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ASSESSING THE DETERMINANTS OF NEOBANKING: EVIDENCE FROM A EUROPEAN COUNTRY

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Dissertation

presented as partial requirement for obtaining the Master Degree Program in Statistics and Information Management

NOVA Information Management School
Instituto Superior de Estatística e Gestão de Informação
Universidade Nova de Lisboa

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COUNTRY**

by

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Master Thesis presented as partial requirement for obtaining the Master's degree in
Statistics and Information Management, with a specialization in Analysis and Information
Management

Supervised by

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July 2024

STATEMENT OF INTEGRITY

I hereby declare having conducted this academic work with integrity. I confirm that I have not used plagiarism or any form of undue use of information or falsification of results along the process leading to its elaboration. I further declare that I have fully acknowledge the Rules of Conduct and Code of Honor from the NOVA Information Management School.

Lisboa, July 2024

DEDICATION

I dedicate this thesis to my parents, João and Justina, whose unwavering support throughout my educational journey made this achievement possible. Your sacrifices and endless belief in my potential have shaped the person I am today. Your encouragement never ended, even during the most challenging times.

I also express gratitude to my sister, Raquel, for her encouragement and relentless support, always pushing me to do better. Your presence in my life has been a constant reminder of the profound value of having a sister who is not only family by chance but also a friend by choice.

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ABSTRACT

Neobank is a type of financial institution that operates exclusively online without traditional physical branch networks. The current study aims to understand how overall trust plays an important role in neobanking adoption. A conceptual model was created by combining the DeLone & McLean model with overall trust to understand the impact of neobanking on individual performance. Data was collected via an online survey of 210 participants and analyzed using partial least squares structural equation modeling techniques. The result of this study indicates that overall trust is more important to user satisfaction than use itself of the service. Also, it is presented that both use, and user satisfaction are important precedents of individual performance. User satisfaction is positively affected by system quality, information quality, and service quality. Evaluating the impact of neobanking on individual performance is valuable for neobanking managers, offering insights that can help them implement strategies to retain users and attract potential adopters.

KEYWORDS

Neobanking; DeLone & McLean model; Overall Trust.

Sustainable Development Goals (SGD):



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LIST OF ABBREVIATIONS AND ACRONYMS

TRU	Overall Trust
SQ	System Quality
SRQ	Service Quality
IQ	Information Quality
SAT	User Satisfaction
PERF	Individual Performance
D&M	Delone & McLean IS Success Model
CR	Composite Reliability
AVE	Average Variance Extracted
HTMT	Heterotrait Monotrait Ratio
IS	Information system
IT	Information technology

1. INTRODUCTION

One of the most precious things of individuals is their money. The way and the place where they keep it is a concern that accompanies them through their lives. Whether it is a physical institution or an online one, people want to be informed about their information in real time. Technology has revolutionized the banking world and has increased the quality of these services, with neobanking being an example of this, which offers mobile and online banking. (Strohm, 2021). In addition to this, the trust and security of a banking system is essential to individuals. Since neobanks bring advantages that physical banks do not have, such as making international transactions free of charge, a full online financial system is much more vulnerable to uncertainty and risk. Although having an online bank is more convenient and comfortable, it also brings many concerns for individuals, and that is why it is important to study whether individuals trust these banking systems.

Previous research shows us the impact of mobile banking on individual performance using DeLone & McLean IS Success model (D&M) and Task Technology Fit perspective (Tam & Oliveira, 2016), and identifies that if mobile banking users feel that the service meets their task needs, more individuals will use it. Work was also conducted on the impact of risk on the adoption of Internet banking (Martins et al., 2014), and this study reveals that perceived risk is an important factor affecting end-user intention to use Internet banking. If institutions provide information about security and trust on the platform, users will know whether Internet banking is a dangerous service or not, and so they will be able to evaluate if they should trust this service. They should also prevent user concerns about computer crimes or invasion of privacy and explain that the use of a secure channel from the consumer's personal computer to the bank server is important. Therefore, overall trust in banks and their services is important because of financial stability concerns (van der Cruisen et al., 2023).

This study aims to analyze data considering the outcome of overall trust and the D&M IS Success Model. We will study if an individuals' overall trust can be directly related to the use, satisfaction, and individual performance in the context of neobanking. We therefore wish to answer the following research questions:

- (1) To what extent does system quality, information quality, and service quality impact one's experience with neobanking?
- (2) Does overall trust have an important impact on individuals' experience with neobanking?

In answering these questions this paper is structured as follows: first, we will present the theoretical background of the theme, explaining the concept of neobanking, previous research, and an overview of the D&M IS (information system) success model; second, a research model will be presented, and hypotheses are developed; third, the results will be presented and finally, the final discussion, implications, and conclusions will be described.

2. LITERATURE REVIEW

2.1. NEOBANKING

A bank is not only an institution entrusted with safeguarding people's money but also a pivotal financial intermediary involved in various financial activities and serving as a counterparty in central banks' monetary policy operations. Banks play a crucial role in sustaining commercial activities by facilitating payment transactions and providing personal credit, thereby contributing significantly to the development of both national and international commerce. In a traditional bank, consumers have physical contact with an entity, go to an agency and perform their financial activities such as service payments, loans, credit cards, etc. Financial service providers frequently offer new digital services in addition to their traditional ones (Broekhoff et al., 2023). With the advancement of technology, banks were able to adjust their business and create online solutions so that accounts could be managed through distance. Consequently, traditional basic payment services are becoming less common. These actions are performed with the help of a device, such as a computer or a mobile phone. A positive relationship exists between the quality of services offered by banks and consumers' trust in them (Bravo et al., 2019; Chang & Hung, 2018; Ngoc Phan & Ghantous, 2013).

Years later, and with advances in technology, neobanks were created. Mitch Strohm (2021) wrote on the Forbes website, "Neobanks are fintech firms that offer apps, software, and other technologies to streamline mobile and online banking". These fintech are generally specialized in financial products, like checking and savings accounts. In neobanks, people only connect with the bank through Internet platforms, like websites and apps. Since neobanking does not have a physical branch, all elementary communication and all products they subscribe to will be carried out online. Hauff (2019) found that customers trust their bank more when the relationship with bank personnel is stronger, focusing on Sweden. Customers need to trust mobile banking to use it (Malaquias & Hwang, 2016), and we can conclude that to neobanking, consumers must trust the system to subscribe and perform financial activities. Understanding the determinants of trust in banking networks is the first step toward gaining a better understanding of modern financial systems (Bülbül, 2013).

