

Technology acceptance model – Related antecedents and the performance outcome of financial technology adoption in small and medium enterprises



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Background: Despite the increasing value of FinTech in emerging markets, empirical research pertaining specifically to South Africa's small and medium enterprises (SME) sector remains scant. Consequently, this quantitative study explores factors affecting the adoption of financial technology (FinTech) solutions by SMEs in South Africa and also interrogates the relationship between FinTech adoption and organisational performance.

Aim: The purpose of the study was to investigate factors affecting adoption of FinTech by SMEs in South Africa and the relationship between FinTech adoption and organisational performance.

Setting: Leveraging the technology acceptance model (TAM), the study interrogated the nexus of the constructs of perceived usefulness, perceived ease of use, FinTech adoption and organisational performance of SMEs.

Methods: Data were collected from a purposive sample of 1036 respondents across the country and were analysed using structural equation modelling (SEM), among other statistical tools.

Results: Results obtained revealed that both perceived usefulness and perceived ease of use significantly affect FinTech adoption, which subsequently was shown to positively affect organisational performance.

Conclusion: The findings of the current study affirm that the TAM offers a veritable framework for comprehending FinTech adoption, with perceived usefulness and perceived ease of use as pivotal elements, and further illustrate that FinTech adoption substantially enhances organisational performance among the studied SMEs in South Africa.

Contribution: Instructively, the research enhances the theoretical comprehension of technology adoption and provides practical insights for policymakers, FinTech developers and SMEs, highlighting the necessity for user-centric and value-oriented solutions in the FinTech sector.

Keywords: financial technology adoption; small and medium enterprises; technology acceptance model; perceived usefulness; perceived ease of use.

Introduction

The swift advancement of financial technology (FinTech) in emerging economies has generated novel opportunities for businesses, especially small and medium-sized enterprises (SMEs), to utilise digital financial services. Countries with emerging economies, particularly in sub-Saharan Africa, harbour significant opportunities for FinTech adoption owing to a substantial unbanked population, which is anticipated to exceed 2 billion worldwide (Alexander, Shi & Solomon 2017). The increased appeal of FinTech solutions has been fertilised by the high rate of utilisation of mobile phones, as this is a crucial enabler of digital financial services (Haddad & Hornuf 2019; Ndung'u 2022). South Africa, with a mobile penetration rate of 67% in 2018 (Slazus 2022), seems well-suited for FinTech accessibility. Expectedly, the coronavirus disease 2019 (COVID-19) pandemic expedited the implementation of FinTech solutions as firms, including SMEs, resorted to digital platforms for survival during movement restrictions (Pervez 2022; Saka, Eichengreen & Aksoy 2021). Curiously, despite these developments, in developing economies, traditional banking continues to be favoured over FinTech solutions, particularly among older or less technologically adept populations (Iwashita 2022; Saksonova & Kuzmina-Merlino 2017). Although worldwide FinTech services

are expanding into sectors such as international money transfers, insurance and wealth management (Mirchandani, Gupta & Ndiweni 2020), the payments segment continues to be the primary catalyst for FinTech growth in Africa (Coffie & Hongjiang 2023).

Financial technology or FinTech is a convergence of technology and finance (Jalal, Al Mubarak & Durani 2024:525). In other words, it is a scenario where financial services are aided by technology. In the context of South Africa, FinTech segments consist of payments, lending, savings and deposits, Insurtech, investments, financial planning and advisory, capital raising and business-to-business (B2B) tech providers (National Treasury 2019:3).

The FinTech sector in South Africa is advancing, and so the country, alongside Kenya, Nigeria and Tanzania, exhibits a substantial aggregation of FinTech enterprises, with Cape Town establishing itself as a notable FinTech centre on the continent (Pervez 2022; Pollio & Cirolia 2022). This expansion is supported by the sector's alignment with market trends in the developed world (Ndung'u 2022), despite several views which suggest that the industry is comparatively modest yet possesses significant growth potential (Kheira 2021). Conventional financial institutions in South Africa are recognising the disruptive influence of FinTech, as banks progressively implement technological solutions to maintain competitiveness (Coetzee 2018).

The South African Reserve Bank (SARB) has proactively addressed the emergence of FinTech by creating a specialised FinTech unit in 2017 to examine its implications and by engaging in the Intergovernmental FinTech Working Group (IFWG) with principal regulators, including the Financial Sector Conduct Authority and National Treasury. This regulatory framework highlights the significance of FinTech in improving financial services while preserving systemic stability in South Africa.

Despite the rising appeal of FinTech, empirical research on the determinants of its adoption by SMEs and its ensuing influence on organisational performance remains scarce, more so in the context of a developing economy like South Africa. Although research underscores FinTech's revolutionary impact on financial services, especially in digital payments and loans (Kyari & Akinwale 2020; Tapanainen 2020), the majority of studies concentrate on global or regional frameworks, resulting in a contextual deficiency concerning South Africa and indeed SMEs. Consequently, while FinTech adoption is acknowledged for improving operational efficiency and financial performance (Marei et al. 2023; Subanidja, Sorongan & Legowo 2022), there is limited understanding of how SMEs in South Africa assess the utility and usability of FinTech solutions, as well as how these assessments relate to adoption and organisational performance.

