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MAPPING TECHNOLOGY ACCEPTANCE AND CONTINUANCE IN DIGITAL FINANCIAL SERVICES FOR ELDERLY CONSUMERS: A BIBLIOMETRIC ANALYSIS

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Abstract:

The digitalisation of the financial services sector has revolutionised access to banking, payments, and other financial activities. However, older users may face challenges in adopting and using these services, such as low digital capability, usability difficulties, perceived security risks, and lack of confidence in technology. This study traces the evolution of research on Technology Acceptance and Continuance in digital financial services among elderly consumers. An advanced Scopus search identified three conceptual domains: technology acceptance and continuance; digital financial services; and elderly consumers. The initial search found 277 publications from 2006 to August 2026. The publication and citation performance was evaluated using Scopus Analyzer; OpenRefine was used to clean and standardise

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the bibliographic metadata; and VOSviewer to analyse the co-occurrence of keywords and co-authorship networks by country. The results show that China leads with 64 publications, while the United States has the highest number of citations (2,375). The most cited publication had 602 citations. The conceptual core of the literature was "older adults" (89 occurrences; total link strength = 138) and "technology acceptance" (88; total link strength = 128). The strongest international collaboration was in China (total link strength = 26), Malaysia (15), and Hong Kong (12). Nevertheless, the presence of acceptance-oriented and health-technology themes, and the weak presence of continuance and digital-finance themes, suggest that the research area remains theoretically and contextually fragmented.

Keywords:

Digital Financial Services; Elderly Consumers; Technology Acceptance; Technology Continuance; Bibliometric

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Introduction

While digital financial services offer clear advantages in convenience, access, and financial inclusion for older adults, adoption and ongoing use are not uniform; for many older people, perceived barriers to usability, lack of computer skills, anxiety, risk, and trust issues may outweigh the potential benefits. Mobile banking, mobile payments, online banking, digital insurance, and newer technologies like facial recognition payments can reduce transaction friction and enable older consumers to participate in an increasingly digital economy. However, older consumers are consistently less likely to use these services than younger consumers and often face a harder path to using them (Han & Ko, 2025; Mei, 2024; Wong et al., 2021). This is not just a question of chronological age, but of an interplay of ageing, digital inequality, service design and the evolving architecture of finance, where access to banking, payments, insurance and investment increasingly depends on digital capability and confidence (Panetta et al., 2025; Zhang, 2025; Elouaourti & Ibourk, 2024). Against this background, an introduction to technology acceptance and continuance in digital financial services for elderly consumers must begin by recognising that the field sits at the intersection of two structural transformations: population aging and financial digitalisation. Recent studies repeatedly show that older adults are becoming a strategically important user segment rather than a residual one, especially as digital payments, mobile banking, and app-based financial management move from optional channels to default infrastructures of everyday economic life (Mei, 2024) (Bvuma et al., 2025) (Panetta et al., 2025). Policy and market relevance is amplified in emerging and middle-income settings, where online banking and digital payment platforms are promoted as vehicles for financial inclusion. Nevertheless, it can also deepen exclusion if older

adults cannot use them effectively (Bvuma et al., 2025; Elouaourti & Ibourk, 2024). Evidence from China further suggests that digital literacy relates not only to service use but also to downstream economic participation, including financial market engagement, implying that digital divides in later life can translate into asset divides and broader wealth inequality (Wang et al., 2022). For this reason, digital financial adoption among older adults should be understood not only as a consumer behaviour problem but also as a question of inclusion, autonomy, and financial well-being in later life (陆, 2025) (Elouaourti & Ibourk, 2024).

In theory, researchers have addressed this question more often using technology acceptance models such as Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT)-derived models, as they reflect the cognitive assessments commonly used in older adults' adoption of financial technologies. Across the studies we reviewed in mobile payment, digital banking, and online banking contexts, 'perceived usefulness' and 'perceived ease of use' remain key determinants of attitudes and behavioural intention (Elouaourti & Ibourk, 2024) among older consumers. In older cohorts, in particular, attitude often becomes a proximal determinant of intention, and usefulness, convenience, observability, and trust help to shape attitude (Yang et al., 2024; Mei, 2024). Meanwhile, the literature has gradually moved away from the parsimonious acceptance model, since financial service usage is not purely cognitive for older adults. Researchers have added the factors of risk, trust, social influence, digital literacy, user experience, consumption value, adaptation and satisfaction to TAM, stating that these are essential to explain why some older people move from awareness to trial and from trial to regular use and to advocacy ((Yang et al., 2024) (Mei, 2024) (Mei, 2024) (Mei, 2024) (Mei, 2024)). This expansion is crucial because, when not viewed through the lens of age, older consumers exhibit unique motivational and capability profiles that are not accounted for when age is merely a demographic control (Yang et al., 2024) (Bvuma et al., 2025) (Bvuma et al., 2025). One conclusion that has consistently emerged from the literature is that multiple barriers to elderly adoption include psychological, functional, and structural barriers. One clear psychological inhibitor is technology anxiety, which decreases the continuance intention of mobile banking users and is more negative for adults aged 70 and over than for those in their 60s (Zeng et al., 2025). Other research also reveals that lack of trust, uncertainty, and fear of mistakes are barriers to older people's adoption of mobile payment and other tools (Cheng et al., 2023). Thus, trust plays a decisive role in this area: In mobile payment usage in older adults, trust is mediated by performance and financial risk, which in turn enhance the perceived usefulness and ease of use, and in the continuance models, trust intensifies the link between user adaptation and continued mobile banking use (Nguyen & Dao, 2024) (Bvuma et al., 2025) (Bvuma et al., 2025). In addition to these psychological barriers, older adults may face other challenges in their real-life interactions with digital finance, including interface complexity, high cognitive effort, memory and dexterity issues, as well as infrastructure limitations like unreliable networks or low support services (Wongpun et al., 2026) (Bvuma et al., 2025). Notably, high device ownership alone does not guarantee effective use, as shown in Nigeria, where most senior citizens own smartphones but do not effectively use fintech apps (Wongpun et al., 2026).