One example of a neobank is Revolut, which was founded on the 1st of July in 2015 (Revolut, 2015). This bank offers full online solutions, such as savings accounts and credit cards. Customers can download the app and then have access to create an account, transfer money to it, setting up a savings account, and see their money converted into almost every international currency. Customers can also have an account without a physical card to make online payments only. One of the main advantages of this bank is that consumers may use their cards to make payments or transfers in almost every country without extra fees. On the other hand, consumers do not have a physical place to go to if help is needed.

There is not much literature about neobanking adoption. However, previous studies have investigated the role of trust and security in various aspects of technologies for financial

management adoption, such as robot-advisors (Roh et al., 2023), blockchain technology (Oh et al., 2023; Roh et al., 2024) and Fintech (Jafri et al., 2024). Regarding financial services, studies have been done exploring trust and mobile banking in diverse settings, such as what role trust and quality dimensions play in the actual use of mobile banking services (Sharma & Sharma, 2019), and it was found that both service quality and trust are the key determinants influencing satisfaction and intention to use, Adiningtyas & Auliani (2024) analyzed the quality of mobile banking services in Indonesia and found that technology-trusting performance positively influences promoting intention. The influence of trust on customers' intention to use a specific mobile payment system was studied, where trust was found to have significant positive impacts on customers' intention to use (Alrawad et al., 2023). However, in the context of customers from Tunisia, trust was not found significant in influencing intention to adopt mobile banking (Abdennebi, 2023). Trust can play an important role in influencing mobile banking adoption, but it does not consistently exert a positive influence on service use, as it may enhance short-term relationships but not necessarily long-term ones (Susanto et al., 2016).

2.2. TECHNOLOGY ADOPTION MODELS

2.2.1 DELONE & MCLEAN IS SUCCESS MODEL (D&M)

The Delone and Mclean IS success has been employed to elucidate the performance of both individuals and organizations (DeLone & McLean, 1992). The original D&M model (Fig. 1) identified six factors for the IS success model: system quality, information quality, system use, user satisfaction, individual impact, and organizational impact (outside the scope of this work). This model suggests that the match between information quality and system quality is more likely to have a positive impact on performance if the end-user feels satisfaction and uses the system.

Research after this model was released observed that the D&M model did not have a measure for the IS service quality. Pitt, Watson, and Kavan (Pitt et al., 1995) believed that the three factors, system quality, information quality, and service quality, together had a bigger impact on IS use and satisfaction. This model shows that either system quality, information quality or service quality positively affects the use of IS and user satisfaction. The use of IS affects user satisfaction and vice-versa. These two have a positive impact on individual performance, and individual performance influences organizational impact. Years later, Delone and McLean, after analyzing several papers that have been done using the original model, proposed an updated model. In this updated model, they included the service quality factor. They proposed that it significantly influences system use and user satisfaction (DeLone & McLean, 2003). With the growth of IS, users started to pay more attention to the quality of services (Tam & Oliveira, 2016).

Other studies have confirmed that this model can be helpful in explaining individual performance and can be used with other models or variables. This model has been used in the

IS field, combined with the expectation-confirmation model to investigate the continuance intention to use mobile payment (Franque et al., 2021), and was also proposed to an ex-post evaluation by users of an IS dedicated to the automotive industry (Roky & Meriouh, 2015), used to examine the relationship between e-commerce and individual performance (Tam et al., 2020), also, to investigate the continuance intention to use mobile payment (Franque et al., 2021), and the satisfaction for mobile banking (Lee & Chung, 2009). This study will carry this model at an individual performance level. We think it can be used to explain whether information quality, system quality or service quality of neobanking influences the use and user satisfaction of these services, and if the use and/or the user satisfaction influence the individual performance.

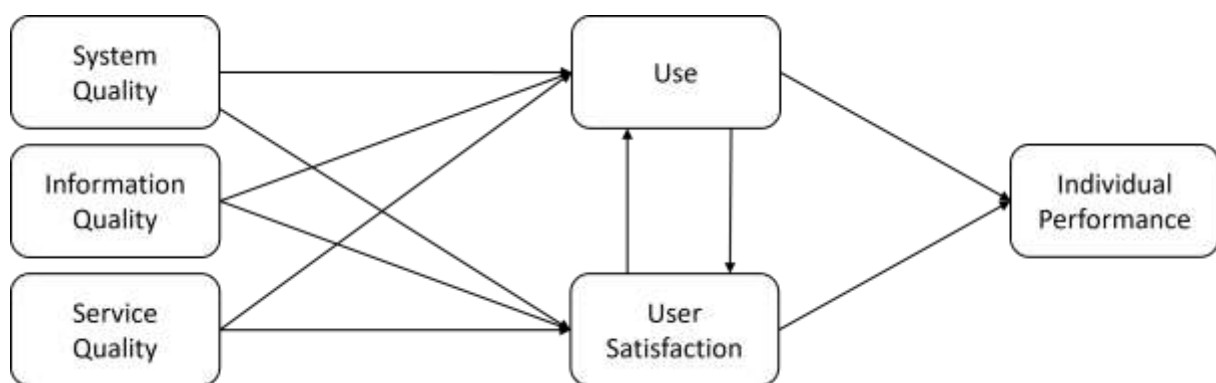


Figure 1 – D&M IS Success model, 2003

2.2.2 OVERALL TRUST

Trust is believed to be the basis of every decision-making process in many contexts of our lives. Trust begins with information, and it influences the users' use. It will affect performance and satisfaction when combined with technology. Overall trust is a combination of factors such as competence (known previously as ability), integrity, and benevolence in order to understand a user's confidence to use information technology (IT) (Anol Bhattacharjee, 2002; Chen & Dhillon, 2003). Competence refers to a seller's capability to fulfil commitments made to customers, such as effectively managing online sales transactions, delivering exemplary service, and demonstrating expertise in the market. Integrity denotes the seller's consistency, reliability, and honesty in their actions. Benevolence encompasses the seller's dedication to acting in the best interests of customers, striving to provide optimal assistance and support (Gefen, 2002; Palvia, 2009).

Previous studies have been done using overall trust and have been used in combination with some other models. Franque et al. (2022) used overall trust, task technology fit model, and expectation-confirmation model to understand the continuance intention of mobile payment. Oliveira et al. (2017) analyzed how various sources of trust, i.e., consumer characteristics, firm characteristics, website infrastructure, and interactions with consumers, influence dimensions of overall trust to examine purchase intention in e-commerce, and overall trust was found to

be essential to explain use and user satisfaction. Tam et al. (2020) used individual performance, the D&M model, e-commerce, the use of IS, overall trust, and user satisfaction to examine individual performance in e-commerce. Cao et al. (2018) found that user satisfaction and continuance intention toward mobile payment in an online-mobile payment context were influenced by trust. In the context of this study, overall trust in neobanking is reflected in the use of a neobank application, to the extent that it requires creating an account, making transactions, and saving money, for example. Studies about other technologies showed us that trust provides the guarantee that users will acquire future positive outcomes (Hajiheydari & Ashkani, 2018). Trust becomes a crucial factor in consumers' purchase decisions when a financial service or product is difficult to evaluate (Ennew et al., 2011). Online banking inherently carries risks because unauthorized third parties may gain access to consumers' sensitive information (Shaikh & Karjaluoto, 2016).

