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**FINANCIAL VULNERABILITY, RESILIENCE AND WILLINGNESS TO PAY
(WTP) FOR SOCIAL PROTECTION OF GIG WORKERS IN MALAYSIA**



**By
NG JIA JIA**

**Thesis Submitted to
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in Fulfillment of the Requirement for the Master of Economics**



Othman Yeop Abdullah Graduate School of Business

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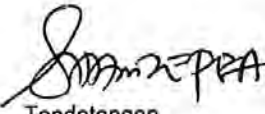
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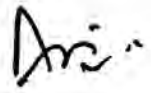
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ABSTRACT

The gig economy has reshaped the labour market by offering flexible work but also exposing workers to risks in social protection and financial stability. This study examines short-term financial vulnerability, financial resilience, and willingness to pay (WTP) for social protection schemes among gig workers in Malaysia. These factors are analysed based on socioeconomic characteristics. A multi-stage sampling method was used to select respondents from different regions and gig job categories. Data were collected through online and face-to-face surveys conducted between June and November 2022, yielding 452 usable responses. Bivariate tests, including the t-test and chi-square test, were used to identify significant associations or differences between key variables. Logistic regression was used to estimate the influence of gig workers' financial vulnerability, resilience, and WTP based on their socioeconomic factors. The findings show that monthly income consistently affects both vulnerability and resilience. Higher education is linked to lower vulnerability and greater resilience. Gender, job category, and region significantly influence WTP and financial conditions. Unlike previous studies, age shows minimal effect on WTP and financial status when other factors are controlled. In conclusion, the study identifies several key factors that influence financial vulnerability, resilience, and WTP for social protection schemes. Monthly income, education level, and job category are main factors affecting financial vulnerability. In contrast, financial literacy, vulnerability, and income play important roles in strengthening financial resilience. Additionally, gender, job category, region, financial vulnerability, resilience, and literacy significantly influence WTP for social protection schemes. Tailored legislative measures and labour reforms are essential to meet the unique needs of gig workers in Malaysia. These should include financial literacy programs, targeted job interventions, and region-specific social protection schemes. Such efforts can improve gig workers' willingness to participate in social protection scheme, ensuring inclusive and effective support in the changing employment landscape.

Keywords: Financial vulnerability, Gig, Resilience, Social protection schemes, Willingness to pay

ABSTRAK

Ekonomi gig telah mengubah pasaran buruh dengan menawarkan kerja fleksibel, tetapi turut mendedahkan pekerja kepada risiko perlindungan sosial dan kestabilan kewangan. Kajian ini meneliti kerentanan kewangan jangka pendek, daya tahan kewangan, dan kesanggupan membayar (WTP) untuk skim perlindungan sosial dalam kalangan pekerja gig di Malaysia. Faktor-faktor ini dianalisis berdasarkan ciri sosioekonomi. Kaedah pensampelan berperingkat digunakan untuk memilih responden dari pelbagai wilayah dan kategori pekerjaan gig. Data dikumpulkan melalui tinjauan dalam talian dan bersemuka antara Jun hingga November 2022, dengan 452 respons yang boleh digunakan. Ujian bivariat seperti ujian t dan ujian khi-kuasa dua digunakan untuk mengenal pasti hubungan atau perbezaan yang signifikan antara pemboleh ubah utama. Regresi logistik digunakan untuk menganggarkan pengaruh kerentanan kewangan, daya tahan, dan WTP pekerja gig berdasarkan faktor sosioekonomi mereka. Dapatan menunjukkan bahawa pendapatan bulanan secara konsisten mempengaruhi kerentanan dan daya tahan. Tahap pendidikan yang lebih tinggi dikaitkan dengan kerentanan yang lebih rendah dan daya tahan yang lebih tinggi. Jantina, kategori pekerjaan, dan perbezaan wilayah memberi kesan ketara terhadap WTP dan keadaan kewangan. Tidak seperti kajian terdahulu, umur menunjukkan kesan yang minimum terhadap WTP dan status kewangan apabila faktor lain dikawal. Kesimpulannya, kajian ini mengenal pasti beberapa faktor penting yang mempengaruhi kerentanan kewangan, daya tahan kewangan, dan WTP untuk skim perlindungan sosial. Pendapatan bulanan, tahap pendidikan dan kategori pekerjaan merupakan faktor utama yang mempengaruhi kerentanan kewangan. Sebaliknya, literasi kewangan, kerentanan, dan pendapatan memainkan peranan penting dalam membina daya tahan kewangan. Selain itu, jantina, kategori pekerjaan, wilayah, kerentanan, daya tahan dan literasi kewangan turut memberi pengaruh ketara terhadap WTP untuk skim perlindungan sosial. Langkah perundangan dan reformasi buruh adalah amat penting untuk memenuhi keperluan unik pekerja gig di Malaysia. Inisiatif ini perlu merangkumi program literasi kewangan, intervensi kerja yang disasarkan, dan skim perlindungan sosial mengikut wilayah. Usaha ini dapat meningkatkan kesediaan pekerja gig untuk menyertai skim perlindungan sosial, sekali gus memastikan sokongan yang inklusif dan berkesan dalam landskap pekerjaan yang semakin berubah.

Kata kunci: Kerentanan kewangan, Gig, Daya tahan kewangan, Skim perlindungan sosial, Kesanggupan membayar

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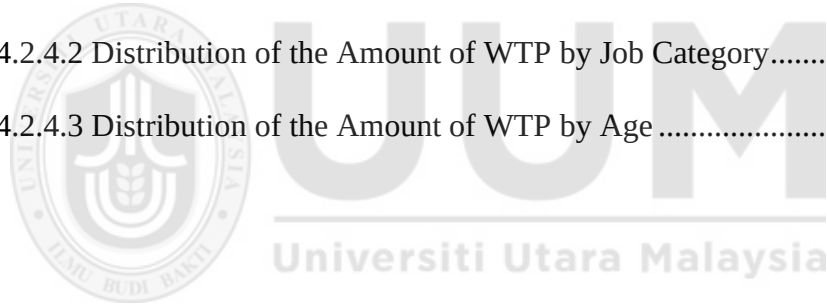
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LIST OF ABBREVIATIONS

COVID-19	-	Coronavirus Disease Of 2019
EPF	-	Employees Provident Fund
GDP	-	Gross Domestic Product
ICT	-	Information and Communication Technology
ICU	-	Implementation Coordination Unit
ILMIA	-	Institute of Labour Market Information and Analysis
IQR	-	Interquartile Range
LCH	-	Life-Cycle Hypothesis
MCO	-	Movement Control Order
RM	-	Ringgit Malaysia
SESSS	-	Self-Employment Social Security Scheme
SOCSSO	-	Social Security Organization
VIF	-	Variance Inflation Factors
WTP	-	Willingness to Pay

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Technological advancements have led to a major transition in the economy. The emergence of the “gig economy” is facilitated through various digital platforms such as e-hailing, food delivery services and freelance. Individuals who engage with customers through these platforms are known as “gig workers”. While these platforms offer flexible employment opportunities to gig workers, this has led them to be more financially vulnerable by creating precarious work arrangements with no job security and a lack of access to traditional benefits.

During the COVID-19 crisis, the rising number of positive cases forced the extension of movement control orders (MCOs). Thousands of businesses had to lay off employees and even close down. The COVID-19 disruption led to the highest unemployment rate of the decade, at 4.6 per cent in 2021 (DOSM, 2022). During this time, most employers and employees who were affected were forced to shift to digital platforms to continue their business and survive. Some markets such as retail shops, restaurants, and healthcare services shifted gears and gained an advantage over competition during the pandemic. With people restricted from outdoor activity, e-commerce and healthcare stepped in to rescue the day. Logistics companies, especially food deliverers, rose dramatically in meeting demand. Therefore, this pandemic has accelerated the dynamic of change that drives people, businesses, and government businesses, and governments to adopt digital platforms to meet their daily needs. In 2021, information and communication technology

(ICT) services, manufacturing, trade and content and media contributed 23.2 per cent to the gross domestic product (GDP) in Malaysia (DOSM, 2022). The gig economy is, thus, a new source of economic growth contributing to the GDP in the Twelfth Malaysia Plan 2021-2025 (Economic Planning Unit, 2021).

By definition, gig workers offer services based on skills, short-term contracts, freelance or flexible employment and “on demand” job. Those who participate in economic activity by using digital platforms or mobile apps for at least one hour per week are classified as gig workers in Europe (ILO, 2023a). Three categories were established by Leonardi & Pirina (2020) and Schor et al. (2020) for gig workers in European countries. Those who work full-time alongside gig workers could do this as a hobby, to build new contacts or to gain new experiences. Simultaneously, part-time workers might find that platform earnings enable them to diversify their income sources. Additionally, unemployed individuals who rely solely on gig work for their income might indeed find that gig work involves substantial work responsibilities over a long period of time.

It is a fact that the gig economy and the persistence of individuals in low-income jobs are significantly correlated, particularly concerning the last two categories (Leonardi & Pirina, 2020). Gig workers, as outlined by the Inland Revenue Authority of Singapore (2023), including independent contractors, freelancers, or project-based workers who rely on their specific skills. Gig workers are also classified as workers who do not have written contracts, are not entitled to annual vacation, and have no social protection coverage (Chen, 2012; DOSM, 2020; Miti et al., 2021). Although the term “gig worker” carries diverse definitions around the world and significantly contributes to the nation's GDP, there is currently no legal definition of the term that mandates the provision of

employment benefits to gig workers. Employment benefits such as health insurance, paid leave, or retirement contributions are often attached to traditional employment.

Moreover, the inherent flexibility and autonomy in gig work contribute to the financial vulnerability of gig workers (Broughton et al., 2018). Uncertain income and lack of savings lead to short-term financial vulnerability, making it challenging to afford monthly expenses like rent, food, or utility bill (Auguste et al., 2022; Daniels & Grinstein-Weiss, 2019). Not only that, gig workers are also vulnerable to social risk because of the absence of welfare and financial safety nets such as insurance coverage from employers or platform service providers in contrast to traditional employees. In the event of work-related accident or injuries, they are responsible to pay the medical costs by themselves. Without proper regulation for gig workers, the gig economy's growth might cause financial instability, leading to long-term socioeconomic and political problems.

By providing better access to social security services, gig workers may improve their financial resilience and empower themselves for a rapid rebound from potential economic shocks. However, there are still uncertainties about the practical implementation of social protection programmes. Therefore, it is vital to carry on exploring the different perspectives of gig workers towards these programmes in various contexts. The willingness to pay (WTP) for social protection is pivotal in discussions on its expansion. WTP denotes the monetary value that individuals are prepared to spend or allocate of accessing specific services (Ogundeji et al., 2019). Without the assurance of sufficient assistance during difficult times, the perceived return on investment for making contributions to social safety schemes may decline, which would lower the participation rates.

In conclusion, Malaysia's gig economy has grown rapidly in recent years, as many workers turning to digital platforms for employment opportunities. However, gig workers are often financially vulnerable due to the absence of social protection such as unemployment benefits, health insurance, and medical care (OECD, 2020). Thus, the ability of gig workers to bounce back from economic shocks has emerged as a significant concern for researchers and policymakers. This has urged them to argue that rights and protections for "online platform workers" or "gig workers" should be strengthened (OECD, 2019; ILO, 2023).

It is imperative to identify the financial vulnerability, resilience and willingness to pay (WTP) based on their socioeconomic factors in Malaysia to enhance the social protection schemes for gig workers. According to Hamid et al. (2023), low resilience is considered financially vulnerable. Nonetheless, it is crucial to recognize that gig workers who can fulfil their basic needs might also show low financial resilience. Financial vulnerability is also an important issue which causes gig workers reluctant to contribute to social protection schemes. The key assumption is that the WTP for social protection might differ depending on socioeconomic factors. The idea extends to social protection for gig workers are excluded from the protection such as the Employees Provident Fund (EPF), unemployment benefit and health protection.

Different age group, income, educational attainment, family size, and other factors can affect their ability to contribute to social protection as it becomes a commitment. Therefore, the financial vulnerability, resilience, and WTP for social protection can be estimated by economic methods. Given the significance of social protection in

safeguarding gig workers' financial well-being, it is vital to explore the social protection schemes available to gig workers in Malaysia.

1.2 Social Protection in Malaysia

Social protection includes all public initiatives to protect individuals from economic and social distress. Social protection comprises three different types of policy, for example, social assistance programmes, social insurance programmes, and active labour market policies (ALMPs) (Bank Negara Malaysia, 2021; Hamid et al., 2021). It is a sustainable development goal that can improve everyone's quality of life and ensures income security in the event of unexpected situations like illness, pregnancy, workplace injuries, unemployment, retirement and death of breadwinner (Miti et al., 2021). The COVID-19 pandemic, which led to a high unemployment rate, accelerated the emergence of the gig economy.

However, Malaysia's social protection system has not been immune to these challenges. The pandemic has exposed deep structural issues surrounding the country's current social protection framework. As gig workers experience income instability, their financial capacity is diminished, and their access to loans is limited due to the lack of credit ratings. They are compelled to seek financial assistance from family members, friends, or illegal financial institutions to cover daily expenses. Since they are ineligible for medical benefits, they may be forced to continue working despite being sick.

Consequently, gig workers are vulnerable, facing challenges such as unstable income and lack of social protection, which unable to support their own basic needs (OECD & ILO, 2019). Due to the flexible nature of gig jobs, gig workers in Malaysia are not recognized

by the government, leading to a lack of critical data. This potentially results in the implementation of ineffective policies (Kidd, 2020). As a result, gig workers have experienced the most significant impact on the labour economy. There are existing protection schemes in Malaysia, mainly voluntary and self-administered, but the participation rate is low (OECD, 2021b).

1.2.1 Voluntary contribution with retirement incentive (i-Saraan)

Voluntary contribution with retirement incentive (i-Saraan) programme announced by the Employment Provident Fund (EPF). It enables EPF members who are self-employed and have no regular source of income, including gig workers to contribute voluntarily to their retirement fund and receive additional contributions from the government as a special incentive.

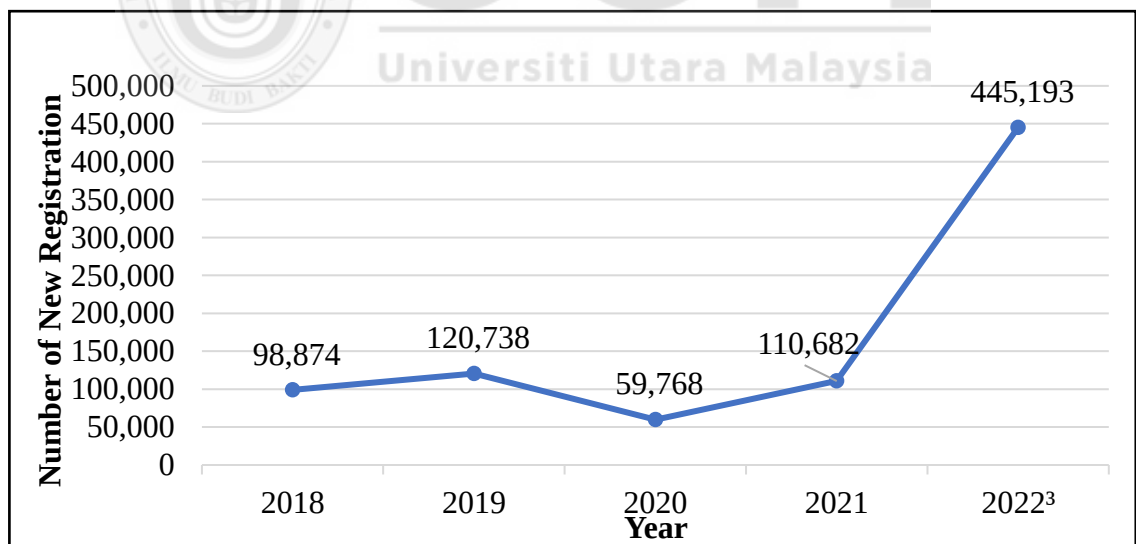


Figure 1.1

The Number of i-Saraan New Registration from 2018 to 2022

Source: EPF 2020, 2021, 2022, 2019

Figure 1.1 shows the number of new registrations for i-Saraan from 2018 to third quarter of 2022. It shows the sharp increase in registration throughout these five years. The new registrations of i-Saraan recorded at 98,874 in 2018 and increased by 22.11 per cent to 120,738 in 2019, as efforts to expand coverage to the self-employed, including gig workers. However, in 2020, new registrations dropped significantly to 59,768, indicating a 50.50 per cent decline from 2019. This decline was attributed to the limited in-person services provided at EPF's branches in compliance with the MCO's SOPs and promotional campaigns by EPF counter staff or the Mobile Team, which could not be implemented throughout the year due to the implementation of movement control orders in Malaysia. (EPF, 2019).

The contribution of i-Saraan significantly decreased during the first MCO in 2020 since members' incomes were negatively impacted by restriction on economic activities. Many individuals could not work at all due to the lockdown measures (EPF, 2020). As a result, their ability to contribute to i-Saraan was diminished. However, EPF's branches motivate i-Saraan members to contribute continuously to their retirement savings, resulting in an increased collection of contributions from RM217.38 million in 2019 to RM223.11 million at the end of 2020.

The EPF continues to promote retirement planning and savings among self-employed individuals and informal workers through i-Saraan, where members receive a 15 per cent government contribution (maximum RM250 per year) in addition to their contributions. After the promotion was released, new registrations increased to 110,682 and recorded RM302.39 million in contributions in 2021. Since the movement restrictions ended on 31 December 2021, along with the increase of gig workers, there was a rapid rise in new

registrations to 445,193 in the third quarter of 2022, which is around four times as in 2021. (We need to say something, like this is the number of ‘new registration’, and it does not reflect whether or not regular distribution has been made by the registrants. This is important to set a foundation for your problem statement later).

1.2.2 Self-employment social security scheme (SESSS)

According to the Self-Employment Social Security Act of 2017, the Self-Employment Social Security Scheme became effective on 1 June 2017. It was introduced to protect self-employed individuals and informal workers, including gig workers. This scheme has provided them with medical care, temporary disablement, permanent disablement, constant attendance allowance, dependents’ benefits, bereavement benefits, education benefits, and physical or vocational rehabilitation facilities. Self-employment injuries include occupational diseases and accidents during work-related activities; the self-employed insured persons are well-protected by this scheme. Occupational diseases refer to those caused by or arise from any occupation listed in the Fifth Schedule of the Employees’ Social Security Act of 1969.

The scheme was initially mandatory for self-employed individuals in the passenger transport sector including taxi, e-hailing, and bus drivers. However, the significant increase in the informal sector has raised critical issues that need to be solved by the government. Thus, starting from 1 January 2020, this scheme has been extended to 19 other sectors under the informal sector, including goods or food transport, agriculture, livestock, forestry, fisheries, food, construction, manufacturing, hawkers, accommodation premises, online business, information technology, data processing, agents, professional

services, support services, arts, household services, beauty and healthcare (SOCSSO, 2022). Over 810,000 self-employed and informal workers in the country are anticipated to benefit from this coverage expansion (Mansor, 2022).

Table 1.1

Four Types of Self-Employment Social Security Scheme (SESSS) Contribution Plan

Plan	Insured Income	Monthly Contribution	Yearly Contribution
1	RM1,050	RM13.10	RM157.20
2	RM1,550	RM19.40	RM232.80
3	RM2,950	RM36.90	RM442.80
4	RM3,950	RM49.40	RM592.80

Source: SOCSSO, 2020

Table 1.1 shows the contribution depends on the options of insurable earnings, which included four plans from RM1,050, RM1,550, RM2,950, or RM3,950 with the yearly contribution from RM157.20, RM232.80, RM442.80, or RM592.80 respectively. Contributions may be paid on a monthly or annual basis. The coverage for self-employed individuals who contribute to the scheme begins on the date and time of contribution payment is made and verified on the payment receipt.

1.2.3 Penjana Gig

PenjanaGig programme is a government assistance initiative through *Pelan Jana Semula Ekonomi Negara (PENJANA)* on June 2020 to guarantee the social security and welfare of self-employed individuals (*Orang Bekerja Sendiri, or OBS*) including GrabCar, FoodPanda, LalaMove and others in the gig economy. This initiative is a component of the Self-Employment Social Security Scheme (SESSS) and is under Plan 2. A contribution of RM232.80 is the basis of this government assistance for a coverage period of at least

one year. Self-employed individuals or gig workers can enjoy the benefits of social security protection under SESSS and SOCSO.

Table 1.2
Distribution of PenjanaGig (Plan 2) Contribution

Plan	Government Contribution 70%	Platform Service Provider 30%
Plan 2 (RM232.80)	RM163.00	RM69.80

Source: SOCSO, 2020

In this programme, the contribution will be paid with 70 per cent from the government (RM163.00) and remaining 30 per cent (RM69.80) from the platform service providers (or gig workers through the platform service providers, as shown in Table 1.2. The contribution is only allowed for annual payments. Applications and contributions can be submitted starting from 15 June 2020 until 31 December 2021 (SOCSO, 2020a).

1.2.4 KerjayaGig programme

The KerjayaGig programme has expanded the scope of hiring incentives under PenjanaKerjaya 3.0 by providing gig or temporary job opportunities until participants obtain full-time employment. By definition, gig employment refers to individuals who carry out work through platform service providers using digital applications to obtain wages, including Grab Car, Foodpanda, Lalamove and others. In this programme, a monthly payment of RM600 as an incentive was provided to individuals who were offered a temporary or gig job for up to 6 months, while a one-off fee of RM200 was provided to employers, services providers, platforms, or organization for each temporary or gig job provided by the operator registered with SOCSO.