Nonetheless, the same literature also highlights enablers of acceptance and continuance, indicating that exclusion is neither inevitable nor uniform. Digital literacy repeatedly emerges as a foundational resource that shapes perceived usefulness, predicts fintech adoption, and influences how much older adults rely on peer or family signals to assess new services (Wongpun et al., 2026). Social influence also matters; word-of-mouth, peer engagement, and

family encouragement can make benefits more visible and encourage older adults to adopt new financial technologies when they need external nudges (Wongpun et al., 2026). Additionally, facilitating conditions, training, and technical support significantly reinforce intention and actual use, with some studies suggesting that elderly consumers might be more inclined to adopt services with hands-on training, simplified interfaces, and age-friendly design (Wongpun et al., 2026). Other studies indicate that enjoyment, hedonic motivation, and gamified engagement can have a positive impact on attitudes and continuance for some segments of the older population, but this is more conditional as opposed to utilitarian influence, and does not negate risk issues (Bvuma et al., 2025) (Wong et al., 2021). The continuance literature offers the final piece, suggesting that initial acceptance and continued use are related yet distinct. For older users, other factors such as satisfaction, adaptation, convenience, facilitating conditions, perceived benefits and sacrifices, inertia, and even subjective well-being (in some models) influence continuance intention in addition to ease of use and usefulness (Wong et al., 2021) (Wong et al., 2021) (Wong et al., 2021) (Wong et al., 2021). This is particularly evident in the context of pandemic-induced digital payment adoption, where older adults were compelled to use online payment services and have since continued to do so because of the value they derive from them and because they have grown accustomed to the service, despite prevailing older adult stereotypes of reluctance to use fintech (Wong et al., 2021). Meanwhile, satisfaction is not guaranteed: older adults with Artificial Intelligence (AI)-powered insurance services reported moderate satisfaction with usefulness and ease of use, but also noted training deficits and a fear of financial loss, which still limit their experience (Wong et al., 2021). The literature as a whole suggests that a holistic view to map technology acceptance and continuance in digital financial services for elderly consumers is required, which should combine beliefs, emotional feelings, social support, structural inequalities, and post-adoption assessments across the different types of services and age groups. Such a map is required because older consumers are neither a uniform group nor simply "late adopters" – their digital financial journeys are neither the same nor identical, but are rather the result of a complex mix of digital financial literacy, trust, anxiety, design fit, support, and life context, all of which make digital finance either a tool of empowerment or a new mechanism of exclusion.

Research Question

- **RQ1**: How has the volume of scholarly publications on technology acceptance and continuance in digital financial services among elderly consumers evolved from 2006 to August 2026?
- **RQ2:** Which publications have exerted the greatest influence on research concerning technology acceptance and continuance in digital financial services among elderly consumers, as measured by citation impact?
- **RQ3:** Which countries are the leading contributors to research on technology acceptance and continuance in digital financial services among elderly consumers in terms of publication output and citation impact?
- **RQ4:** What are the dominant, emerging, and underexplored themes in research on technology acceptance and continuance in digital financial services among elderly consumers, as revealed by keyword co-occurrence analysis?
- **RQ5**: What patterns of international research collaboration characterise technology acceptance and continuance research in digital financial services among elderly consumers, as revealed by country-level co-authorship analysis?

Methodology

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Bibliometric analysis is an organised, systematic, quantitative evaluation of bibliographic information from scholarly publications (Alves et al., 2021; Assyakur & Rosa, 2022; Verbeek et al., 2002). Beyond descriptive indicators such as publication trends, leading journals, prolific authors, institutions, and countries (Wu & Wu, 2017), bibliometric analysis can explore a research field's intellectual structure and thematic development using science-mapping techniques such as document co-citation analysis. A thorough bibliometric review should follow an iterative, transparent process, including developing and refining search terms, conducting comprehensive database retrieval, applying predefined eligibility criteria, cleaning data, and validating analyses. This methodological approach helps build comprehensive, reproducible datasets and increases the reliability of the findings (Fahimnia et al., 2015). Scopus was chosen as the sole data source because it comprehensively indexes peer-reviewed articles, supports metadata compatibility with bibliometric analysis tools, and provides structured citations (Al-Khoury et al., 2022; di Stefano et al., 2010; Khiste & Paithankar, 2017). To this end, relevant publications in the period 2006-2026 (August) were retrieved from Elsevier's Scopus database for further performance analysis and science mapping.