2.2.3 D&M AND OVERALL TRUST

The D&M and the construct of overall trust that is being considered in our study focus on different aspects that individuals may consider and influence use, user satisfaction, and individual performance. The D&M considers the elements of the service by the technology being studied, such as system quality, information quality, and service quality, and the construct of overall trust that is a combination of factors (competence, integrity, and benevolence) considers the behavioral characteristics of an individual making our study more complex. When combined, the D&M and overall trust complement each other, indicating that their combination helps in comprehending the influence of individual performance.

3. RESEARCH MODEL

With this study, we seek to understand if the system quality, information quality, and service quality of neobanking services combined with overall trust will affect the performance of the service. As discussed before, the D&M success model is a strong model to use while studying technologies at an individual level.

System quality refers to the flexibility, security, reliability, response time, and ease of use of the service (Wu & Wang, 2006). System quality can be seen as the extent to which the system is user-friendly and effective for task completion (Dwivedi et al., 2013; Schaupp et al., 2006). Bhattacharjee (2001) found that better system performance leads to higher user satisfaction, which in turn increases the intention to continue using the system, and the reverse is also true. High system quality is a desirable attribute of IS (Almaiah et al., 2022; Petter et al., 2013). In this study, system quality is determined by whether neobanking is easy to use and navigate, if it is well structured, and if it can meet the user's needs. We expect that the higher system quality of neobanking will lead to higher use of the services and, the greater use, the greater satisfaction, which can lead to positive impacts on individual performance. Consequently, we hypothesize that:

H1a: System quality is positively associated with the use of neobanking.

H1b: System quality is positively associated with user satisfaction with neobanking.

Information quality stands for the information produced by an IS. This refers to the data that a neobank may produce while being utilized by users. It includes desirable characteristics of the system, which are relevance, accuracy, timeliness, completeness, understanding, and accessibility and that is represented by web pages and management reports (Chatterjee et al., 2018; Dwivedi et al., 2013; Petter et al., 2013). Information quality has been demonstrated to be a crucial success factor in evaluating overall IS success, particularly in the context of web-based systems (McKinney et al., 2002). We expect that the elevated information quality positively influences user satisfaction and the intention to use neobanking. Thus, we propose:

H2a: Information quality is positively associated with the use of neobanking.

H2b: Information quality is positively associated with user satisfaction with neobanking.

The agents of neobanking provide service quality to the users. It refers to the standard of support that system users receive from the IS department and IT support personnel, which DeLone & McLean (2003) presented with qualities such as responsiveness, reliability, conciseness, technical competence, and empathy of personnel. Drawing from marketing principles, Pitt et al. (1995) assert that service quality, adapted as a pivotal metric, plays a significant role in assessing the IS field. They argue that traditional IS effectiveness metrics often prioritize products over services, potentially leading to inaccurate estimations of IS effectiveness when the quality of IS services is overlooked. In the context of our study, service

quality represents the standard help center that users may use when needing help. Since neobanking is an online bank, it needs to be accessed by a device. Due to physical dimensions, there are several issues faced, such as usability. It was found by Sharma & Sharma (2019) that service quality is the determinant key influencing users' intention to use and satisfaction. Therefore, we hypothesize:

H3a: Service quality is positively associated with the use of neobanking.

H3b: Service quality is positively associated with user satisfaction with neobanking.

An aspect of the D&M IS success model is the reciprocal relationship between use and user satisfaction. This study examines the one-way dynamics of use to user satisfaction and their impact on individual performance. Use measures the actual use of the neobanking. User satisfaction is regarded as one of the key indicators when assessing overall IS success. Both use and user satisfaction are important means of measuring customers' feedback in using neobanking, as both affect the IS's impact on individual performance (DeLone & McLean, 1992). Individuals who engage extensively with a system tend to utilize its features that are most pertinent to their tasks, thereby enhancing their overall performance outcomes (Kane & Alavi, 2008). When users experience satisfaction, their confidence, effectiveness, and efficiency in completing tasks within an IS are notably elevated, thereby contributing to enhance individual performance (Katsanos et al., 2010). In mobile perspectives, Maduku & Thusi (2023) found that mobile shopping continuance intention was significantly influenced by user satisfaction. The higher user satisfaction with the neobanking service, the higher the intention to continue using it, and consequently, it will affect individual performance. For example, in the context of an IS, individual performance impact refers to the actual performance of a person utilizing the IS. In the neobanking context, it is creating an account, making transactions, and build up savings, thus improving the user's well-being. Accordingly, we propose that:

H4: The use affects the user satisfaction of neobanking.

H5: The use of neobanking influences individual performance

H6: The user satisfaction of neobanking influences individual performance.

Overall trust stands as an important construct to understand if people value the trustworthy characteristics of neobanking when using it and if it affects user satisfaction. Previous studies have examined the relationship between trust and user satisfaction (Fang et al., 2011; Shiau & Luo, 2012; Tam et al., 2019). Tam et al. (2020) found that overall trust is statistically significant in explaining both use and user satisfaction regarding e-commerce technologies. Considering that overall trust is a crucial factor for increasing the intention to use and enhancing user satisfaction among neobanking, we expect that the effect of overall trust moderate the effect of use on user satisfaction predicting that overall trust will encourage use and enhance user satisfaction with neobanking service, we propose that:

H7a: Overall trust is positively associated with the use of neobanking.

H7b: Overall trust is positively associated with user satisfaction with neobanking.

H7e: Overall trust will moderate the effect of use on user satisfaction, such that the relationship will be stronger among people with higher trust.

Overall trust can also be a significant influence on individual performance, individuals with a high level of overall trust can lead to a huge performance increase with the neobanking service. When users have a high level of trust in both mobile payments and the provider, their intention to continue using mobile payments will increase (Oliveira et al., 2017b). Also, Shao et al. (2019) found that trust affects continuance intention. We expect that higher levels of overall trust influence positively individual performance and moderate the effects of both use and user satisfaction on individual performance. Accordingly, we propose that:

H7c: Overall trust is positively associated with individual performance of neobanking.

H7d: Overall trust will moderate the effect of use on individual performance, such that the relationship will be stronger among people with higher trust.

H7f: Overall trust will moderate the effect of user satisfaction on individual performance, such that the relationship will be stronger among people with higher trust.

