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From Pension Gaps to E-Wallets: The Role of Fintech in Supporting Malaysian Senior Citizens' Gig Economy Participation

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ABSTRACT

Malaysia's ageing population faces widening pension gaps, compelling many senior citizens to remain economically active through side hustles and gig economy work. While flexible work provides supplementary income, it also exposes seniors to financial insecurity and irregular earnings. Financial technology (Fintech), particularly e-wallets and digital savings tools, has emerged as a potential enabler of financial resilience. This study employs a systematic literature review (2020–2025) using Scopus AI to explore the intersection of pension adequacy, gig participation, and fintech adoption among Malaysian senior citizens. Findings highlight that financial necessity, improved health, and human capital drive continued workforce participation, while limited financial literacy and digital skills hinder fintech uptake. E-wallets and digital investment platforms offer seniors greater control over money management, but inclusive design, tailored digital literacy initiatives, and policy support are essential to close adoption gaps. The paper contributes to understanding how fintech can bridge pension shortfalls and strengthen financial inclusion in Malaysia's ageing society.

1. Introduction

The traditional view of retirement as a complete withdrawal from working life is rapidly changing. People are living longer, healthier lives, which has extended their economic participation well beyond the conventional retirement age. According to the Department of Statistics Malaysia, senior citizens already represent 11.6% of the total population in 2024 (3.9 million out of 34.1 million). By 2040, this figure is projected to rise to 17.3% (6.4 million), and by 2057 Malaysia is expected to become a super-aged society, with over 20% of the population aged 60 and above.

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At the same time, pension systems are under increasing pressure, with many retirees struggling to meet rising living costs. This reality has given rise to the phenomenon of the “lifelong hustle,” where senior citizens continue working after retirement. While financial necessity is a major driver, many also seek to stay socially engaged and maintain a sense of purpose [1].

The growth of the gig economy has expanded flexible, short-term income opportunities for seniors, ranging from ride-hailing and food delivery to tutoring and freelance work [2]. However, managing income in these informal sectors often presents challenges, including irregular cash flows and the absence of formal protections [2,3]. To navigate this uncertainty, senior citizens require financial tools that are simple, secure, and tailored to their needs [4]. Fintech offers such solutions, enabling users to manage money, track earnings, and plan for retirement more effectively [2,5].

Fintech therefore plays a potentially critical role in strengthening the financial resilience of Malaysia’s ageing population. A deeper understanding of its potential and limitations is essential to support this demographic as they adapt to the digital economy [6]. Accordingly, this paper examines the engagement of Malaysian senior citizens in side hustles and their use of fintech. The findings aim to provide insights for policymakers, fintech providers, and social institutions in designing inclusive tools and strategies that empower seniors to participate confidently and securely in the digital economy.

1.1 Financial Sources for Senior Citizens in Malaysia

Malaysia’s pension system is comprised of several schemes, including the Civil Service Pension Scheme, the Employees Provident Fund (EPF), and social pensions such as Bantuan Warga Emas (BWE). While these schemes provide some level of support, many retirees still face substantial income gaps. Limited pension coverage, low EPF savings, and the rising cost of living increase the risk of elderly poverty [4].

To address this, financial literacy has become increasingly important. Senior citizens must be equipped with the knowledge and skills to plan and manage their finances effectively [7-8]. Fintech tools—such as e-wallets, digital savings applications, and online investment platforms—hold promise in supporting better financial management, provided that efforts are made to close the digital literacy gap [2].

Nonetheless, many senior citizens continue to engage in side hustles as a means of sustaining their livelihoods post-retirement [4]. This shift challenges the conventional understanding of retirement as a complete withdrawal from the workforce. Instead, “lifelong hustle” reflects an evolving reality where seniors remain economically active through informal and flexible work arrangements, including ride-hailing, tutoring, freelancing, and multi-level marketing (MLM).

At the same time, pension reforms and digital financial solutions are being introduced to promote sustainability and independence among the elderly [9]. These developments highlight the urgent need to explore how senior citizens can adapt to and benefit from fintech innovations. Fintech offers new pathways for older adults to manage their finances more independently [8]. This study is therefore timely, as it addresses the critical intersection of ageing, work, and digital financial inclusion in Malaysia.

2. Methodology

This study employed a systematic literature review (SLR) to examine the role of fintech in supporting Malaysian senior citizens engaged in side hustles and gig economy activities. The review

aimed to (i) synthesize existing knowledge, (ii) identify challenges and barriers to fintech adoption, and (iii) highlight research gaps for future investigation.