Four groups of individuals are eligible to apply for this programme : (i) formal workers who are registered with SOCSO but are given notice for unpaid leave, unemployed individuals who registered with SOCSO, (ii) hardcore unemployed groups who have been unemployed for over 180 days and jobseekers from vulnerable groups (disabled people (OKU), (iii) single mothers, poor households registered with e-Kasih, former prisoners, and others). The additional requirement is that individuals must submit proof of employment activity by uploading the *Log Aktiviti Gig* through the application system to receive the subsequent monthly incentive payments. Besides, individuals must inform SOCSO when they obtain a full-time job offer within 24 hours. However, the amount received would be reclaimed for those who do not following the requirement.

1.2.5 SIP Gig programme

Under Budget Malaysia 2022, SIP Gig is a financial incentive of RM600 to RM800 per month for a maximum of 6 months for new gig workers. There are two main objectives for this programme: to provide opportunities for short-term employment for unemployed individuals and encourage job seekers or unemployed individuals to access employment opportunities in informal employment or gig jobs through digital platforms. This incentive is targeted at individuals who have received notice of unpaid leave (minimum of one month), have been laid off, individuals or graduates unemployed for more than 60 days, job seekers from the affected group (disabled, ex-prisoners and others) and housewives who have not worked for more than 6 months but engaged in work with irregular working hours using Digital Platform registered under SOCSO. Gig workers who earn at least RM1,200 monthly commission or work more than 40 hours per week are eligible for an RM600 monthly incentive. In comparison, those who earn RM2,500 or more monthly

commission or work more than 60 hours per week are eligible for RM800 monthly incentives from this programme. The application of the SIP Gig programme was opened from 17 January 2022 until 31 December 2022.

1.2.6 Malaysia Social Protection Council (MySPC)

MySPC is the main coordination policy and programme to strengthen the country's social protection system. It was reactivated on 29 June 2020 with an emphasis on coordinating social protection data among agencies that include core social assistance, labour market intervention and social insurance. MySPC is coordinated by the Implementation Coordination Unit (ICU) under the Prime Minister's Department, which acts as a secretariat. MySPC aims to reform the social security framework, pension and retirement, including a protection scheme from SOCSO and EPF would be improved and expanded to all Malaysians.

In part of social security, it focuses on these main groups i.e. (i) housewives, (ii) contract/ self-employed individuals, (iii) private and public sector workers. Increasing the involvement and retention of target groups in the labour market through job placement, up-skilling and re-skilling, minimum wages and re-employment of retirees is a strategy to create an active and inclusive labour market. In addition, developing a social protection database to store and manage comprehensive information across agencies enables policymakers to improve protection for vulnerable groups (Sarimin & Hassim, 2021).

In conclusion, there are several social protection programmes for gig workers in Malaysia. The government has implemented self-contribution, short-term programmes or incentives of social protection for the gig workers as well as incentives for employers who provide

temporary or gig employment in order to encourage employment in the gig economy and reduce unemployment. Most of the programmes have expanded their coverage to include a wider range of individuals, not only self-employed workers, but also gig workers such as e-hailing, p-hailing, freelancers, and others. Thus, social protection is important to protect the workers in terms of employment, income, medical and retirement, which reduces their vulnerability. Government and employer contributions are also essential in social protection to reduce the financial burden on gig workers.

1.3 Problem Statement

The lack of regulatory protection and fundamental rights at work has become an issue for the vulnerable position of gig workers (De Stefano & Aloisi, 2018; Koutsimpogiorgos et al., 2020). Many of them are ineligible to receive employee benefits from their companies, which exposes them to high risk. The existing social protection schemes for gig workers in Malaysia, such as the Self-Employment Social Security Scheme (SESSS) under SOCSO (Social Security Organisation) and the i-Saraan programme from the Employees Provident Fund (EPF), aim to provide protection for gig workers who traditionally lack access to formal employee benefits. However, the pattern of contribution highlights several challenges tied to the unique nature of gig work and the instability of income that gig workers face.

Despite the introduction of social protection programmes, participation remains minimal. SOCSO reported that only 5.43 per cent of self-employed workers, including gig workers, are contributing under SESSS (Kamel, 2021). Similarly, in 2020, the i-Saraan programme showed a registration rate of less than 10 per cent out of the estimated 2.7 million self-employed Malaysians, with only 18 per cent of them consistently contributing to i-Saraan

(Ministry of Finance, 2020). This figure highlights the critical gap in social protection coverage, especially given the gig economy, where workers face higher risks due to a lack of protection.

Hence, income volatility is a significant factor affecting the ability of gig workers to contribute regularly to social protection schemes. According to the data from Glassdoor, a platform that provides comprehensive company insights, including salary information for businesses operating in Malaysia, p-hailing riders earn an average monthly income of RM1,000 – RM2,000, while e-hailing drivers averaged RM1,750 – RM3,500, and freelance gig workers earned between RM1,000 – RM4,000 (Glassdoor, 2024a, 2024b, 2024c). These figures indicate that a significant number of gig workers earn below Malaysia's median wage of RM2,844 (DOSM, 2024), leading to their financial vulnerability. As a result, gig workers often lack the ability to make consistent contributions to schemes like SESSS or i-Saraan, making them less protected. If a gig worker is involved in a road accident or work-related injury that requires emergency treatment or medical care, the lack of employee protection could cause a financial crisis for them and have unfavorable consequences for their families.

The irregular and low income of gig workers leads to inconsistent savings, making it difficult for them to meet their basic needs and prepare for financial emergencies. Research from Caro et al. (2021) in Western countries has shown that full-time gig workers often report earning below minimum wage standards, and similar challenges exist in Malaysia where the gig workers earn less than RM2,500 per month (Ahmad, 2020). As a result, the inability to save regularly further exacerbates the financial resilience of these workers.

Given this scenario, social protection can provide gig workers with a better alternative funding mechanism. Critical concerns include fragmented and overlapping programs, coverage gaps, inadequate programs to fully address socioeconomic vulnerabilities, and fiscal challenges. While research on the gig economy in Malaysia remains limited, it is important for gaining deeper insights due to the differences in the socio-economic landscape, policy, and regulatory framework. Besides, the financial vulnerability, financial resilience and willingness to pay for social protection of gig workers might vary due to demographic and socioeconomic factors. Thus, this study aims to identify the financial vulnerability, financial resilience and willingness to pay (WTP) for social protection among gig workers in Malaysia, taking into account socioeconomic factors. Additionally, there is a lack of evidence on the determinants of financial vulnerability, financial resilience and WTP for social protection among gig workers in the Malaysian context. Therefore, it is essential to understand these determinants in order to assist authorities in revising and implementing effective policies regarding social protection for gig workers in Malaysia.

1.4 Research Question

- i. How do the financial vulnerability, resilience, and willingness to pay (WTP) for social protection of gig workers differ by their socioeconomic factors?
- ii. What are the determinants of financial vulnerability, resilience, and willingness to pay (WTP) for social protection among gig workers?
- iii. What is the distribution of willingness to pay (WTP) amounts across selected socioeconomic factors among gig workers?

1.5 Research Objectives

The purpose of the research objectives is to answer all the problems outlined in the research questions.

- i. To determine the distribution of financial vulnerability, resilience, and willingness to pay (WTP) for social protection among gig workers across different socioeconomic factors.
- ii. To identify the determinants of financial vulnerability, resilience, and willingness to pay (WTP) for social protection among gig workers.
- iii. To identify the distribution of willingness to pay (WTP) amounts across selected socioeconomic factors among gig workers.

1.6 Significance of the Study

Social protection is important and has a huge impact on the labour market. In contrast, gig workers who do not receive social protection, such as unemployment benefits, health protection, and medical care could be exposed to risk. Socioeconomic factors, such as income level, education, and job stability, influence the individuals' financial vulnerability of and their willingness to pay (WTP) for social protection schemes.

The findings can be used as a guideline for those who want to conduct an in-depth study on the financial vulnerability, resilience, and WTP for social protection of gig workers in Malaysia. By providing empirical evidence, this research will contribute to the formulation of policies aimed at improving the social safety net for this group. For instance, the studies by Daud et al. (2024) and Uchiyama et al. (2022) conducted in Malaysia indicate that certain socioeconomic factors, such as level of education, income

level, and job category significantly influence the financial vulnerability of gig workers, whereas in Western countries, as noted by Broughton et al. (2018), factors such as level of income have a more pronounced impact.

While there has been extensive research on gig workers' social protection in Western economies, such as studies by Bärnighausen et al. (2007) and Berdahl & Moriya (2021), there is a notable gap in studies focusing on the willingness to pay (WTP) for such protection among gig workers in Malaysia. The few available studies, such as Daud et al. (2024) and Uchiyama et al. (2022) provide preliminary insights but do not comprehensively address WTP or its determinants within the Malaysian gig economy. By filling this gap, this study will provide a clearer understanding of financial behaviors and challenges specific to Malaysia's gig workers. The research outcomes will guide policymakers in designing and implementing social protection policies that are effective for the unique needs of gig workers in Malaysia.

Moreover, this research will offer a blueprint for future studies by simplifying the selection process of key determinants influencing financial vulnerability among gig workers. Policymakers and researchers will be able to utilise these findings to identify socioeconomic factors that significantly impact on effective policies for comprehensive social protection.

By addressing the literature gap and offering empirical data, this study will provide essential insights for stakeholders to consider when designing or refining social protection schemes. An inappropriate scheme could lead to lower participation rates and may potentially push gig workers into the informal sector, contributing to a shadow economy.

Therefore, a deeper understanding of WTP for social protection and potential subsidy mechanisms is vital to ensuring the effectiveness and sustainability of these schemes.

1.7 Scope of Study

The research aims to analyse financial vulnerability, resilience, and willingness to pay (WTP) for social protection of gig workers, covering those with gig platforms and other freelancers such as e-hailing, accommodation, household services, local microtasking, freelancers (journalism, programming, software development, content writer, copywriter, photographer), consultants, art, design, entertainment, and education. As for sampling, the respondents has been chosen to represent the Northern, Central, Southern, and East Coast of Peninsular Malaysia, as well as Sabah and Sarawak of East Malaysia. The sample consisted of gig workers from Peninsular Malaysia and East Malaysia. The survey was conducted through a combination of online and physical face-to-face interviews, which were carried out between June 2022 and November 2022.

1.8 Definition of Key Terms

The term “gig economy” describes the labour market where independent contracting occurs through and on digital platforms where the work is contingent, including temporary work and freelancing. This platform serves as a mediation for people to interact in social and economic activities which they connect consumers, gather and monetize data and scale to be effective. Most businesses now mediate practically every economic activity through the gig economy. Many digital platforms purposefully hire as many workers as possible with low entry requirements, typically to generate a surplus of the labour force

and ensure a consistent supply of workers on demand for those who need them. The emergence of the gig economy has changed the nature of work from permanent or stable jobs to more flexible arrangements for workers, and employers (Woodcock & Graham, 2020). However, the gig economy also has a negative side, including low wages, irregular employment, hazardous working conditions and lack of employment protection. Traditional mechanisms for regulating basic working standards are fundamentally challenged by the emergence of the gig economy, which is characterized by digital platforms and solitary independent workers. Thus, the unclear existing regulations for gig workers exacerbate their vulnerability (Stewart & Stanford, 2017).

Many jobs are insecure because they might be irregular or temporary workers with unstable incomes. Physical hazards or diseases might arise from the work itself. When the labourers work and live in unprotected conditions, it denies their fundamental rights, hampering economic development and social harmony. Thus, social protection allows labours, their families, and communities to feel more secure despite vulnerabilities and unforeseen circumstances. According to the ILO (2004), social protection is defined as a set of public policies that a society offers its citizens to protect them from economic and social hardship caused by a significant decrease in income as a consequence of various contingencies such as sickness, injuries at the workplace, unemployment as well as the people reach an old age.

Besides, social protection also includes healthcare and benefits for families with children. The Universal Declaration of Human Rights, adopted in 1948, specifically in Article 22 stated that "everyone, as a member of society, has the right to social security". On the other hand, SOCSO is an administrator for social security protection in Malaysia. When

accidents happen or diseases make employees unable to work, SOCSO will provide free medical treatment, a place for physical or vocational rehabilitation and financial help. If an employee passes away, their dependents will be financially supported by their pension (SOCSO, 2020b).

Financial vulnerability is also known as financial fragility manifested as the inability to manage expenses, inability to cope with unexpected expenses, indebtedness, or a decline in the ratio of real household net wealth to disposable income (Loke, 2017; Daud et al., 2019). The significant reason for financially vulnerable people is usually a lack of financial knowledge that leads to unplanned financial behavior. This situation exposed people to financial risk and shock, making it difficult for households to accumulate sufficient wealth to support their livelihood. Financial vulnerability demonstrates the degree to which an individual, family, or community is susceptible to adverse financial events or shocks. It is a measure of how easily one's financial situation can be negatively impacted by unexpected events such as joblessness, medical emergencies, or economic downturns (Poh & Sabri, 2017). Thus, high financial vulnerability households were those with low income or low liquidity, high balance sheet leverage and inability to manage financial stress and financial crisis. The main characteristic that distinguishes vulnerability from poverty is the risk of or uncertainty of experiencing hardship (Midões & Seré, 2022). Financial vulnerability can be measured by using objective and subjective approaches. The objective approach is self-reported or gathered from external sources and an independent individual's perspective. For instance, the presence of financial assets, the amount in a savings account, credit accessibility, or coverage of health insurance. The subjective approach is usually conducted through surveys which based on perception and

self-reported. The debt-to-income ratio and the emergency savings for income shock are indicators used to measure financial vulnerability (Loke, 2017). A survey of United States household financial vulnerability has been done by using data from National Financial Capability Study 2015 asking individual's confidence in their ability to come up with \$2000 in one month in the event of an emergency (Hasler & Lusardi, 2019). Therefore, high levels of debt, limited savings, unstable income, and lack of financial planning are often indicators of financial vulnerability (Fernández-López et al., 2023).

Financial resilience reveals an individual's ability to recover from economic setbacks, thereby enabling them to navigate financial challenges and adapt to changing circumstances (Abbott-Chapman et al., 2008). Financial resilience plays a pivotal role in gauging an individual's capacity to withstand financial shocks and maintain their economic well-being. It is a multidimensional concept that encompasses various indicators, including economic resources, financial resources, financial knowledge, and social capital (Bottazzi & Oggero, 2023; Chen & He, 2022; Essel-Gaisey et al., 2023; Hamid et al., 2023; Lusardi et al., 2021). Economic resources denote an individual's disposable income and wealth. These resources provide a buffer against financial shocks and enable individuals to maintain their consumption levels during difficult times. In contrast, financial resources refer to the ability to access credit and other financial instruments, including insurance that can help individuals manage risks and uncertainties. Additionally, financial literacy is another critical indicator of financial resilience. Financial literacy enables individuals to make informed decisions about their finances, such as saving, investing and managing debt. Research has shown that financial literacy is particularly low in certain demographic groups, such as women, lower-income

individuals, and the young (Lusardi et al., 2021). This lack of financial literacy can exacerbate the impact of economic crises, making it more challenging for individuals to recover. Social networks and community support as social capital can provide individuals with access to resources and information that can help them manage financial shocks (Chen & He, 2022). Therefore, financially resilient individuals or communities are better equipped to navigate challenges, recover from setbacks, and maintain a level of financial stability even in the face of adverse events.

Nevertheless, it is noteworthy that generic definitions of financial vulnerability include various aspects, however, this study is mainly measured by the ability to meet basic expenditures. In other words, financial vulnerability refers to short-term financial stress, whereas financial resilience represents a combination of long-term vulnerability and the ability to bounce back from financial setbacks.

When evaluating social protection programs, willingness to pay (WTP) emerges as a critical consideration. According to Breidert (2005), it indicates the level of support and investment people are willing to contribute to these initiatives, thereby highlighting their perceived value and potential impact on societal well-being. It also represents the highest price a person agrees to pay in exchange for a good or service, influenced by its utility and perceived economic value .

1.9 Organization of the Study

In this study, there are five chapters structured as follows. Chapter One presents the background of the study, the problem statement, research questions, research objectives, the significance of the study, the scope of the study, and the research hypothesis. Chapter Two presents an extensive literature review relevant to this research and the literature gap. Chapter Three is a methodological chapter discussing the data and estimation methods used in this research. Chapter Four discusses the results. Lastly, Chapter Five concludes the key findings, followed by suggestions and policy implications, limitations of the study, as well as some recommendations for future studies.



CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The main purpose of this chapter is to provide insight into basic concepts and theories related to the research. This chapter reviews the previous studies related to the research topic and illustrates the impact of socioeconomic factors on financial vulnerability, resilience and willingness to pay (WTP) for social protection. The theories are presented in Section 2.2. Section 2.3 discusses empirical evidence on financial vulnerability and resilience among gig workers. Section 2.4 presented a willingness to pay (WTP) for social protection schemes. In addition, this research contributes to filling the literature gap as discussed in Section 2.5. Section 2.6 briefly concludes the chapter.

2.2 Theoretical Review

The life-cycle hypothesis (LCH), developed by Modigliani and Brumberg (1954), a theory of consumer behaviour in which individuals make consumption and savings decisions based on their expected lifetime income and not just their current income. According to LCH, people save during their working years and draw upon their savings during retirement, which implies that financial behavior is not random but based on expected income and needs at different stages of life (Modigliani, 1986).

The LCH suggests that individuals aim to maintain consistent consumption levels throughout their lives, saving during their working years and drawing on those savings during retirement. This core concept is reflected in Danziger et al. (1982), Deaton (2005)

and Jappelli (2014), which investigate how individuals adjust their consumption based on anticipated future income rather than solely relying on current income. Danziger et al. (1982) emphasize this in the context of poverty, while Deaton (2005) provides empirical validation across demographics, and Jappelli (2014) explores it across different countries.

Modigliani's original hypothesis also suggests that wealth accumulation follows a "hump-shaped" pattern. The peak during middle age when earnings are highest. The prediction of the LCH, that individuals save more during their prime earning years is supported by the analysis of consumption data in the past studies (Deaton, 2005; Sablik, 2016). Besides, the wealth pattern which the variations in saving behaviours influenced by economic conditions and institutional factors also discussed in previous study (Jappelli, 2014).

The original LCH has undergone various empirical tests and adaptations to address challenges and deviations observed in real-world data. The rigorous testing of the LCH using modern econometric techniques contributes to its empirical foundation (Danziger et al., 1982; Deaton, 2005). Similarly, Jappelli critiques previous methodologies for measuring savings and suggests adjustments to better reflect life-cycle savings behavior, particularly regarding pension contributions (Jappelli & Modigliani, 2003).

At the aggregate level, the Life-Cycle Hypothesis (LCH) suggests that a nation's saving rate is influenced by its economic growth rate rather than just its current aggregate income level. This implies that in a rapidly growing economy, a larger proportion of the population consists of younger, working-age individuals who have higher savings which results in higher aggregate savings. Conversely, there is a potential reduction in the national saving rates in a slower-growing or aging economy due to the increase share of

retirees (who dissave). Thus, aggregate savings are more closely linked to the demographic structure and growth dynamics rather than just the total income at a given point in time. The LCH implies that national saving rates depend on economic growth rather than current income levels solely. This aspect is highlighted in Deaton (2005) findings about how younger generations save more during growing economies to maintain higher consumption expectations in life later. Danziger et al. (1982) focus on social policy also aligns with this view, as they discuss how economic conditions affect saving behaviors among low-income households. Thus, these studies not only align with the original LCH theory but also expand upon it by addressing specific contexts such as poverty, demographic variations, and empirical validations. They collectively reinforce the relevance of the LCH in understanding consumption and savings behavior across different populations and economic conditions.

Despite the suggestion of LCH requiring individuals to have smooth consumption over their lifetime by saving during high-income periods and dissaving in retirement, gig workers' irregular income patterns and lack of formal retirement benefits make it difficult for them to follow this path. Through this lens, the study explores the financial vulnerability, resilience, and willingness to pay (WTP) for social protection among gig workers, identifies the key socioeconomic determinants influencing these factors and analyses the distribution of WTP amounts across different socioeconomic groups. Gig workers, who are often characterised by their non-traditional employment arrangements, face unique challenges in financial planning due to the uncertainty and variability of their income sources. This makes them more financially vulnerable in the short term, as they may struggle to meet basic expenditures during periods of illness, unemployment, or low-

demand work seasons. Under the LCH framework, financial vulnerability is seen as more prevalent in the earlier and middle stages of life, where income fluctuations are more pronounced and savings may not be sufficient to cover unexpected costs. Variables such as income volatility, employment stability and the ability to meet basic expenses can be used to model financial vulnerability. This is because LCH suggests that individuals in these stages are still accumulating wealth and, therefore, more vulnerable to financial shocks.

Financial resilience, on the other hand, reflects an individual's capacity to bounce back from financial shocks and adapt to changing economic conditions. According to LCH, financial resilience is built over time through saving and investment behaviors that prepare individuals to handle income disruptions in life. Gig workers who are able to save regularly, manage their expenses, or draw upon external support (such as family or community networks) indicate greater financial resilience. LCH suggests that individuals who are older or have more savings and assets are more financially resilient. Factors like savings rate, access to external support, and long-term financial planning can be used to measure financial resilience, as individuals who successfully manage their financial resources are better equipped to handle future economic challenges.

