



Barriers and motivations of older adults in digital banking adoption: Recent findings, gaps, and future directions

Disele Dizon^{12*}, Ryan Ebardo¹

¹De La Salle University, Manila, Philippines. ²University of St. La Salle, Bacolod, Philippines.

Corresponding author: Gisele Dizon (Email: g.dizon@usls.edu.ph)

Abstract

As digital banking becomes more prevalent, older adults often struggle to adopt these technologies due to age-related limitations. While digital banking offers convenience and accessibility, older adults face distinct barriers that have not been fully explored in prior literature. This study aims to investigate the motivations, challenges, and coping strategies of older adults in adopting digital banking. A systematic literature review was conducted using Scopus and PubMed databases, covering studies from January 2019 to June 2024. The search focused on journal and conference papers written in English that discussed digital banking among older adults. After applying inclusion criteria and removing duplicates, 26 articles were analyzed in full. Four key motivators were identified: convenience, accessibility, social influence, and the desire for independence. In contrast, the most common barriers were technological complexity, privacy and security concerns, physical and cognitive decline, and resistance to change. Older adults were found to cope with these challenges by seeking assistance from family and friends, using accessible technologies, and participating in educational training programs. Findings also show that while digital banking can empower older adults, existing systems often lack age-friendly features. Commonly used theories such as UTAUT and TAM fail to address aging-specific factors, highlighting the need for frameworks like STAM. To promote digital inclusion, banking systems must adopt inclusive design, offer educational support, and consider aging-related needs. Future research should employ mixed methods and culturally diverse perspectives to better support older adults' digital banking adoption.

Keywords: Adoption, Digital banking, Older adults, Systematic literature review.

Funding: This study received no specific financial support.

History: Received: 14 March 2025 / Revised: 15 April 2025 / Accepted: 17 April 2025 / Published: 12 May 2025

Copyright: © 2025 by the authors. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/).

Competing Interests: The authors declare that they have no competing interests.

Publisher: Innovative Research Publishing

DOI: 10.53894/ijirss.v8i3.6929

Authors' Contributions: Both authors contributed equally to the conception and design of the study. Both authors have read and agreed to the published version of the manuscript.

Transparency: The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

1. Introduction

The banking sector has been transformed by digitalization, resulting in notable changes in people's daily routines [1, 2]. The emergence of digital banking has been an important development for both banks and their customers, completely transforming the way these financial organizations operate. It has facilitated wider societal participation in commerce by streamlining transactions, diminishing the necessity for actual bank visits, and providing round-the-clock access to financial services via online platforms and mobile applications. This digital transformation has optimized financial management, enhancing accessibility and user-friendliness for numerous individuals. The convenience and efficiency offered by digital banking have made it a preferred choice for many, significantly reducing the need for physical banking interactions [3]. However, this innovation has also created challenges for older adults, who often exhibit low or no adoption rates of digital banking services. As banks continue to close physical branches and move services to digital platforms, many older adults are left to navigate unfamiliar technologies that test their confidence, digital skills, and trust in managing their personal finances [4].

Older adults represent a growing segment of the population in many countries [5]. It is becoming increasingly important to comprehend the financial needs and habits of this age group as life expectancy increases and the demographic landscape evolves. The adoption of digital technologies by older adults is influenced by various factors, including physical, cognitive, and social aspects. Older adults often face challenges such as decreased vision, hearing, and motor skills, which can hinder their ability to use digital devices effectively [6, 7]. Cognitive decline, including memory loss and slower information processing, further complicates their interaction with technology [8]. Despite these challenges, many older adults are motivated to learn and use digital technologies due to the benefits of maintaining social connections, accessing information, and managing daily tasks independently [9]. Social support from family members, friends, and community programs plays a crucial role in facilitating their digital literacy and confidence [5].

Even though digital banking is becoming more common, there remains a notable gap in the literature regarding how older adults interact with these technologies. Previous studies have highlighted the potential benefits of digital banking for older adults, such as convenience and reduced reliance on physical bank branches [9-11]. However, the literature also indicates that many older individuals are hesitant to adopt digital banking due to technological challenges and identified barriers. Several systematic literature reviews have focused on the use of gerontechnology [12] and general technology [13] among older adults. Indriasari et al. [14] conducted a systematic literature review (SLR) on the challenges, technology, and future research agenda of digital banking. Similarly, Tuli [15] explored the adoption of digital banking in emerging Asian countries through SLR. This study is different from previous reviews as it aims to analyze the motivations, barriers, challenges encountered, and coping strategies, focusing on older adults. Giving particular attention to older adults is crucial due to their unique needs and the demographic trends showing an increasing proportion of older individuals in populations worldwide. As life expectancy increases, older adults are becoming a significant demographic group, necessitating changes across various sectors such as banking. Thus, this SLR seeks to synthesize existing research to provide an extensive understanding of the factors influencing the adoption of digital banking among older adults. The research questions arising from the relevant review are as follows:

RQ1. What motivates older adults to adopt digital banking?

RQ2. What are the identified challenges and barriers reported in the literature regarding the adoption of digital banking?

RQ3. How do older adults cope with the identified barriers and challenges in the adoption of digital banking?

This paper is organized as follows: The research methodology is described in Section 2. The results of the research questions are discussed in Section 3. The key findings are summarized in Section 4. Finally, the limitations of this review and recommendations for future research are discussed in Section 5.