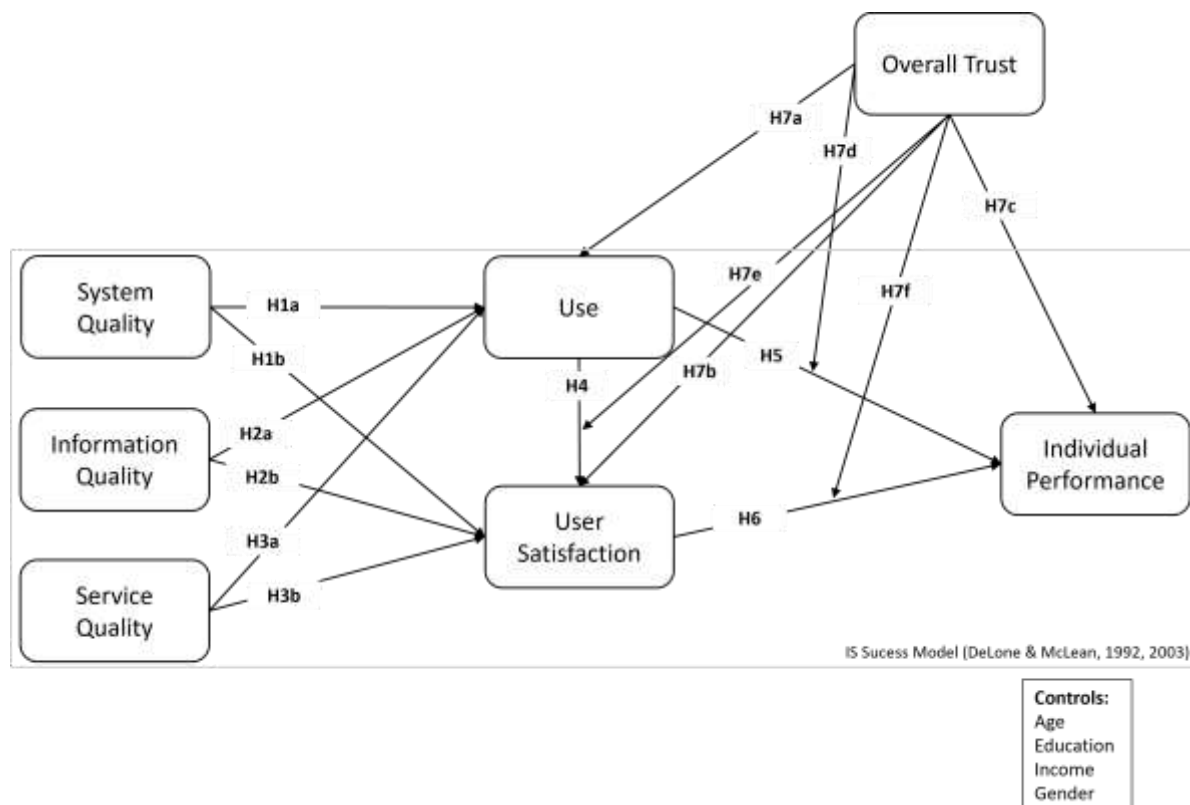


Figure 2 – Research Model

4. METHODOLOGY

4.1. MEASURES

Our target population for this study is the current users of neobanking. An instrument based on the research model was developed (please see Appendix A). Each of the items was adopted from prior research. The system quality, information quality, and service quality items were adapted from Tam & Oliveira (2016) and Urbach et al. (2010); use items adapted from Tam & Oliveira (2016) and Zhou et al. (2010); user satisfaction items were adapted from Tam & Oliveira (2016) and Wu & Wang (2006); individual performance items were adapted from Tam & Oliveira (2016) and Urbach et al. (2010), and finally, the overall trust items were adopted from Palvia (2009), Oliveira et al. (2017), and Franque et al. (2022). All items were measured on a seven-point scale with anchors ranging from one, "strongly disagree" to seven, "strongly agree".

4.2. DATA COLLECTION

The method used to collect data for this study was an online survey through Qualtrics, which was shared in forums and social media groups. As it would be virtually impossible to determine whether an individual currently uses neobanking, the survey began with a filter question asking the respondents if they currently use neobanking. If not, the questionnaire finished; if yes, it proceeded with the measurement items presented before. A sample of 30 respondents was selected from the target population of the study to pilot the questionnaire to validate the instruments and understand the clarity of the questionnaire. These responses were not included in the main study. Participation in this study was voluntary, and confidentiality was ensured. The NOVA IMS Ethics Committee approved the questionnaire.

By the end of August 2023, a final sample of 371 responses was collected, and due to incompleteness, 161 responses were removed, leaving a final 210 complete and valid responses. The respondents' characteristics are presented in Table 1; 50% of respondents were female, and 85.7% of the respondents were aged between 21 and 40 years old, with the mean age being 31. Concerning education, 91.8% have a university degree or higher, and 79.5% of our respondents are full-time employed.

Harman's single-factor test was applied (Mackenzie et al., 2011) to detect the existence of common method bias. As the first factor was valued at 32.36%, far from 50%, we can securely conclude that common method bias is not a problem (MacKenzie & Podsakoff, 2012), Podsakoff et al., 2003).

Table 1 – Sample Characteristics

Measures	Categories	Frequency (n=210)	%
Gender	Female	105	50
	Male	104	49.5
	Other	1	0.5
Age	< 20	2	1
	21-40	180	85.7
	41-60	21	10
	> 61	7	3.3
Marital Status	Single	144	68.6
	Married	62	29.5
	Divorced	3	1.4
	Widow	1	0.5
Highest Education Level	Lower than Bachelor	15	7.2
	Bachelor's Degree	64	30.4
	Higher than Bachelor	129	61.4
	Other. Please specify	2	1
Occupation	Full-time Student	14	6.7
	Working student	24	11.4
	Employment	167	79.5
	Retired	3	1.4
	Unemployed	2	1
Average Family Monthly Income	< 1500€	54	25.7
	1500€ to 3000€	92	43.8
	> 3000€	64	30.5

5. DATA ANALYSIS AND RESULTS

To evaluate and validate the theoretical model, structural equation modelling (SEM) using partial least squares (PLS) was employed. The partial least squares structural equation modelling (PLS-SEM) has been used to estimate complex models (Sarstedt et al., 2023). PLS was chosen for our study because (i) some items in our data do not follow a normal distribution; (ii) the research model has not been tested before in the literature; (iii) this method is recommended for complex models; (iv) PLS estimation requires a sample size that is ten times the highest number of structural paths directed at any single construct in the model (Chin, 1998, Gefen & Straub, 2005). Accordingly, the tool applied to PLS was SmartPLS 4.0 (Ringle et al., 2024). As proposed by Anderson & Gerbing (1998), our analysis was divided into the validity and reliability of the measurement model and then the assessment of the structural model.