Willingness to pay (WTP) for social protection schemes is closely linked to both financial vulnerability and financial resilience, as it reflects how individuals perceive their need for financial security throughout their lives. According to the LCH, WTP is higher for individuals who foresee greater financial challenges in the future, especially those who experience instability of income or lack personal savings. Gig workers with higher financial vulnerability are more likely to express a greater WTP for social protection

schemes because they face higher risks in the short term. Conversely, those with greater financial resilience may show lower as they feel more confident in their ability to manage financial risks independently. LCH suggests that WTP for social protection will increase as individuals approach later life stages, where income is expected to decline and the need for protection (such as healthcare and retirement) is predicted to rise.

The LCH offers a comprehensive framework for selecting variables that capture the relationship between financial vulnerability, resilience, and WTP. For instance, income level, which is higher income, may reduce financial vulnerability and increase financial resilience by enabling more savings and lower WTP for social protection. Individuals with lower incomes are more likely to experience greater financial vulnerability and WTP but have lower financial resilience. Besides, younger gig workers may experience higher financial vulnerability due to lower savings but may have lower WTP for social protection because they perceive fewer immediate risks. Older workers approaching retirement may show higher WTP as they anticipate more significant income declines. Those who save regularly or have access to external financial support show greater financial resilience, which could lower their WTP for social protection schemes. In addition, individuals who perceived greater risks in terms of health issues or unemployment may exhibit a higher WTP for social protection schemes, as they recognize the potential future financial challenges, aligning with LCH's prediction of consumption over life stages.

In short, LCH explains how financial behavior is shaped over time, influencing financial vulnerability, resilience and WTP for social protection schemes. By examining how gig workers manage income, savings, and spending at different life stages, this study highlights why some workers are more vulnerable, others more resilient, and how these

impact their WTP. Thus, LCH provides a theoretical basis for understanding the interactions between financial vulnerability, resilience, and WTP, offering insights into how socioeconomic factors drive these dynamics and shape the development of policies that address the financial challenges faced by gig workers in Malaysia.

2.3 Financial Vulnerability and Resilience

Individuals typically work as gig workers in order to cope with their financial difficulties. Koustas (2019) and Daniels & Grinstein-Weiss (2019) demonstrate how structured questionnaires capture the economic conditions of gig workers, influencing their financial behavior and vulnerability. The quantitative analysis uses survey data which analyse income patterns, savings, and financial challenges among gig workers. However, gig workers often earn less compared to their full-time job's income and local minimum wage, which causes them greater financial challenges (Manyika et al., 2016; Myhill et al., 2021; Butler, 2021). Specifically, Myhill et al. (2021) highlights the impact of income fluctuations on financial planning and resilience by using a case study approach with qualitative insights. As the demand for gig services varies, workers' wages fluctuate (Daniels & Grinstein-Weiss, 2019).

Many gig respondents in the United Kingdom (UK) are relatively satisfied with their working routine. Even though many gig workers are employed in London's prosperous economy, only a few people are able to save a portion of their income, and the majority have no savings for retirement because they earn solely from gig jobs or supplementary household income. Younger workers may eventually face more financial difficulties than older workers. This is because older workers receive pensions after they retire and often

have assets that can earn passive income, like rental properties, which put them in a better financial position. Due to the uncertainty of job availability and limited ability to save, gig workers might experience financial vulnerability (Broughton et al., 2018). Most of the gig workers have higher debt than formal workers and engage in predatory lending (Mitchell et al., 2021). The solvency of gig workers can impact service provision. For example, individuals who are financially distressed might not be able to keep the vehicle they used for e-hailing activities or the house they used to host Airbnb guests (Daniels & Grinstein-Weiss, 2019).

In Malaysia, gig workers have no financial safety nets such as retirement savings in EPF because the national legal framework does not recognize them as “employees” leading them to financial shock (Nadzri & Hassan, 2020; Othman et al., 2020). In this situation, financial safety nets play a crucial role in safeguarding gig workers’ financial resilience during emergencies and unexpected circumstances. However, empirical evidence of financial vulnerability among gig workers in Malaysia is limited.

There have been several studies in the literature that use socioeconomic factors such as gender, age, education level, marital status, number of households, household income, financial literacy and financial behavior to analyze the determinants of financial vulnerability (Betti et al., 2007; Loke, 2017; Daud et al., 2019). Among the factors mentioned earlier, Sabri et al. (2021) find that the majority of the breadwinners and household heads are men, whose financial behavior is more likely to determine household financial vulnerability. In contrast, Killewald et al. (2017) indicate women being risk averse most of the time to lower financial fragility. In terms of age, Cifuentes et al. (2020) find that the potentially vulnerable households are relatively younger. Moreover,

Anderloni et al. (2012) and Šubová et al. (2021) find that higher education levels obtained more comprehensive knowledge of various financial products and managed financial resources well to overcome unexpected situations.

The marital status and number of households have statistically significant impacts on the vulnerability levels (Ali et al., 2020; Cifuentes et al., 2020). Financial vulnerability is negatively associated with married households, whereas the number of households has a significantly direct effect. Loke (2017) and Daud et al. (2019) find that household income significantly influences financial situation, such that the lower the disposable income, the higher the financial vulnerability of the household. Furthermore, uncertain income also leads to financial vulnerability (He & Zhou, 2022). Many researchers have argued that lack of financial literacy and personal circumstance are significant determinants of financial vulnerability because the most vulnerable households are those who have various sources of debt, specifically unsecured debt including personal loans and credit cards provided by non-banking financial institutions (Atkinson & Messy, 2013; Daud et al., 2019; Magli et al., 2021; Mitchell et al., 2021; Pasa et al., 2022). Therefore, individuals or communities with high financial vulnerability are more likely to experience severe financial hardship when faced with unexpected expenses or income disruptions.

On the other hand, financial resilience refers to the ability of individuals, families, or communities to endure and rebound from financial shocks or setbacks. It involves the capacity of adapting to changing circumstances, absorbing financial shocks, and maintaining financial well-being over time (Abbott-Chapman et al., 2008; Salignac et al., 2015; Zahedi et al., 2022). For instance, the ability to manage finances efficiently by gathering information and decision making on financial planning, debt management,

retirement savings, and utilise the newly available financial products and services are crucial to strengthen the resiliency of gig workers (Behrman et al., 2012; Mitchell & Lusardi, 2015). Therefore, individuals with higher education levels and financial knowledge are more resilient to debt traps and attain better well-being (Brunetti et al., 2015; Pasa et al., 2022). Besides, access to appropriate resources is also vital to resilience with internal and external resources and support (Muir & Strnadová, 2014; Salignac et al., 2019). Internal resources refer to the ability to utilise on individual capabilities such as skills, traits, behaviors and values, while external resources and support can be both formal, like loans from banks and informal, such as borrowing from family members (Salignac et al., 2015). Thus, having emergency savings, diverse sources of income, access to credit, and effective financial planning are indicators of financial resilience.

2.4 Willingness to Pay (WTP)

A wide range of concepts are used to examine consumers' responses to prices. Willingness to pay (WTP) is more closely related to price judgements (reference price, acceptable price) as part of the price perception process. It is also connects to other factors that affect decision-making such as satisfaction, loyalty and culture (Le Gall-Ely, 2009). Besides, WTP perceived as the sum of money an individual is willing to spend on a certain improvement or compensation. WTP is also a measurement that depicts a person's propensity to take financial action to support the planned improvement or change (Goksen et al., 2001).

In economics, the concept of “willingness to pay” refers to the maximum amount of money a person would be willing to spend, sacrifice or exchange to access or obtain goods

and services or avoid something undesirable (Miti et al., 2021). According to Bala et al. (1999), willingness to pay indicates the degree to which a person values a health benefit. This varies from person to person and depends on the severity of the illness and the willingness and ability to exchange money for health.

Since people have multiple options from which to choose, such as purchasing a different item, a different brand or visiting a different store, their WTP is anticipated to be significantly influenced by the perceived value of the options they are considering. (Simonson & Drolet, 2004). In other words, uncertain values and preferences are susceptible to influence by aspects including the characteristics of goods and services, choice context and option framing.

In addition, people have different willingness to bear the risk. However, most people dislike risk (O'Donoghue & Somerville, 2018). The most common attitude toward risk creates the demand for insurance for self-protection. The more risk-averse individuals are more willing to pay for self-protection (Dachraoui et al., 2004). Furthermore, income determines the degree of an individual's risk aversion. As a person's income rises, they are less risk-averse. Therefore, an individual would be more willing to pay to prevent a risky circumstance if their income was uncertain.

In the previous study, preference traits, including risk and time preference and financial situations are applied to explain the employees' participation on their demand for social protection and willingness to pay to the social security system (Bogliacino et al., 2019). The result shows that platform workers are significantly less willing to contribute to social security. Risk averse people are more inclined to pay for social security, but workers with

financial constraints are less likely to contribute. The limitations of the study by Bogliacino et al. (2019) include a lack of information about riders versus freelancer professionals as platform workers and the inability to differentiate between workers who provide actual platform work and those who were rewarded as respondents in the online survey.

Even though gig workers may take collective action to improve the current situation, the gig economy has successfully utilised its features to prevent workers from organising labour unions or refusing to bargain collectively (Bulian, 2021). Since gig workers are more dependent on themselves, they might have their own perception or preference to decide whether they prefer to contribute to social protection and recognize that the contribution is maximizing their utility for the value of money (Uchiyama et al., 2022). However, this study was conducted in two regions of Malaysia (Klang Valley and Sabah) with 12 gig workers from Grab drivers (e-hailing) and Foodpanda riders (p-hailing) only.

The willingness to pay (WTP) for social protection schemes can be categorised into socio-economic, demographic, and program design elements (Miti et al., 2021). Ogundejiid et al. (2019) assessed the WTP for the state contributory health insurance scheme (SHIS) in Nigeria. In general, the majority of the households are willing to pay for insurance premiums for their households with an average amount of 513 Naira (USD 1.68) per month per person. Compared to female and married respondents, male and single respondents were more willing to pay a higher amount. The respondent's age group between 30 to 39 years had the greatest rate who indicated they would be willing to contribute to the insurance scheme and the age group between 20 to 29 years had the lowest rate. WTP in rural areas is lower than in urban areas. Besides, the results showed

that household income and WTP have a statistically significant positive relationship. However, there is a significant negative relationship between education level and WTP. Similarly, Ahmed et al. (2016) indicated that monthly income, geographical location and education level are the key determinants of WTP, which is supported by using logistic regression. However, in the research of Shafie & Hassali (2013), WTP is positively influenced by educational level.

A study carried out in Wuhan, China faced the same issues as informal sector workers having no health insurance (Bärnighausen et al., 2007). This study identifies the maximum WTP for basic health insurance (BHI) with a combination of closed-ended and open-ended questions. The results show that the average WTP for BHI is significantly greater than the estimated average cost of BHI. However, education was not a significant determinant of WTP in this study. With the result, researchers predicted only 35 per cent of informal workers would enroll in the BHI at a price equal to the average premium contribution of formal employees.

In Togo, Africa, informal sector workers play a main role in contributing 5 per cent of the annual growth rate. Although they contribute to the productivity of the country, they do not benefit from social protection. This study estimates their WTP by using a logistic model and survey data on socioeconomic and demographic factors. The results indicated all the variables (income, household size, age, education level, gender, location, and consultation with a doctor) have significant effects on the WTP for social protection services which WTP of informal workers will increase with their income. Undoubtedly, income is the key determinant of informal workers' WTP in Togolese (Atake & Agbodji, 2017).

In terms of program design, several studies indicated that WTP or contribution in a social protection program was positively associated with low and flexible contribution rates, adaptable withdrawal options, appealing benefits packages, the integration of mobile technology, and government subsidies (Kwena & Turner, 2013; Zhang et al., 2006). Corujo (2017) emphasized the significance of institutional quality and governance, which enforce regulations on social security for informal workers in the Spain's gig economy. Suggestions included redesigning the social security system to align with regulatory and legal frameworks, prioritizing low-income self-employed individuals, and complementing the existing scheme with adequate provisions. In addition, informal workers could be reluctant to participate in social protection schemes because they lack awareness of their risks or mistrust in social protection system administered by public institutions (Deblon & Loewe, 2011).

On the other hand, financially vulnerable people are unwilling to invest additional income in physical and financial capital or education. On the contrary, they will keep their savings in cash or a bank account for easy withdrawal without loss whenever they have been hit by an adverse shock (Deblon & Loewe, 2011). Financial vulnerability is often caused by individual characteristics such as age, low income and financial knowledge (Mogaji, 2020). Although low income (or known as financially vulnerable) individuals are at risk of high medical costs, their participation rates in health insurance are typically low (Baillon et al., 2022). Thus, they might be willing to pay (WTP) for social protection schemes to reduce the vulnerabilities (Ahmad, 1991).

2.5 Literature Gap

Despite extensive research on financial vulnerability and resilience, there is a notable gap in empirical evidence regarding gig workers' financial situations, especially in Malaysia. Existing studies such as Daud et al. (2024) and Nadzri and Hassan (2020) have focused on socioeconomic determinants of financial vulnerability and resilience but have not examined the unique challenges gig workers face in accessing social protection and their willingness to contribute. Therefore, in this study, we specifically focus on the socioeconomic factors that influence financial vulnerability, financial resilience, and WTP for social protection among gig workers in Malaysia. By exploring the connections between these concepts, this study helps identify the determinants of financial vulnerability, resilience and WTP for social protection. This topic has received limited attention in the existing literature.

Specifically, this study differs from other Malaysian research in its specific focus on gig workers and their WTP for social protection. Most studies such as Sabri et al. (2021), focus on socioeconomic factors affecting financial behavior in conventional employment settings. This study expands on this by focusing on gig workers, who often lack formal social protection, highlighting their unique financial vulnerability and resilience dynamics. Additionally, by incorporating WTP for social protection, this research addresses an area not covered in prior studies. For example, Loke (2017) and Sabri et al. (2021) examine the impact of household and working adult income on financial vulnerability, but they do not explore how income fluctuations specifically affect gig workers' resilience or WTP.

Internationally, studies like Harpur & Blanck (2020) and Huws et al. (2017) examine gig workers' financial challenges, but they focus on developed economies such as the United

States and Europe. They rarely investigate WTP for social protection or address the socioeconomic conditions of developing countries like Malaysia. By focusing on Malaysia, the prior study provides a distinctive perspective, shedding light on gig workers' financial insecurity in a developing economy with lower wages and limited protections (Uchiyama et al., 2022).

Although a small but growing number of studies have been conducted in recent years, this research aims to be one of the first comprehensive studies to focus on the dynamics of financial vulnerability, resilience and WTP within the Malaysian gig economy. By examining financial vulnerability, resilience, and WTP together, this study provides a more comprehensive understanding of gig workers' financial situations, contributing to local and international literature on gig economy challenges. The variables explored in this study are particularly unique, as they encompass not only traditional socioeconomic factors but also specific aspects of gig work that influence financial decision-making. This approach complements other related studies conducted in Malaysia by providing a more detailed insight into how gig workers navigate their financial landscapes, particularly in the absence of adequate protections.

2.6 Conclusion

Digital advancements have reshaped global labour markets, leading to the emergence of the “gig economy” (Kässi & Lehdonvirta, 2018). Gig economy offers short-term, project-based work facilitated by digital platforms, attracting individuals seeking flexible employment opportunities. The classification of gig workers remains controversial, impacting labour contracting, compensation, and protective measures (Woodcock &

Graham, 2020). In Malaysia and other Asian countries, gig workers lack legal recognition as employees, leaving them without institutional support and social protection (Chen, 2018). These shortcomings expose gig workers to increased financial vulnerability, emphasizing the need for reforms to address the labour law gaps and provide gig workers with access to essential benefits like health insurance and pensions (ILO, 2023b).

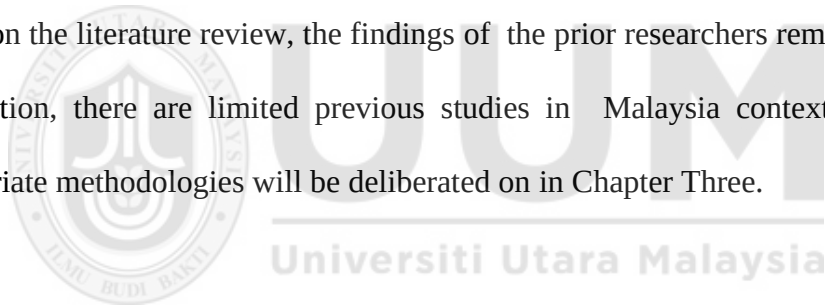
However, the mandatory insurance requirement for gig workers imposes a substantial financial strain. Being highly self-reliant, gig workers have the autonomy to decide whether they are willing to contribute to social protection schemes and recognise that such contributions can maximise their utility in relation to their financial value (Uchiyama et al., 2022). As stated in the background in Chapter One, there is a need to strengthen social protection programs for gig workers in Malaysia. According to the SOCSO, the launch of the PenjanaGig initiative under the *Pelan Jana Semula Ekonomi Negara (PENJANA)*, is only a short-term initiative. The growing number of gig workers without appropriate protections have exposed themselves, their families, and their passengers, especially those working in e-hailing, to various risks, including financial insecurity, lack of health coverage and vulnerability to accidents.

The Life-Cycle Hypothesis (LCH) provides a foundation for understanding how individuals manage income, savings, and consumption over lifetimes, which influence financial vulnerability, resilience and WTP. Financial vulnerability reflects susceptibility to financial shocks (short-term), often higher among low-income groups with limited resources, while financial resilience depends on factors like economic resources, financial resources, financial knowledge, and social capital. On the contrary, WTP for social protection is shaped by income stability, perceived vulnerability, and institutional contexts,

with demographic and socioeconomic factors such as age, income, education, and financial literacy.

In addition, the data collection and methodology of this study are aligned with the methods used by Ahmed et al. (2016), Atake & Agbodji (2017), Koustas (2019) and Daniels & Grinstein-Weiss (2019). Specifically, the use of structured questionnaires and logistic regression to analyse financial vulnerability, resilience and WTP ensures robustness and comparability to previous research.

Overall, this chapter aims to determine the factors that affect financial vulnerability, financial resilience, and will willing to pay for social protection schemes of gig workers. Based on the literature review, the findings of the prior researchers remain inconclusive. In addition, there are limited previous studies in Malaysia context. Therefore, the appropriate methodologies will be deliberated on in Chapter Three.



CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter focuses on the methodology used to analyse the factors affecting financial vulnerability, resilience and willingness to pay (WTP) for social protection of gig workers in Malaysia and identify their determinants. The methodology includes the conceptual framework of the study as well as the data collection process to achieve the research objectives posed in Chapter One.

3.2 Conceptual Framework

The Life-Cycle Hypothesis (LCH) theory provides a theoretical foundation for understanding gig workers' financial behaviors and the dynamics of financial vulnerability, resilience and WTP for social protection. According to LCH, individuals plan their consumption and savings behavior over their lifetime, balancing current income with anticipated needs throughout different life stages. This theory suggests that people aim to accumulate savings at a younger age to support themselves during periods of lower income, such as retirement. In the context of gig workers, LCH provides a lens to view their financial vulnerability, resilience and WTP for social protection.

Gig workers often experience fluctuating income and limited job security, which may hinder their ability to maintain the consistent savings that the LCH deems essential for long-term financial stability. The theory underscores that without a steady accumulation of resources, individuals are at heightened risk of financial vulnerability, especially during

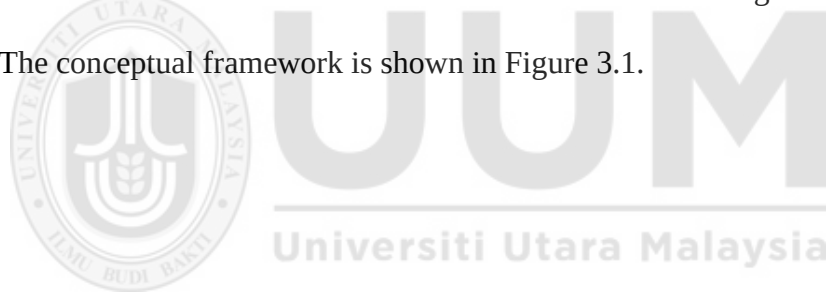
economic shocks. Limited savings and inconsistent earnings restrict gig workers' ability to build a financial cushion, making them particularly susceptible to setbacks and underscoring the need for social protection.

This susceptibility connects directly to the concept of resilience within the LCH framework. Financial resilience involves four key measures which are economic resources, financial resources, financial knowledge, and social capital, following Salignac et al. (2019). Salignac et al.'s (2019) measures were comprehensive and served as a strong foundation for developing strategies to evaluate individuals' financial strengths and weaknesses. Ideally, resilient gig workers would accumulate savings, diversified income sources, strong financial knowledge, or develop social capital to cope with challenging circumstances. Financial knowledge empowers gig workers to make informed decisions about savings, investments, and insurance. Therefore, proactive financial planning through savings or insurance is critical for resilience, enabling individuals to 'bounce back' from challenges. However, the inconsistent income patterns that are common in the gig economy can erode these protective resources, leaving gig workers less resilient and, consequently, more vulnerable to financial setbacks.

The decision to contribute to social protection is also influenced by the LCH, which suggests that individuals value planning for periods of reduced income. For gig workers, the willingness to pay (WTP) for social protection may depend heavily on financial literacy, trust in social protection institutions, and socioeconomic context. Consequently, gig may view social protection as a crucial buffer against income instability. Suppose social protection is seen as a reliable alternative or complement to personal savings,

aligning with LCH. In that case, gig workers may be more inclined to invest in it, enhancing their financial resilience.