2. Methodology

A comprehensive literature review was conducted using two reputable academic databases: Scopus and PubMed. Scopus has a significant benefit in terms of its extensive publishing coverage. Scopus has an additional advantage of including several types of papers, such as conference proceedings, in addition to articles [16]. On the other hand, PubMed encompasses literature in the field of behavioral sciences, including medical informatics [17]. The selection of these databases was based on their significance and contributions to the fields of aging, gerontechnology, and geriatrics [13]. A search query was performed for each database, with a particular emphasis on the title and abstract. The search was conducted using the following expression: ("banking" OR "app banking" OR "digital banking" OR "web banking" OR "internet banking" OR "electronic banking" OR "e-banking" OR "mobile banking" OR "online banking") AND ("older adults" OR "older adult" OR "older users" OR "seniors" OR "senior" OR "senior citizens" OR "elderlies" OR "elders"). Table 1 illustrates the tests and specific terms employed in the search method. The search in electronic databases was performed on May 10, 2024, and later updated on June 11, 2024.

The search focused on papers published from January 2019 to June 2024 to analyze the current literature. Scopus and PubMed have indexed a wide range of documents, but only journal articles and conference papers have been selected for inclusion.

Database	Search Strategy			
Scopus	("older adults" OR "older adult" OR "older user" OR "older users" OR seniors OR "senior" OR "senior citizen" OR "senior citizens" OR elderlies OR elders) AND (banking OR "app banking" OR "digital banking" OR "web banking" OR "internet banking" OR "electronic banking" OR e-banking OR "mobile banking" OR "online banking") AND PUBYEAR > 2018 AND PUBYEAR < 2025 AND (LIMIT-TO (DOCTYPE, "ar") OR LIMIT-TO (DOCTYPE, "cp")) AND (LIMIT-TO (SRCTYPE, "j") OR LIMIT-TO (SRCTYPE, "p")) AND (LIMIT- TO (LANGUAGE, "english"))			
PubMed	(("digital banking"[All Fields] OR "electronic banking"[All Fields] OR "online banking"[All Fields] OR "mobile banking"[All Fields] AND "older adults"[All Fields] OR "elderly"[All Fields] OR "senior citizens"[All Fields] OR "seniors"[All Fields] AND 2019/01/01:2024/04/30[Date - Publication]))			

 Table 1.

 Search strategy for Scopus and PubMed databases.

This implies that the evaluation did not include papers that are currently being researched, book series, chapters in books, or review papers. By utilizing the predetermined keywords, the search yielded 685 publications in the Scopus database and 41 papers in the PubMed database. Three studies were excluded from the analysis due to their identification as duplicates in both the Scopus and PubMed databases. After using inclusion criteria to refine the findings, the number of articles was reduced to 217, which underwent full text examination. Both authors agreed to include 26 articles in this SLR as shown in Figure 1.



Flowchart of the SLR.

A comprehensive overview of the articles included in this SLR, presenting a clear representation of the research related to the core topic of the study, is presented in Table 2.

Table 2.	
Articles included in the analy	79

Articles included in the analysis.					
Paper ID	Title	Theory	Method	Barriers/ Challenges	Location
P1	Barriers to and Facilitators of Older People's Engagement with Web- Based Services: Qualitative Study of Adults Aged > 75 Years		Qualitative	Digital exclusion, Physical impairments, Privacy and Security Concerns	United Kingdom
P2	Factors Impacting Senior Citizens' Adoption of E-Banking Post- COVID-19 Pandemic: An Empirical Study from India	UTAUT	Quantitative	Perceived risk and anxiety, Technological literacy and comfort, Cultural and Social Influences	India
P3	A posteriori segmentation of elderly Internet users: applying PLS-POS	UTAUT	Quantitative	Psychographic Diversity, Generational Perception	Spain
P4	An adoption of social banking among the aging population	UTAUT	Quantitative	Education Level, Savings Level, Understanding of Online Banking	Thailand
P5	Factors Affecting the Intention to Use Digital Banking Services: A Case Study of Elderly Customers in Vietnam	ТАМ	Quantitative	Perceived Risks, Technology Use, Social Influence, Adaptation to Technological Advancements	Vietnam
P6	Mobile banking affordances and constraints for the elderly	Affordance Theory	Qualitative	Technological and Non-Technological Constraints	Mexico
P7	Empowering Autonomous Digital Learning for Older Adults		Mixed Methods	Technological Complexity, Security Concerns	China
P8	Privacy and Data Security in Everyday Online Services for Older Adults		Qualitative	Complexity of Data Security Practices, Understanding and Managing Privacy Settings	Norway
Р9	"I used to carry a wallet; now I just need to carry my phone": Understanding current banking practices and challenges among older adults in China		Qualitative	Technological Complexity, Security Concerns, Design Inclusivity	China
P10	Revisiting the expectation- confirmation model to measure the effectiveness of multichannel banking services for elderly consumers	Expectation Confirmation Model, Hedonic Adaptation Theory	Quantitative	Cognitive Decline, Technostress	India
P11	Too old to bank digitally? A Survey of Banking Practices and Challenges among Older Adults in China		Quantitative	Technological Complexity and Usability Issues, Physical and Cognitive Limitations, Cultural and Behavioral Resistance	China