Data Search Strategy

Figure 1 presents this structured data-collection procedure: Topic Identification, Scope Determination, Keyword Formulation, Record Retrieval, Eligibility Screening, and Dataset Finalisation. The only database used was Scopus, and the search period covered English-language publications from 2006 to 2026; all source types, document types, and subject areas were included. This broad disciplinary coverage includes studies of technology acceptance among the elderly in information systems, business, finance, gerontology, healthcare, and the social sciences. The search included technology-related concepts such as "technology acceptance," "technology adoption," "behavioural intention," "digital adoption," and "digital acceptance," along with several descriptors for the elderly population. Multiple synonyms were used to increase search sensitivity and allow for variations in scholarly terminology. Limiting the collection to English-language works, however, may introduce linguistic and geographic bias, and including all document types and sources may introduce inconsistencies in scholarship quality. Furthermore, the syntax in the search window matches the TITLE element, even though the element searched is said to include the keywords, abstract, and title; this is incorrect syntax, as it would ordinarily search only TITLE, and should be corrected to improve methodological transparency and reproducibility.

A total of 277 records were identified, and only four were excluded because they did not meet the inclusion criteria or were not relevant to the topic, leaving 273 publications for bibliometric analysis. Therefore, 98.56% of the records initially retrieved were kept and 1.44% were excluded. This high retention rate indicates relatively little irrelevant material and strong topical precision for the selected keywords. However, it could also mean the eligibility criteria were defined very broadly, as all subject areas, source types, and document types were considered. The results would be stronger if the authors reported the inclusion and exclusion criteria and the specific reasons for excluding each record. More importantly, the reported search strategy focuses on general technology acceptance in elderly populations, not specifically on "continuance" and "digital financial services," which are key in the article title. The search string should better reflect the study's scope before the final bibliometric analysis, as without these conceptual components the 273-record dataset may include studies on

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unrelated technologies while missing relevant studies on continued use of digital banking, fintech, and electronic payment services.

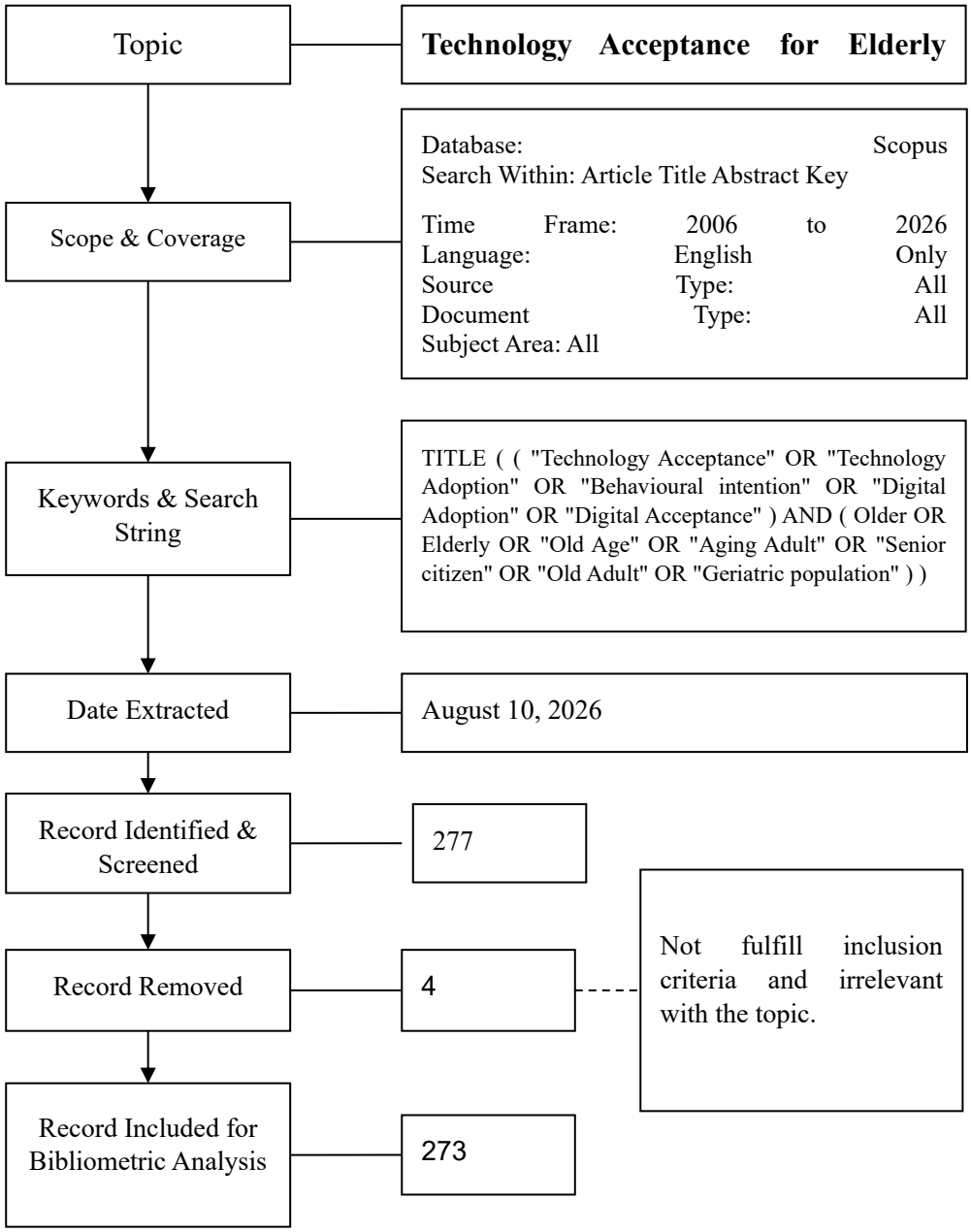


Figure 1: Flow Diagram of the Search Strategy (Page, McKenzie, et al., 2021; Page, Moher, et al., 2021)