The absence of targeted research constrains comprehension of the practical obstacles and prospects unique to South African SMEs, a vital sector for economic development

and employment. This is what provides the impetus that this study needs to empirically investigate the factors influencing FinTech adoption by SMEs in South Africa, by specifically examining the roles of perceived value and perceived ease of use as defined by the technology acceptance model (TAM).

Overview of financial technology

Financial technology, or FinTech, denotes a collection of digital advances employed to deliver, enhance, or transform financial services. A comprehensive definition is elusive (Schueffel 2017); however, consensus exists that FinTech amalgamates the financial sector with technologies including mobile platforms, artificial intelligence, cloud computing and blockchain (Leong & Sung 2018; Tritto, He & Junaedi 2020). Researchers characterise it as a multidisciplinary domain and an expeditiously expanding business, marked by advancements in loans, payments, wealth management and insurance (Iwashita 2022; Ryu 2018; Khahharovna & Jumaboevich 2022). Buckley, Arner and Barberis (2016) define FinTech as the convergence of finance and information technology, whereas Vijai (2019) emphasises its capacity to deliver innovative financial solutions resulting from technical advancements.

The expansion of FinTech was accelerated by the 2008 global financial crisis, which exposed the vulnerabilities of traditional financial institutions and necessitated the search for more adaptable, user-centric alternatives (Imerman & Fabozzi 2020; Serbulova 2021). The proliferation of smartphones and enhanced internet access, particularly in emerging nations, has accelerated this trend, hence promoting the dissemination of mobile financial services (Haddad & Hornuf 2019; Shin & Choi 2019). The M-Pesa scenario in Kenya illustrates that digital financial solutions can rapidly develop in response to unaddressed financial demands (Bateman 2020; Kheira 2021). The latter is characterised by contextual characteristics such as infrastructure quality, digital literacy, affordability and customer trust (Abdullah et al. 2018; Majib et al. 2021). The COVID-19 pandemic accelerated the development of FinTech as consumers and businesses sought contactless and remote financial services (Aysan & Nanaeva 2022; Hasan, Ashfaq & Shao 2021).

FinTech is globally categorised into several segments, including payments, lending, InsurTech, crowdfunding and digital advisory services (Imerman & Fabozzi 2020; National Treasury 2019). In developing economies, digital payments and alternative lending have become the most dynamic sectors, indicating a pressing demand for accessible, cost-effective financial instruments (Coffie & Hongjiang 2023; Kyari & Akinwale 2020). Academics contend that an effective FinTech ecosystem relies on cooperation among regulators, innovators, infrastructure providers and end-users (Lee & Shin 2018; Muthukannan, Priyadharshini & Arul 2021). Although FinTech has revolutionised access to financial services, it has simultaneously engendered worries of over-indebtedness, data privacy and digital exclusion, particularly in low-income countries (Bateman 2020; Branzoli & Supino 2020).

Financial technology landscape in South Africa

South Africa has solidified its status as a principal FinTech hub in Africa, alongside Kenya and Nigeria, characterised by a swiftly expanding start-up and digital financial service provider ecosystem. The national FinTech landscape encompasses several areas, including digital payments, mobile lending, savings and deposits, InsurTech and investment platforms (National Treasury 2019). Yoco, PayFast, Lulalend, TymeBank and Vault22 (formerly 22seven) are prominent providers of mobile-first, user-centric platforms tailored to the requirements of SMEs and underbanked consumers (Ndung'u 2022; Pollio & Cirolia 2022). Cape Town has been identified as a continental FinTech powerhouse, bolstered by a dynamic start-up ecosystem, a robust banking system and a growing information technology (IT) workforce.

Despite ongoing developments, the FinTech sector in South Africa is encountering structural and regulatory challenges. The absence of digital literacy, infrastructural deficiencies and persistent scepticism towards digital platforms hinder widespread adoption, especially among informal and rural enterprises (Arendse & Van Den Berg 2024; Molosiwa & Holland 2025). Furthermore, the legacy systems of traditional banks hinder the speed of digitalisation, prompting numerous institutions to form partnerships with FinTech start-ups to maintain competitiveness (KPMG 2021; Wilson 2017). Consequently, the SARB and the IFWG have developed policies aimed at fostering innovation while safeguarding financial stability. These pertain to Sandbox initiatives and regulatory structures for digital payments, crypto-assets and digital credit (National Treasury 2019).

South African banks are adopting FinTech, frequently through internal initiatives or collaborations with digitally focused firms (Coetzee 2018). While some FinTech entities are still perceived as disruptors, many are now regarded as complements to traditional financial institutions by providing customer-centric services, alternative credit assessments and expedited onboarding processes (Berg et al. 2022; Zalan & Toufaily 2017). Nonetheless, concerns persist that accessible financing via FinTech platforms may promote consumer over-indebtedness (Bateman 2020).