P12	Not all elderly people are the same: fostering trust through the mobile banking service experience		Quantitative	Technological Challenges, Perceived Risk, Age-	Canada
P13	"But at the age of 85? Forget it!": Internalized ageism, a barrier to technology use	Stereotype Embodiment Theory	Qualitative	Internalized Ageism, Self-Perceptions of Aging, Technology Design	Austria
P14	Baby Boomers' intention to use branch or digital banking channels in South Africa: An exploratory study	TAM, UTAUT, TPB	Quantitative	Trust Issues, Technological Complexity, Resistance to Change	South Africa
P15	Latent segmentation of older adults in the use of social networks and e- banking services		Quantitative	Technology Anxiety, Willingness to Try New Technology	Spain
P16	A study on the dynamics and challenges of traditional banking and e-banking services among senior citizens in Bangalore city		Quantitative	Technological Literacy, Physical Limitations, Security Concerns	India
P17	Designing an age-friendly conversational AI agent for mobile banking: the effects of voice modality and lip movement		Quantitative	Trust Issues and Security Concerns, Low Competence in Using Technology, Cognitive and Physical Decline	South Korea
P18	Unofficial Proxies: How Close Others Help Older Adults with Banking		Quantitative	Privacy and Security Concerns, Technological Challenges	Canada
P19	The role of cognitive age in explaining mobile banking resistance among elderly people	Innovation Resistance Model	Quantitative	Psychological and Functional challenges, Cognitive Age-related Differences	France
P20	Financial inclusion of the elderly: Exploring the role of mobile banking adoption	Actor Network Theory	Qualitative	Lack of Understanding and Awareness, Security Concerns, Complexity of Mobile Banking Apps, Resistance to Change	South Africa
P21	Predicting Older Adults' Mobile Payment Adoption: An Extended TAM Model	ТАМ	Quantitative	Complexity of Technology, Privacy and Security Concerns, Resistance to Change	Taiwan
P22	Individual and shared digital repertoires – older adults managing digital services	Uses and Gratification Theory	Qualitative	Complexity of Technology, Security Concerns	Finland
P23	Can skeuomorphic design provide a better online banking user experience for older adults?		Qualitative	Usability Issues, Physical and Cognitive limitations, Resistance to change	United Kingdom
P24	Self-efficacy and anxiety as determinants of older adults' use of Internet Banking Services	Social Cognitive Theory	Quantitative	Technological Anxiety, Security Concerns	Spain
P25	Together we turn Uncertainty into Action: Understanding the Role of Artificial Intelligence in Supporting		Qualitative	Complexity of Technology, Privacy concerns	South Korea

	the Financial Concerns of Older Adults				
P26	The Antecedents of Mobile Banking Adoption among Senior Citizens in Malaysia	UTAUT	Quantitative	Adapting to technological change	Malaysia

3. Results

This section presents the results of the systematic review, which includes geographical diversity, methodological choices, theoretical frameworks used, and is based on research questions.

3.1 Geographical Diversity

The studies were conducted across a variety of locations, illustrating diverse cultural and economic impacts on the adoption of digital banking by older adults. From Asia, with countries like India [3, 18, 19], China [6, 20, 21], Taiwan [22] and South Korea [23, 24], focusing on integrating traditional banking habits with rapid digital transformation, to Europe where nations such as Spain [25-27], The United Kingdom [11, 28], Finland [29], France [30] and Austria [8]. Examines the interaction between aging populations and digital banking in the context of varying social policies and technological familiarity. In North America, Canadian studies [31, 32], emphasizes accessibility and inclusivity for a multicultural aging population. African studies, particularly in South Africa [12, 33], explore digital banking as a means for financial inclusion in regions with limited traditional banking infrastructure. Finally, in Latin America, Mexican research [9], addresses the specific needs and barriers faced by the elderly in adopting mobile banking technologies. It is worth noting that the number of research studies on Southeast Asian countries is scant.

3.2. Methodological Choices

The choice of method often reflects the specific research question and the depth of information required. This SLR comprised of sixteen quantitative studies Jena [3], Jin et al. [6], Kraiwanit and Tulathananun [10], Sinha and Singh [18], Lakshman and Sulaiman [19]; Yang et al. [22]; Kim and Song [23]; Villarejo-Ramos [25]; Arenas-Gaitán, et al. [26]; Peral-Peral et al. [27], Chaouali and Souiden [30], Rajaobelina et al. [31], Latulipe et al. [32], Ramlall, et al. [33], Thanh [34], Andalib Touchaei and Hazarina Hashim [35] nine qualitative studies Köttl et al. [8], Castillo-Villar and Castillo-Villar [9], Ellis and Marshall [11], Msweli and Mawela [12], Jin and Fan [21], Choi et al. [24], Money et al. [28], Hänninen et al. [29], Ellefsen and Chen [36] and one mixed methods study [20]. Therefore, it is significant to recognize that there is a need to investigate the factors that lead to the adoption of digital banking among older adults using mixed methods.

3.3. Theoretical Frameworks Used

Based on the SLR, most studies employed the Unified Theory of Acceptance and Use of Technology (UTAUT), appearing in five articles [3, 10, 26, 33, 35]. The Technology Acceptance Model (TAM) was cited in three articles [22, 33, 34]. Moreover, the Innovation Resistance Model was referenced by one article [30]. Other theories, including Affordance Theory [9], Hedonic Adaptation Theory [18], Stereotype Embodiment Theory [8], Actor Network Theory [12], Uses and Gratification Theory [29] and Social Cognitive Theory [27] were mentioned individually in a single article. The twelve studies investigated do not imply a specific theoretical framework employed in their studies. It is noteworthy that the theories used in the current literature are too general and do not consider the aging factors that affect the adoption of digital banking.

3.4. Result of RQ1. What Motivates Older Adults to Adopt Digital Banking?

This paper presents an investigation of the factors that motivate older adults to adopt digital banking. Based on the analysis of 26 papers, several common factors emerge that motivate older adults in the use or adoption of digital banking. These factors include convenience, accessibility, social influence, and a desire for independence.