Additionally, socioeconomic factors such as income level, educational background, and household composition shape gig workers' perceptions and decisions around social protection. Financially resilient gig workers, who typically have some savings, diversified income streams, strong financial knowledge and social capital, are better prepared for financial shocks. For those with limited resources, social protection can provide a foundational safety net, reducing their vulnerability. By integrating long-term financial planning and socioeconomic influences, this behavior aligns with the LCH principle that individuals make financial decisions and secure their well-being across different life stages. The conceptual framework is shown in Figure 3.1.



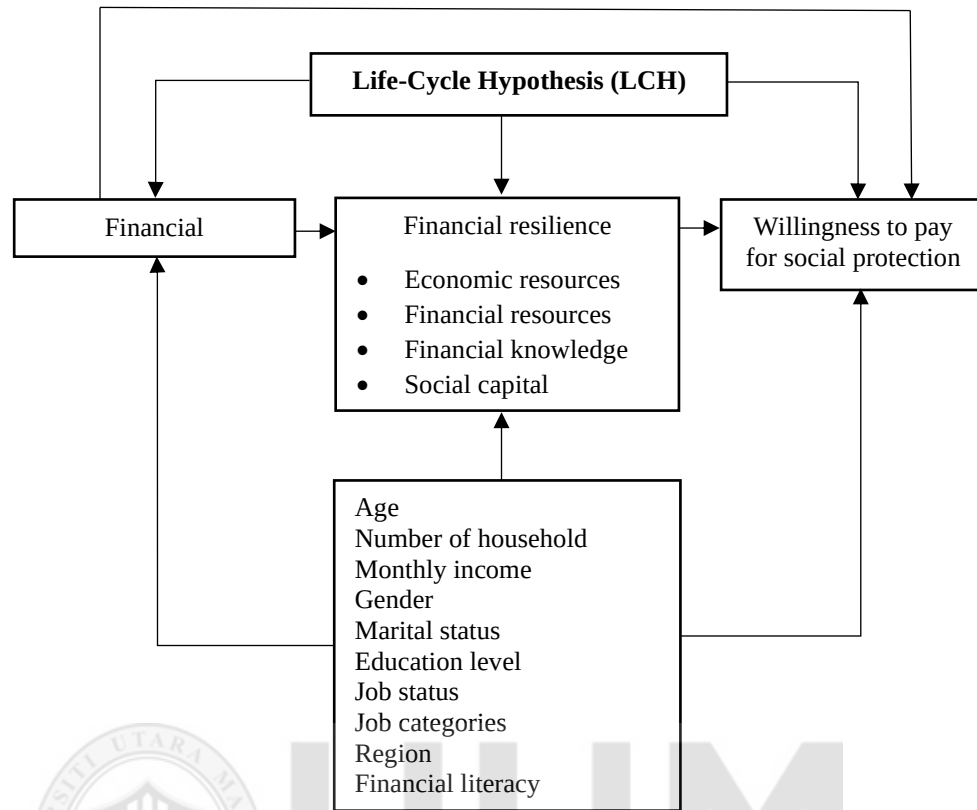


Figure 3.1
Conceptual Framework for the Financial Vulnerability, Resilience and Willingness to pay (WTP) for Social Protection of Gig Workers in Malaysia
 Sources: Author's illustration

3.3 Research Framework

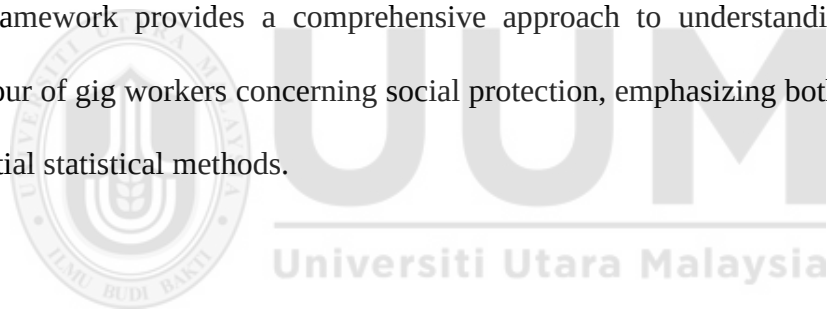
Figure 3.2 shows the research framework structured to address three primary research questions, each aligned with a corresponding objective and method of analysis.

The first research question examines how financial vulnerability, resilience, and willingness to pay (WTP) for social protection among gig workers vary according to their socioeconomic factors. To achieve this, the first objective is to determine the financial vulnerability, resilience, and WTP for social protection among gig workers by their socioeconomic factors. This analysis employs the t-test and Chi-square test to identify statistically significant differences among various groups.

The second research question seeks to identify the determinants of financial vulnerability, resilience, and WTP for social protection among gig workers. Correspondingly, the second objective aims to uncover the factors influencing these financial attributes. The study uses logistic regression analysis to determine the significant predictors of financial vulnerability, resilience, and WTP.

The third research question explores the distribution of WTP amounts across selected socioeconomic factors among gig workers. The third objective is to identify the patterns of WTP amounts in relation to these factors. A Pearson's correlation test is conducted to analyse variations in WTP amounts among different socioeconomic groups.

This framework provides a comprehensive approach to understanding the financial behaviour of gig workers concerning social protection, emphasizing both descriptive and inferential statistical methods.



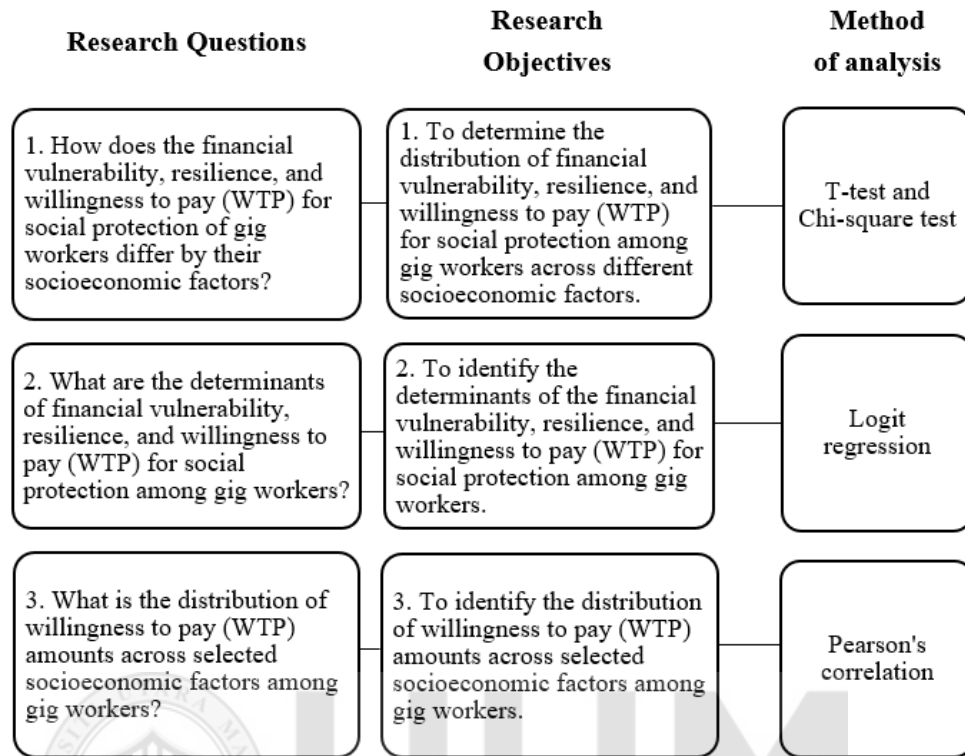


Figure 3.2
Research Framework
 Sources: Author's illustration

3.4 Instrument Development

The development of the instrument was a critical step in ensuring the reliability and validity of the research findings. In this study, the instrument was designed and guided according to a conceptual framework to capture key variables that related to financial vulnerability, financial resilience, and willingness to pay (WTP) for social protection. The process involved two main stages: questionnaire design and pre-test.

3.3.1 Questionnaire design

To achieve research objectives, this study employed a quantitative approach involving a structured questionnaire survey. A sample of gig workers was used to determine their financial vulnerability, resilience and willingness to pay (WTP) for social protection by socioeconomic factors. Hence, a questionnaire was the most convenient and useful instrument to collect information from a large number of people within a period of time (Ng, 2006). The questionnaire design was adapted from previous research to include variables more suited to the gig economy, like income variability and access to social protection schemes in Malaysia.

The questionnaire's structure was designed to answer the research questions. It has been divided into three main parts: part A, part B, and part C.

Part A consists of demographic and socioeconomic factors such as age, gender, marital status, number of households, education attainment, categories of gig work, employment status, residing location, and individual's monthly income. Part B measure financial vulnerability and resilience. Part C measures the WTP for social protection among the respondents.

Hasler et al. (2022) categorised respondents into levels of vulnerability and resilience based on aggregated scores from survey items. They categorised individuals into vulnerability levels using debt and cash flow management factors. Scores were grouped into quantiles to distinguish high and low vulnerability. This method provides a precedent for categorising Likert scale responses into actionable levels. Besides, Salignac et al. (2019) identified patterns of resilience linked to financial behaviour, such as savings and wealth building. Resilience was assessed as the capacity to manage financial shocks, with

lower scores indicating higher vulnerability. This aligns with Likert-based scales categorising financial resilience into “high” (greater ability to bounce back) and “low” (limited recovery potential).

The decision to use 2.51 as the cut-off is based on its alignment with the interpretation of the scale used in this study. While a score of 2.00 represents the midpoint in many rating scales, it may not sufficiently differentiate between respondents with neutral opinions and those exhibiting slight agreement or disagreement. By scoring 2.51, this study ensures a more precise classification of respondents’ attitudes, behaviours, or conditions, focusing on those who lean positively or negatively. Additionally, this threshold has been validated in similar studies and typically defines thresholds for classification based on the theoretical distribution of the scale and the study objectives. (Financial Resilience Institute, n.d.; Salignac et al., 2019).

Indicators related to financial vulnerability were adapted from Anderloni et al. (2012) which used binary responses (“Yes” or “No”) and provided absolute frequencies and percentages for financial challenges such as shopping for food, paying bills, and loan repayment. In contrast, our study used a Likert scale (point 1 to point 4) to assess the frequency of financial problems over the past 12 months and subjective dimension to severity and regularity of these challenges.

Furthermore, Q22 and Q24 (refer to Appendix A) from Anderloni et al. (2012) were adapted to measure financial vulnerability among gig workers. However, certain sub-questions in Q22, such as “Paying condominium administration charges” and “Paying the mortgage on your home” , were intentionally excluded to ensure the questionnaire aligns with the Malaysia context. These items were deemed less relevant because they reflect

financial obligations that might not be common or significant for most of the target population in Malaysia, particularly among lower-income gig workers. For instance, homeownership rates in Malaysia might differ significantly from other countries, with many individuals renting houses or rooms or living in family-owned properties. Similarly, condominium administration charges were only applicable to those who resided in condominiums which represented a smaller subset of the population. To enhance the assessment of respondents' financial vulnerability, the question "I have been worried about money during the past two weeks" was included in the questionnaire.

Table 3.1 shows the seven items in the questionnaire that determine the financial vulnerability. Respondents are requested to answer the questions of financial vulnerability by ranking them and giving a value to the Likert scale (points 1 to 4). Point 1 represents the respondents are never encounter problems for necessities. As the point moves up from point 1 to point 4, the vulnerability will be higher. As the polarity is consistent in these items, responses of "never" or "rarely" were categorized as low financial vulnerability, while other responses indicated high financial vulnerability. Finally, the financial vulnerability scores are calculated based on the average scores of the seven questions. The average score between 1 and 2.50 is classified as low financial vulnerability. Meanwhile, the average score between 2.51 and 4.00 indicated high financial vulnerability.

Table 3.1

Financial Vulnerability Items and Measurement

Financial vulnerability	Questionnaire items	Measurement
1.	Over the last 12 months, I have encountered problems with shopping for food.	1 = Never 2 = Rarely 3 = Often 4 = Every time
2.	Over the last 12 months, I have encountered problems with buying essential clothing.	
3.	Over the last 12 months, I have encountered problems with paying for petrol, electricity, phone bills, and others.	
4.	Over the last 12 months I have encountered problems with paying the rent.	
5.	Over the last 12 months I have encountered problems with paying off loans for the purchase of car/motorcycle/television, and others.	
6.	Over the last 12 months, my household had been without specialized medical care for financial reasons.	
7.	I have been worried about money during the past TWO WEEKS.	

Note: Adapted from Anderloni et al. (2012)

Moreover, financial resilience measures were adapted from Salignac et al. (2019). The first measure, economic resources, included income, savings, debt management, the ability to meet living expenses, and access to emergency funds. The second measure, financial resources, focused on assessing access to and demand for financial products and services, reflecting financial inclusion. The third measure is financial knowledge, which addresses individuals' understanding and confidence in financial products and services, their use of financial advice, and proactive financial decision-making. Lastly, the fourth measure, social capital, encompasses individuals' connections with friends, family, community, and government, which could provide financial support and guidance in decision-making.

Salignac et al. (2019) employed the scoring methodology (see more in Appendix B) and adopted a structured and detailed approach. For instance, Salignac et al. (2019) categorised savings into levels, ranging from “1 - no or negligible savings”, “2 - limited savings (1-2 months’ income)”, “3 - moderate savings (3 months’ income)”, and “4 - significant savings or asset accumulation”. In contrast, our study condensed into straightforward statements as “I have solid savings (more than 3 months of income) and assets accumulation if I were to be retrenched” and measured on a 4-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree) to measure financial resilience.

Table 3.2 demonstrates the financial resilience dimensions and seventeen items used to measure financial resilience. Financial resilience is also being ranked and valued using the Likert scale (points 1 to points 4). Point 1 shows that the respondents strongly disagree with the statement. While point 4 shows that the respondents strongly agree with the statement. From the lowest to the highest, the items are arranged according to the same polarity. Respondents are categorised as high financial resilience if they choose “agree” or “strongly agree”, while respondents are shown as low financial resilience if they choose “disagree” or “strongly disagree”. The seventeen items’ average scores determine the financial resilience scores. A score between 1-2.50 is classified as low financial resilience, and 2.51-4.00 is classified as high financial resilience.

Table 3.2

Financial Resilience Dimensions

Financial resilience dimensions	Questionnaire items	Measurement
Economic resources	1. I have solid savings (more than 3 months of income) and assets accumulation if I were to be retrenched. 2. I am very comfortable with paying off debt. 3. I have no debt. 4. In the event of hospitalisation, I am not worried about paying for medical expenses of RM2,500. 5. If I am diagnosed with a critical illness (e.g., cancer, heart attack, coma, etc.), I have sufficient funds to support myself without burdening my family.	1 = Strongly disagree 2 = Disagree 3 = Agree 4 = Strongly agree
Financial resources	6. I have access to full use of a wide range of banking services. 7. I have access to mainstream credit. 8. I have no unmet need for credit. 9. I have a significant insurance cover. 10. I have no unmet need for insurance.	
Financial knowledge	11. I have very good knowledge of financial services. 12. I am very confident using financial service products. 13. I have received financial advice.	
Social capital	14. Whenever I face an important financial decision, I actively seek all relevant information. 15. I have a well-established social network relationship. 16. I am very likely to receive social support in a time of crisis. 17. I don't need community or government support.	

Note: Adapted from Salignac et al. (2019)

The classification of willingness to pay (WTP) scores as high or low using a four-point Likert scale is supported by prior studies that categorised WTP based on socioeconomic factors and survey design. For example, a Malaysian study categorised gig workers into “willing” and “not willing” groups for social insurance contributions based on discrete choice experiments, showing that WTP is influenced by income, perceived value, and

access to alternative insurance options (Ghorpade et al., 2023). Similarly, research in Bangladesh categorised gig workers' WTP for health insurance, identifying high WTP for scores above the midpoint and low WTP for lower scores (Ahmed et al., 2016). Moreover, Nga (2018) classified the WTP variable as binary, categorising responses into “Yes” for those willing to pay and “No” for those unwilling to pay for social health insurance. Thus, the use of a four-point Likert scale also employed in this part, which excludes a neutral option, forces respondents to lean toward agreement or disagreement, ranking from point 1, “strongly disagree”, indicating low WTP for social protection to point 4 “strongly agree” indicated high WTP for social protection. The WTP scores are determined by the average of the scores of the five items since they are arranged in the same polarity. For scores between 1-2.50, WTP is considered low, while for scores between 2.51-4.00, it is deemed high. The measurement is indicated in Table 3.3. In addition, the willingness to pay (WTP) section was revised to include closed-ended questions for quantifiable and open-ended questions (the amount of WTP) to capture crucial reasons behind willingness or unwillingness to pay for social protection.

Table 3.3

Willingness to pay (WTP) for Social Protection Items and Measurement

WTP	Questionnaire items	Measurement
1.	I am willing to contribute every month for savings.	1 = Strongly disagree
2.	I am willing to contribute monthly for unemployment	2 = Disagree
3.	I am willing to contribute monthly to retirement savings.	3 = Agree
4.	I am willing to contribute monthly for employment injury	4 = Strongly agree
5.	I am willing to contribute monthly for health insurance.	

Note: Author's illustration

This study also identified the top three social protection schemes to which gig workers would like to contribute the most by arranging the order of choice from number 1 to 3.

The social protection schemes are provided in Table 3.

Table 3.4

Social Protection Schemes

Social protection schemes
Health insurance
Life insurance
Unemployment insurance (EIS)
Employment injury insurance
Social security scheme/ PenjanaGig
Retirement savings (EPF)
Hourly minimum wage, excluding commission per task
Subsidy on cost of providing services
Career development and training opportunities

Note: Author's illustration

Besides, Hogarth and Hilgert (2002) provided a foundation for measuring financial knowledge which determines the level of financial resilience of gig workers. The questionnaire was adapted (see more in Appendix C) to include items relevant to gig workers, such as financial planning specific to irregular income and savings behavior. For example, the previous study stated “If you buy certificates of deposit, savings bonds, or treasury bills, you can earn higher returns than on a savings account, with little or no added risk”. However, the majority of gig workers did not invest in certificates of deposit, savings bonds, or treasury bills but fixed deposit accounts. Therefore, fixed deposits were used in our study to ensure normality. Binary responses (“True” or “False”) were used in Hogarth & Hilgert (2002) to collect the responses from respondents. Concurrently, the 4-point Likert scale was used in our study for the respondents to self-rate their financial knowledge from 1 (strongly disagree) to 4 (strongly agree). Additionally, contemporary elements from RinggitPlus (2020), such as financial attitudes towards saving and debt, were localized to the Malaysian gig worker population.

Aside from that, financial literacy items and measurements are presented in Table 3.4. The present study used six items with a 4-point Likert scale ranging from 1 (strongly disagree)

to 4 (strongly agree) to measure financial literacy. Since the items are organized with the same polarity, the average scores across the six items are utilized to calculate the financial literacy scores. Financial literacy is considered as low for the scores between 1-2.50 and high for the scores between 2.51-4.00.

Table 3.5
Financial Literacy Items and Measurement

Financial literacy	Questionnaire items	Measurement
1.	I should have an emergency fund that covers two to six months of my expenses.	1 = Strongly disagree
2.	I know that if I make late payment on my loan, it will be more difficult for me to apply for others loan.	2 = Disagree
3.	I know that I can earn higher returns by saving in fixed deposit account than on a normal savings account or current account.	3 = Agree
4.	I know that when I use my home as collateral for a loan, there is a chance for me to lose my home.	4 = Strongly agree
5.	I am responsible for providing the majority of funds that will be need for retirement.	
6.	I know that the earlier I start saving for retirement, the more money I will have because the effects of compounding interest increase over time.	

Note: Adapted from Hogarth & Hilgert (2002)

3.3.2 Pre-test questionnaires

The main purpose of the pre-test questionnaires was to determine whether the respondents could understand the questions and ensure their relevance to this study. First, pre-test questionnaires were reviewed by experts from the Institute of Labour Market Information and Analysis (ILMIA) and academic experts from Universiti Utara Malaysia and Universiti Malaysia Sabah. The expert recommendations included revising demographic questions to capture the diverse socioeconomic backgrounds of gig workers, adding items to assess respondents' financial literacy and its influence on resilience and WTP, and ensuring that the questions were concise to maintain respondent engagement. After the

expert view, adjustments were made to ensure clear and concise questions addressing research objectives. Additionally, a pilot survey was conducted with a small sample of 30 gig workers. The 30 respondents for the pilot survey were selected using convenience sampling, targeting gig workers who were easily accessible and willing to participate. Participants were recruited through personal networks and informal referrals. This approach enabled a fast and efficient selection process, which provided initial insights into the clarity, relevance, and structure of the questionnaire, helping to refine it before its distribution to a larger sample population.

After collecting data from the samples, Cronbach's Alpha was used to determine the reliability of the question items. The results showed that all the question items were reliable since the alpha was 0.7 and above. For instance, Cronbach's Alpha of financial vulnerability showed $\alpha = 0.8505$, financial resilience ($\alpha = 0.8809$), financial literacy ($\alpha = 0.7709$), and WTP ($\alpha = 0.7242$). There were no changes in the questionnaires after Cronbach's Alpha was tested.

3.5 Sample Determination

A multi-stage sampling approach was utilised, combining stratified sampling and purposive sampling to ensure the study did not concentrate solely on e-hailing and p-hailing services. The snowball technique was employed to identify and recruit participants from various gig work categories. This is because the population is widely dispersed and difficult to study in its entirety. It involves multiple levels of selection, combining different sampling methods to ensure a representative sample while reducing logistical challenges (Hansen & Hurwitz, 1943). This method made it easier to connect with a wider

range of gig workers who might not have been reached through an in-person survey and this method has been applied in the previous research (Nga, 2018).