The South African FinTech sector is progressing towards more inclusion and innovation. The synergy of mobile penetration, a conducive regulatory framework and rising consumer demand enables the nation to spearhead digital financial change in the area. To guarantee equitable access and sustainable growth, stakeholders must persist in tackling digital exclusion, infrastructure constraints and consumer protection.

Theoretical framework and hypothesis development

Despite the existence of numerous theories and methods for delineating and comprehending technology usage, the TAM is esteemed for its efficacy in examining technology adoption (Slazus 2022). This study employed the TAM to evaluate the influence of usefulness and ease of use of

FinTech products and services on their adoption of FinTech. The TAM is extensively employed to assess technology adoption (Upadhyay et al. 2022). It is based on the two principles of perceived usefulness (PU) and perceived ease of use (PEOU), which are believed to affect attitude towards technology adoption (Ullah et al. 2021).

Perceived usefulness, characterised as the belief that technology can improve job performance (Tun-Pin et al. 2019; Venkatesh & Davis 2000), may be a crucial factor in FinTech adoption (FINAD) by SMEs. After all, customers, for instance, are more inclined to embrace FinTech solutions when they view these technologies as helpful in enhancing performance, conserving time and providing concrete advantages (Alwi et al. 2019; Owusu et al. 2021). The findings of studies undertaken by Alalwan et al. (2018) as well as Jantarakolica and Jantarakolica (2018) suggest that PU is a factor in the adoption of FinTech as it affects initial acceptance and sustained usage (Daragmeh, Sági & Zéman 2021). Empirical evidence from Indonesia and Malaysia also highlights the predictive ability of PU in facilitating FINAD (Mahmud, Joarder & Muheymin-Us-Sakib 2022; Nugraha et al. 2022).

However, alternate positions exist, as evidenced by research such as Rattanaburi and Vongurai (2021) as well as Brown (2002), which indicates that no significant correlation exists between PU and technology adoption, especially in developing economies or specialised applications. Interestingly, Wallace and Sheetz (2014) have challenged the unidimensional aspect of PU, contending that it may not comprehensively encompass users' interpretations of 'useful' in various settings. Nonetheless, PU continues to be a frequently referenced concept in elucidating technology adoption, as it not only encourages adoption but also promotes ongoing engagement with FinTech solutions (Singh, Sahni & Kovid 2020; Slazus 2022). Chen, Xu and Arpan (2017) and Chang, Hajiyev and Su (2017) established the substantial influence of PU on behavioural intention (BI) and actual usage, whereas Jerene and Sharma (2020) and Majid (2021) highlighted that users are more inclined to embrace FinTech when they recognise concrete advantages in efficiency, cost reduction, or decision-making assistance. Mindful of this and other scholarly positions stemming from studies undertaken in different economic and geographical contexts, this study anticipates that:

H₁: There is a positive relationship between perceived usefulness and FinTech adoption by small and medium enterprises in South Africa.

Perceived ease of use, a fundamental element of the TAM, denotes the extent to which consumers view that the utilisation of a specific technology-based solution requires minimum effort (Venkatesh & Davis 2000). Perceived ease of use tends to affect the adoption of FinTech by diminishing the perceived effort necessary to utilise technological services, thereby motivating prospective users (Tun-Pin et al. 2019). Tiong (2020) notes that PEOU is a primary predictor of FINAD in Malaysia. Similarly, Jantarakolica and Jantarakolica (2018) identified PEOU as a crucial factor in FinTech adoption, particularly among consumers with minimal technological proficiency.

This was further corroborated by Almashhadani et al. (2023), who asserted that PEOU is more critical to users who are inexperienced in using technology. Correspondingly, Nugraha et al. (2022) found that PEOU was a significant determinant of FinTech adoption. Moreover, PEOU frequently corresponds with other adoption characteristics, including trust and perceived complexity (Isiaka, Adeosun & Okewale 2022; Owusu et al. 2021). Streamlined FinTech solutions generally improve user experiences, thereby fostering adoption (Buckley & Webster 2016; Dinh, Nguyen & Nguyen 2018). Nonetheless, Alwi et al. (2019) contend that PEOU may not consistently demonstrate statistical significance with respect to having a relationship with technology adoption, as this is contingent upon the context. This notwithstanding, there is a degree of consensus in extant literature that user-friendly FinTech solutions enhance acceptance, particularly among inexperienced users, as simplicity diminishes cognitive load and stimulates interest in the technology (Al Nawayseh 2020; Matsepe & Van Der Lingen 2022). Furthermore, Khan, Yee and Gan (2021) and Abbasi et al. (2021) both established that PEOU and PU strongly influence the desire to utilise peer-to-peer (P2P) lending platforms. Chen et al. (2017) similarly discovered that both PEOU and PU strongly influence BI, with both parameters indirectly affecting actual usage through intention. Nonetheless, certain research contests the generality of these correlations. Granić and Marangunić (2019) discovered that PEOU did not significantly affect BI or actual usage, emphasising contextual factors such as user demographics, digital preparedness and platform complexity. In the South African SME setting, where numerous business owners may possess limited digital abilities, the simplicity and user-friendliness of FinTech systems are essential for uptake. Tun-Pin et al. (2019) and Noviyanti and Erawati (2021) observed that PEOU is most impactful when combined with personal innovativeness, perceived enjoyment and efficacy. It is against this backdrop that this study hypothesises that:

H₂: There is a positive relationship between perceived ease of use and FinTech adoption by small and medium enterprises in South Africa.

Since its inception, the TAM model has been revised and expanded by different academics (see Fedorko, Bacik & Gavurova 2018; Ooi & Tan 2016; Venkatesh, Thong & Xu 2016). However, this study is interested in interrogating the possible correlation between FINAD and organisational performance (OP). For SMEs, performance is frequently assessed by financial metrics such as profitability and operational efficiency and with non-financial factors such as decision-making quality and customer experience (Isiaka et al. 2022). FinTech adoption can be crucial for enhancing organisational performance through improved decision-making, operational efficiency and profitability (Chen et al. 2021; Matsepe & Van Der Lingen 2022).

FinTech adoption enables organisations to develop sustainable business models and achieve competitive advantages, therefore improving overall performance (Pizzi, Corbo & Caputo 2021; Subanidja et al. 2022). Research indicates that FINAD enhances financial performance, with Nigerian banks reporting a 5% rise in profitability (Kyari & Akinwale

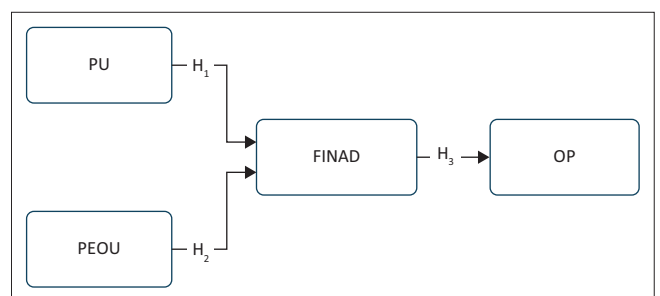
2020). The advantages of FinTech, such as increased transaction speed, superior user experience and higher efficiency, are likely to engender greater productivity and operational effectiveness (AlBar & Hoque 2019; Marei et al. 2023). Moreover, FinTech also tends to broaden the accessibility of financial services, especially in developing nations, hence fostering organisational growth (Setiawan et al. 2021). Furthermore, research conducted by Kumar, Kohli and Kashyap (2023) and Darmansyah et al. (2020) demonstrates that SMEs utilising FinTech tools such as digital payments, cloud-based accounting, or online lending experience enhancements in operational efficiency, customer service and financial decision-making. These solutions not only optimise everyday processes but also enhance financial transparency and access to working capital, hence improving the overall agility and competitiveness of SMEs. It is noteworthy, though, that these literary positions stem from studies in different contexts, and so their findings are unlikely to accurately reflect what the nature of the relationship between FINAD and OP might be in the case of SMEs in South Africa. Nonetheless, positions canvassed in prior research encourage the study to deductively project that:

H₃: There is a positive relationship between FinTech adoption and organisational performance of small and medium enterprises in South Africa.

Reliant on the hypotheses of the study, which have been informed by due consideration for different scholarly positions as it pertains to plausible relationships between the study's independent and dependent variables, the research model for the study was developed and is illustrated in Figure 1.

Research methods and design

This research utilises a quantitative design aligned with the post-positivist worldview. The purposive non-probability sampling method was utilised to create the pool of respondents that the study relied upon for data. Purposive sampling is deemed appropriate for this study because of the impracticality of randomisation, mainly because of the absence of a comprehensive sampling frame (Etikan, Musa & Alkassim 2016) of SMEs in South Africa. A self-administered structured online questionnaire was employed for data collection purposes. Online surveys provide researchers with numerous advantages, including cost efficiency, the option to pause and resume the survey, and the rapid completion of the research instrument by respondents (Nayak & Narayan



PU, Perceived usefulness; PEOU, Perceived ease of use; FINAD, FinTech adoption; OP, Organisational performance.

FIGURE 1: Theoretical framework and hypothesis development.

2019). Out of 1533 responses collected, 1065 were valid, while 468 were considered invalid owing to incompleteness. The study's sample size was considered adequate relative to previous research about the factors influencing FinTech adoption, which employed 362 respondents (Sharma et al. 2024) and 386 respondents (Wu & Peng 2024).