3.4.1. Convenience

The first identified factor deals with the effect of user experience and the practical daily use of banking services by older adults. Convenience refers to the ease with which older adults can manage their financial transactions without physical constraints. Convenience was discovered to be one of the enablers that motivate elderly consumers to adopt and use mobile banking [12]. While several studies highlight convenience as a key motivator in the adoption of online banking, emphasizing the elimination of the need to travel to physical banks [10, 11, 29].

Digital banking allows users to access banking services such as checking balances, transferring money, paying bills, and depositing checks without needing to visit a bank branch [3, 6, 33, 34]. This aspect is particularly beneficial for those who may face challenges with mobility or who live in areas where access to physical bank branches is limited. Digital platforms and services can facilitate a more autonomous and convenient learning and usage environment for older adults [21, 28, 29]. Enhancing their ability to manage their finances independently [9, 20, 24].

3.4.2. Accessibility

Accessibility involves the user-friendliness of digital banking interfaces, which include clear navigation, readable text, and intuitive design tailored to the needs of older users. Features like voice recognition and simplified menu options can significantly enhance the accessibility of banking services, making them more approachable for users who may not be tech-savvy [23, 29]. Moreover, the design of online banking services has a substantial impact on their accessibility. Easy access and user-friendly interfaces contribute to the satisfaction and continued use of digital banking by older adults [3, 6, 34]. When older adults find digital banking services easy to access and use, their overall satisfaction increases, motivating continued use [18, 19, 26].

3.4.3. Social Influence

Social influence is facilitated by factors such as subjective norms, social norms, and social identities [25, 26, 34]. The social influences of the closest environment enhance self-efficacy and alleviate anxiety through the provision of assistance, guidance, and support from family members and friends [27]. Older adults often rely on the endorsements and recommendations of their immediate social circles when deciding whether to adopt new technologies such as digital banking [3, 21]. Older adults are more inclined to use and embrace digital banking when they observe their peers effectively using it, thereby fostering a collective learning process that benefits all participants [25, 32, 35]. Moreover, the decision to adopt digital banking is significantly influenced by friends, family, and peers [12, 21, 33].

3.4.2. Desire for Independence

This factor emphasizes the crucial role of empowering older adults to adopt digital banking by boosting their self-efficacy and self-confidence, thereby fostering greater independence. Controlling finances and making their own decisions is essential for older adults [24]. Older adults with high self-efficacy are more likely to believe that they can learn and use digital banking effectively, which directly supports their independence by reducing reliance on others for financial management. The article by Jin [20] underscores the role of educational programs in enhancing digital literacy among older adults, boosting their self-efficacy and confidence to use digital banking tools independently. Kim and Song [23] explore how user-friendly design features, such as conversational AI agents that utilize voice and visual cues, can enhance older adults' confidence in using digital banking services. Additionally, by making the technology more accessible and easier to interact with, these design innovations help older adults feel more secure in their ability to engage with digital banking platforms without external assistance.

Jena [3] and Lakshman and Sulaiman [19] highlight how digital banking empowers older adults to manage their financial transactions independently, a key aspect of maintaining their autonomy as they age. This is particularly important for those who face mobility or health challenges that might otherwise limit their access to traditional banking services. In addition, Jin et al. [6] discuss the role of digital banking in fostering financial independence among older adults, allowing them to remain active participants in managing their finances despite physical limitations.

3.5. Results of RQ2. What are the Identified Challenges and Barriers Reported in the Literature on the Adoption of Digital Banking?

Based on the comprehensive review of 26 papers included in the analysis, the most common barriers and challenges to digital banking adoption among older adults were identified. These barriers and challenges include technological complexity, security and privacy concerns, physical and cognitive decline, and resistance to change.

3.5.1. Technological Complexity

Technological complexity is a prevalent barrier discussed in various studies Jena [3]; Jin, et al. [6]; Kraiwanit and Tulathananun [10]; Sinha and Singh [18]; Lakshman and Sulaiman [19]; Yang, et al. [22]; Kim and Song [23]; Villarejo-Ramos [25]; Arenas-Gaitán, et al. [26]; Peral-Peral, et al. [27]; Chaouali and Souiden [30]; Rajaobelina, et al. [31]; Latulipe, et al. [32]; Ramlall, et al. [33]; Thanh [34]; Andalib Touchaei and Hazarina Hashim [35]. These studies emphasize the difficulty that older adults encounter while trying to use complicated digital interfaces, which can discourage them from using digital banking. Difficulties such as interfaces that are not user-friendly, high cognitive demands, and the need to constantly adjust to new features provide obstacles for older adults in efficiently using digital platforms [29]. Difficult interfaces with small writing and complex navigation discourage older adults from adopting digital banking [6, 8, 21].

The cognitive load required to use digital banking systems, which is made more complicated by the need to adapt to frequent updates and new technologies, can be overwhelming for older adults. Kim and Song [23] explored how conversational AI can simplify interactions and make digital banking more accessible. Moreover, Jin [20] points out that the technological complexity of digital tools can be a significant barrier, indicating the need for training and support to improve digital literacy among older adults. These technological difficulties often require assistance from others [32].

3.5.2. Security and Privacy Concerns

Security and privacy concerns significantly hinder the adoption of digital banking by older adults, who often express heightened apprehension about the safety of online transactions and the security of their financial information [21, 22, 30]. Security and privacy concerns may include scams, fraud, identity theft, and having personal information stolen or misused [28]. Numerous factors that meet their distinct demands and preferences influence older people's adoption of digital

banking. The impact of concerns about security and privacy on the willingness of older adults to engage with digital banking emphasizes the need for educational programs that enhance understanding of digital security practices [20]. Similarly, Ellefsen and Chen [36] highlight the difficulties older adults encounter in managing privacy settings and understanding how their data is protected, which can deter them from using online banking services. Furthermore, security and privacy concerns often lead older adults to rely on others to perform online banking tasks, indicating a lack of trust and confidence in the security measures of digital platforms [32].