Data Analysis

VOSviewer is a popular bibliometric software tool, created by Nees Jan van Eck and Ludo Waltman of Leiden University, The Netherlands (van Eck & Waltman, 2010, 2017). It is designed to build, visualise, and explore bibliometric networks, with special capabilities for network visualisation, clustering, and density mapping. The software offers various relational analyses, including co-authorship, co-citation, bibliographic coupling, and citation and

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keyword co-occurrence analyses. These capabilities can help researchers understand the intellectual, social, and conceptual structures of a research domain. Its interactive interface, customisable visualisations, and ability to handle large bibliographic datasets have made it a popular tool for bibliometric studies. One of VOSviewer's main benefits is that it captures complex bibliographic relationships and displays them in interpretable visual maps. These maps can display nodes as items of analysis (authors, publications, journals, countries, and/or keywords), and node size can reflect frequency of occurrence or citations. A link indicates a relationship between items, and the link's thickness indicates the strength of that relationship. Items in proximity tend to be highly related, and groupings define sets of highly related items. A network and density visualisation can thus help to identify key contributors to the network, key groups of knowledge, repeated research topics, and trends that might be hard to see in the descriptive statistics. Scopus was used to fetch bibliographic data for publications ranging from 2006 to August 2026 for the current study. The exported dataset included publication year, article title, authors, source title, number of citations, and author keywords. After screening and standardising the data, we analysed the final dataset and constructed the corresponding bibliometric networks using VOSviewer version 1.6.20. The Visualization of Similarities (VOS) mapping technique places items in a low-dimensional space so that the distance between two items approximates their degree of relatedness; strongly related items are placed closer together, and weakly related items are placed farther apart [27]. In concept, this is similar to multidimensional scaling [28]. Nevertheless, the objective function and normalisation procedures are tailored to bibliometric network data. Specifically, the influence of differences in the overall occurrence frequencies of individual items was minimised by normalising co-occurrence relationships using the association-strength measure (Van Eck & Waltman, 2007). The association strength between items (i) and (j) is calculated as follows:

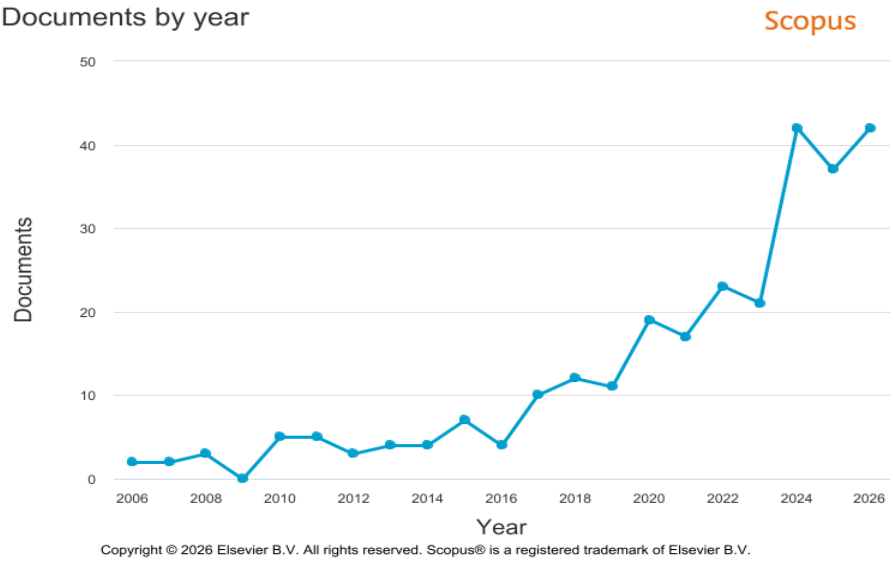
$$AS_{ij} = \frac{C_{ij}}{w_i w_j},$$

which is "proportional to the ratio between, on the one hand, the observed number of co-occurrences of i and j and on the other hand the expected number of co-occurrences of i and j in the case where co-occurrences of i and j are statistically independent" (Van Eck & Waltman, 2007).

Result and Discussion

RQ1: How has the volume of scholarly publications on technology acceptance and continuance in digital financial services among elderly consumers evolved from 2006 to August 2026?

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Figure 2: Trend of Research in Technology Acceptance in Digital Financial Services Among Elderly Consumers by Years

Table 1: Trend of Research in Technology Acceptance in Digital Financial Services Among Elderly Consumers by Years

Year	Doc	Percentage (%)
2018	12	4.40
2017	10	3.66
2016	4	1.47
2015	7	2.56
2014	4	1.47
2013	4	1.47
2012	3	1.10
2011	5	1.83
2010	5	1.83
2009	0	0.00
2008	3	1.10
2007	2	0.73
2006	2	0.73

The available data for 2006-2018 indicate a fairly diverse publication trend with a general upward trajectory from 2 documents (0.73%) in 2006 to 12 documents (4.40%) in 2018 shown in Table 1 and Figure 2. The number of research documents issued during 2006-2013 was more limited, with 0-5 documents released annually; in 2009, no research documents were published. This suggests the field was still in its infancy, as studies on technology acceptance during this period focused on general users and first-time adoption of internet or mobile banking, while elderly consumers received less attention. The increase in 2010 and 2011, with 5 publications in each year (1.83%), may reflect growing use of online banking, smartphones, and electronic payment services. Nonetheless, this variability suggests that ageing, technology acceptance, and digital financial services had not yet formed an integrated and continuous research strand.