Measurement scales

The study employed scales utilised in prior studies by Venkatesh (2000) as well as Gholami, Abdekhoda and Gvgani (2018) to evaluate the constructs of PU and PEOU. Similarly, the scale used to measure FINAD was adapted from instruments used for the same purpose by Dulcic, Pavlic and Silic (2012) as well as Shahbaz et al. (2020). Organisational performance was assessed with a scale sourced from a study by Elbashir, Collier and Davern (2008). All measurement items in the scales were accompanied by five-point Likert scale answer options on a range of strongly disagree (1) to strongly agree (5). Table 1 presents the measurement items together with the results obtained from a factor analysis conducted, which reflects the corresponding factor loadings and the t-stat for each item.

Table 1 indicates that the factor loadings for items in the PU scale varied from 0.699 to 0.787, while PEOU-related items exhibited factor loadings between 0.500 and 0.829.

TABLE 1: Measurement scales and factor loadings.

Construct and items	Loading	t-stat
PU		
The use of financial technology improves job performance (PU1)	0.759	-
The use of financial technology increases work productivity (PU2)	0.772	24.589
The use of financial technology enhances job effectiveness (PU3)	0.699	23.794
Financial technology will be useful in my job (PU4)	0.747	23.209
Financial technology adoption results in higher efficiency levels of my work (PU5)	0.787	24.664
PEOU		
The use of financial technology is clear and understandable (PEOU1)	0.743	-
Interactions with financial technology do not require a lot of my mental effort (PEOU2)	0.500	15.211
Financial technology is easy to use (PEOU3)	0.744	22.005
It is easy to get financial technology to do what one wants it to do (PEOU4)	0.829	23.197
The use of financial technology is flexible (PEOU5)	0.743	22.051
FINAD		
I use financial technology periodically (FINAD1)	0.320	-
I use financial technology regularly (FINAD2)	0.659	9.633
My business is fully integrated with financial technology (FINAD3)	0.776	9.964
I often recommend financial technology to my business partners (FINAD4)	0.822	10.061
I often use financial technology to develop strategies for the business (FINAD5)	0.818	10.054
OP		
The organisation is experiencing increased revenue (OP1)	0.741	-
The organisation is experiencing increased geographical distribution of services (OP2)	0.705	24.252
The organisation is experiencing enhanced profit margins (OP3)	0.791	22.890
The organisation is experiencing increased return on investment (OP4)	0.782	23.334
The organisation is experiencing improved competitive advantage (OP5)	0.737	22.456

PU, Perceived usefulness; PEOU, Perceived ease of use; FINAD, FinTech adoption; OP, Organisational performance.

Moreover, items in the OP scale exhibited factor loadings ranging from 0.705 to 0.791. The factor loadings for FINAD varied from 0.320 to 0.822. Subsequent to the discovery of indicators with low loading items (e.g. FINAD1 with a factor loading of 0.320), a conservative methodology was implemented in accordance with Howard's (2016) proposition. This technique involves the systematic elimination of items with loadings below 0.400 to assess potential improvements in the scale (Decius, Schaper & Seifert 2019). Interestingly, the elimination of FINAD1 did not enhance the scale; therefore, FINAD1 was retained. Based on the results of the factor analysis, the measurement items for PU, PEOU, FINAD and OP were considered to have achieved satisfactory indicator reliability.

Statistical analysis approach

The covariance-based structural equation modelling (CB-SEM) technique was utilised to investigate the proposed linear correlations between study constructs as expressed in the study's hypotheses. Reinartz, Haenlein and Henseler (2009) assert that CB-SEM is suitable for validating theoretically posited associations. Aimran et al. (2017) also assert that CB-SEM outperformed Partial Least Square-Structural Equation Modelling (PLS-SEM) in accuracy consistency while estimating bigger samples (100 or more). The current study's sample size exceeds 100, hence validating the application of CB-SEM for analysing the proposed correlations.

The CB-SEM process consists of two main stages: Firstly, it validates the measurement model by assessing the reliability and validity of the study constructs. Therefore, the internal consistency reliability of the constructs was assessed utilising both Cronbach's alpha and composite reliability, with a threshold of 0.700. Convergent validity was assessed using average variance extracted (AVE), with values above 0.500 indicating adequate convergent validity. Furthermore, discriminant validity was evaluated using the heterotrait-monotrait (HTMT) criterion; an HTMT ratio below 0.850 signifies sufficient discriminant validity. Secondly, CB-SEM evaluates the structural model by analysing the linear relationships among the proposed relationships (De Carvalho & Chima 2014).

Ethical considerations

Ethical clearance to conduct this study was obtained from the University of Pretoria Faculty of Economic and Management Sciences Research Ethics Committee with reference number: EMS129/23.

Results

Descriptive statistics

The construct-related descriptive statistics results summarised in Table 2 offer insights into respondents' average perceptions, data distribution normality and the likelihood of multicollinearity and common method bias (CMB).