5.1. MEASUREMENT MODEL

Our measurement model only includes reflective indicators for the operationalization of the constructs; therefore, the measurement model must be evaluated on internal consistency, convergent validity, and discriminant validity (Jr. Hair et al., 2016). Internal consistency is ensured by the composite reliability (CR) measure by verifying that all indicators are greater than 0.70, which means that the model has good internal consistency (Hair et al., 2016). In Table 2 the CR values are presented, which are above 0.70. The convergent validity is tested by Average Variance Extracted (AVE). The AVE should be higher than 0.50 so that the latent variables account for more than half of the variance in their indicators, and so convergent validity is ensured (Hair et al., 2011), as we can observe in Table 2.

Table 2 – Composite reliability (CR), Average Variance Extracted (AVE) and Correlation Between Constructs

Construct	CR	AVE	IQ	PERF	SAT	SQ	SRQ	TRU	USE
IQ	0.923	0.668	0.817						
PERF	0.938	0.834	0.589	0.913					
SAT	0.970	0.890	0.722	0.762	0.944				
SQ	0.947	0.782	0.764	0.566	0.740	0.884			
SRQ	0.961	0.862	0.542	0.487	0.570	0.476	0.928		
TRU	0.964	0.871	0.737	0.609	0.774	0.700	0.510	0.933	
USE	0.869	0.690	0.362	0.641	0.595	0.411	0.368	0.477	0.831

Three aspects test the discriminant validity: (i) the Fornell-Larcker criterion; (ii) the cross-loadings; (iii) the Heterotrait-Monotrait (HTMT) ratio. The first criterion is the Fornell-Larcker criterion (Fornell & Larcker, 1981). It declares that the square root of the AVE for each construct is greater than the correlation between constructs, as we can see in Table 3. The

second criterion ensures if the cross-loadings are smaller than the loadings for each indicator (Chin, 1998); the criterion is met as presented in Table 3.

Table 3 – Loadings and Cross-Loadings

Items	IQ	PERF	SQ	SRQ	TRU	SAT	USE
IQ_1	0.845	0.530	0.735	0.405	0.603	0.630	0.333
IQ_2	0.795	0.440	0.654	0.400	0.530	0.554	0.280
IQ_3	0.783	0.416	0.595	0.369	0.555	0.497	0.297
IQ_4	0.831	0.508	0.580	0.497	0.709	0.658	0.296
IQ_5	0.848	0.500	0.593	0.512	0.656	0.582	0.307
IQ_6	0.800	0.485	0.585	0.465	0.544	0.602	0.261
PERF_1	0.553	0.919	0.553	0.415	0.562	0.709	0.539
PERF_2	0.536	0.931	0.494	0.431	0.512	0.654	0.555
PERF_3	0.525	0.890	0.502	0.483	0.589	0.719	0.655
SQ_1	0.617	0.522	0.900	0.415	0.580	0.665	0.416
SQ_2	0.696	0.515	0.887	0.433	0.600	0.631	0.404
SQ_3	0.723	0.463	0.888	0.420	0.655	0.632	0.325
SQ_4	0.668	0.513	0.905	0.421	0.608	0.667	0.347
SQ_5	0.675	0.485	0.839	0.414	0.653	0.674	0.319
SRQ_1	0.502	0.412	0.454	0.913	0.463	0.507	0.342
SRQ_2	0.476	0.424	0.433	0.948	0.417	0.495	0.305
SRQ_3	0.515	0.484	0.438	0.937	0.510	0.555	0.343
SRQ_4	0.516	0.479	0.440	0.915	0.497	0.552	0.370
TR_1	0.685	0.584	0.663	0.475	0.939	0.730	0.447
TR_2	0.681	0.546	0.618	0.487	0.935	0.725	0.437
TR_3	0.674	0.542	0.636	0.476	0.938	0.709	0.449
TR_4	0.709	0.600	0.693	0.466	0.921	0.724	0.446
SAT_1	0.624	0.669	0.608	0.504	0.636	0.885	0.588
SAT_2	0.702	0.750	0.712	0.582	0.768	0.963	0.564
SAT_3	0.692	0.726	0.715	0.527	0.749	0.959	0.545
SAT_4	0.705	0.727	0.752	0.535	0.759	0.965	0.555
USE_1	0.356	0.590	0.404	0.342	0.494	0.598	0.857
USE_2	0.303	0.464	0.317	0.316	0.318	0.381	0.788
USE_3	0.234	0.530	0.289	0.254	0.349	0.474	0.845

Finally, the third criterion is the Heterotrait-Monotrait (HTMT) ratio, and it validates if values are smaller than 0.90 (Henseler et al., 2014). This criterion is met, as shown in Table 4, and thus, discriminant validity is supported.

Table 4 – Heterotrait-to-Monotrait Ratio (HTMT)

Construct	IQ	PERF	SAT	SQ	SRQ	TRU	USE
IQ							
PERF	0.652						
SAT	0.773	0.817					
SQ	0.836	0.617	0.782				
SRQ	0.584	0.523	0.596	0.507			
TRU	0.793	0.655	0.809	0.744	0.535		
USE	0.428	0.755	0.677	0.475	0.424	0.541	

Hence, by demonstrating good indicator reliability, construct reliability, convergent validity, and discriminant validity, we ensure that our measurement model is adequate for our study.

5.2. STRUCTURAL MODEL

As the measurement model was found satisfactory and valid, we continued the examination of the structural model. Considering the R-squares values, our model explains 28% of the variation in the use of neobanking, regarding user satisfaction, the model explains 76.9% of the variation and 64.3% in individual performance. The evaluation of the structural model used 5.000 bootstrap resamples to determine the significance level of the model paths (Henseler et al., 2009). Figure 3 presents the structural model results of our research.