The review process was conducted using the Scopus database, complemented by Scopus AI, an artificial intelligence tool designed to accelerate academic searches and improve thematic synthesis. This hybrid approach ensured broader coverage of relevant studies and enhanced the efficiency of the review.

The search was structured around four thematic areas; each framed as a guiding query:

- i. Aging workforce and extended retirement in Malaysia
- ii. Gig economy participation among senior citizen workers
- iii. Fintech adoption and financial inclusion for senior citizens
- iv. Case studies on fintech use by Malaysian senior citizen side hustlers

The retrieved sources (2020–2025) were screened based on relevance to the Malaysian and Southeast Asian context, peer-reviewed accessibility, and thematic fit. Statistical data from the Department of Statistics Malaysia and selected industry reports were also included to provide empirical grounding.

To maintain transparency, the detailed wording of the Scopus AI prompts and their corresponding focus areas are summarized in Table 1. This inclusion provides clarity on how queries were designed to capture relevant literature while keeping the main methodology concise. The selected literature was then categorized, critically analyzed, and synthesized to identify enabling factors, barriers, and opportunities for fintech adoption among senior citizens. This process established a structured evidence base to support the practical recommendations outlined later in the paper.

3. Results

This section presents the consolidated findings from the systematic review. Guided by four thematic areas—aging workforce participation, gig economy involvement, fintech adoption, and Malaysian case studies—the review integrates evidence published between 2020 and 2025. The AI-assisted approach using Scopus AI provided efficiency in identifying relevant studies while ensuring thematic coverage across Southeast Asia, with a particular focus on Malaysia.

Overall, the results highlight that while senior citizens are increasingly active in the workforce through gig and informal activities, their financial sustainability remains fragile. Fintech tools offer important opportunities to bridge this gap, but structural barriers such as limited financial literacy, digital competency, and social protection constraints remain significant.

3.1 Aging Workforce and Extended Retirement

The review shows that continued workforce participation among senior citizens in Malaysia and Southeast Asia is driven by several factors. Financial necessity remains the strongest driver, as many retirees lack sufficient retirement savings or secure pension income [10,11]. At the same time, improved health and longevity enable more seniors to remain economically active [12]. Social participation—through economic, religious, or community activities—has also been positively associated with seniors' well-being [10].

Fintech tools, particularly those supporting financial management and healthcare, are emerging as enablers of this continued participation [13]. However, structural challenges such as the lack of integrated pension reforms and limited access to age-friendly digital solutions persist [4]. This indicates that policies which combine social protection with digital inclusion strategies are essential to sustain senior citizens' employability.

Table 1

Scopus AI prompts

Prompt	Focus Area	Example Query
1	Aging Workforce & Extended Retirement	Explore articles (2020–2025) on extended workforce participation of senior citizens (60+) in Malaysia and Southeast Asia, focusing on financial necessity, health, and fintech support.
2	Gig Economy Participation	Identify studies (2020–2025) on senior citizens' involvement in gig or informal work post-retirement (e.g., ride-hailing, tutoring, freelancing), with emphasis on motivations and challenges
3	Fintech Adoption & Financial Inclusion	Examine the level of fintech adoption among senior citizens, focusing on e-wallets, digital banking, investment platforms, and barriers such as digital literacy, security, and accessibility.
4	Case Studies on Fintech Use	Review case studies (2020–2025) on fintech use by Malaysian senior citizens (e.g., GrabPay, Touch 'n Go, MAE, EPF i-Invest, Public Gold).

3.2 Gig Economy Participation

The review also underscores the growing trend of senior citizens participating in the gig economy and informal work. Common activities include ride-hailing, delivery services, tutoring, freelancing, and multi-level marketing [14]. Motivations are twofold: financial necessity due to inadequate pensions, and flexibility provided by gig platforms.

Despite these opportunities, the review highlights major vulnerabilities. Senior citizen gig workers often face financial insecurity, lack of social protection, health risks, and the burden of digital skills acquisition [15]. Current research tends to focus on general gig workers rather than seniors specifically, leaving a gap in understanding how this demographic navigates platform-based work. This underscores the need for more targeted empirical studies on senior-specific gig experiences in Malaysia.

3.3 Fintech Adoption and Financial Inclusion

Fintech adoption among senior citizens in Malaysia is still at a developing stage. While the COVID-19 pandemic accelerated the use of e-wallets and digital payments [11], adoption of more advanced fintech tools such as investment apps and digital savings platforms remains limited [5]. Key enabling factors include cybersecurity awareness, performance expectancy, and personal innovativeness, while barriers include low financial literacy, digital complexity, and concerns over online fraud [16].