3.5.3. Physical and Cognitive Decline

The challenge of physical decline is particularly pertinent as it directly impacts the ability of older adults to interact with digital platforms. The presence of visual, auditory, and motor impairments poses difficulties in utilizing conventional banking interfaces, as they are typically not tailored to accommodate these specific constraints. Such issues can hinder the legibility of small writing on screens, the ability to perceive voice instructions, and the accuracy of using touch-based interfaces. Reduced physical agility and tremors might also create difficulties in executing precise movements, such as touching small buttons on a smartphone screen Kim and Song [23]. Jin [20] explores how age-related declines necessitate banking interfaces that are accessible and easy to use, emphasizing adaptations like voice navigation or larger text. Castillo-Villar and Castillo-Villar [9] further support this by illustrating how non-technological constraints, such as physical impairments, hinder older adults' engagement with mobile banking.

The cognitive decline, which includes diminished memory, slowed cognitive processing, and challenges in problemsolving, has a substantial effect on the capacity of elderly individuals to use digital banking services [8]. The cognitive impairments hinder the ability to recall passwords, comprehend intricate transaction processes, or navigate through many banking choices [6]. Moreover, Sinha and Singh [18] note that older adults experience a deterioration in cognitive ability, memory, and vision, which impairs their capacity to consistently carry out financial transactions on their mobile devices or through internet platforms. Similarly, older adults are concerned about forgetting the steps to complete bank transactions, not being able to remember how to use many functions at the same time, and forgetting passwords [21].

3.5.4. Resistance to Change

Older adults tend to be resistant to change and hesitant to embrace technological advancements [35]. The hesitancy of older adults to transition to digital banking is emphasized by their lack of trust in their ability to effectively use these new innovations without making costly mistakes. This anxiety is frequently worsened by the evident complexity of digital interfaces and the apprehension of losing the personal connection offered by traditional bank visits. Such issues are highlighted in studies of Ramlall et al. [33], which discuss how baby boomers show a marked preference for in-person interactions at banks. Similarly, Jin et al. [6] and Köttl, et al. [8] underscore that cultural norms and established banking habits significantly influence older adults' preference for traditional banking methods over digital solutions. Further, older adults tend to exhibit cultural and behavioral resistance towards embracing new technology, as they often favor the familiarity and perceived dependability of traditional banking systems over the seemingly impersonal nature of digital transactions [30].

3.5.5. Result of RQ3. How do older adults cope with the identified barriers and challenges in adopting digital banking?

Older adults employ several strategies to cope with the identified barriers and challenges in the use of digital banking. These strategies include seeking assistance from family and friends, using simplified and accessible technologies, and participating in educational training and workshops.

3.5.6. Seeking Assistance from Family and Friends

Social and peer support significantly enhances the adoption of digital banking among older adults, acting as a critical bridge between unfamiliar technology and its potential users. This support, which can come from peers, family members, or community groups, provides not only practical assistance but also emotional encouragement and reinforcement [34]. As emphasized by Jin et al. [6] and Köttl et al. [8], older adults rely on assistance from younger family members to navigate digital banking. This intergenerational support helps them understand how to use digital platforms and provides them with the confidence to perform online transactions. Similarly, Castillo-Villar and Castillo-Villar [9] noted that the support of older adults' family and closest friends was crucial in adopting and becoming competent in using mobile banking. Regarding family, older adults pointed out that seeking assistance was also beneficial in terms of fostering connections with younger family members, as it provided them with a shared topic to engage in conversation.

3.5.7. Using Simplified and Accessible Technologies

Technologies designed with older adults in mind can significantly ease their transition to digital banking. Features like larger text, simplified interfaces, and voice-activated commands can help mitigate physical and cognitive barriers [34]. The effectiveness of using design elements that mimic the physical world, which can be more familiar to older users, thereby reducing cognitive load, was highlighted by Ellis and Marshall [11]. Furthermore, Kim and Song [23] illustrate how conversational AI helped older persons use digital banking. These AI agents use advanced voice recognition technologies that are sensitive to elderly vocal patterns and speech limitations to address age-related cognitive and physical impairments. Natural language processing minimizes cognitive burden, making digital navigation easier and more intuitive. The design

principles emphasize clarity, ease of use, and step-by-step guidance to boost user confidence. Choi et al. [24] stressed that the participants expressed a desire to use AI to increase their confidence in making financial decisions. Older adults emphasized the significance of independently determining the financial information they wish to receive while relying on AI to provide it.

3.5.8. Participating In Educational Trainings and Workshops

Participation in community-based training programs is a common strategy. These programs offer hands-on training and tailored guidance, helping older adults develop the necessary skills to use digital banking services. Moreover, Kraiwanit and Tulathananun [10] highlight the role of community-based workshops and peer learning in encouraging older adults to adopt digital banking. It discusses how seeing peers successfully use digital banking can significantly motivate other older adults to participate in similar educational efforts and adopt these technologies themselves. Jin [20] elaborates on specialized educational programs designed to assist older adults in mastering digital technologies. Initiatives such as workshops and training sessions help older adults in the use of digital banking services, directly addressing technological literacy and comfort [3].

4. Discussion

The current literature demonstrates a noteworthy endeavor by researchers to investigate the factors influencing the usage of digital banking among older adults. This investigation plays an important role in promoting the use of digital banking among this demographic, informing policy decisions, and ultimately facilitating the implementation of technology-based solutions for the aging population.