The results reveal that PU possesses the highest mean of 4.276, signifying that respondents predominantly concurred on its importance. Furthermore, PEOU, FINAD and OP exhibited means of 3.992, 3.906 and 3.968, respectively, indicating that study respondents had a substantially elevated perception about these constructs. The skewness and kurtosis scores provide insights into the data normality. The skewness values for all constructs vary from -1.265 to -0.806, while the kurtosis values span from 0.367 to 2.318, all falling below the thresholds of 2 for skewness and 7 for kurtosis (Matore & Khairani 2020), which then signals that the data largely take the form of a normal distribution.

The tolerance and variance inflation factor (VIF) are employed to evaluate multicollinearity and CMB. Common method bias denotes the systematic measurement error that occurs when both dependent and independent variables are evaluated using the identical instrument, which may exaggerate the correlations between them (Desmaryani, Soleh & Wiarta 2024). A tolerance value under 0.1 and a VIF beyond 5 would signify significant multicollinearity problems and possible CMB (Kock 2015). The tolerance values for all constructs range from 0.521 to 0.614, while the VIF values were from 1.805 to 1.921, all of which are within acceptable ranges. The results indicate that multicollinearity is not an issue in this study and the data are free from CMB.

TABLE 2: Descriptive statistics results.

Constructs	N	Mean	SD	Skewness	Kurtosis	Collinearity statistics	
						Tolerance	VIF
PU	1065	4.276	0.791	-1.265	2.318	0.544	1.838
PEOU	1065	3.992	0.905	-0.821	0.628	0.521	1.921
FINAD	1065	3.906	0.981	-0.838	0.367	0.554	1.805
OP	1065	3.968	0.837	-0.806	0.943	0.614	1.628

SD, standard deviation; VIF, variance inflation factor; PU, perceived usefulness; PEOU, perceived ease of use; FINAD, FinTech adoption; OP, Organisational performance.

Measurement model results

Prior to evaluating the hypothesised linear relationships between the study's constructs, the measurement model was assessed for internal consistency reliability, convergent validity and discriminant validity. The results stemming from these assessments are shown in Table 3. The results signal that the study constructs achieved internal consistency reliability, as evidenced by Cronbach alpha values ranging from 0.799 to 0.880. This was additionally corroborated by composite reliability values that were above the 0.700 criterion (ρ_c ranging from 0.826 to 0.881). The study's findings also showed that the AVE values for the constructs ranged from 0.505 to 0.596, demonstrating the attainment of convergent validity. Furthermore, the HTMT values for PU, PEOU, FINAD and OP were below the 0.850 threshold, indicating sufficient discriminant validity among the study constructs.