A more defined growth began in 2014, when the number of publications jumped to four documents (1.47%), to seven in 2015 (2.56%), dropped to four in 2016 (1.47%), and then grew significantly to ten in 2017 (3.66%) and twelve in 2018 (4.40%). This acceleration can be reasonably explained by the rapid spread of fintech, mobile banking, and cashless payments, as well as growing policy and academic interest in population ageing, digital exclusion, and financial inclusion. For elderly consumers, as financial transactions increasingly shift online, research on this group has grown in importance because of concerns about digital literacy, perceived risk, security, trust, and usability. This suggests that the consistent increase in 2017–2018 indicates the field is maturing and that initial acceptance is shifting toward sustained use and continuity. However, the table stops at 2018; thus, the trend that was claimed through August 2026 cannot be assessed without the publication data for 2019-2026.

RQ2: What publications have had the most impact (in terms of citations) on the research on technology acceptance and continuance among elderly consumers in the context of digital financial services?

The citation distribution indicates a focus of intellectual activity, with the top 10 publications receiving 3,261 citations. The top ten cited papers include Chen and Chan (2014) with 602 citations (around 18.46%), followed by Kinioman et al. (2013) with 575 citations, Bearing et al. (2013) with 511 citations, and Chew and Teo (2015) with 495 citations (Table 2). This prominence may stem from its development and empirical validation of the Senior Technology Acceptance Model, an age-specific extension of conventional technology-acceptance perspectives. Niehaves and Plattfaut (2014) is the second most cited, with 386 citations, followed by Renaud and Van Biljon (2008) with 324 citations and Chen and Chan (2011) with 320 citations. Together, these four publications receive about half the citations of the ten most cited publications, suggesting the literature is rooted in a fairly limited set of seminal works. They are justifiable given the factors they address: age-related digital inequality, determinants of technology adoption, and theoretical adaptation for older users, all of which are relevant to a wide range of technological and institutional settings. Other highly cited studies show how the field has expanded beyond general technology acceptance to health care technologies, wearable technology, patient portals, and decision-making processes related to older adults. Interestingly, Bertolazzi et al. (2024) is the first systematic review to address barriers and enablers to technology use among older adults with chronic conditions. It has already been cited 302 times since publication, indicating strong academic interest in the topic. Talukder et al., Berkowsky et al., Mitzner et al., Portz et al., and Pan and Jordan-Marsh have been cited 255-288 times, respectively, suggesting strong interest in the contextual and psychological, health-related, and behavioral determinants of elderly technology use. Nevertheless, most papers focus on general technology or healthcare technology, not specifically on technology in digital financial services. This pattern indicates that research on acceptance and continuance of digital financial services among elderly people draws heavily on the general literature on gerontechnology and health technology. It also highlights potential avenues for future research to provide more context-specific explanations by incorporating financial risk, security, trust, digital literacy, customer experience, and continued usage behaviour.

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Table 2: Top 10 Most-Cited Publications on Technology Acceptance Among Elderly Consumers

No	Authors	Title	Year	Source title	Cited by
1	Chen K.; Chan A.H.S. (Chen & Chan, 2014)	Gerontechnology acceptance by elderly Hong Kong Chinese: a Senior Technology Acceptance Model (STAM)	2014	Ergonomics	602
2	Niehaves B; Plattfaut R. (Niehaves & Plattfaut, 2014)	Internet adoption by the elderly: Employing IS technology acceptance theories for understanding the age-related digital divide	2014	European Journal of Information Systems	386
3	Renaud K; Van Biljon J (Renaud & Van Biljon, 2008)	Predicting technology acceptance and adoption by the elderly: A qualitative study	2008	ACM International Conference Proceeding Series	324
4	Chen K; Chan A.H.S (Chen & Chan, 2011)	A review of technology acceptance by older adults	2011	Gerontechnology	320
5	Bertolazzi A.et al. (Bertolazzi et al., 2024)	Barriers and facilitators to health technology adoption by older adults with chronic diseases: an integrative systematic review	2024	BMC Public Health	302
6	Talukder M.S. et.al. (Talukder et al., 2020)	Predicting antecedents of wearable healthcare technology acceptance by elderly: A combined SEM-Neural Network approach	2020	Technological Forecasting and Social Change	288
7	Berkowsky R.W et. al (Berkowsky et al., 2017)	Factors Predicting Decisions about Technology Adoption among Older Adults	2017	Innovation in Aging	264
8	Mitzner T.L. et al. (Mitzner et al., 2019)	Technology Adoption by Older Adults: Findings from the PRISM Trial	2019	Gerontologist	263
9	Portz J.D. et al. (Portz et al., 2019)	Using the technology acceptance model to explore user experience, intent to use, and use behavior of a patient portal among older adults with multiple chronic conditions: Descriptive qualitative study	2019	Journal of Medical Internet Research	257
10	Pan S.; Jordan-Marsh M. (Pan & Jordan-Marsh, 2010)	Internet use intention and adoption among Chinese older adults: From the expanded technology acceptance model perspective	2010	Computers in Human Behavior	255

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RQ3: Who are the most prolific country-publishers and who have the most influential country-publishing track record for technology acceptance and continuance research in digital financial services with elderly consumers?