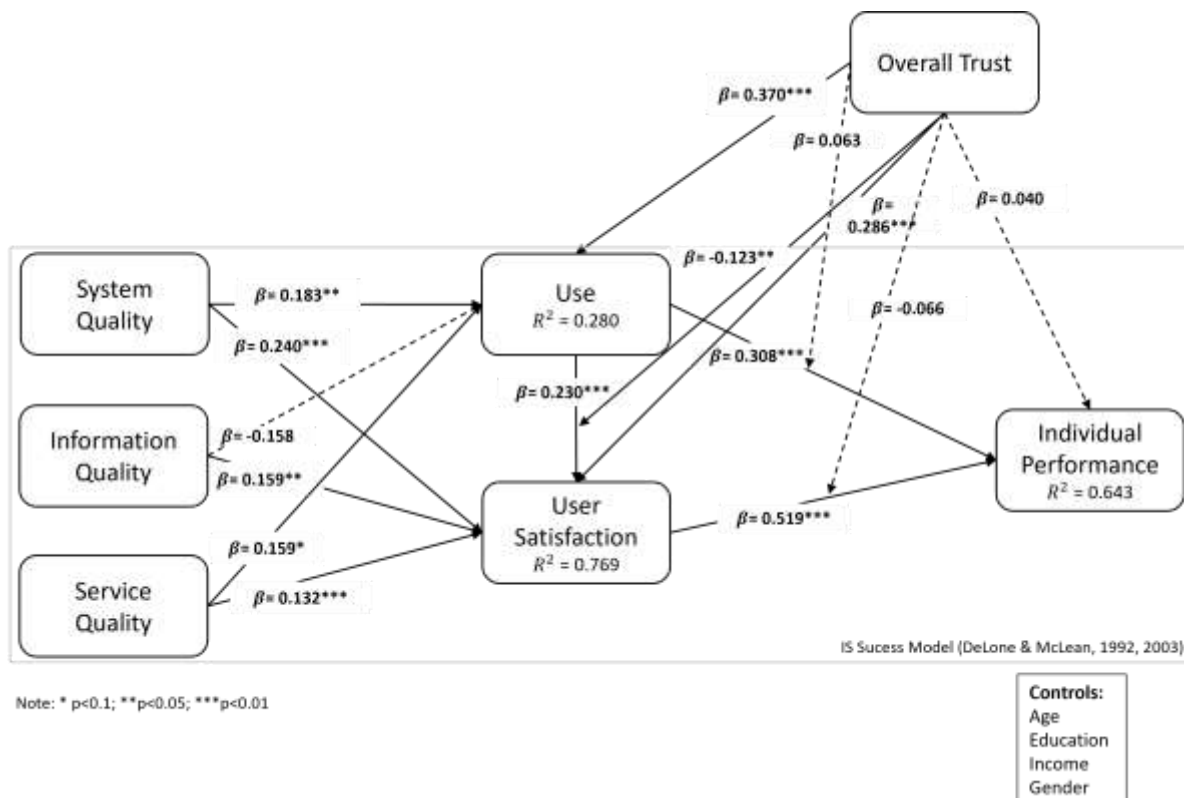


Figure 3 – Structural Model Results

Overall, 11 of our 15 hypotheses were supported (please see Table 5). The system quality ($\hat{\beta} = 0.183$; $p < 0.05$) and service quality ($\hat{\beta} = 0.159$; $p < 0.1$) are found to be statistically significant in explaining use, thus confirming H1a and H3a. However, information quality is not statistically significant in explaining use ($\hat{\beta} = -0.158$; $p > 0.1$), and thus H2a is not confirmed. Also, system quality ($\hat{\beta} = 0.240$; $p < 0.01$), information quality ($\hat{\beta} = 0.159$; $p < 0.05$) and service quality ($\hat{\beta} = 0.132$; $p < 0.01$) explain positively and are statistically significant in explaining user satisfaction, thus confirming H1b, H2b, and H3b. Use is statistically significant in explaining user satisfaction ($\hat{\beta} = 0.230$; $p < 0.01$) so H4 is confirmed. Both use ($\hat{\beta} = 0.308$; $p < 0.01$) as user satisfaction ($\hat{\beta} = 0.519$; $p < 0.01$) are found to be statistically significant in explaining individual performance, thus confirming both H5 and H6.

Table 5 – Structural Model Results

	Hypotheses	Findings ($\hat{\beta}$)	Conclusion
H1a	SQ -> USE	Positive and statistically significant ($\beta^{\wedge}=0.183$; $p<0.05$)	Supported
H1b	SQ -> SAT	Positive and statistically significant ($\beta^{\wedge}=0.240$; $p<0.01$)	Supported
H2a	IQ -> USE	Non-significant effect ($\beta^{\wedge}=-0.158$; $p>0.1$)	Not supported
H2b	IQ -> SAT	Positive and statistically significant ($\beta^{\wedge}=0.159$; $p<0.05$)	Supported
H3a	SRQ -> USE	Positive and statistically significant ($\beta^{\wedge}=0.159$; $p<0.1$)	Supported
H3b	SRQ -> SAT	Positive and statistically significant ($\beta^{\wedge}=0.132$; $p<0.01$)	Supported
H4	USE -> SAT	Positive and statistically significant ($\beta^{\wedge}=0.230$; $p<0.01$)	Supported
H5	USE -> PERF	Positive and statistically significant ($\beta^{\wedge}=0.308$; $p<0.01$)	Supported
H6	SAT -> PERF	Positive and statistically significant ($\beta^{\wedge}=0.519$; $p<0.01$)	Supported
H7a	TRU -> USE	Positive and statistically significant ($\beta^{\wedge}=0.370$; $p<0.01$)	Supported
H7b	TRU -> SAT	Positive and statistically significant ($\beta^{\wedge}=0.286$; $p<0.01$)	Supported
H7c	TRU -> PERF	Non-significant effect ($\beta^{\wedge}=0.040$; $p>0.1$)	Not supported
H7d	TRU x USE -> PERF	Non-significant effect ($\beta^{\wedge}=0.063$; $p>0.1$)	Not supported
H7e	TRU x USE -> SAT	Negative and statistically significant ($\beta^{\wedge}=-0.123$; $p<0.05$)	Supported
H7f	TRU x SAT -> PERF	Non-significant effect ($\beta^{\wedge}=-0.066$; $p>0.1$)	Not supported

Overall trust is found to be positive and statistically significant in explaining use ($\hat{\beta} = 0.370$; $p < 0.01$) and user satisfaction ($\hat{\beta} = 0.286$; $p < 0.01$), thus confirming H7a, H7b. However, it is not statistically significant in explaining individual performance, and thus H7c is not confirmed.

While overall trust is found to be statistically significant in moderating the effect of the use on user satisfaction ($\hat{\beta} = -0.123$; $p < 0.05$), confirming the hypothesis H7e, is not statistically significant in moderating the effect of the use on individual performance ($\hat{\beta} = 0.063$; $p > 0.1$) and is also, not statistically significant in moderating the effect of user satisfaction on individual performance ($\hat{\beta} = -0.066$; $p > 0.1$), thus H7d and H7f are not confirmed. The moderation effect of overall trust in use on user satisfaction can be found in Figure 4. For those who score low on use, those who are high in overall trust will score high in user satisfaction compared with the one who are low in overall trust. Also, those who score high on use and those who are high in overall trust score high in user satisfaction. Those who have the most user satisfaction is those who score high in overall trust and use; followed by those who score low in use but score high in overall trust, then those who score high in use but score low in overall trust, and finally, those who score low in use and in overall trust.