4.1. Motivations for the Adoption of Digital Banking

The analysis of the motivations for older adults to adopt digital banking, as obtained from the SLR of 26 studies, emphasizes four key factors: convenience, accessibility, social influence, and a desire for independence. Convenience is a primary motivator. Older adults value the ability to conduct financial transactions without the physical limitations associated with traditional banking [12]. This is particularly beneficial for those with mobility issues or those residing in areas far from bank branches. Studies have consistently shown that the convenience of digital banking platforms, which allow for checking balances, transferring funds, and paying bills online, significantly contributes to their adoption among older adults [33].

Accessibility of digital banking platforms, characterized by user-friendly interfaces with clear navigation and readable text, enhances their usability for older adults. The integration of features like voice recognition and simplified menu options further facilitates ease of use, making these platforms accessible even to those who are not tech-savvy [29]. Moreover, social influence plays a critical role as well. The support from family and friends, along with the endorsement of digital banking by peers, significantly influences older adults' decisions to adopt these technologies [3]. This support not only alleviates anxiety but also boosts self-efficacy, making older adults more comfortable and confident in using digital banking services [35].

Finally, the desire for independence demonstrates the importance of empowering older adults to manage their finances autonomously. Digital banking enables older adults to maintain control over their financial decisions and actions, which is crucial for their sense of independence and self-worth [24]. This empowerment is facilitated by educational programs that enhance digital literacy and confidence in using digital banking tools [19].

4.2. Barriers and Challenges to the Adoption of Digital Banking

The literature identifies several barriers hindering older adults from adopting digital banking, with technological complexity and security concerns being predominant. Older adults struggle with complex digital interfaces that have high cognitive demands and frequent updates, which discourage their use [21]. The presence of security and privacy concerns, such as fears of fraud and misuse of personal information, also significantly impacts their willingness to engage with digital platforms [28]. Educational programs enhancing digital literacy could mitigate these concerns by educating older adults about safe online practices and the robust security measures protecting their information [20].

Physical and cognitive declines further complicate the use of digital banking for older adults, as these declines impair their ability to interact with standard banking interfaces that are not designed for their specific needs [23]. Additionally, a resistance to change is evident among older adults who prefer traditional banking methods due to their familiarity and personal interaction. This resistance could be lessened by integrating traditional elements into digital banking platforms and emphasizing the reliability and benefits of digital methods, thus easing the transition for older adults and encouraging them to embrace technological advancements in banking [33].

4.2. Coping Strategies Employed by Older Adults

Older adults adopt various strategies to overcome the challenges associated with digital banking, largely focusing on social support, technological simplification, and educational efforts. Family and community support play a crucial role, as older adults often rely on younger family members and friends for guidance and confidence in navigating digital platforms. This intergenerational assistance not only helps them understand and use these technologies but also strengthens family bonds through shared activities [34]. Furthermore, adopting user-friendly technology tailored for older adults, such as larger text and voice-activated commands, significantly eases their transition. Technologies like conversational AI are particularly effective as they accommodate the physical and cognitive limitations of older users, thereby enhancing their digital banking experience [24].

Educational initiatives and community workshops play an essential role in supporting the adoption of digital banking among older adults. These initiatives provide practical training and peer learning opportunities, which are instrumental in building technological literacy and confidence among older adults. Seeing their peers successfully use digital banking platforms motivates them to engage more actively and overcome their apprehensions about technology. Such educational interventions are specifically designed to address the unique needs of older adults, making digital banking more accessible and reducing the anxiety associated with new technologies [20].

5. Conclusion

The adoption of digital banking among older adults presents both significant opportunities and notable challenges. Because of this innovation, people are able to take part in digital commerce. However, it also hinders older adults from engaging in digital commerce activities. The literature review reveals that while digital banking offers substantial benefits such as convenience, accessibility, social influence, and the desire for independence, older adults face considerable barriers and challenges including technological complexity, security and privacy concerns, physical and cognitive limitations, and resistance to change. To overcome these challenges, strategies such as social support, simplified technology interfaces, and educational initiatives are critical. Intergenerational assistance and community-based training programs are particularly effective in enhancing digital literacy and confidence among older adults. Addressing these barriers through inclusive design and targeted interventions can promote greater financial inclusion and independence for older adults, ensuring they can fully benefit from digital banking services [23]. Continued research and practical initiatives are crucial for narrowing the digital divide and empowering older adults in the evolving financial environment.

Nevertheless, we recognize that our review has some limitations. First, we acknowledge that since this study was limited to publications and conference papers in the English language, there remains a possibility of missing other relevant studies and insights in some languages. In addition, the list of scholarly work was sourced exclusively from Scopus and PubMed databases, limiting the articles included in the review.

Further investigation should prioritize the development of a deeper understanding of the complex interactions and needs of older adults with regard to digital banking. One critical area for future studies is the exploration of personalized training programs that cater to varying levels of technological proficiency among older adults. Research should also investigate the long-term effects of such educational interventions on digital banking adoption and usage patterns. Additionally, it is necessary to examine the factors that influence older adults to adopt digital banking using a specific technology adoption model since theories employed in the current literature are too general. It is recommended to use a theory that considers the physical, psychological, and social characteristics associated with aging, as well as technological influences in adopting new technologies. Factors such as gerontechnology anxiety and age-related health conditions present in STAM may influence the adoption of digital banking among older adults. Paul, et al. [37] posit that these factors that lead to the adoption of digital banking among older adults using mixed methods. This approach enables the extraction of diverse and perhaps contradictory findings from both qualitative and quantitative inferences [38].