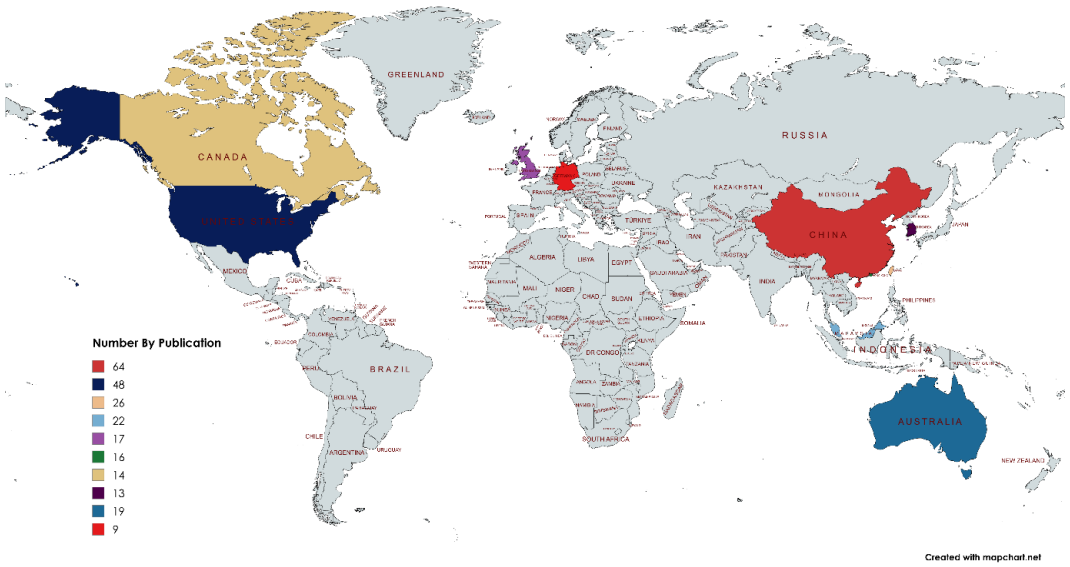


Figure 3: Top 10 Countries by Number of Publications on Technology Acceptance and Continuance in Digital Financial Services for Elderly Consumers

The geographical distribution indicates that the research is mainly focused on Asia and North America, especially China (64 publications; 26.78%) and the United States (48 publications; 20.08%) (Figure 3). Together, these countries account for 46.86% of publications in the top 10 and thus play a leading role in this research area. China's leadership may stem from its rapidly ageing population, widespread adoption of mobile payments, and government policies focused on digital financial inclusion. This dominance aligns with the United States' existing research infrastructure and the high concentration of research on technology acceptance, ageing, and consumer behaviour. Other countries, such as Taiwan, Malaysia, and Hong Kong, also contribute significantly, with 26 (10.88%), 22 (9.21%), and 16 publications (6.69%), respectively. This may indicate the speed of digitalisation in these economies, and an awareness that older populations might be marginalised as banking and payment services shift to the digital sphere.

In terms of the top ten contributors, six are from Asia-Pacific, namely China (34 papers), Taiwan (24 papers), Malaysia (18 papers), Hong Kong (28 papers), South Korea (34 papers) and Australia (3 papers), which together made 151 papers (63.18% of the top ten). This makes sense, as many societies in Asia are experiencing population ageing and rapid fintech growth, underscoring the need to explore perceived security, trust, acceptance, and continued use of digital financial services among elderly consumers. Malaysia's fourth-place ranking is noteworthy and may reflect the country's financial-inclusion push, its growing digital-banking system, and its policy direction on serving older and underserved consumers. In comparison, the United Kingdom, Canada, Australia, and Germany contribute smaller but not insignificant shares, which may reflect their well-developed financial systems and broader research focus on digital inclusion and ageing. However, the geographical bias in the representation of developing regions (e.g., Africa, Latin America and South Asia) suggests that technically developed economies may heavily influence existing knowledge and may not reflect the

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experiences of elderly consumers in less advanced environments or in different social, cultural and institutional settings.

RQ4: What are the prevailing, the underdeveloped and the less explored themes of the literature regarding technology acceptance and continuity among elderly consumers in digital financial services as identified through the keyword co-occurrence analysis?

The keyword co-occurrence network (illustrated in Figure 4) is centred on the terms "older adults" (89 occurrences and Total Link Strength [TLS] = 138) and "technology acceptance" (88 occurrences and TLS = 128), which showed that these terms form the main intellectual focus of the literature. "technology adoption" (28; TLS = 36) and "behavioral intention" (27; TLS = 24) also suggest that current research mostly focuses on the acceptance or initiation of the use of technologies by older adults. The "TAM" (11; TLS = 20), "UTAUT" (5; TLS = 13), "senior technology acceptance model" (6; TLS = 10), "perceived usefulness" (9; TLS = 15), and "facilitating conditions" (5; TLS = 9) all support this theoretical orientation. These keywords indicate that traditional acceptance models remain the most common explanatory frameworks, but extensions to these models at the age level have also been acknowledged. Nevertheless, the absence of continuance-related terms among the top keywords suggests the literature has focused more on pre-adoption assessments and behavioural intention than on the actual, ongoing, or discontinued use of the technology.