These findings suggest that fintech adoption among senior citizen side hustlers cannot be viewed merely as a technological issue but as part of a broader inclusion challenge. Addressing this requires financial literacy programs tailored to seniors, stronger cybersecurity protections, and simplified fintech interfaces [8]. Without these, fintech risks deepening rather than bridging financial exclusion among older adults

3.4 Case studies on Fintech Use

Although direct case studies on Malaysian senior citizens' fintech usage remain scarce, several insights can be drawn from related studies on digital finance adoption. Widely used platforms include GrabPay, Touch 'n Go, MAE, EPF i-Invest, and Public Gold, which seniors increasingly encounter through gig work and personal finance management [17].

Among the various fintech tools, e-wallets such as Touch 'n Go and GrabPay are the most visible for senior gig workers, particularly those involved in ride-hailing and delivery services. These

platforms not only facilitate seamless transactions but also reduce dependency on cash, which is crucial for seniors managing irregular income flows. For instance, senior Grab drivers often rely on the in-app wallet system to receive earnings instantly, enabling quicker access to daily funds. This demonstrates the practical role of e-wallets in bridging pension gaps by providing immediate liquidity and easing day-to-day money management.

Findings indicate that high internet penetration (84.2%) has created favourable conditions for fintech uptake [5]. Positive adoption drivers include performance expectancy, hedonic motivation, and habit formation [7,8], while financial literacy and Shariah-compliant fintech options are particularly important in shaping trust and long-term use among Malaysian seniors [18]. Nevertheless, the absence of direct empirical studies on senior citizen side hustlers limits current understanding. The review highlights an urgent research gap: the need for case studies specifically examining how older gig workers use fintech in managing income, savings, and retirement planning.

3.5 Consolidate Results

Tables 2 and 3 summarize the consolidated findings. Table 2 presents the number of references retrieved across the four thematic prompts, while Table 3 synthesizes key focus areas, findings, challenges, and research gaps.

Table 2

The consolidated results of reference numbers for all four prompts

PROMPT	Number of Reference	Number of Foundational Reference	Number of Expanded Reference
Prompt 1: Aging Workforce & Extended Retirement	13	5	8
Prompt 2: Gig Economy Participation	9	5	6
Prompt 3: Fintech Adoption & Financial Inclusion	11	5	10
Prompt 4: Case Studies on Fintech Use	7	5	0
TOTAL	40	20	24

Table 3

The summarized key findings for all four prompts

Prompt	Focus Area	Key Findings	Challenges Identified	Research Gaps
Prompt 1: Aging Workforce & Extended Retirement	Continued employment of seniors (60+) in Malaysia and Southeast Asia (2020–2025)	Seniors stay in the workforce due to financial needs, improved health, and use of Fintech for money and health management	Lack of secure retirement income, limited access to digital tools, need for social protection and flexible work	Need for integrated policies and more research on long-term workforce participation
Prompt 2: Gig Economy Participation	Seniors in gig or informal work (e.g. ride-hailing, tutoring, freelancing, MLM)	Flexibility, income necessity, and tech access drive participation	No social protection, health risks, digital illiteracy	Scarcity of research on senior-specific gig roles and needs

Table 3 (Continueud)

Prompt 3: Fintech Adoption & Financial Inclusion	Use of fintech for banking, savings, income management among senior citizens	Fintech offers digital convenience; COVID-19 pushed e-wallet usage	Low financial/digital literacy, tech complexity, cybersecurity fears	Few studies focused on fintech for senior citizen side hustlers
Prompt 4: Case Studies on Fintech Use	Platforms like GrabPay, Touch 'n Go, MAE, i-Invest, Public Gold	High internet access, strong fintech ecosystem; financial literacy & Islamic fintech boost use	No senior-specific case studies; reliance on general user insights	Urgent need for targeted case studies on fintech use by senior citizen gig workers

Taken together, the results highlight a complex but promising landscape. Senior citizens are increasingly active participants in Malaysia's gig economy, but their financial resilience is undermined by limited pensions and inadequate digital literacy. Fintech holds the potential to provide inclusive financial tools that support this demographic, yet its success depends on addressing structural barriers and designing interventions tailored to the needs of senior citizens

4. Discussions

The review of literature on Malaysian senior citizens' workforce participation (2020–2025) reveals that financial necessity, health conditions, human capital, and fintech adoption collectively shape the extent to which older adults remain economically active. These insights underline the complex interplay between economic pressures, social well-being, and digital transformation in Malaysia's ageing society.