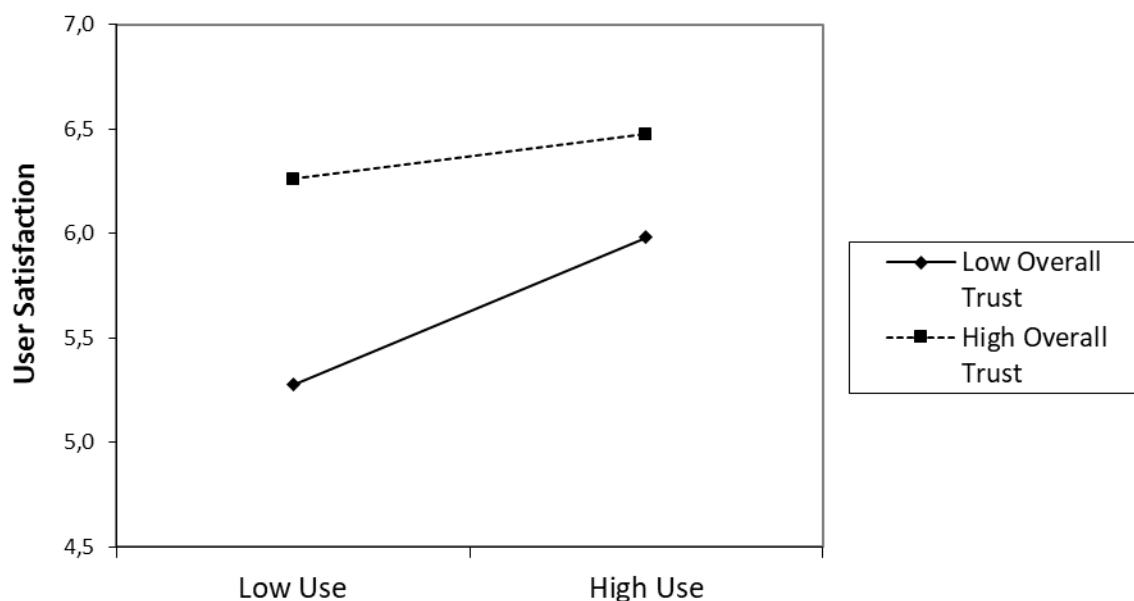


Figure 4 – Moderation effect of overall trust in use on user satisfaction (H7e)

Finally, to understand how our model compared to the base D&M model, we evaluated the theoretical model without the overall trust construct and found that considering the R-squares values, this second model explains 22.6% of the variation in the use of neobanking, regarding user satisfaction, the model explains 71.8% of the variation and 63.7% in individual performance with neobanking.

6. DISCUSSION AND IMPLICATIONS

6.1. DISCUSSION OF FINDINGS

The aim of our study was to ascertain the determinants of individual performance with neobanking combining the D&M IS success model with the dimension of overall trust. Based on the findings, of our 15 hypotheses, 11 were confirmed, and four were not. Accordingly, we can assert that most of the hypothesized relationships were validated.

The use of neobanking in our model is explained by overall trust, followed by system quality and service quality (H1a, H3a, H7a). Besides overall trust being the most important in explaining use, our results also show that information quality is not important for use of neobanking. Thus, users are more concerned with the system quality and service quality than the information quality (H2a). This might be explained by the fact that users' do not access the information produced by the neobank; they are more likely to be involved in the questions about security, response time, ease of use and support that system users receive from the IS department and IT support personnel. The positive effect between system quality and IS use and between service quality and IS use found in our study is comparable with other studies, although it was tested with different technologies (Tam & Oliveira, 2016; Urbach et al., 2010). Although, the lack of effect between information quality and IS use is not consistent with the same studies in the IS field. However, other studies have reported the same result as our research regarding information quality and use in the IS field (Viontita & Mahendrawathi, 2024).

Our research model validates the relationship between user satisfaction with neobanking and overall trust, followed by system quality, use, information quality, and service quality, in that order. We can conclude that user satisfaction is influenced by the combination of the system quality, information quality and service quality, use and overall trust, consequently showing a positive effect (H1b, H2b, H3b, H4, H7b). The relationship between system quality, information quality, and service quality, with user satisfaction has also been verified by other studies regarding other technologies (Hollmann et al., 2013; Tam & Oliveira, 2016). The findings highlight the importance of improving system quality and service quality, as well as their impact on user satisfaction. For instance, when a customer submits a complaint via a call center, and it is resolved within a specified time frame, this can significantly enhance user satisfaction and increase their intention to utilize mobile banking services.

Individual performance is explained by user satisfaction, use, and overall trust. The more satisfaction users have when using neobanking, the greater the performance they may experience (H6). However, using neobanking to manage accounts, make transfers, subscribe to products, and trust neobanking is also important its usefulness in users' lives (H5, H7c). There is evidence to conclude that overall trust moderates the relationship between neobanking use and user satisfaction (H7e). This means that overall trust is the important driver to user satisfaction, as is the moderation effect of overall trust in use on user

satisfaction. User satisfaction comes from high trust and from high use. Trust is found to be important in lowering customers' perceived risks associated with new technologies and innovations, as proved before by other studies in the IS field (Alrawad et al., 2023; L.-W. Wu & Tang, 2022).

6.2. THEORETICAL IMPLICATIONS

This study integrates the D&M model and overall trust to explain the individual performance of neobanking. We found that both use, and user satisfaction are statistically significant on individual performance regarding neobanking services. First, this study enriches the limited knowledge based on individual performance in neobanking area. Moreover, through its focus on individual performance, this study advances future research on the outcomes of processes that are facilitated, enhanced, or made possible using IS. To the best of our knowledge, this is an area where research has not explored much. Second, some constructs play as a moderation effect that could show as important results. This would improve the importance of testing multiple scenarios to reveal additional insights.

Our findings validate prior studies regarding how overall trust influences both use and user satisfaction. We found that overall trust has a direct and positive influence on use and user satisfaction with neobanking. However, overall trust has no effect on individual performance with neobanking. This study enhances our understanding of customer behavior in the context of neobanking services. Individuals with higher levels of overall trust influence the increase of neobanking use and user satisfaction.

The combination of the D&M model and overall trust is not new in the IS literature, Tam et al. (2020) in their research also reported that either IT characteristics, including system quality, information quality, and service quality, play a crucial role in IS success, as do trust perceptions. Our study contributes to enhance that fact once we also found that either those IT characteristics and overall trust influence and enhance positively user satisfaction.