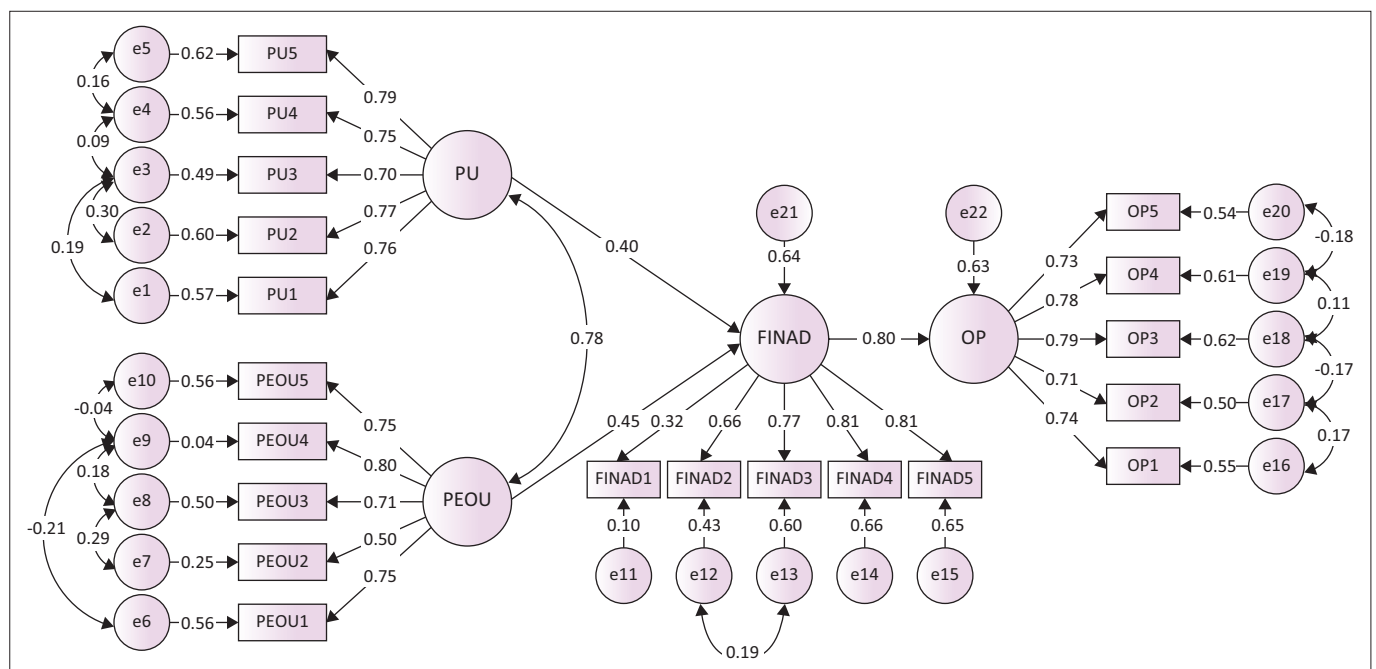
Structural model results

To investigate the hypothesised linear relationships between PU, PEOU, FINAD and OP for the sampled SMEs in South Africa, a structural model was developed as illustrated in Figure 2. The model fit indices for the structural path analysis model shown in Figure 2 indicated that

TABLE 3: Measurement model results.

Construct	Internal consistency reliability		Convergent validity	Discriminant validity (HTMT)			
	α	ρ_c		PU	PEOU	FINAD	OP
PU	0.880	0.881	0.596	-	-	-	-
PEOU	0.830	0.838	0.513	0.631	-	-	-
FINAD	0.799	0.826	0.505	0.592	0.622	-	-
OP	0.865	0.866	0.564	0.575	0.549	0.654	-

PU, perceived usefulness; PEOU, perceived ease of use; OP, organisational performance; AVE, average variance extracted; HTMT, heterotrait-monotrait.



PU, perceived usefulness; PEOU, perceived ease of use; FINAD, FinTech adoption; OP, organisational performance.

FIGURE 2: Structural path model for perceived usefulness, perceived ease of use, FinTech adoption and organisational performance.

the structural model attained satisfactory model fit. This is shown by Chi-square Minimum Discrepancy Function (CMIN)/degrees of freedom (*df*) of 2.679, Comparative Fit Index (CFI) of 0.977, Tucker-Lewis Index (TLI) of 0.972, NFI of 0.964, GFI of 0.963, AGFI of 0.949, RMSEA of 0.040 and standardised root mean square residual (SRMR) of 0.035, which are all above the cut-off values.

Figure 2 indicates that the path coefficient for the association between PU and FINAD is 0.40, for PEOU and FINAD is 0.45, and for the relationship between FINAD and OP is 0.80. The path coefficients indicate a positive correlation between PU and FINAD, PEOU and FINAD as well as between FINAD and OP.

Table 4a and Table 4b encapsulates the path coefficients, *t*-values, *p*-values and conclusions about the direct relationships within the predictive model for PU, PEOU and FINAD, as well as the association between FINAD and OP for the sampled SMEs in South Africa.

The results in Table 4a and Table 4b indicate that the prediction model for the association between PU, PEOU and FINAD yielded an R^2 value of 0.639, implying that PU and PEOU account for 63.9% of the variance in FINAD. Correspondingly, the R^2 for the predictive model between FINAD and OP was 0.632, indicating that FINAD accounts for 63.2% of the variance in OP.

The results in Table 4 indicated that PU exerts a positive and statistically significant effect on FINAD ($\beta = 0.403$, $t = 6.364$, $p = 0.000$), hence corroborating H_1 . This indicates that SMEs are more inclined to embrace FinTech solutions when they recognise the technology as advantageous and effective in enhancing business operations. Likewise, PEOU and FINAD exhibited a statistically significant and positive correlation ($\beta = 0.445$, $t = 6.699$, $p = 0.000$), which implies that H_2 was supported. These findings show that the cohort of respondents in the study perceive FinTech solutions as more adoptable when they are straightforward

and user-friendly. Further, the findings reveal that FINAD has a statistically significant and positive correlation with the OP of SMEs ($\beta = 0.795$, $t = 9.620$, $p = 0.000$). Consequently, H_3 was statistically supported, meaning that FINAD contributes to improved OP for SMEs.

Discussion

The results of this study, examining FinTech uptake among a sample of SMEs in South Africa, closely correspond with the principles of the TAM and the current literature. The findings indicate that both PU and PEOU positively affect FINAD, aligning with the fundamental tenets of the TAM (Venkatesh & Davis 2000). Perceived usefulness, characterised as the conviction that technology augments job performance, surfaced as a significant predictor of FINAD, corroborating prior research that emphasises FinTech's role in enhancing productivity, conserving time and providing tangible advantages to users (Alwi et al. 2019; Owusu et al. 2021). Perceived ease of use was also shown to affect FINAD positively, indicating that user-friendly and low-effort technologies are essential for promoting adoption, especially among SMEs with diverse technological proficiency (Jantarakolica & Jantarakolica 2018; Tun-Pin et al. 2019). The findings emphasise the significance of PU and PEOU as essential determinants for FinTech adoption, as indicated by previous studies in other countries (see Mahmud et al. 2022; Nugraha et al. 2022) with developing economies such as Malaysia and Indonesia.