Furthermore, studies should consider the socio-cultural factors influencing digital banking adoption in different regions, taking into account the limited number of research studies on Southeast Asian countries in the current literature. Finally, interdisciplinary research that integrates insights from gerontology, psychology, and technology design can offer comprehensive strategies to address the complex challenges faced by older adults in the digital banking sector.

References

- [1] R. Singhal, S. Sharma, M. Garg, and R. Bhateja, "Banking digitalisation: An analysis of literature using bibliometric analysis," *Academy of Marketing Studies Journal*, vol. 28, no. 2, 2024.
- [2] T. E. Sebayang, D. B. Hakim, T. Bakhtiar, and D. Indrawan, "What accelerates the choice of mobile banking for digital banks in Indonesia?," *Journal of Risk and Financial Management*, vol. 17, no. 1, p. 6, 2023. https://doi.org/10.3390/jrfm17010006
- [3] R. Jena, "Factors impacting senior citizens' adoption of e-banking post COVID-19 pandemic: An empirical study from India," *Journal of Risk and Financial Management*, vol. 16, no. 9, p. 380, 2023. https://doi.org/10.3390/jrfm16090380
- [4] N. T. Msweli and T. Mawela, "Enablers and barriers for mobile commerce and banking services among the elderly in developing countries: a systematic review," in *Responsible Design, Implementation and Use of Information and Communication Technology: 19th IFIP WG 6.11 Conference on e-Business, e-Services, and e-Society, I3E 2020, Skukuza, South Africa, April 6–8, 2020, Proceedings, Part II 19, 2020: Springer, pp. 319-330.*
- [5] Y.-Y. Yap, S.-H. Tan, and S.-W. Choon, "Elderly's intention to use technologies: a systematic literature review," *Heliyon*, vol. 8, no. 1, 2022. https://doi.org/10.1016/j.heliyon.2022.e08765
- [6] X. Jin, E. Kuang, and M. Fan, "Too old to bank digitally? A survey of banking practices and challenges among older adults in China," in DIS," in Proceedings of the 2021 ACM Designing Interactive Systems Conference: Nowhere and Everywhere, Association for Computing Machinery, Inc, Jun. 2021, pp. 802–814. https://doi.org/10.1145/3461778.3462127, 2021.
- [7] G. Wilson, J. R. Gates, S. Vijaykumar, and D. J. Morgan, "Understanding older adults' use of social technology and the factors influencing use," *Ageing & Society*, vol. 43, no. 1, pp. 222-245, 2023. https://doi.org/10.1017/S0144686X21000490
- [8] H. Köttl, V. Gallistl, R. Rohner, and L. Ayalon, ""But at the age of 85? Forget it!": Internalized ageism, a barrier to technology use," *Journal of aging studies*, vol. 59, p. 100971, 2021. https://doi.org/10.1016/j.jaging.2021.100971
- [9] F. R. Castillo-Villar and R. G. Castillo-Villar, "Mobile banking affordances and constraints by the elderly," *Marketing Intelligence & Planning*, vol. 41, no. 1, pp. 124-137, 2023. https://doi.org/10.1108/MIP-01-2022-0045
- [10] T. Kraiwanit and W. Tulathananun, "An adoption of social banking among the ageing population," *Corporate Governance and Organizational Behavior Review*, vol. 5, no. 2, pp. 99-108, 2021. https://doi.org/10.22495/cgobrv5i2p10