Moreover, we tested our research model without the construct overall trust and found that, when compared with our original combined model, the variation of the use and user satisfaction is lower in the model where we do not have the construct overall trust. That enhance the fact that overall trust is important to explain individuals' use and user satisfaction with neobanking services. This study validate that it is better to combine theories and models to adapt the conceptual models in question. The D&M model is a model that works well, but when we talk about a service or technology such as a bank, trust is fundamental, and the D&M model does not include this component.

Other studies were made in the IS field using the D&M model which also validated the effects between use and user satisfaction, and both with individual performance with other technologies (Franque et al., 2022; Viontita & Mahendrawathi, 2024), making our model valid in neobanking area and showing that 20 years later the D&M model is still a strong model to explain use and user satisfaction in IS field (Tam et al., 2020). Our study also contributes to

show that D&M model can be applied to a variety of IS contexts as it was hypothesized by DeLone & McLean (2003). We anticipate that future researchers investigating individual performance in technology will find this study valuable. The integrated approach in this study could serve as a framework for evaluating factors influencing technology performance.

6.3. PRACTICAL IMPLICATIONS

The research findings of our study provide important practical implications for neobanking managers and decision makers and how they can improve individual performance of neobanking consumers.

Since our results show us that use positively influences user satisfaction, managers should seek, for instance, flexibility, security, and ease of use of the system service to enhance user satisfaction with neobanking.

Our findings also suggest that managers should improve system quality and service quality to ensure both use and user satisfaction. Practical examples of this could be providing a user-friendly, intuitive app and web experience and keeping customers informed about any changes to services by having a transparent fee structure and a customer-friendly approach. While information quality did not show significance in explaining use, managers should remain attentive to the dimension as it can impact user satisfaction. Updating all information that supports the neobanking users could improve the information quality. Inadequate or out-of-date information could affect user satisfaction.

Also, overall trust plays an important role on use and user satisfaction. As said before, overall trust is the combination of three dimensions such as competence, integrity, and benevolence making our study providing a more comprehensive understanding of the concept and its impact on customers intention to use new technologies. Good levels of overall trust led to use. For instance, a service like neobank can build trust among consumers by collaborating with well-known brands or engaging in community service and socially responsible initiatives.

Finally, our results show that both use, and user satisfaction are positively associated with individual performance. By improving the use and user satisfaction through examples presented before will direct impact performance with neobanking. Although, factors need to be considered using a multidimensional approach. This means that managers must be aware that improving only system quality, for instance, might not have an impact on individual performance as they must improve all the dimensions presented together.

Evaluating the impact of neobanking on individual performance is valuable for neobanking managers, as also, to develop successful strategies. It would be adequate for decision-makers to base their action plans on the factors that affect users to retain consumers and attract potential adopters.

6.4. LIMITATIONS AND FUTURE WORK

Some limitations can be found in this study. First, our study was conducted in one European country. Therefore, it would be intriguing to apply the model to a different country and compare it with our study. This study could also be done under different countries that could include larger sample sizes, a variety of ages, and diverse culture, for instance. Second, future research could consider other theories than the ones we used. The theme of our study could be studied by other perspectives, such as perceived risk or even analyzing individuals' personality traits. Third, it is likely that some potentially relevant variables were not included in the model. Therefore, future research should aim to expand the range of variables used. One example that might be relevant and could be included in the study is how many neobanking apps an individual may use. Finally, since we study neobanking in general, analyzing specific platforms of this service could be useful to determine if there are differences in their levels of negativity or positivity.

7. CONCLUSIONS

Technology has transformed the banking industry and enhanced the quality of services, with neobanking serving as a prime example. The present study was developed based on a research model that illuminates how system quality, information quality and service quality can impact individuals' use, user satisfaction and performance with neobanking. Additionally, we proposed that overall trust can play a significant role in these relationships by combining the D&M model and this dimension, a three-dimensional construct composed of competence, integrity and benevolence. Our model was found good to explain 64.3% of variation in individual performance due to neobanking use and user satisfaction and to explain 76.9% of variation in user satisfaction due to neobanking use and overall trust. The findings also highlight the significance of system quality, information quality, service quality, and overall trust in the success of neobanking user satisfaction. Our study can be important in how neobanking managers can gain insights on how to assist consumers by understanding that overall trust plays an important role when using neobanking services. Some limitations were identified, indicating areas for improvement in future research.

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APPDENDIX A

Appendix A – Items

Construct		Item	Support
System Quality (SQ)	SQ1	Neobanking is easy to navigate	(Urbach et al., 2010, Tam and Oliveira, 2016)
	SQ2	Neobanking allows me to easily find the information I am looking for	
	SQ3	Neobanking is well structured	
	SQ4	Neobanking is easy to use	
	SQ5	Neobanking offers appropriate functionality	
Information Quality (IQ)	IQ1	The information provided by neobanking is useful	
	IQ2	The information provided by neobanking is understandable	
	IQ3	The information provided by neobanking is interesting	
	IQ4	The information provided by neobanking is reliable	
	IQ5	The information provided by neobanking is complete	
	IQ6	The information provided by neobanking is up-to-date	
Service Quality (SRQ)	SRQ1	The responsible service personnel are always highly willing to help whenever I need support with the neobanking	
	SRQ2	The responsible service personnel provide personal attention when I experience problems with the neobanking	
	SRQ3	The responsible service personnel provide services related to the neobanking at the promised time	
	SRQ4	The responsible service personnel have sufficient knowledge to answer my questions with respect to the neobanking	
Use (US)	US1	I use a neobank	
	US2	I use neobanking to manage my accounts	
	US3	I use neobanking to make transfers	
	US4	I subscribe to financial products that are exclusive to neobanking	
User Satisfaction (USS)	USS1	I am satisfied that Neobanking meets my knowledge or information processing needs	(Wu & Wang, 2006, Tam and Oliveira, 2016)
	USS2	I am satisfied with Neobanking efficiency	
	USS3	I am satisfied with Neobanking effectiveness	
	USS4	Overall, I am satisfied with Neobanking	
Individual Performance (PERF)	PERF1	Neobanking enables me to accomplish tasks more quickly.	(Urbach et al., 2010, Tam and Oliveira, 2016)
	PERF2	Neobanking makes it easier to accomplish tasks.	
	PERF3	Neobanking is useful in my life.	
Overall Trust (TR)	TR1	I like to trust neobanking	(Palvia, 2009, Tam and Oliveira, 2016, Frank Bivar Franque, Tiago Oliveira, Carlos Tam, 2022)
	TR2	I find neobanking trustworthy	
	TR3	I like the reliability of neobanking	
	TR4	I value the trustworthy characteristics of neobanking	