The study's results show that FINAD markedly improves OP, and this lends credence to the assertion that FinTech adoption positively influences the overall performance of businesses. This finding corresponds with results of prior research which revealed enhancements in profitability, decision-making efficiency and operational effectiveness subsequent to FINAD (Kyari & Akinwale 2020; Marei et al. 2023). The findings of the current study affirm that the TAM offers a veritable framework for comprehending FINAD, with PU and PEOU as pivotal elements, and further illustrate that FINAD substantially enhances organisational performance among the studied SMEs in South Africa.

Limitations and areas for future studies

Firstly, the study utilised a quantitative cross-sectional methodology, which restricts the capacity to monitor temporal changes in FinTech uptake and its effects. A longitudinal study could offer more insight into the evolution of FinTech adoption and its effect on organisational performance over time. Secondly, the study relied on a purposive sample of respondents drawn from SMEs in South Africa, thus limiting the generalisability of the findings to other contexts, especially in diverse emerging markets or sectors. Subsequent research may broaden this investigation to more nations or sectors to ascertain if

TABLE 4a: Results for structural model of hypothesised linear relationships.

Hypothesised relationship		Estimate		<i>t</i> -stat	<i>p</i>	Decision
		Standard	Unstandard			
Predictive model for adoption of fintech by SMEs						
H ₁	PU → FINAD	0.403	0.243	6.364	0.000	Supported
H ₂	PEOU → FINAD	0.445	0.245	6.699	0.000	Supported
Predictive model for organisational performance						
H ₃	FINAD → OP	0.795	1.401	9.620	0.000	Supported

Note: Predictive model for adoption of fintech by SMEs - Predictive power (R^2) = 0.639; Predictive model for organisational performance - Predictive power (R^2) = 0.632.

SME, small and medium enterprises; PU, perceived usefulness; PEOU, perceived ease of use; FINAD, FinTech adoption; OP, organisational performance.

TABLE 4b: Results for structural model of hypothesised linear relationships.

CMIN/ <i>df</i>	CFI	TLI	NFI	RMSEA	SRMR	GFI	AGFI
2.679	0.977	0.972	0.964	0.040	0.035	0.963	0.949

Note: Test = Direct relationship structural path model fit indices.

CMIN, Chi-square Minimum Discrepancy Function; *df*, degrees of freedom; CFI, Comparative Fit Index; TLI, Tucker-Lewis Index; NFI, Normed Fit Index; RMSEA, Root Mean Square Error of Approximation; SRMR, standardised root mean square residual; GFI, Goodness-of-Fit Index; AGFI, Adjusted Goodness-of-Fit Index.

analogous trends arise. Furthermore, although the TAM was beneficial for this study, alternative frameworks such as the Unified Theory of Acceptance and Use of Technology (UTAUT) or the Diffusion of Innovations Theory may be examined to offer a more comprehensive understanding of technology uptake.

Conclusion

This research offers important theoretical and practical contributions. This study theoretically expands the application of the TAM by validating its effectiveness in the context of FinTech uptake among SMEs in South Africa. This study also underscores the robustness of the TAM by illustrating that PU and PEOU are critical determinants of technology adoption, particularly within the dynamic FinTech sector. The research enhances the theoretical comprehension of the effects of FINAD on OP, addressing a gap in the literature by emphasising the direct effect of technology adoption on organisational performance. This research expands the scope of TAM by integrating OP as an outcome variable, demonstrating its applicability beyond individual user adoption to organisational-level results.

The study offers significant insights for SMEs, FinTech providers and policymakers in South Africa. The findings highlight the necessity for SMEs to regard FinTech solutions as instruments for improving operational efficiency, decision-making quality and overall competitiveness. FinTech companies leverage this insight to develop and market products that are both functional and user-friendly, hence ensuring increased adoption rates. Moreover, authorities might devise specific policies to assist SMEs in embracing FinTech, like the provision of training programmes to improve technological competence or the establishment of incentives to mitigate adoption obstacles.

Additionally, policymakers must focus on the development of programmes that facilitate FinTech adoption among SMEs by tackling obstacles associated with technology availability, cost and literacy. Policies designed to offer financial incentives, such as subsidies or tax reductions for SMEs implementing FinTech solutions, can promote increased adoption. Moreover, investment in digital infrastructure and the implementation of training programmes to augment technology competency among SME owners and staff are crucial for enhancing perceived ease of use. FinTech companies, in partnership with government agencies, must prioritise the creation of user-centric solutions designed for SMEs, guaranteeing that technologies are accessible, cost-effective and capable of providing substantial advantages. By cultivating a conducive climate for FinTech adoption, policymakers can enhance the performance of SMEs, which are essential for economic development, job creation and innovation in South Africa.

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Competing interests

The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

Authors' contributions

T.N. developed the theoretical formalism, performed the analytic calculations and performed the numerical simulations. Both T.N. and C.E.-E. contributed to the final version of the manuscript. C.E.-E. supervised the project.

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Data availability

The data that support the findings of this study are available from the corresponding author, T.N., upon reasonable request.

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