The stages of sample determination are as follows:

Stage 1: The target population include all gig workers divided into five regions in Peninsular Malaysia (Northern, Central, Southern, and East Coast) and East Malaysia (Sabah and Sarawak) which was purposely selected in order to answer the research questions. Gig workers from different inclusive ethnicities and backgrounds were included. Given the unknown precise number of gig workers in Malaysia, the number of informal workers (1.26 million, excluding the agriculture sector) in 2020 served as a proxy for determining the sample size of gig workers from each region. To determine a sample size, the formula for sample size calculation (Cochran, 1977) as follows:

The general formula for the sample size n for proportional estimation:

$$n = \frac{Z^2 \cdot p \cdot (1 - p)}{E^2}$$

Where:

n = required sample size

Z = Z-score corresponding to the desired confidence level

p = estimated proportion of the population (if unknown, use 0.5 for maximum variability)

E = margin of error (expressed as a decimal)

Steps of calculation:

1. Determine the Z -score: For a 95 per cent confidence level, the Z -score is approximately 1.96.
2. Estimate the proportion p : There is no prior estimate is available, use $p = 0.5$ to maximize the sample size.
3. Set the margin of error E : The margin of error is given as 5 per cent, which is expressed as a decimal 0.05.
4. Substituting the values into the formula:

$$n = \frac{(1.96)^2 \cdot 0.5 \cdot (1 - 0.5)}{(0.05)^2}$$

i. Calculate Z^2 :

$$Z(1.96)^2 = 3.8416$$

ii. Calculate $p(1 - p)$:

$$0.5 \cdot (1 - 0.5) = 0.25$$

iii. Substitute these values into the equation:

$$n = \frac{3.8416 \cdot 0.25}{0.0025} = \frac{0.9604}{0.0025} = 384.16 \approx 385$$

Thus, this study requires a sample size of 385 respondents to achieve a margin of error of 5 at a 95 per cent confidence level. This calculation ensures that the study's estimation will be statistically reliable within the specified margin of error and confidence level.

In Table 3.6, all 14 states of Malaysia were stratified into five regions. The proportion of informal workers in each region was used to determine the sample size for that region.

Table 3.6
Sample Determination

Region	Proportion by region (%)	Sample size by region
Northern	20.9	84
Central	21.2	85
Southern	16.1	65
East Coast	22	88
East Malaysia	19.6	78
Total Sample Required		385

Source: DOSM (2020)

Stage 2: Snowball sampling techniques were applied to select the gig workers according to the categories required for the study in the five regions. The survey was conducted at locations known to attract gig workers, such as popular fast-food outlets (e.g., KFC or McDonald's) and outside of the shopping complex (e.g., Aeon Mall) where Foodpanda and GrabFood riders frequently gather. Additionally, the researcher approached drivers seated in their cars with e-hailing stickers at the drop-off or pick-up points outside shopping complexes. Researchers identified these gathering spots by consulting local gig workers and directly visiting areas where gig workers are known to congregate. There was once at these locations, respondents were approached and invited to participate in the survey, ensuring that the targeted number of responses was met. An online survey was conducted simultaneously to complement the study and widen the reach. Respondents were invited through personal networks, focusing on individuals who engaged in gig jobs. These participants were encouraged to refer friends or colleagues who were also involved in gig jobs, using a snowball sampling technique to expand the respondent pool. This

study encompassed various categories of gig jobs in Table 3.7 and were aged 16 years and above.

Table 3.7
Categories of Gig Job

Category	Example
Food delivery/ delivery service	Foodpanda, Grab Food, Lalamove, Bungkusit, Halo Rider, GoGet, MULA, DeliverEat, HappyFresh.
E-hailing	GrabCar, MyCar
Accommodation	Host of Airbnb
Household services	Mr. Wireman, cleaning services
Local microtasking	GigaGigs
Freelancers	Journalism, programmer, software development, content writer, copywriter, photographer
Consultants	Accounting and finance
Art, design and entertainment	Musicians, graphic designer, busker
Education	Substitute instructors, tutors

Sources: Author's illustration

A detailed briefing on the objective of the research is explained to the respondents. Respondents must sign a consent form before answering the questionnaire, and participation is completely voluntary. The survey was conducted through a combination of online and physical face-to-face interviews, which were carried out between June 2022 and November 2022. After the survey period, a data cleaning process was conducted, and 452 usable responses were used for analysis.

3.6 Data

Primary data is used in this study to determine the financial vulnerability, resilience and willingness to pay (WTP) for social protection of gig workers in Malaysia. The job category has been divided into three groups: D_hailing (food delivery/ delivery service/ e-hailing), D_hhhousehold (accommodation/ household services/ local microtasking), and D_freelance (freelancers/ consultants/ art, design and entertainment/ education). The data on demographic, socioeconomic factors, financial situation (financial vulnerability,

financial resilience, financial literacy), and WTP for social protection are collected through face-to-face interviews and online. The questionnaire used in this research was created over a three-month period. Both the English and Malay language versions of the questionnaire are prepared and the Malay language version is used during the interview. A pre-test is carried out before the actual interview to ensure the reliability of the instrument. The study aims to identify the determinants of financial vulnerability, resilience and WTP for social protection of gig workers.

Table 3.8

Operational Definition of Variables in the Statistical Model

Variables	Definitions
Finvul: high	1 if financial vulnerability score ranges from 2.51 – 4.00, 0 otherwise
Finres: high	1 if financial resilience score ranges from 2.51 – 4.00, 0 otherwise
WTP: high	1 if willing to pay for social protection schemes score ranges from 2.51 – 4.00, 0 otherwise
Amount of WTP	Total amount gig workers are willing to pay, measured in Ringgit Malaysia (RM)
Age	Age in years
Household	Number of people in a household
Income	Individual monthly income measure in Ringgit Malaysia (RM)
Gender: Male	1= Male, 0 otherwise
Marital	
Single (ref)	1=Single, 0 otherwise
Married	1=Married, 0 otherwise
Divorced/ Widowed	1=Divorced/ Widowed, 0 otherwise
Education	
No formal/ Primary (ref)	1 = Highest education attainment equalled Ujian Pencapaian Sekolah Rendah (UPSR) and below, 0 otherwise
Secondary	1 = Highest education attainment equalled Penilaian Menengah Rendah (PMR), Pentaksiran Tingkatan Tiga (PT3), Sijil Pelajaran Malaysia (SPM), Sijil Pelajaran Malaysia Vokasional (SPMV), Sijil Tinggi Persekolahan Malaysia (SPTM), Sijil Tinggi Agama Malaysia (STAM), 0 otherwise
Tertiary	1 = Highest education attainment equalled diploma, Bachelor degree and above, 0 otherwise
Job status	
Full-time (ref)	1 = The status of gig work is full-time, as primary source of income without other permanent job, 0 otherwise
Part-time	1 = The status of gig work is part-time with other permanent job, 0 otherwise
Casual	1 = The status of gig work is based on demand, 0 otherwise
Category	

Variables	Definitions
<i>D_hailing (ref)</i>	1 = Job category is E-hailing and P-hailing, 0 otherwise
<i>D_hhservice</i>	1 = Job category is household services (cleaning services, wiring services), 0 otherwise
<i>D_freelance</i>	1 = Job category is freelancers (programmers, writers, tutors, consultants, designers, etc.), 0 otherwise
Region	
<i>Northern (ref)</i>	1 = Residing in Northern region (Kedah, Penang, Perak, Perlis), 0 otherwise
<i>Central</i>	1 = Residing in Central region (Selangor, Federal Territory Kuala Lumpur, Labuan, and Putrajaya), 0 otherwise
<i>Southern</i>	1 = Residing in Southern region (Negeri Sembilan, Melaka, Johor), 0 otherwise
<i>East Coast</i>	1 = Residing in East Coast region (Terengganu, Kelantan), 0 otherwise
<i>East Malaysia</i>	1 = Residing in East Malaysia region (Sabah, Sarawak), 0 otherwise
<i>Finlit: high</i>	1 if financial literacy scores in ranges from 2.51 – 4.00, 0 otherwise

Source: Author's illustration

3.7 Method of Analysis

To ensure a comprehensive analysis, this study employs a structured approach that addresses different types of variables and research objectives. The analysis is divided into three parts. First, inferential statistics are used to address the first objective by identifying the distribution of financial vulnerability, resilience, and willingness to pay (WTP) for social protection across different socioeconomic factors. The Student t-test was conducted to analyse continuous variables, while the Chi-square test was used for categorical variables.

Second, to achieve the second objective, a logistic regression model was employed to determine the factors influencing the odds of being financially vulnerable, resilient, and WTP for social protection among gig workers. The goodness-of-fit of the regression model was evaluated using Pearson's Chi-square test and the Hosmer-Lemeshow test to validate the model.

Finally, for the third objective, Pearson's correlation coefficient was used to measure the strength and direction of the linear relationship between the amount of WTP, age and monthly income, while Student t-test was applied to analyse the mean of two groups.

3.7.1 Inferential analysis

To address objective one, inferential analysis techniques such as t-test and chi-square test are employed to determine whether there are significant associations or differences between variables of interest. A t-test is used to compare the mean of two groups and determine if there is a statistically significant difference between all variables. Graphs and figures are used to visualise the data and findings.

The general formula for the t-test is:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}} \quad (1)$$

Where:

$\bar{X}_1$ and $\bar{X}_2$ are the sample means of two groups. s_1^2 and s_2^2 are the variances of the two groups meanwhile n_1 and n_2 are the sample sizes of the two groups.

A Chi-square test is used for categorical data to assess whether there is an association between two variables. The Chi-square test is calculated as:

$$\chi^2 = \sum \frac{(O_i - E_i)^2}{E_i} \quad (2)$$

Where:

O_i is the observed frequency in category i , while E_i is the expected frequency in category i , calculated as:

$$E_i = \frac{(\text{Row Total} \times \text{Column Total})}{\text{Grand Total}} \quad (3)$$

Both tests help analyse the relationship of financial vulnerability, resilience, and WTP across socioeconomic factors in gig workers with its p-value. The p-value helps determine whether the results of the statistical test are significant (*). It represents the probability of observing the test results under the assumption that the null hypothesis (H_0) is true. A smaller p-value indicates stronger evidence against the null hypothesis.

The hypothesis for the t-test is as follows:

H_0 : There is no significant difference between the means of the two groups.

H_1 : There is a significant difference between the means of the two groups.

If p-value is less than or equal to α (0.10), reject H_0 which indicates the significant difference between groups. However, if the p-value is more than α (0.10), fail to reject H_0 which shows that there are no significant differences.

The hypothesis for the Chi-square test is as follows:

H_0 : There is no association between the categorical variables.

H_1 : There is an association between the categorical variables.

If p-value is less than or equal to α (0.10), reject H_0 which indicates that the variables are associated. However, if p-value is more than α (0.10), fail to reject H_0 which shows that no significant association.

Furthermore, the Interquartile Range (IQR) measures the spread of the middle 50 per cent as a dataset and calculated as the difference between the third quartile (Q_3) and the first quartile (Q_1). A smaller IQR indicates low variability in which the data points are closely clustered. While, a larger IQR suggests high variability, reflecting a wider spread of values. The IQR is particularly useful in comparing groups, where wider range may indicate greater income disparity such as among gig workers with fluctuating earnings.

3.7.2 Logistic model specification

To achieve objective two, the logistic model was utilised to summarise and describe the main characteristics of the data, which also applied in the past studies (Atake & Agbodji, 2017; Gidey et al., 2019; Witati & Putri, 2020). This included measures such as mean, standard deviation and percentiles, which provide insights into the central tendency, variability, and distribution of the variables under study.

Three estimation models for this research were developed based on the selected literature and theoretical framework. These models identified the financial vulnerability, resilience and willingness to pay (WTP) for social protection of gig workers by socioeconomic factors. The general model which written as follows:

$$Y = \beta X + e \quad (4)$$

Where Y is the dependent variable. X is a vector of explanatory variables, β as coefficient to be estimated in the model and e is an error term.

This model was used to identify the association between financial vulnerability, resilience and WTP for social protection of gig workers was used to identify the association between

financial vulnerability, resilience and WTP for the social protection of gig workers by their socioeconomic factors. It is applied to cater to the dichotomous nature of financial vulnerability, resilience, and WTP variables.

The linear functions represented as:

$$Finvul = f(Age, No_hh, Mth_inc, Gender, Marital, Edu, Status_gig, Category, Region, Finlit) \quad (5)$$

$$Finres = f(Age, No_hh, Mth_inc, Gender, Marital, Edu, Status_gig, Category, Region, Finvul, Finlit) \quad (6)$$

$$WTP = f(Age, No_hh, Mth_inc, Gender, Marital, Edu, Status_gig, Category, Region, Finvul, Finres, Finlit) \quad (7)$$

To assess the goodness-of-fit of the logistic regression model, Pearson's Chi-square test and the Hosmer-Lemeshow test were applied. These tests help determine how well the predicted probabilities from the model align with the observed data. Pearson's Chi-square test evaluates whether the predicted and observed frequencies differ significantly. If the p-value is greater than the significance level of 0.10, the model fits the data well. Moreover, the Hosmer-Lemeshow test assesses the model's calibration by grouping predicted probabilities into groups (commonly 10) and comparing observed and expected frequencies. These tests assess the model's calibration by grouping predicted probabilities into groups (commonly 10) and comparing observed and expected frequencies in each group. An insignificant p-value greater than (> 0.05) suggests the model fits the data well. These tests validate the logistic regression model by ensuring it provides reliable predictions for financial vulnerability, resilience, and WTP among gig workers.

3.7.3 Pearson's correlation coefficient and t-test

Pearson's correlation coefficient (r) measures the strength and direction of a linear relationship between two continuous variables such as WTP amount, age, and monthly income to examine whether individuals with higher income are willing to pay more for social protection schemes and explore WTP amount differences across age groups. The value of r ranges from -1 to 1, with the following interpretations:

Positive correlation ($r > 0$) = As one variable increases, the other also increases

Negative correlation ($r < 0$) = As one variable increases, the other decreases

Zero correlation ($r = 0$) = No linear relationship between the variables

The p-value in Pearson's correlation analysis helps determine whether the observed relationship between two variables is statistically significant or occurred by chance. The null hypothesis (H_0) states that there is no correlation between the variables ($r = 0$). The alternative hypothesis (H_1) states that there is a significant correlation between the variables ($r \neq 0$). If the p-value is less than or equal to (≤ 0.10), reject H_0 which shows the correlation is statistically significant. Whilst, if the p-value is more than (> 0.10), accept H_0 which indicates there is no significant correlation.

Additionally, the t-test is used to compare the mean of the two groups and determine whether there is a statistically significant difference between WTP amount and gig job category, ethnicity, employment status and education level. The p-value is a crucial measure in determining the significance of statistical test results. It represents the probability of obtaining the observed results under the assumption that the null hypothesis

(H_0) is true. Hence, a lower p-value provides stronger evidence against the null hypothesis.

In the case of a t-test, the hypotheses are stated as follows:

H_0 : There is no significant difference between the means of the two groups.

H_1 : There is a significant difference between the means of the two groups.

If the p-value is less than or equal to the significance level ($\alpha = 0.10$), H_0 is rejected, signifying a meaningful difference between the groups. Conversely, if the p-value exceeds α (0.10), H_0 is not rejected, implying no significant difference between the groups.

3.9 Conclusion

This chapter has outlined the research methodology employed to analyse the financial vulnerability, financial resilience and willingness to pay (WTP) for social protection among gig workers. The methodology included instrument development, sample determination, data definition, and model specification to ensure the research questions are effectively addressed. These methodological steps form the foundation for the empirical analysis, which are conducted in the following chapter.

The study is guided by the Life-Cycle Hypothesis (LCH), which explained financial decision-making based on economic resources, financial knowledge, and social capital. The conceptual framework integrated key socioeconomic factors such as age, income, education, job category, and financial literacy to analyse their influence on financial vulnerability, resilience and WTP. To operationalise this framework, a structured instrument was developed to ensure the collection of relevant data from a representative sample of gig workers.

The methodology employed t-tests, Chi-square tests, logistic regression, and Pearson's correlation analysis to examine the relationships between financial vulnerability, resilience, WTP, and socioeconomic factors. These method of analysis provide insights into the distribution of WTP, the key determinants of financial vulnerability, financial resilienc and WTP, how these factors vary among gig workers, and the linear relationship between the amount of WTP and selected socioeconomic factors. This structured approach contributed valuable knowledge to financial decision-making in the gig economy. The next chapter will present the empirical findings, validating the proposed framework and offering deeper insights into gig workers' financial behavior.



CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This chapter presented the findings of the empirical results of the financial vulnerability, resilience and willingness to pay (WTP) for social protection of gig workers in Malaysia according to their socioeconomic factors. Also, cross-tabulation is conducted by observing their mean (t-test) and Chi-square value (Chi-square test). Besides, logistic model has been used to identify the net association of the financial vulnerability, resilience and WTP for social protection of gig workers by their socioeconomic factors. As a result, all data were analysed by using STATA 17.0 version. Discussion and analysis of the descriptive statistics are in section 4.2. On the other hand, the empirical results of logistic regression has been discussed in Section 4.3 while section 4.4 showed the discussions about the association between financial vulnerability, financial resilience, and willingness to pay for social protection schemes based on their socioeconomic factors. Lastly, the summary of this chapter is provided in Section 4.5.

4.2 Descriptive Statistics

A descriptive statistic is an analytical approach that systematically and clearly describes the fundamental features of data, providing a straightforward interpretation and measurement of the data spread represented by standard deviation. Table 4.1 shows the descriptive statistics of dependent and independent variables. Based on 452 observations, the standard deviation was employed to determine the data spread out from the mean. It

reported a higher standard deviation on age (years), number of households (number of people in a household), monthly income (in Ringgit Malaysia) and amount of WTP, showing that the data are more spread out as it counted by continuous number. At the same time, the other variables such as WTP, financial vulnerability, financial resilience, gender, marital status, education level, employment status, job category, region and financial literacy show a low standard deviation. The data are closely clustered around the mean, indicating higher reliability in the data.

Table 4.1

Summary Statistics of Dependent and Independent Variables (n=452)

DEPENDENT VARIABLES	Mean	Standard Deviation	Frequency	
Willingness to Pay				
High	0.889	0.314	402	
Low	0.111	0.314	50	
Financial Vulnerability				
High	0.119	0.325	54	
Low	0.881	0.325	398	
Financial Resilience				
High	0.604	0.490	179	
Low	0.396	0.490	273	
INDEPENDENT VARIABLES	Mean	Standard Deviation	Min	Max
Age	28.779	8.984	18	68
Number of Households	4.668	2.073	0	12
Monthly Income (RM)	2397.473	1564.451	150	10000
Amount of WTP (RM)	193.305	316.722	0	3000
	Mean	Standard Deviation	Frequency	
Gender				
Female	0.327	0.470	148	
Male	0.673	0.470	304	
Marital Status				
Single	0.668	0.471	302	
Married	0.314	0.465	142	
Divorced/ Widowed	0.018	0.132	8	
Education Level				
No formal/ Primary	0.035	0.185	16	
Secondary	0.420	0.494	190	
Tertiary	0.544	0.499	246	
Employment Status				
Full-time	0.639	0.481	289	
Part-time	0.217	0.413	98	
Casual	0.144	0.351	65	
Job Category				
E-hailing/ P-hailing	0.511	0.500	231	
Household services	0.106	0.308	48	
Freelance	0.383	0.487	173	
Region				
Northern	0.228	0.420	103	
Central	0.212	0.409	96	
Southern	0.166	0.372	75	

East Coast	0.199	0.400	90
East Malaysia	0.195	0.396	88
Financial Literacy			
High	0.847	0.360	383
Low	0.153	0.360	69

Source: Author's calculation

4.2.1 Distribution of financial vulnerability by socioeconomic factors

To achieve objective one, the study conducted descriptive statistics on financial vulnerability, resilience, and willingness to pay (WTP) for social protection by gig workers' socioeconomic factors. The characteristics of respondents regarding financial vulnerability are presented below. Out of the total 452 respondents, a significant majority of 398 (88.1 per cent) reported low financial vulnerability, while 54 (11.9 per cent) reported high financial vulnerability.

Figure 4.2.1 shows the distribution of financial vulnerability by age (Panel A), number of households (Panel B) and monthly income (Panel C). The median age of low financial vulnerability gig workers was 26 years old, with an interquartile range (IQR) of 23 – 32, while high financial vulnerability gig workers had a median age of 26.5 years, IQR of 23 – 36 years. Besides, a median number of households was 5 persons with an IQR of 3 – 6 in the low financial vulnerability group. The high financial vulnerability group had the same median of households of 5 persons with an IQR of 4 – 7. The median monthly income for low financial vulnerability gig workers was higher than that of high financial vulnerability gig workers, which recorded RM2,000 (IQR RM1,500 – RM3,000), and RM1,750 (IQR RM1,100 – RM2,500), respectively.