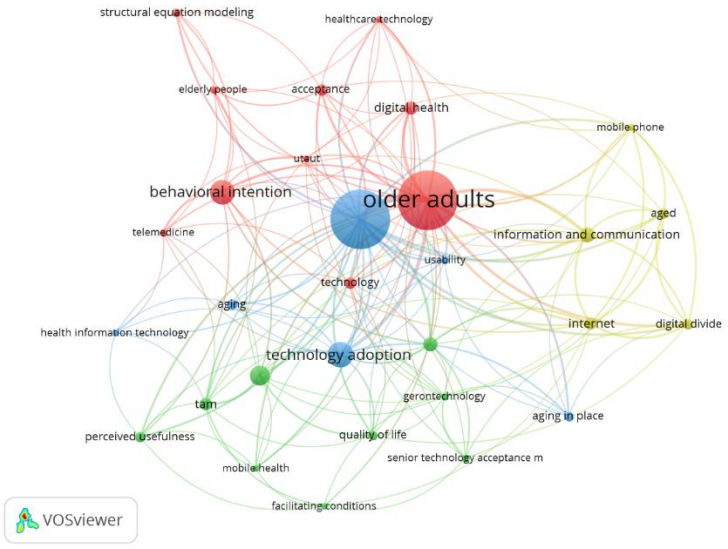


Figure 4: Network Visualisation Map of Keywords' Co-occurrence

Figure 4 also highlights a strong focus on digital inclusion and health technology. The topic of "information and communication technologies" is mentioned 14 times. However, its relatively high TLS value of 38 suggests many links to other topics, as do "internet" (11; TLS = 35), "digital divide" (9; TLS = 31), and "mobile phone" (5; TLS = 24). The high prevalence of these terms may reflect ongoing concerns about how older adults access, use, understand, and benefit from digital technologies. At the same time, the key terms "digital health," "telemedicine," "mobile health," "health information technology," and "healthcare technology" reveal that research on technology acceptance for elderly people has been significantly influenced by

healthcare applications, specifically in the domains of ageing in place and quality of life. However, the lack of central concepts related to "digital banking," "fintech," "mobile payment," "trust," and "security" suggests that digital financial services remain underrepresented in the mapped network. This finding indicates a true research gap or that the search strategy is too general, focusing on technology acceptance, and should be further refined to focus the dataset on financial services and continuance issues, as well as to collate synonymous terms pertaining to the population of "older adults," "elderly," "older people," and "aged." The keyword network visualisation was mentioned in the table 3.

Table 3: Network Visualisation Map of Keywords' Co-occurrence

Keyword	Occurrences	Total Link Strength
older adults	89	138
technology acceptance	88	128
technology adoption	28	36
behavioral intention	27	24
elderly	21	24
information and communication technologies	14	38
older people	13	22
digital health	12	20
internet	11	35
tam	11	20
acceptance	10	18
technology	10	13
aged	9	24
perceived usefulness	9	15
aging	9	10
digital divide	9	31
quality of life	8	16
aging in place	8	12
structural equation modeling	7	11
senior technology acceptance model	6	10
elderly people	6	10
telemedicine	6	11
usability	6	18
gerontechnology	6	13
utaut	5	13
healthcare technology	5	15
facilitating conditions	5	9
mobile phone	5	24
mobile health	5	12
health information technology	5	8

RQ5: Based on country-level co-authorship analysis, what are the patterns of international research collaboration in technology acceptance and continuance research in digital financial services from elderly consumers' perspective?

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China holds the most prominent position in the country co-authorship network, with 64 publications, 994 citations, and the highest total link strength (TLS = 26), as illustrated in Figure 5. This mix is interesting, as it suggests that China is the most productive and internationally connected contributor, perhaps owing to its fast-ageing population and high levels of technological progress and policy concern on digital inclusion. The USA has the second-highest productivity (48 documents) but the highest citation impact (2,375 citations, or about 49.5 citations/publication). Its TLS of nine is much lower than China's, however, meaning its scholarly impact comes more from its more-cited products than from its extensive cross-country collaboration in this dataset. Malaysia also shows a remarkable collaborative stance: it produces only 22 documents, yet it has the second-highest TLS of 15, with 275 citations. This finding implies that Malaysian researchers are actively involved in international research collaborations, despite the relatively low citation rate (12.5 citations per publication), suggesting that increased participation has not yet translated into commensurate citations.

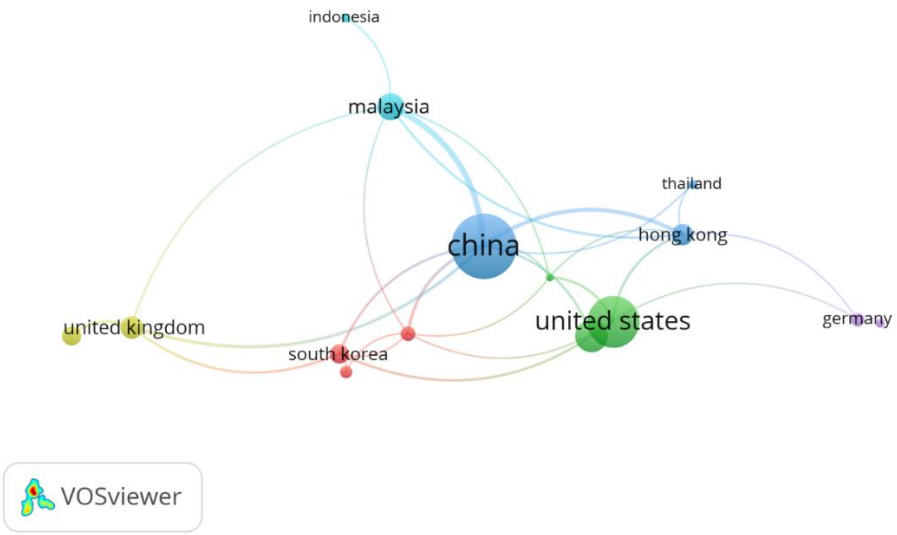


Figure 5: Country Co-authorship Network in Elderly Technology Acceptance Research