- [11] A. Ellis and M. T. Marshall, "Can skeuomorphic design provide a better online banking user experience for older adults?," *Multimodal Technologies and Interaction*, vol. 3, no. 3, p. 63, 2019. https://doi.org/10.3390/mti3030063
- [12] N. T. Msweli and T. Mawela, "Financial inclusion of the elderly: exploring the role of mobile banking adoption," *Acta Informatica Pragensia*, vol. 10, no. 1, pp. 1-21, 2021. https://doi.org/10.18267/J.AIP.143
- [13] G. Huang and S. A. Oteng, "Gerontechnology for better elderly care and life quality: a systematic literature review," *European Journal of Ageing*, vol. 20, no. 1, p. 27, 2023. https://doi.org/10.1007/s10433-023-00776-9
- [14] E. Indriasari, H. Prabowo, F. L. Gaol, and B. Purwandari, "Digital banking: Challenges, emerging technology trends, and future research agenda," *International Journal of E-Business Research*, vol. 18, no. 1, pp. 1-20, 2022. https://doi.org/10.4018/ijebr.309398
- [15] E. Tuli, "Exploring digital banking adoption in developing Asian economies: Systematic literature review and bibliometric analysis," *International Social Science Journal*, vol. 74, no. 252, pp. 399-426, 2024. https://doi.org/10.1111/issj.12463
- [16] S. Echchakoui, "Why and how to merge Scopus and Web of Science during bibliometric analysis: the case of sales force literature from 1912 to 2019," *Journal of Marketing Analytics*, vol. 8, no. 3, pp. 165-184, 2020. https://doi.org/10.1057/s41270-020-00081-9
- [17] D. Y. L. Chan, S. W. H. Lee, and P.-L. Teh, "Factors influencing technology use among low-income older adults: A systematic review," *Heliyon*, vol. 9, no. 9, 2023. https://doi.org/10.1016/j.heliyon.2023.e20111
- [18] N. Sinha and N. Singh, "Revisiting expectation confirmation model to measure the effectiveness of multichannel bank services for elderly consumers," *International Journal of Emerging Markets*, vol. 18, no. 10, pp. 4457-4480, 2023. https://doi.org/10.1108/IJOEM-03-2021-0361
- [19] K. Lakshman and N. Sulaiman, "A study on dynamics and challenges on traditional banking and E-banking services among senior citizen's at Bangalore city," *International Journal of Advanced Trends in Computer Science and Engineering*, vol. 8, no. 3, pp. 931–935, 2019. https://doi.org/10.30534/ijatcse/2019/91832019
- [20] X. Jin, "Empowering autonomous digital learning for older adults," presented at the In Extended Abstracts of the CHI Conference on Human Factors in Computing Systems (pp. 1-6), 2024.
- [21] X. Jin and M. Fan, "I used to carry a wallet, now i just need to carry my phone": Understanding current banking practices and challenges among older adults in China," in *In Proceedings of the 24th International ACM SIGACCESS Conference on Computers and Accessibility (pp. 1-16)*, 2022.
- [22] C.-C. Yang, S.-Y. Yang, and Y.-C. Chang, "Predicting older adults' mobile payment adoption: An extended TAM model," *International Journal of Environmental Research and Public Health*, vol. 20, no. 2, p. 1391, 2023. https://doi.org/10.3390/ijerph20021391
- [23] D. Kim and H. Song, "Designing an age-friendly conversational AI agent for mobile banking: The effects of voice modality and lip movement," *International Journal of Human-Computer Studies*, vol. 187, p. 103262, 2024. https://doi.org/10.1016/j.ijhcs.2024.103262
- [24] Y. Choi, D. Choi, and H. Hong, "Together we turn uncertainty into action: Understanding the role of artificial intelligence in supporting the financial concerns of older adults," in *Proceedings of the ACM Conference on Computer Supported Cooperative Work, CSCW, Association for Computing Machinery, Oct. 2023, pp. 132–137. https://doi.org/10.1145/3584931.3607018, 2023.*
- [25] Á. F. Villarejo-Ramos, "Latent segmentation of older adults in the use of social networks and e-banking services Begoña Peral-Peral Universidad de Sevilla," Retrieved: https://www.researchgate.net/publication/337992205, 2019.
- [26] J. Arenas-Gaitán, A. F. Villarejo Ramos, and B. Peral-Peral, "A posteriori segmentation of elderly internet users: applying PLS-POS," *Marketing Intelligence & Planning*, vol. 38, no. 3, pp. 340-353, 2020. https://doi.org/10.1108/MIP-01-2019-0057
- [27] B. Peral-Peral, Á. F. Villarejo-Ramos, and J. Arenas-Gaitán, "Self-efficacy and anxiety as determinants of older adults' use of Internet Banking Services," *Universal Access in the Information Society*, vol. 19, no. 4, pp. 825-840, 2020.
- [28] A. Money, A. Hall, D. Harris, C. Eost-Telling, J. McDermott, and C. Todd, "Barriers to and facilitators of older people's engagement with web-based services: Qualitative study of adults aged> 75 years," *JMIR Aging*, vol. 7, p. e46522, 2024. https://doi.org/10.2196/46522
- [29] R. Hänninen, L. Pajula, V. Korpela, and S. Taipale, "Individual and shared digital repertoires-older adults managing digital services," *Information, Communication & Society*, vol. 26, no. 3, pp. 568-583, 2023. https://doi.org/10.1080/1369118X.2021.1954976
- [30] W. Chaouali and N. Souiden, "The role of cognitive age in explaining mobile banking resistance among elderly people," *Journal of Retailing and Consumer Services*, vol. 50, pp. 342-350, 2019. https://doi.org/10.1016/j.jretconser.2018.07.009
- [31] L. Rajaobelina, I. Brun, R. Line, and C. Cloutier-Bilodeau, "Not all elderly are the same: Fostering trust through mobile banking service experience," *International Journal of Bank Marketing*, vol. 39, no. 1, pp. 85-106, 2021. https://doi.org/10.1108/IJBM-05-2020-0288
- [32] C. Latulipe, R. Dsouza, and M. Cumbers, "Unofficial proxies: How close others help older adults with banking," in *In Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems (pp. 1-13)*, 2022.
- [33] S. Ramlall, M. Hattingh, and P. Van Deventer, "Baby boomers' intention to use branch or digital banking channels in South Africa: An exploratory study," in *In Conference of the South African Institute of Computer Scientists and Information Technologists 2020 (pp. 74-84)*, 2022.
- [34] N. T. T. Thanh, "Factors affecting the intention to use digital banking services: A case study on elderly customers in Vietnam," Экономический журнал Высшей школы экономики, vol. 27, no. 2, pp. 270-289, 2023. https://doi.org/10.17323/1813-8691-2023-27-2-270-289
- [35] S. Andalib Touchaei and N. Hazarina Hashim, "The antecedents of mobile banking adoption among senior citizens in Malaysia," *International Journal of Human–Computer Interaction*, vol. 40, no. 9, pp. 2380-2397, 2024. https://doi.org/10.1080/10447318.2022.2161236
- [36] J. Ellefsen and W. Chen, "Privacy and data security in everyday online services for older adults," in *In Proceedings of the 10th International Conference on Software Development and Technologies for Enhancing Accessibility and Fighting Info-exclusion* (pp. 203-207), 2022.
- [37] C. Paul *et al.*, "Why do seniors accept or reject new technologies? Towards developing a seniors oriented technology acceptance model," in *Proceedings BRAININFO 2019*, 2019.

[38] L. Reis, C. Maier, and T. Weitzel, "Mixed-methods in information systems research: Status quo, core concepts, and future research implications," *Communications of the Association for Information Systems*, vol. 51, no. 1, p. 17, 2022.