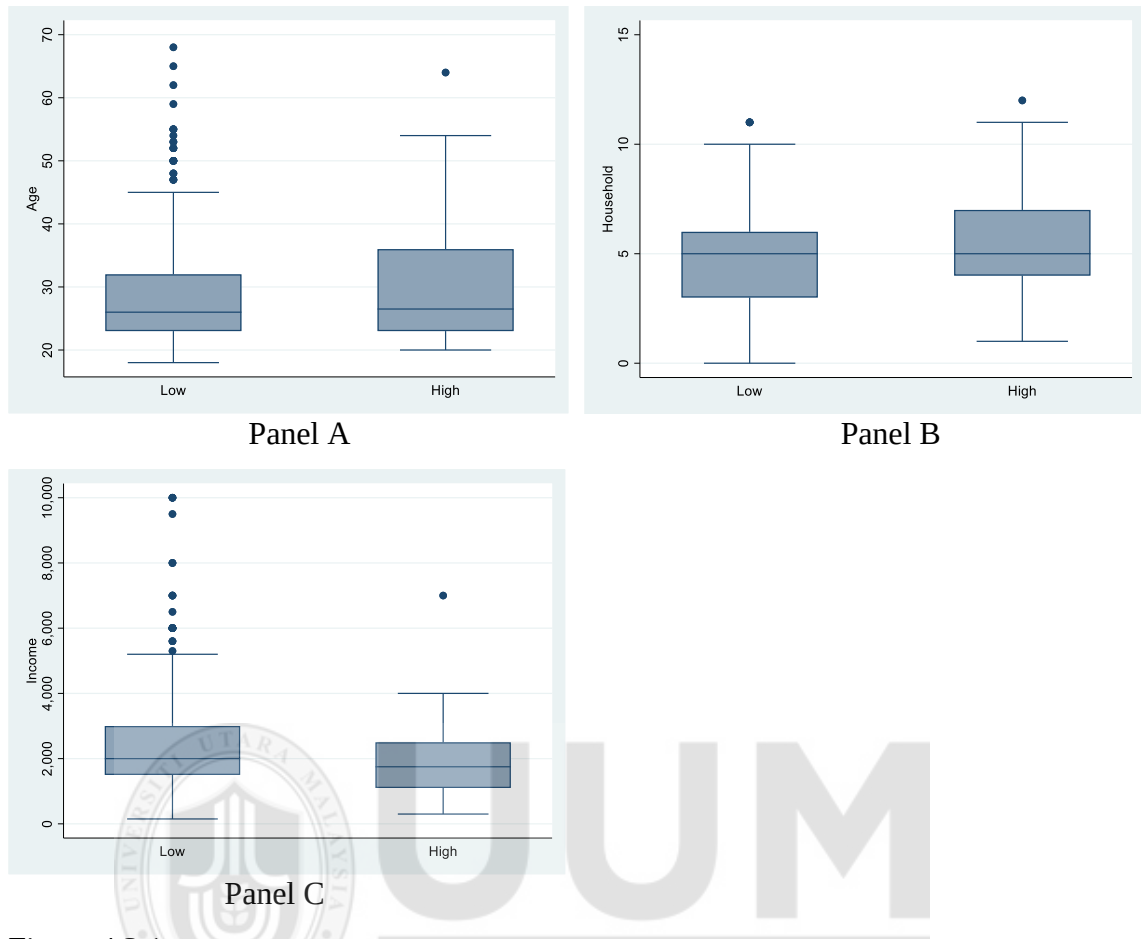


Figure 4.2.1
Financial Vulnerability by Socioeconomic Factors
 Source: Author's illustration

From Table 4.2.1, the results show significant differences in financial vulnerability with age, number of households, monthly income, education level, employment status, job category, and geographical location, as shown in Table 4.2.1. The association between level of education and financial vulnerability is in line with the previous studies that the more educated workers are, the less likely they face financial challenges (Anderloni et al., 2012; Šubová et al., 2021).

A significant influence of employment status on financial vulnerability was also discovered, which is evident in previous research (Wang et al., 2022). Full-time gig

workers (15.22 per cent) ($p=0.017$) exhibit the highest percentage of being high financially vulnerable compared to other employment statuses.

Table 4.2.1

t-test and Chi-square of Financial Vulnerability by Socioeconomic Factors

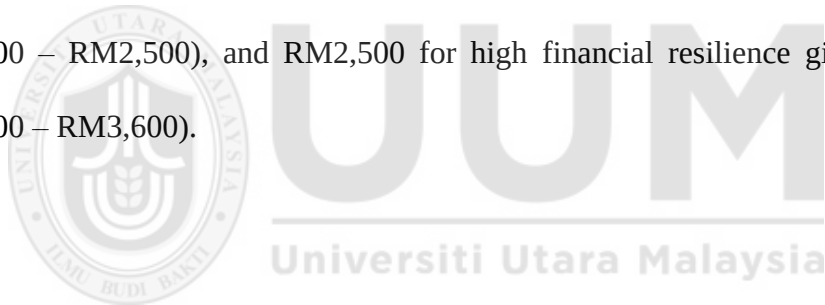
<i>t-test</i>				
Variables	Low financial vulnerability (Mean) (financial vulnerability) (Mean) ($n_1=54$)	Difference (L-H)	p-value	
Age	28.442	31.259	-2.817	0.0303*
Number of Households	4.601	5.167	-0.566	0.0596*
Monthly Income	2468.111	1876.852	591.259	0.0090*
<i>Chi-square test</i>				
Variables	Low financial vulnerability (%) ($n_2=398$)	High financial vulnerability (%) ($n_1=54$)	Total Sample (%) ($n=452$)	p-value
Gender				0.255
Female	90.54 (134)	9.46 (14)	100 (148)	
Male	86.84 (264)	13.16 (40)	100 (304)	
Marital Status				0.446
Single	89.40 (270)	10.60 (32)	100 (302)	
Married	85.21 (121)	14.79 (21)	100 (142)	
Divorced/ Widowed	87.50 (7)	12.50 (1)	100 (8)	
Education Level				0.000*
No formal/ Primary	56.25 (9)	43.75 (7)	100 (16)	
Secondary	88.95 (169)	11.05 (21)	100 (190)	
Tertiary	89.43 (220)	10.57 (26)	100 (246)	
Employment Status				0.017*
Full-time	84.78 (245)	15.22 (44)	100 (289)	
Part-time	93.88 (92)	6.12 (6)	100 (98)	
Casual	93.85 (61)	6.15 (4)	100 (65)	
Job Category				0.013*
E-hailing/ P-hailing	89.61 (207)	10.39 (24)	100 (231)	
Household services	75.00 (36)	25.00 (12)	100 (48)	
Freelance	89.60 (155)	10.40 (18)	100 (173)	
Region				0.075*
Northern	92.23 (95)	7.77 (8)	100 (103)	
Central	90.63 (87)	9.38 (9)	100 (96)	
Southern	92.00 (69)	8.00 (6)	100 (75)	
East Coast	82.22 (74)	17.78 (16)	100 (90)	
East Malaysia	82.95 (73)	17.05 (15)	100 (88)	
Financial Literacy				0.616
High	87.73 (336)	12.27 (47)	100 (383)	
Low	89.86 (62)	10.14 (7)	100 (69)	

Source: Author's calculation

The symbol (*) refer to significant

4.2.2 Distribution of financial resilience by socioeconomic factors

Figure 4.2.2 shows the distribution of financial resilience by age (Panel A), number of households (Panel B) and monthly income (Panel C). The data indicates both low and high financial resilience gig workers had a median age of 26 years old, with an interquartile range (IQR) of 23 – 32 and 22 – 32, respectively, which revealed that there was no variation in age between the two groups categorised by financial resilience. Besides, the median (5 persons) and IQR (3 – 6 persons) for a number of households was the same between high financial resilience and low financial resilience groups. The median monthly income for low financial resilience gig workers was RM2,000 (IQR RM1,400 – RM2,500), and RM2,500 for high financial resilience gig workers (IQR RM1,500 – RM3,600).



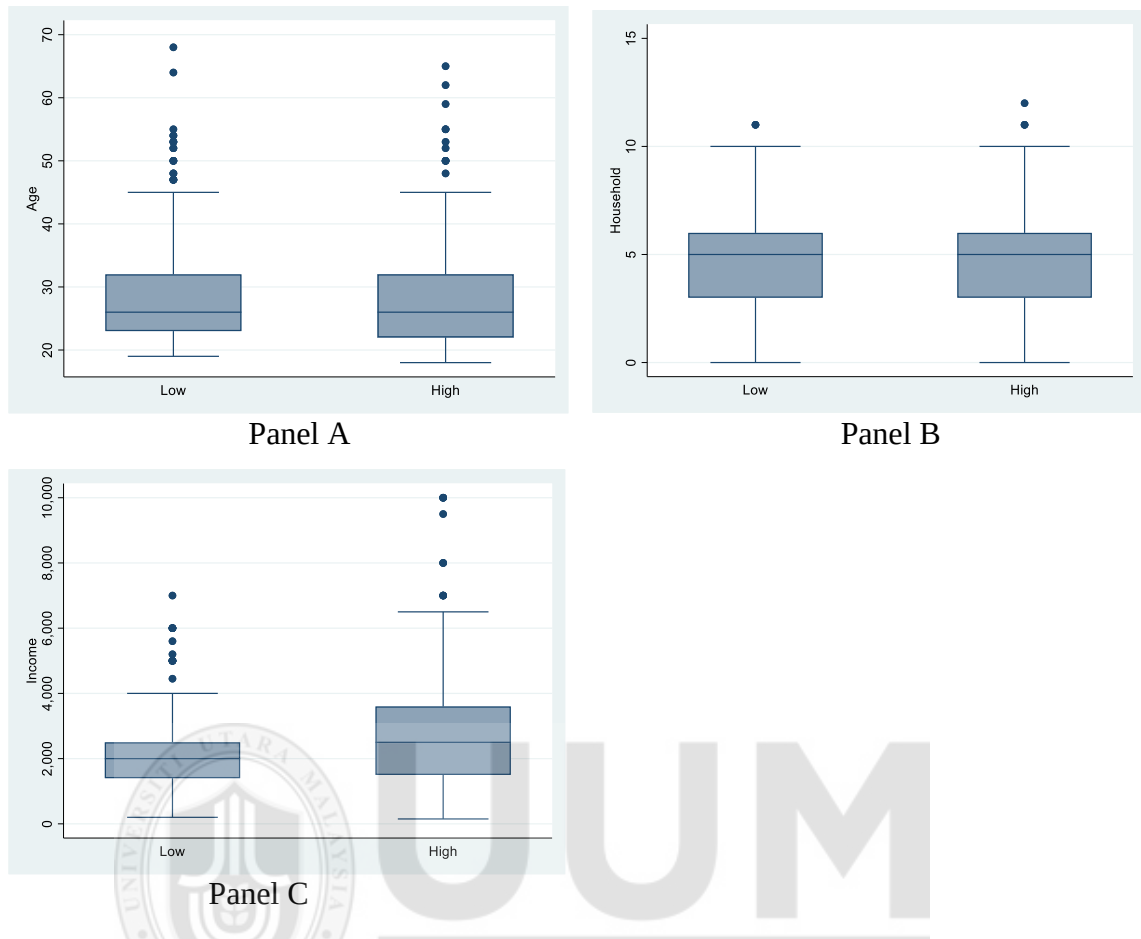


Figure 4.2.2
Financial Resilience by Socioeconomic Factors
 Source: Author's illustration

Table 4.2.2 depicts that financial resilience significantly differs based on monthly income, education level, employment status, geographical location, financial vulnerability, and financial literacy. Gig workers with tertiary education (44.72 per cent) ($p=0.049$) show the highest percentage of high financial resilience, followed by gig workers with secondary education (33.16 per cent) and no formal or primary education (37.50 per cent). The association is found similar to past studies (Hamid et al., 2023; Kass-Hanna et al., 2021). There is also a significant difference between employment status. Part-time gig workers (47.96 per cent) ($p=0.043$) are more likely to have higher financial resilience

compared to full-time gig workers (35.29 per cent) and casual gig workers (46.15 per cent). In contrast, a previous study found that part-time gig workers exhibited a lower financial resilience than other employment statuses (Streeter et al., 2021). Among the respondents, 22.79 per cent reside in the Northern region, 21.24 per cent in the Central region, 16.59 per cent in the Southern region, 19.91 per cent in the East Coast, and 19.47 per cent in East Malaysia. Based on the results, gig workers who are residing in Central region (50.00 per cent) ($p=0.029$) showed a higher proportion of being high financial resilience than workers in other regions, indicating that gig workers in Central region are more likely to have a higher ability to rebound from the shocks (financial resilience).

Respondents with high financial vulnerability are more likely to exhibit low financial resilience. Even those with low financial vulnerability in the short term may struggle to cope with sudden challenges, indicating that the majority are less resilient, as shown in Table 4.2.2. Financial literacy is also reported to significantly impact on the financial resilience of gig workers. Gig workers with high financial literacy (43.60 per cent) ($p=0.000$) show a higher proportion rate of high financial resilience compared to those with low financial literacy (17.39 per cent) ($p=0.000$). Other independent variables, such as age, gender, marital status, and number of households, were insignificant in influencing financial resilience. Similarly, a past study also found that age and gender are not significantly associated with financial resilience (Vučković et al., 2023).

Table 4.2.2

t-test and Chi-square of Financial Resilience by Socioeconomic Factors

<i>t-test</i>				
Variables	Low financial resilience (Mean) (n ₂ =273)	High financial resilience (Mean) (n ₁ =179)	Difference (L-H)	p-value
Age	28.802	28.743	0.059	0.9454
Number of Households	4.685	4.642	0.043	0.8314
Monthly Income	2054.359	2920.771	-866.412	0.0000*
<i>Chi-square test</i>				
Variables	Low financial resilience (%) (n ₂ =273)	High financial resilience (%) (n ₁ =179)	Total Sample (%) (n=452)	p-value
Gender				0.190
Female	56.08 (83)	43.92 (65)	100 (148)	
Male	62.50 (190)	37.50 (114)	100 (304)	
Marital Status				0.542
Single	61.26 (185)	38.74 (117)	100 (302)	
Married	57.75 (82)	42.25 (60)	100 (142)	
Divorced/ Widowed	75.00 (6)	25.00 (2)	100 (8)	
Education Level				0.049*
No formal/ Primary	62.50 (10)	37.50 (6)	100 (16)	
Secondary	66.84 (127)	33.16 (63)	100 (190)	
Tertiary	55.28 (136)	44.72 (110)	100 (246)	
Employment Status				0.043*
Full-time	64.71 (187)	35.29 (102)	100 (289)	
Part-time	52.04 (51)	47.96 (47)	100 (98)	
Casual	53.85 (35)	46.15 (30)	100 (65)	
Job Category				0.233
E-hailing/ P-hailing	60.61 (140)	39.39 (91)	100 (231)	
Household services	70.83 (34)	29.17 (14)	100 (48)	
Freelance	57.23 (99)	42.77 (74)	100 (173)	
Region				0.029*
Northern	58.25 (60)	41.75 (43)	100 (103)	
Central	50.00 (48)	50.00 (48)	100 (96)	
Southern	57.33 (43)	42.67 (32)	100 (75)	
East Coast	72.22 (65)	27.78 (25)	100 (90)	
East Malaysia	64.77 (57)	35.23 (31)	100 (88)	
Finanacial Vulnrability				0.013*
High	75.93 (41)	24.07 (13)	100 (54)	
Low	58.29 (232)	41.71 (166)	100 (398)	
Financial Literacy				0.000*
High	56.40 (216)	43.60 (167)	100 (383)	
Low	82.61 (57)	17.39 (12)	100 (69)	

Source: Author's calculation

The symbol (*) refer to significant

Although financial vulnerability and financial resilience are related, they are distinct constructs. A low financial vulnerability indicates that an individual faces less direct financial risk in the short-term, but this does not necessarily mean a high financial

resilience. Financial resilience reflects the ability to recover or adapt to financial shocks, which requires proactive planning, savings, or external support. Gig workers with lower financial vulnerability may not have developed these proactive measures, resulting in lower financial resilience. On top of that, socioeconomic influences are also crucial for this counterintuitive relationship between financial vulnerability and financial resilience. Gig workers with lower financial vulnerability may not face immediate financial hardship, but socioeconomic factors (such as limited access to financial tools, education, or financial support) may hinder their ability to recover (Hamid et al., 2023; Klapper & Lusardi, 2020). This is particularly important for job categories where gig workers consistently receive income that is insufficient for long-term planning.

4.2.3 Distribution of willingness to pay (WTP) for social protection schemes by socioeconomic factors

According to the WTP for social protection schemes, the median age of gig workers was 31 years old, with an IQR of 24 – 38 years in the low WTP group. In the high WTP category, the median age was 25 years old, with an IQR of 23 – 31 years. There was a statistically significant difference in the WTP for social protection schemes according to age, being lower in the high WTP group ($p = 0.028$). Moreover, the median and IQR for a number of households revealed no difference between low WTP and high WTP groups. In addition, the median monthly income for both low WTP (IQR RM1,500 – RM2,500) and high WTP (IQR RM1,500 – RM3,000) groups was identical at RM2,000. The results are demonstrated in Figure 4.2.3.

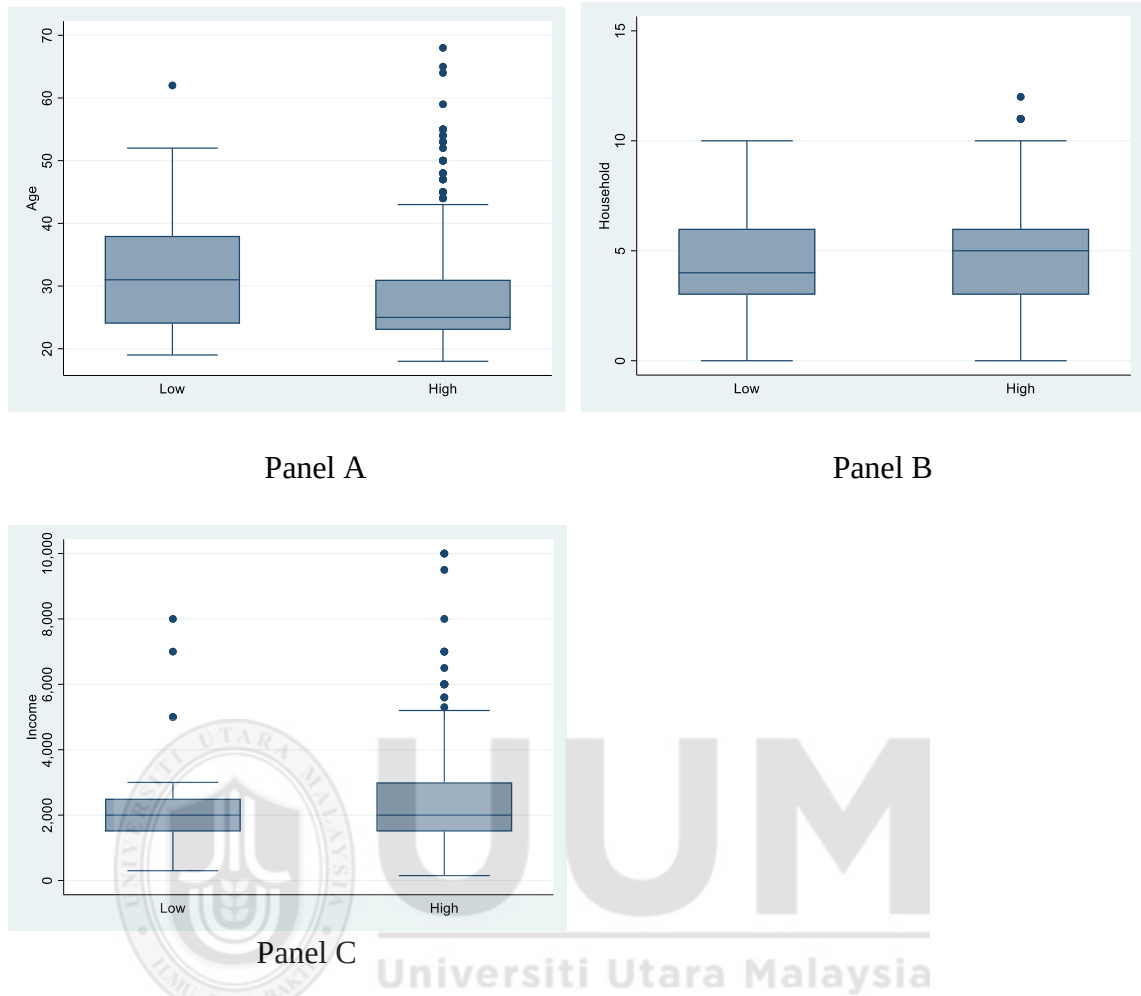


Figure 4.2.3
WTP for Social Protection Schemes among Gig Workers by Socioeconomic Factors
 Source: Author's illustration

Table 4.2.3 reveals the significant difference between region and WTP. Gig workers in the Northern region (96.12 per cent)($p=0.025$) have the highest percentage of WTP for social protection schemes, followed by the Central region (89.58 per cent)($p=0.025$), East Malaysia region (88.64 per cent)($p=0.025$), Southern region (88.00 per cent)($p=0.025$), and East Coast region (81.11 per cent)($p=0.025$). The association is found similar to past study (Ran & Zhao, 2023). A similar result is obtained for WTP by employment status ($p=0.085$)(Berdahl & Moriya, 2021).

In terms of financial situations, The association between financial vulnerability and WTP is along the lines of earlier literature (Corujo, 2017; Daniels & Grinstein-Weiss, 2019; Schanz, 2022). Besides, the study indicates a noteworthy impact of financial resilience on the WTP for social protection schemes. Furthermore, gig workers who have high financial literacy (91.12 per cent)($p=0.000$) reported a higher percentage of WTP for social protection schemes, indicating that gig workers who more understanding and know financial matters were more likely to contribute to social protection schemes as presented by (Zubir et al., 2021).



