural consumers and other countries with different digital payment systems and spending patterns. Future research may involve rural areas and the model could be compared across countries with varying digital payments adoption. Fourth, the model accounted for a small proportion of the variance in impulsive buying and overspending, indicating that there are other factors at play. Future research might involve additional factors like cashback offers, social media exposure, materialism and present bias and digital financial literacy, and could also investigate whether effects vary by payment method, including buy-now-pay-later, credit cards, and mobile wallets.

The two stages of the model were not moderated by financial self-control, perhaps because the self-control measure was a trait and not a state that varies across purchase situations. Future research would benefit from using an experience sampling or diary approach to capture self-control at the moment of purchase and would also want to test financial self-control as a direct predictor or other moderators (e.g., financial literacy, age and income), which may explain why some consumers are more affected by payment convenience than others.

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