4.1 Financial Necessity as the Primary Driver

The clearest and most consistent finding is that financial necessity remains the dominant reason seniors continue to work. Inadequate pension coverage and low retirement savings compel many to seek supplementary income, often in gig or informal work [19]. This vulnerability echoes broader concerns about the financial fragility of gig workers [15]. The persistence of this trend indicates that retirement is no longer a "final exit" but a financial transition, where seniors juggle both subsistence and participation.

4.2 Health as an Enabler of Extended Participation

While financial pressures push seniors into the labour market, health outcomes determine how long they can stay. Seniors with better physical and mental health are significantly more likely to remain in the workforce [13]. Active lifestyles, social engagement, and preventive healthcare thus act as enablers, rather than just background conditions. This suggests that policies promoting healthy ageing are indirectly also employment policies—they keep seniors economically productive for longer.

4.3 Human Capital and Employability After Retirement

The role of human capital—education, skills, and prior work experience—is also decisive. Seniors with higher educational attainment and transferable skills are better positioned to re-enter the

workforce or adapt to new forms of employment [12,20]. Conversely, those with limited education face higher risks of exclusion. This highlights the importance of lifelong learning and continuous skills development, especially digital skills, to ensure seniors can remain competitive in both traditional and gig economy settings [8].

4.4 Fintech as a Tool for Resilience—But with Barriers

Fintech adoption is a double-edged sword for senior citizens. On one hand, digital payment platforms such as Touch 'n Go, GrabPay, and MAE provide tools for managing irregular gig income, improving savings discipline, and accessing financial services [16,21]. On the other hand, adoption rates remain low due to digital literacy gaps, security concerns, and usability barriers [22].

While pension reforms remain a long-term necessity, fintech tools—especially e-wallets and micro-investment platforms—offer immediate solutions to seniors facing pension shortfalls. E-wallets provide an accessible entry point for financial inclusion, allowing seniors to store, transfer, and budget income from gig activities without complex banking procedures. This makes them particularly relevant in addressing pension gaps, as they enable real-time management of supplemental income streams. However, without targeted digital literacy initiatives, seniors risk exclusion from these benefits, highlighting the importance of policies that integrate fintech training with broader retirement support measures.

Without tailored interventions, fintech risks reinforcing exclusion rather than enabling inclusion. Thus, fintech must be seen not as a panacea but as one component of a wider ecosystem of support.

4.5 Policy Implications

Taken together, the findings suggest a multi-pronged approach is needed. Flexible work arrangements and social protection schemes tailored to senior gig workers could reduce income volatility [20]. Integration of fintech into pension schemes or micro-savings programs may improve long-term resilience [1]. Importantly, policies must avoid treating seniors as a homogenous group—differences in education, health, and digital familiarity require differentiated strategies.

4.6 Future-Oriented Strategies

To prepare for Malaysia's transition into a super-aged society, several strategies stand out:

- Financial resilience programs: Strengthen income support mechanisms, expand pension coverage, and design financial literacy initiatives targeted at older workers [11][23].
- Lifelong learning & digital upskilling: Institutionalize reskilling programs, with emphasis on digital and financial literacy, to equip seniors for participation in a tech-driven economy [8,15].
- Inclusive fintech design: Develop fintech solutions that are accessible, secure, and senior-friendly, while also addressing trust and cybersecurity concerns. Partnerships between fintech firms, government agencies, and NGOs could accelerate adoption in this demographic [5,22].

5. Conclusions

This paper has described a systematic review process utilizing Scopus AI to uncover current trends of fintech engagement among side-hustling Malaysian senior citizens. The findings reveal that

continued workforce participation among seniors is shaped by financial necessity, improved health, human capital, and the adoption of fintech tools. Fintech—particularly e-wallets and micro-investment platforms—emerges as a critical enabler of financial resilience, although its adoption is constrained by digital literacy gaps, security concerns, and usability barriers.

Future strategies for enhancing senior citizens' participation in the workforce should prioritize financial support, health and wellbeing, lifelong learning, fintech adoption, and flexible work arrangements. By addressing these key areas, policymakers and organizations can create an enabling environment that foster both active economic engagement and broader digital inclusion for seniors. Importantly, this study not only synthesizes existing knowledge but also identifies barriers and highlights research gaps that must be addressed through future empirical studies to ensure fintech solutions effectively bridge pension gaps and strengthen financial inclusion in Malaysia's ageing society.

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