Table 4.2.3

t-test and Chi-square of WTP by Socioeconomic Factors

<i>t-test</i>				
Variables	Low Willingness to Pay (Mean) (n ₁ =50)	High Willingness to Pay (Mean) (n ₂ =402)	Difference (L-H)	p-value
Age	31.400	28.453	2.947	0.0284*
Number of Households	4.580	4.679	-0.099	0.7503
Monthly Income	2227.000	2418.677	-191.677	0.4145
<i>Chi-square test</i>				
Variables	Low Willingness to Pay (%) (n ₁ =50)	High Willingness to Pay (%) (n ₂ =402)	Total Sample (%) (n=452)	p-value
Gender				0.162
Female	8.11 (12)	91.89 (136)	100 (148)	
Male	12.50 (38)	87.50 (266)	100 (304)	
Marital Status				0.120
Single	8.94 (27)	91.06 (275)	100 (302)	
Married	15.49 (22)	84.51 (120)	100 (142)	
Divorced/ Widowed	12.50 (1)	87.50 (7)	100 (8)	
Education Level				0.129
No formal/ Primary	25.00 (4)	75.00 (12)	100 (16)	
Secondary	12.11(23)	87.89 (167)	100 (190)	
Tertiary	9.35 (23)	90.65 (223)	100 (246)	
Employment Status				0.085*
Full-time	13.49 (39)	86.51 (250)	100 (289)	
Part-time	6.12 (6)	93.88 (92)	100 (98)	
Casual	7.69 (5)	92.31 (60)	100 (65)	
Job Category				0.117
E-hailing/ P-hailing	8.23 (19)	91.77 (212)	100 (231)	
Household services	16.67 (8)	83.33 (40)	100 (48)	
Freelance	13.29 (23)	86.71 (150)	100 (173)	
Region				0.025*
Northern	3.88 (4)	96.12 (99)	100 (103)	
Central	10.42 (10)	89.58 (86)	100 (96)	
Southern	12.00 (9)	88.00 (66)	100 (75)	
East Coast	18.89 (17)	81.11 (73)	100 (90)	
East Malaysia	11.36 (10)	88.64 (78)	100 (88)	
Financial Vulnerability				0.000*
High	25.93 (14)	74.07 (40)	100 (54)	
Low	9.05 (36)	90.95 (362)	100 (398)	
Financial Resilience				0.007*
High	6.15 (11)	93.85 (168)	100 (179)	
Low	14.29 (39)	85.71 (234)	100 (273)	
Financial Literacy				0.000*
High	8.88 (34)	91.12 (349)	100 (383)	
Low	23.19 (16)	76.81 (53)	100 (69)	

Source: Author's calculation

The symbol (*) refer to significant

4.2.4 Distribution of the amount of willingness to pay (WTP) by selected socio demographic

Figure 4.2.4.1 displays the relationship between income and the amount of WTP for social protection schemes. The majority of data points are clustered at lower income levels (below RM2,000) and lower WTP amounts (below RM500). This indicates that most participants in the study have low incomes and are willing to pay smaller amounts for social protection. There are few individuals with higher incomes (above RM6,000) and higher WTP values (above RM1,000). One extreme result shows a WTP of around RM3,000 despite having a relatively low income (under RM2,000). Low-income gig workers have limited financial capacity, which might restrict their ability to pay for social protection schemes, even if they value social protection. In contrast, some respondents with higher incomes might have higher WTP due to greater financial flexibility or a perceived need for social protection. However, the lack of a strong correlation suggested that factors such as financial literacy, job category, or perceived importance of social protection might play a role in determining WTP.

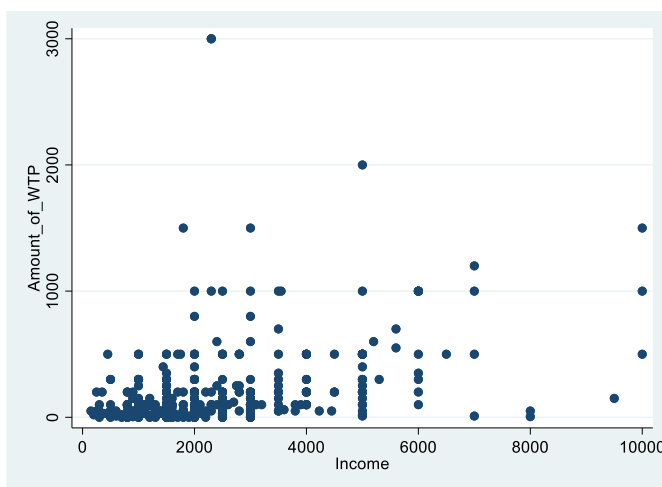


Figure 4.2.4.1
Distribution of the Amount of WTP by Monthly Income
Source: Author's illustration

Figure 4.2.4.2 shows the mean amount of WTP for social protection across three job categories: D_hailing, D_hhservice, and D_freelance. Workers in the freelance category are willing to pay the most for social protection schemes compared to other categories and the average amount is over RM250. E-hailing and p-haling workers have moderate mean WTP for social protection schemes, around RM200. This is less than for freelancers but significantly higher than household service workers. Besides, workers in the household service category are the least willing to pay, with a mean WTP of less than RM100.

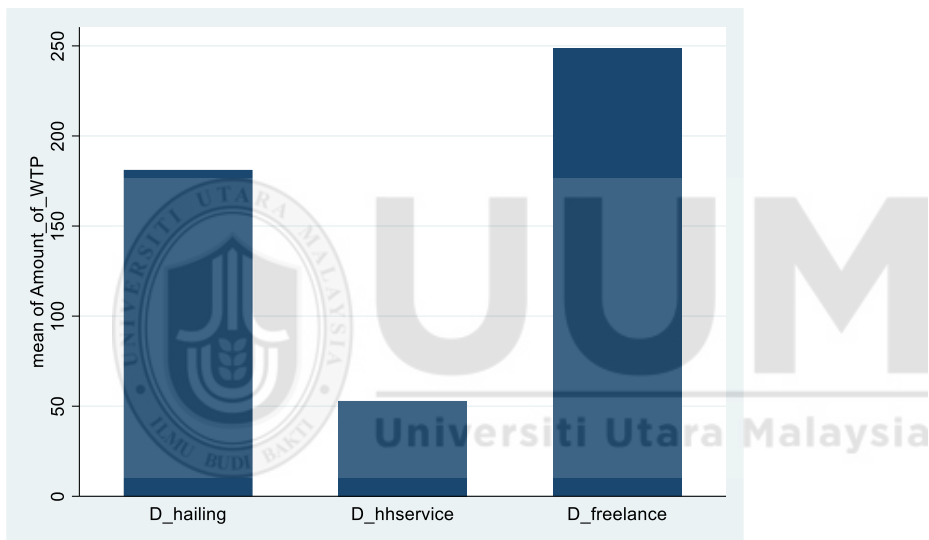


Figure 4.2.4.2
Distribution of the Amount of WTP by Job Category
Source: Author's illustration

The distribution of WTP by age is revealed in Figure 4.2.4.3. The ages range from 18 to 68 years. Most of the WTP values are concentrated at lower levels (closer to RM0) across all ages. However, there are a few extreme values where the amount is significantly higher, such as RM3,000. The data shows a wide range of values for younger individuals (ages 20-30), including some extreme cases. For older individuals (ages above 40), the amount generally seems lower and more concentrated around zero.

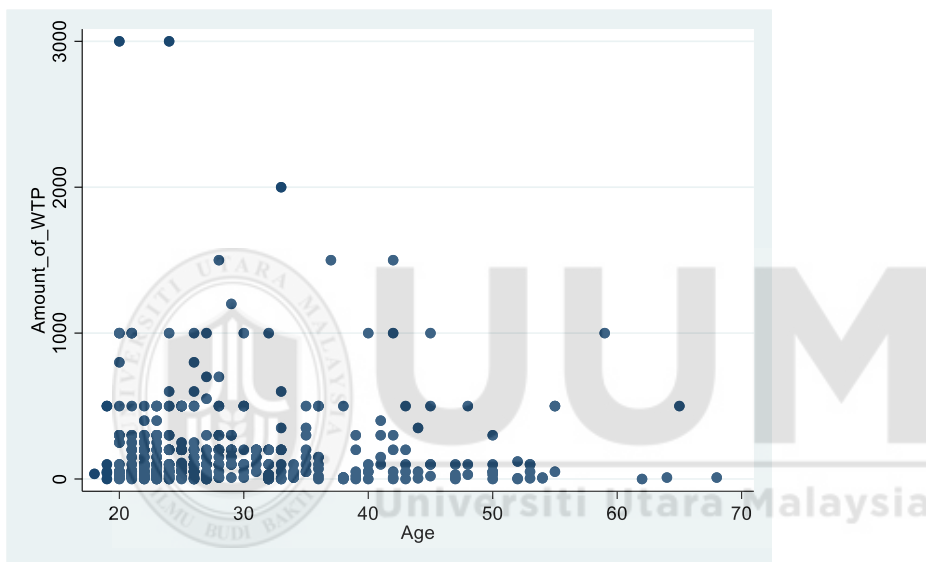


Figure 4.2.4.3
Distribution of the Amount of WTP by Age
 Source: Author's illustration

4.3 Empirical Analysis and Findings

This section reports the results of the logistic regression analysis. To achieve objective two, the logistic model is analysed to identify the net association between socioeconomic factors and financial vulnerability, financial resilience, and willingness to pay (WTP) for the social protection of gig workers. Additionally, Pearson's correlation is used to assess the strength and direction of the linear relationship between WTP amount and selected socioeconomic factors to fulfil objective three.

4.3.1 Analysis of logistic model on financial vulnerability of gig workers

The result shown in Table 4.3.1 reveals the logistic regression of the financial vulnerability of gig workers. The post-estimation statistic shows that a total of 89.16 per cent of outcomes are correctly predicted. The goodness-of-fit of this model is tested by the Pearson Chi-square test and Hosmer-Lemeshow test to assess whether the observed outcomes in the sample align with the predicted probabilities in the model. The Pearson chi-square is reported to be significant by $\chi^2 = 464.20$ with $p\text{-value} < 0.1$, indicates that the data is a poor fit in this model. As the Pearson chi-square test only provides an overall assessment of model fit, Hosmer et al. (1997) suggested categorizing data into groups by ordering the predicted probabilities, and the results show insignificant as $p\text{-value} > 0.05$. In other words, this model is considered well-specified and a good fit. Furthermore, the rule of thumb for variance inflation factors (VIF) is 10, and the results show a maximum VIF of 8.87 and a mean VIF of 2.32, suggesting the absence of multicollinearity issues (O'Brien, 2007). However, this model also has the issue of heteroscedasticity. To address this issue, robust standard errors adjust the standard errors to be robust to heteroscedasticity.

The financial vulnerability of gig workers is examined and observed at a significance level of 1 per cent, 5 per cent and 10 per cent. The findings in Table 4.3.1 imply the association between the financial vulnerability of gig workers and various factors such as monthly income, education level, and job category. However, the effects of other variables examined in the logistic regression model, including age, number of households, gender, marital status, employment status, region, and financial literacy, revealed an insignificant relationship with financial vulnerability.

The results indicate that those with higher monthly income, and level of education are significantly less likely to have high financial vulnerability, while the job category reported a positive relationship with financial vulnerability. For every unit increase in income, the odds of being financially vulnerable decrease by 0.04 per cent. For those with secondary and tertiary education (compared to those with no formal or primary education), their odds of being financially vulnerable decreased by 76.4 per cent and 72.3 per cent, respectively. Furthermore, being a gig worker in household services increases the odds of having high financial vulnerability by a factor of 2.507 compared to those working in e-hailing or p-hailing.

Table 4.3.1

Logistic Regression of Financial Vulnerability (n = 452)

Variables	Financial Vulnerability						
	Coef	Odd ratio	Std. Err.	z	P>z	95% Conf. Interval	
Age	0.0145045	1.01461	0.024	0.60	0.547	0.968	1.064
Number of Households	0.1141907	1.120966	0.103	1.24	0.214	0.936	1.342
Monthly Income	-0.0003987	0.9996014	0.000	-2.1	0.036**	0.999	1.000
Gender							
<i>Female (ref)</i>	-	-	-	-	-	-	-
Male	0.5061952	1.658967	0.736	1.14	0.254	0.696	3.957
Marital Status							
<i>Single (ref)</i>	-	-	-	-	-	-	-
Married	0.3898453	1.476752	0.684	0.84	0.400	0.596	3.661
Divorced/ Widowed	-0.5978519	0.5499918	0.989	-0.33	0.740	0.016	18.672
Education Level							
<i>No formal/ Primary (ref)</i>	-	-	-	-	-	-	-
Secondary	-1.443757	0.2360393	0.137	-2.49	0.013**	0.076	0.736
Tertiary	-1.284792	0.2767082	0.171	-2.08	0.037**	0.083	0.927
Employment Status							
<i>Full-time (ref)</i>	-	-	-	-	-	-	-
Part-time	-0.7950678	0.4515506	0.209	-1.71	0.087	0.182	1.121
Casual	-0.9750028	0.3771913	0.241	-1.53	0.127	0.108	1.319
Job Category							
<i>E-hailing/ P-hailing (ref)</i>	-	-	-	-	-	-	-
Household services	0.9190953	2.507021	1.304	1.77	0.077*	0.904	6.950
Freelancers	0.4508819	1.569696	0.685	1.03	0.301	0.668	3.690
Region							
<i>Northern (ref)</i>	-	-	-	-	-	-	-
Central	0.2964571	1.345085	0.727	0.55	0.583	0.466	3.879
Southern	0.1321735	1.141306	0.655	0.23	0.818	0.370	3.518
East Coast	0.2662425	1.305052	0.737	0.47	0.637	0.431	3.948
East Malaysia	0.8098407	2.24755	1.145	1.59	0.112	0.828	6.100
Financial Literacy							
High	0.7656101	2.150306	1.089	1.51	0.131	0.797	5.801
<i>Low (ref)</i>	-	-	-	-	-	-	-
_cons	-2.387079	0.0918977	0.117	-1.88	0.060	0.008	1.105
Correct prediction (%)				89.16			
Pearson chi2				464.20			
p-value				0.0978			
Hosmer-Lemeshow				11.50			
p-value				0.1751			
Max VIF/ Mean VIF				8.87/ 2.32			

Note: *=p<0.10, **=p<0.05, ***=p<0.01

4.3.2 Analysis of logistic model on financial resilience of gig workers

The logistic regression result of financial resilience is presented in Table 4.3.2. The heteroscedasticity issue is absent in this model. Yet, robust standard error is used to provide more reliable estimation. The post-estimation statistic shows that a total of 65.27 per cent of outcomes were accurately predicted. The Pearson chi-square yield an insignificant result with $\chi^2 = 438.12$ with a p-value more than 0.1. The insignificance of Hosmer-Lemeshow (p-value > 0.05) show that this model fits well. Furthermore, this model had no multicollinearity issue, as indicated by the maximum VIF of 9.03 and mean VIF of 2.27.

In this finding, for every Ringgit Malaysia change in monthly income, the odds of exhibiting high financial resilience are increased by a factor of 1.000378, holding all other variables constant. Besides being highly financially vulnerable, the odds of being high financial resilience decreased by 47.3 per cent. Financial literacy also shows a significant relationship with financial resilience (Hamid et al., 2023). The results suggest that those with high financial literacy, increased the odds of being high financially resilient by a factor of 2.974 compared to those with low financial literacy. However, the analysis shows no association with age, number of households, gender, marital status, level of education, employment status, job category and region.

Table 4.3.2

Logistic Regression of Financial Resilience (n = 452)

Variables	Financial Resilience						
	Coef.	Odd ratio	Std. Err.	z	P>z	95% Conf. Interval	
Age	-0.0182115	0.9819533	0.018	-1.04	0.299	-0.053	0.016
Number of Households	0.0547366	1.056262	0.052	1.06	0.291	-0.047	0.156
Monthly Income	0.0003782	1.000378	0.000	4.96	0.000***	0.000	0.001
Gender							
Female (ref)	-	-	-	-	-	-	-
Male	-0.258788	0.7719866	0.277	-0.93	0.351	-0.802	0.285
Marital Status							
Single (ref)	-	-	-	-	-	-	-
Married	0.1460979	1.157309	0.293	0.5	0.618	-0.427	0.720
Divorced/ Widowed	0.0882384	1.092248	0.873	0.1	0.920	-1.623	1.800
Education Level							
No formal/ Primary (ref)	-	-	-	-	-	-	-
Secondary	-0.6609506	0.5163603	0.616	-1.07	0.283	-1.869	0.547
Tertiary	-0.2890354	0.7489857	0.626	-0.46	0.644	-1.515	0.937
Employment Status							
Full-time (ref)	-	-	-	-	-	-	-
Part-time	0.4059438	1.500718	0.263	1.54	0.123	-0.110	0.922
Casual	0.2060573	1.228824	0.308	0.67	0.503	-0.398	0.810
Job Category							
E-hailing/ P-hailing (ref)	-	-	-	-	-	-	-
Household services	-0.0914338	0.9126217	0.395	-0.23	0.817	-0.865	0.683
Freelancers	-0.3800198	0.6838479	0.273	-1.39	0.164	-0.915	0.155
Region							
Northern (ref)	-	-	-	-	-	-	-
Central	0.3310997	1.392499	0.313	1.06	0.291	-0.283	0.945
Southern	-0.0367798	0.9638884	0.331	-0.11	0.911	-0.685	0.611
East Coast	0.0990146	1.104082	0.384	0.26	0.797	-0.654	0.852
East Malaysia	0.0612698	1.063186	0.320	0.19	0.848	-0.567	0.689
Financial Vulnerability							
High	-0.6396137	0.5274961	0.366	-1.75	0.080*	-1.356	0.077
Low (ref)	-	-	-	-	-	-	-
Financial Literacy							
High	1.089777	2.97361	0.390	2.79	0.005***	0.325	1.854
Low (ref)	-	-	-	-	-	-	-
_cons	-1.459695	0.2323071	1.027	-1.42	0.155	-3.472	0.553
Correct prediction (%)				65.27			
Pearson chi2				438.12			
p-value				0.3320			
Hosmer-Lemeshow				8.37			
p-value				0.3983			
Max VIF/ Mean VIF				9.03/ 2.27			

Note: *= $p < 0.10$, **= $p < 0.05$, ***= $p < 0.01$

4.3.3 Analysis of logistic model on willingness to pay (WTP) for social protection schemes

Table 4.3.3 presents the results of logistic regression for WTP for social protection schemes. Robust standard errors are employed to account for the presence of heteroscedasticity. The model achieves accurate predictions for a substantial proportion of the outcomes (88.50 per cent). The Pearson chi-square test yield an insignificant result, with $\chi^2 = 423.25$ with a p-value greater than 0.1. The Hosmer-Lemeshow test also indicated insignificance (p-value > 0.05), suggesting a good fit for the model. Additionally, there was no issues of multicollinearity in this model, as evidenced by a maximum VIF of 9.03 and a mean VIF of 2.22.

Male gig workers decrease the odds by a factor of 0.436 of having high WTP for social protection schemes compared to female gig workers. Being a freelancer also decreases the odds of having a high WTP by a factor of 0.359 compared to those who work as e-hailing and p-hailing. Moreover, for gig workers in the Central, Southern and East Coast regions (compared to those in the Northern region), the odds of being high WTP for social protection schemes are decreased by 73.3 per cent, 69.0 per cent, and 69.4 per cent, respectively. The analysis indicates a significant association between financial vulnerability, financial resilience and financial literacy. Being more financially vulnerable, the odds of having high WTP for social protection schemes are decreased by 66.2 per cent. Besides being more financially resilient and literate, the odds of having high WTP are both increased by a factor of 1.935 and 3.300, holding all other variables constant.

Table 4.3.3

Logistic Regression of WTP (n = 452)

Variables	Willingness to pay (WTP)						
	Coef.	Odd ratio	Std. Err.	z	P>z	95% Conf. Interval	
Age	-0.0057234	0.9942929	0.025	-0.23	0.820	-0.055	0.044
Number of Households	0.0751034	1.077996	0.088	0.85	0.394	-0.098	0.248
Monthly Income	0.0000514	1.000051	0.000	0.37	0.709	0.000	0.000
Gender							
<i>Female (ref)</i>	-	-	-	-	-	-	-
Male	-0.8298616	0.4361096	0.352	-2.36	0.019**	-1.520	-0.139
Marital Status							
<i>Single (ref)</i>	-	-	-	-	-	-	-
Married	-0.5523226	0.5756114	0.453	-1.22	0.223	-1.440	0.336
Divorced/ Widowed	-0.4230467	0.655048	1.216	-0.35	0.728	-2.807	1.961
Education Level							
<i>No formal/ Primary (ref)</i>	-	-	-	-	-	-	-
Secondary	0.4298754	1.537066	0.856	0.5	0.616	-1.248	2.108
Tertiary	0.4659383	1.593509	0.872	0.53	0.593	-1.243	2.175
Employment Status							
<i>Full-time (ref)</i>	-	-	-	-	-	-	-
Part-time	0.6100792	1.840577	0.496	1.23	0.219	-0.362	1.582
Casual	0.2929047	1.340315	0.528	0.55	0.579	-0.743	1.329
Job Category							
<i>E-hailing/ P-hailing (ref)</i>	-	-	-	-	-	-	-
Household services	0.1411389	1.151585	0.605	0.23	0.815	-1.044	1.327
Freelancers	-1.023659	0.3592779	0.358	-2.86	0.004***	-1.726	-0.322
Region							
<i>Northern (ref)</i>	-	-	-	-	-	-	-
Central	-1.319064	0.2673855	0.682	-1.93	0.053*	-2.656	0.018
Southern	-1.172594	0.309563	0.691	-1.7	0.090*	-2.527	0.182
East Coast	-1.185099	0.305716	0.659	-1.8	0.072*	-2.477	0.107
East Malaysia	-1.051505	0.3494115	0.664	-1.58	0.113	-2.353	0.250
Financial Vulnerability							
High	-1.085633	0.337688	0.428	-2.54	0.011**	-1.925	-0.246
<i>Low (ref)</i>	-	-	-	-	-	-	-
Financial Resilience							
High	0.6601753	1.935132	0.392	1.68	0.092*	-0.108	1.428
<i>Low (ref)</i>	-	-	-	-	-	-	-
Financial Literacy							
High	1.193823	3.299671	0.451	2.65	0.008***	0.310	2.077
<i>Low (ref)</i>	-	-	-	-	-	-	-
_cons	2.493773	12.10687	1.507	1.66	0.098	-0.459	5.447
Correct prediction (%)					88.50		
Pearson chi2					423.25		
p-value					0.5693		
Hosmer-Lemeshow					8.86		
p-value					0.3545		
Max VIF/ Mean VIF					9.03/ 2.22		

Note: *=p<0.10, **=p<0.05, ***=p<0.01

4.3.4 Analysis of distribution of willingness to pay (WTP) amount across selected socioeconomic factors among gig workers

Table 4.3.4 presents the descriptive statistics for the amount of WTP among the respondents. The analysis is based on 452 observations, with the mean WTP amount recorded at RM193.31. This indicates the average amount of gig workers that are willing to contribute towards social protection schemes. The standard deviation of RM316.72 suggests a substantial variation in WTP amounts, reflecting respondents' diverse financial capabilities and preferences.