Figure 5 also suggests that publication count does not always reflect publication impact or collaboration level. Hong Kong led in production with 16 documents. Nevertheless, Hong Kong accumulated the most citations (1,221), with an average of around 76.3 citations per document, followed by Germany (around 70.9 citations per document), the United Kingdom (around 57.0 citations per document), and Australia (around 56.0 citations per document). These high citation rates suggest that smaller-output countries can have a significant intellectual impact through foundational research, established research groups, or high-visibility journals. Hong Kong's TLS of 12 also indicates high impact and international collaboration. At the same time, Germany's TLS of three reflects its relatively lower impact and less collaborative nature. At the opposite end of the network, Indonesia and Thailand published six documents each. Nonetheless, they attracted only 14 and 15 citations, respectively, possibly indicating less integration with the network or more recent publications

that have not yet had enough time to gain citations. By contrast, Singapore has relatively high collaborative engagement with a TLS of six based on just five documents. Overall, the network appears more focused on better-developed and faster-aging economies, especially in the Asia-Pacific region, with less representation of developing countries, suggesting potential for more extensive cross-national research that better reflects different infrastructural, cultural, and socioeconomic contexts.

Conclusion

The current bibliometric analysis traced the trajectory and impact of research on technology acceptance and continuance in digital financial services for the elderly, its thematic structure, geographic location, and international collaboration. The analysis covered five dimensions: growth in the number of publications, the most cited publications, the top countries by number of publications, dominant and emerging research areas, and co-authorship trends across countries. This study included 273 Scopus-indexed publications from 2006 to August 2026, providing a framework for the field's evolution and highlighting its still under-explored aspects. The results indicate a general increase in scholarly interest, with variable growth in publications throughout the study period. China was the most productive country (64 publications), followed by the United States (48 publications). However, the USA had the highest citation impact (2,375), showing that publication volume does not always reflect scholarly impact. The most cited publication has 602 citations, suggesting the field is still guided by a relatively small number of seminal studies. Other areas with high citation numbers relative to publication volume include Hong Kong, Germany, the United Kingdom, and Australia, all known for specialised research groups and highly visible publications. The keyword co-occurrence analysis revealed that "older adults" (89 occurrences, 138 total link strength) and "technology acceptance" (88 occurrences, 128 total link strength) were the key concepts. The primary theoretical background included technology adoption, behavioural intention, perceived usefulness, TAM, UTAUT, and the Senior Technology Acceptance Model. Nevertheless, the network focused heavily on initial acceptance and intention rather than actual and ongoing use. Health-related topics were also prevalent, such as digital health, telemedicine, mobile health, healthcare technology, ageing in place, and quality of life. In contrast, topics directly related to financial services and the digital dimension, such as digital banking, fintech, mobile payments, financial trust, and perceived security, were less visible. This suggests that research on the intersection of elderly consumers, digital finance, and technology continuance remains underdeveloped and fragmented.

The country-level co-authorship analysis also showed an imbalance in international research. China was the strongest in terms of collaborative position with a total link strength of 26, followed by Malaysia with 15 and Hong Kong with 12. Malaysia has a comparatively low number of citations but strong networks, indicating active research collaboration with other countries. Meanwhile, other countries published books and had relatively small international contacts. The prevalence of technologically sophisticated and rapidly ageing economies, especially in the Asia-Pacific region, suggests that knowledge about elderly consumers may be insufficient for regions where the digital economy is less developed, financial inclusion is lower, or cultural and institutional environments differ. This research adds to the literature by combining publication performance with evidence from science mapping. The results show that technology acceptance and technology continuance are two distinct phases in elderly consumers' digital financial journeys. Usefulness, ease of use, facilitating conditions, and behavioural intention drive initial adoption, whereas continued use relies on satisfaction, trust,

security, service experience, digital confidence, and post-adoption value. In practice, financial institutions and policymakers should not assume digital inclusion based on initial registration or trial. To encourage safe, sustained participation, age-friendly interfaces, simplified authentication, security assurance, accessible customer support, digital-skills programmes, and alternative service channels are needed. Several limitations warrant consideration. The analysis used only one database (Scopus) and English publications, which may have limited the findings to these sources. Bias may favour older publications with longer exposure, and the 2026 data may be incomplete because it covers only part of the year. Keyword variation can also split up closely related concepts, such as terms that refer to elderly people. More significantly, the visibility of general and health technologies suggests the search strategy may have retrieved literature beyond the digital financial-services literature. Future research should use more specific terms for digital banking, fintech, digital payments, trust, security, actual use, and continuance; include more databases; explore and compare developed and emerging economies; and conduct longitudinal or content analyses. In summary, this bibliometric analysis contributes to the scientific field by laying a theoretical groundwork for moving beyond initial uptake to explain secure, meaningful, and ongoing financial service engagement with digital financial services by elderly consumers.

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