Table 4.3.4
Descriptive analysis of WTP amount

Variable	Obs	Mean	Std. dev.	Min	Max
Amount of WTP	452	193.3053	316.7216	0	3000

Source: Author's calculation

The inferential analysis, such as Pearson's correlation analysis and t-test, are used to achieve objective three. Table 4.3.5 examines the relationship between WTP amount, age, and monthly income using Pearson's correlation analysis. The correlation coefficients indicate the strength and direction of linear association between these variables.

The correlation between WTP amount and monthly income is 0.3625 ($p < 0.01$), suggesting a positive statistically significant relationship. This implies that individuals with higher monthly incomes tend to contribute a higher WTP amount for social protection schemes. This finding is consistent with the past study, which suggests that individuals with greater financial capacity are more likely to contribute toward such schemes (Chen, 2024).

In contrast, the correlation between WTP amount and age is 0.0121, which is statistically insignificant ($p = 0.7977$). This indicates that age has no meaningful linear relationship

with the amount of WTP. On top of that, the lack of significance suggests that WTP does not vary systematically with age in the sample in this study.

Table 4.3.5

Pearson's correlation between WTP Amount across Age and Monthly Income

Variables	Amount of WTP	Age	Monthly Income
Age	0.0121 0.7977 452	1 452	
Monthly Income	0.3625*** 0.0000 452	0.2424*** 0.0000 452	1 452

Note: *=p<0.10, **=p<0.05, ***=p<0.01

Source: Author's calculation

Table 4.3.6 presents the t-test results examining the differences in the amount of WTP for social protection schemes across selected socioeconomic factors, including job category, ethnicity, employment status, and education level. The mean WTP values for each group within these categories are compared, and statistically significance is assessed using p-values.

The mean WTP amount for D_hailing (e-hailing and p-hailing) gig workers (RM181.14) is slightly lower than for other gig workers (RM206.02). However, the difference is not statistically significant ($p=0.4043$), indicating that job category does not significantly influence WTP in this study. There is a statistically significant difference ($p<0.01$) in WTP between Malay and non-Malay respondents. Non-Malay workers exhibit a substantially higher mean WTP (RM275.71) to than Malay workers (RM137.76). This finding suggests that ethnic background may play a vital role in determining WTP, potentially due to differences in income levels, financial awareness, or cultural perceptions of social protection (United Nations, 2017).

Workers with part-time or casual employment report a higher mean WTP (RM 232.85) than full-time workers (RM 171.00). The difference is statistically significant at the 5 per cent level ($p = 0.0461$), suggesting that part-time or casual workers may perceive a greater need for social protection and are willing to contribute more despite potentially unstable income sources. Moreover, a significant difference ($p < 0.01$) is observed between highly educated workers (tertiary education and above) and less educated workers (below tertiary education). Highly educated workers show a higher WTP (RM 228.93) than less educated workers (RM 150.76). This finding aligns with expectations, as higher education levels may increase awareness of social protection benefits, leading to a greater willingness to pay.

Table 4.3.6
t-test of WTP amount (RM) by Selected Socioeconomic Factors

Variables	Obs.	<i>t</i> -test	
		WTP amount (RM)	p-value
		Mean	
Job category			
D_hailing	231	181.1385	0.4043
Other than D_hailing	221	206.0226	
Ethnicity			
Malay	270	137.7593	0.0000***
Other than Malay	182	275.7088	
Employment status			
Full time	289	171.0035	0.0461**
Part time/ Casual	163	232.8466	
Education level			
Less educated (below tertiary education)	206	150.7621	0.0088***
Highly educated (tertiary education and above)	246	228.9309	

Note: *= $p < 0.10$, **= $p < 0.05$, ***= $p < 0.01$

Source: Author's calculation

4.4 Discussion

The discussion of the results revealed the association between financial vulnerability, financial resilience, and willingness to pay (WTP) for social protection schemes based on their socioeconomic factors based on the study's objectives. The findings highlighted that monthly income, education level, and job category significantly impact financial vulnerability, while age, household size, gender, marital status, employment status, and financial literacy were insignificant. Similarly, monthly income, financial vulnerability, and financial literacy are crucial in financial resilience, whereas other factors showed no association. Additionally, gender, job category, region, financial vulnerability, financial resilience, and financial literacy demonstrated significant associations with WTP. At the same time, age, household size, monthly income, marital status, education level, and employment status had no effect. The total amount willing to pay (WTP) was positively correlated with monthly income and statistically significantly associated with education level, ethnicity, and employment status. This discussion provides a deeper understanding of how different socioeconomic factors shape gig workers' financial vulnerability, resilience, and WTP. It offers insights into their financial behaviour and the challenges they face in accessing social protection schemes.

4.4.1 Financial vulnerability

The findings highlight that monthly income, level of education, and job category are significantly associated with financial vulnerability. Consistent with findings by Al-Mamun and Mazumder (2015) and He and Zhou (2022) This study found that workers with low or uncertain incomes are more likely to experience high financial vulnerability. Gig workers who struggle to cover necessities and loan repayments fall into this category

of vulnerability, underscoring income stability's critical role in financial well-being. Level of education was also reported as significant, which effect is similar to a prior study indicating an association between education and financial vulnerability (Loke, 2017; Ngepah et al., 2023). Lower educational attainment may limit workers' opportunities to acquire financial management skills, further exacerbating vulnerability. An important observation is the variation in vulnerability across job categories, with workers engaged in household services being particularly susceptible. This contrasts with existing literature, which has primarily focused on the financial vulnerability of e-hailing and p-hailing (Dubbelman, 2021; Ribbans et al., 2022; Uchiyama et al., 2022).

On the other hand, the previous studies have noted that the significance of age-associated financial vulnerability (Conrad et al., 2010; Lachs & Han, 2015; Lusardi et al., 2019). A financial behavior pattern in older adults that significantly exposes them to the risk of substantial resource loss, leading to significant reduction in quality of life. However, this study's findings show no association between age and financial vulnerability. Vučeković et al. (2023) and Daniels & Grinstein-Weiss (2019) found that geographical location significantly affects the financial vulnerability of gig workers, which contradicts the results of the present study. The findings also reveal that other variables such as number of households, gender, marital status, employment status, and financial literacy are not significantly associated with financial vulnerability.

4.4.2 Financial resilience

The findings underline the strong interconnection between financial vulnerability and financial resilience reflect the findings of OECD (2021a). Income, a critical component of financial resilience, is shown to have a significant and consistent association with Deevy et al. (2021) and Salignac et al. (2019). Lower monthly income increases financial vulnerability and limits the capacity to recover from financial shocks, reducing resilience. Financial literacy also had a substantial impact on financial resilience, suggesting that gig workers with high financial literacy increase the likelihood of high financial resilience compared to those with low financial literacy (Hasler et al., 2023). According to prior studies, it shows that financial literacy serves as a safeguard for maintaining financial resilience (Bialowolski et al., 2022; Lyons et al., 2020). It implies that financial resilience is more responsive to financial literacy, which is similar to this study.

These findings revealed no significant relationship between age and financial resilience. However, the result contradicts a previous study by Lusardi et al. (2011). In terms of gender, it reported insignificant to financial resilience, which suggests a similar finding to prior research (Salignac et al., 2019). However, Monticone (2023) highlighted the significant role of gender differences in financial resilience. Hamid et al. (2023) also demonstrated that being a male is significantly associated with lower financial resilience, indicating a decreased likelihood of being financially resilient. However, this contrasts with the study by Lyons & Kass-Hanna (2021), which found that females are less financially resilient.

The findings suggest no association between financial resilience and variables such as number of households, education level, employment status, and region. Interestingly, this

is contrary to reported by past studies that addressed education level and region were significantly associated with financial resilience (Daud et al., 2019; Hasler et al., 2023; Lusardi et al., 2011; Salignac et al., 2019). Consistent with the previous study, the analysis stated that marital status has no significant association with financial resilience (Hasler et al., 2023). In addition, there is a lack of prior research to show the relationship between job category and financial resilience. Yet, instead of building the financial resilience to support their aspirations for the future, many e-hailing drivers are just trying to fight for survival (Dubbelman, 2021).

4.4.3 Willingness to pay (WTP) for social protection

Financial vulnerability causes gig workers to be unable to accumulate savings for retirement and contribute to insurance. In other words, it becomes challenging for them to contribute to social protection schemes (Eichhorst et al., 2016; Schanz, 2022). Conversely, workers with higher financial resilience are more willing to pay for social protection. Many studies have shown that gig workers often have lower coverage under social protection schemes compared to counterparts in traditional employment, resulting in a low willingness to contribute to social protection schemes (ILO, 2023b; Schanz, 2022). According to a study conducted by Schanz (2022), the emergence of the gig economy has exposed workers to risks, including the lack of benefits such as sick leave, health insurance and pension plans. However, many gig workers, particularly those in precarious roles like e-hailing, are more focused on short-term survival than long-term financial planning (Dubbelman, 2021).

The analysis also highlights that gender, job category, region, and financial literacy are statistically significantly associated with WTP for social protection schemes. In terms of gender, male gig workers have less WTP compared to female gig workers, which is similar to the previous study (Atake & Agbodji, 2017), while the result in Dong et al. (2003) reveal that men have more WTP for social protection schemes than women. Job categories, such as e-hailing riders, are more WTP compared to others categories, which suggests a similar prior research (Nizar et al., 2023). Geographical aspects also play an important role in WTP. This association is comparable to studies by (Ahmed et al., 2016; Atake & Agbodji, 2017; Onwujekwe et al., 2010). The level of financial literacy among gig workers can influence their willingness to pay for social protection. Given that gig workers often lack traditional employment benefits such as medical insurance and retirement plans, they might need to rely on their own financial knowledge to make decisions about income protection and risk management.

Nevertheless, previous studies have revealed the significance of age with a willingness to pay for social protection schemes, which is opposed to the findings of this study (Atake & Agbodji, 2017; Babatunde et al., 2016; Bärnighausen et al., 2007; Dong et al., 2003; Lofgren et al., 2008). There is an insignificant association between monthly income, education and WTP. However, previous studies show high income and education level influenced WTP positively (Ahmed et al., 2016; Miti et al., 2021). The number of households and marital status has no significant influence on WTP, which aligns with the past study (Ahmed et al., 2016). Yet, Shafie and Hassali (2013) demonstrated that WTP is influenced by marital status. Other than that, the findings also show no association between employment status and WTP.

In addition, when examining the total amount of WTP, past studies consistently indicate that income is a significant determinant of WTP for social protection schemes. Gig workers with higher incomes tend to exhibit greater WTP for health insurance and other forms of social security (Bayked et al., 2024; Miti et al., 2021; Ogundejiid et al., 2019). Similarly, education level plays a crucial role in determining WTP, as gig workers with higher education levels tend to have a higher understanding of the benefits of social protection schemes, leading to an increase in their WTP (Miti et al., 2021; Ng et al., 2024).

Although direct evidence linking ethnicity to WTP for social protection is limited, socioeconomic factors often intersect with ethnic background in complex ways (United Nations, 2017). Aside from that, job category showed an insignificant effect in the analysis which is contrary to the findings from Miti et al. (2021) that suggest the financial instability of informal workers associated with certain job categories may influence their willingness to pay (WTP) for social protection schemes.

4.5 Conclusions

In conclusion, the findings reveal distinct impacts of socioeconomic factors on financial vulnerability, financial resilience, and willingness to pay (WTP) for social protection schemes, highlighting the complex interplay between these variables. It shows that monthly income, education level and job category significantly impact on financial vulnerability. While age, household size, gender, marital status, employment status, and financial literacy were insignificant. Furthermore, monthly income, financial vulnerability and financial literacy are key influences on financial resilience. Age, household size,

gender, marital status, education level, employment status, job category, and region have no association with financial resilience.

Additionally, gender, job category, region, financial vulnerability, financial resilience, and financial literacy demonstrated crucial association with willingness to pay (WTP) for social protection schemes. Some variables, such as age, household size, monthly income, marital status, education level, and employment status, demonstrate insignificant effects on WTP for social protection schemes. The total amount willing to pay (WTP) revealed a positive correlation with monthly income, while education level, ethnicity, and employment status demonstrated significant associations in this study.

Although past studies have significantly contributed to the understanding of the association between financial situations (financial vulnerability, financial resilience and financial literacy). It is essential to recognize the inherent limitations and constraints that affect the interpretation of the results in this study, especially for gig workers.

CHAPTER FIVE

CONCLUSIONS AND POLICY RECOMMENDATIONS

5.1 Conclusions

The study identified significant associations between financial vulnerability and monthly income, education level, and job category variables. Gig workers with higher monthly income and higher education levels (secondary and tertiary) were less likely to experience high financial vulnerability. In contrast, those in the household services job category were more prone to high financial vulnerability than e-hailing and p-hailing workers. The findings indicated no significant net relationship between financial vulnerability and other variables such as age, gender, marital status, household size, employment status, region, or financial literacy. This suggested that financial vulnerability among gig workers was more influenced by income stability, educational attainment, and the nature of their work. Financial resilience was significantly influenced by monthly income, financial vulnerability, and financial literacy. Higher-income and greater financial literacy increased the possibility of high financial resilience while being highly financially vulnerable reduced the resiliency of gig workers. Gig workers with higher financial literacy can manage financial shocks, supporting their resilience. However, the analysis revealed no significant associations between financial resilience and variables such as age, gender, marital status, household size, education level, employment status, job category, or region. These results highlighted the pivotal role of income and financial literacy in fostering resilience among gig workers, irrespective of their demographic characteristics.

Willingness to pay (WTP) for social protection schemes was significantly associated with gender, job category, region, financial vulnerability, financial resilience, and financial literacy. Male gig workers, freelancers, and those in Central, Southern, and East Coast regions were less likely to show high WTP than their female counterparts, e-hailing workers, and those in the Northern region. Financial vulnerability reduced WTP, while financially resilient and literate gig workers were more likely to contribute to it. Additionally, variables such as age, household size, monthly income, marital status, education level, and employment status showed no significant effect on WTP. These findings emphasized the importance of addressing financial instability and improving financial literacy to enhance gig workers' participation in social protection schemes.

The results suggested that income remains the most influential factor affecting the amount of WTP among gig workers, followed by education level, ethnicity, and job category while employment status has a minimal impact on them. These findings highlight the need for pricing models, policies, and financial strategies that consider income disparities and educational backgrounds among gig workers when determining willingness to pay. Understanding these socioeconomic dynamics can help businesses and policymakers tailor services, pricing, and financial support mechanisms better to accommodate the diverse workforce in the gig economy.

5.2 Policy Recommendations

Based on the findings of financial vulnerability, several recommendations can address the challenges gig workers face. Social protection schemes should be customized to consider the current monthly income status of individuals, ensuring that lower income gig workers receive adequate support. Customised interventions should also address the unique financial needs of different gig job categories. For instance, freelancers freelancing policies could benefit from measures addressing tax considerations and access to professional development opportunities. Additionally, regional disparities must be addressed through localized social protection schemes that consider the unique economic challenges of each region. To enhance income stability, financial instruments such as savings accounts or platforms should be introduced to help gig workers save during peak earning periods, creating a buffer against economic shocks.

Besides, addressing financial resilience requires improving gig workers' ability to manage financial challenges. Enhancing financial literacy through workshops, online courses, or community programmes is essential covering topics such as budgeting, savings strategies, emergency planning, and access to financial tools (Bank Negara Malaysia, 2022). Gig workers should also be encouraged to establish savings buffers and explore wealth creation strategies to build a financial cushion for emergencies. Policies must ensure gig workers earn above the living wage, providing a foundation for sustainable financial stability. Partnerships with educational institutions, government agencies, and online platforms can be leveraged to deliver targeted financial education initiatives. Moreover, regional specific interventions should be developed to address the unique socioeconomic

conditions and challenges faced by gig workers in different areas, promoting financial resilience across diverse contexts.

To increase the willingness to pay (WTP) for social protection, designing effective awareness campaigns and incentive structures is crucial. These campaigns should emphasize the long-term benefits of social protection, including safeguarding financial well-being, providing a safety net in emergencies, and fostering collective benefits. Flexible contribution options are vital to helping gig workers manage their unstable income, making it easier for them to contribute without feeling financially overwhelmed. Attractive incentives such as tax benefits, matching contributions, or loyalty programmes can further encourage participation. Furthermore, collaborations with service provider platforms can streamline the process, integrating incentive structures directly into their systems. Efforts should also address knowledge gaps by increasing awareness of available programmes, simplifying eligibility criteria, and broadening outreach to ensure gig workers can access the benefits they need.

By addressing financial vulnerability, resilience, and WTP through these comprehensive strategies, policymakers and stakeholders can create a more inclusive and effective social protection framework for gig workers, ensuring their financial stability and well-being in an evolving gig economy.

5.3 Limitations

While this study provides valuable insights into gig workers' financial vulnerability, resilience and willingness to pay (WTP) for social protection, several limitations must be acknowledged to ensure a significant interpretation of the findings. Firstly, self-reported data may be affected by recall or social desirability bias. Respondents may provide responses that conform to social expectations rather than reflect their financial experiences. This may affect the accuracy of financial vulnerability, resilience and WTP assessments. Second, this study depends heavily on self-perceived or self-declared measurements, which can introduce bias and inaccuracies into the data. Self-perceived data questions rely on individuals' subjective interpretations of their experiences, which may not always align with objective reality. This can lead to response bias, where respondents may overestimate or underestimate their characteristics or behaviors due to social desirability or memory recall issues. Additionally, self-declared measures may be influenced by factors such as mood, perception, or individual interpretation of the questions that can vary widely among respondents. This can result in inconsistencies in the data collected. Thirdly, the dynamic gig economy landscape characterized by rapid change is also a crucial limitation of the study. Since this study captures a specific period, the findings may not reflect the changing nature of gig work. Policies and circumstances may change, affecting the financial dynamics of gig workers. Fourth, there is a limited exploration of job categories. While job categories were considered in the analysis, the study did not delve into the unique financial challenges of specific gig work roles. Customized interventions based on job category may require a more clear understanding of the unique challenges faced by delivery drivers, household services and freelancers. Lastly, the use of non-probability sampling restricts the generalizability of the findings. Non-probability sampling methods

may not capture the full diversity of gig workers, leading to potential sampling bias. As a result, the conclusions drawn may not accurately represent the broader gig worker population, limiting the applicability of the study's insights to the entire gig economy.

5.4 Suggestions for Future Research

The findings of the current study indicate the financial vulnerability, resilience, and willingness to pay (WTP) for social protection schemes among gig workers in Malaysia. Future research should undertake a rigorous evaluation of flexible design components in social protection programmes. It may involve comparative studies that analyse outcomes between flexible and rigid programmes, explore how flexibility affects access, utilisation, and effectiveness of social security benefits. Additionally, longitudinal analyses is essential to track the financial well-being of gig workers over time and provides insights into income stability, spending patterns, and adaptive strategies. Such research can also examine the influence of significant life events, policy reforms, and economic trends on gig workers' financial resilience.

In addition, future research should explore heterogeneity among gig workers by distinguishing between different job categories, income levels, and employment arrangements. Such subgroup analyses can reveal disparities in financial vulnerability and resilience, contributing to more targeted policy interventions. These findings will not only enrich academic discourse but also inform policymakers in designing inclusive and adaptive social protection frameworks that effectively address the unique financial challenges gig workers face. Strengthening financial security in the gig economy is essential for promoting economic stability and social well-being in an increasingly flexible labour market.

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APPENDIX

Appendix A

Table 1		
Financial vulnerability variables—absolute and percentage frequency.		
Q12. Over the last twelve months have you or a member of your household applied to a bank or finance company for loan but this application was turned down? (loan_rejection)		
– Yes (=1)	2964	95.6
– No (=0)	138	4.4
Q18. Your household's monthly income currently allows you to get to the end of the month: (ends_meet)		
– Very easily, I manage to save a fair amount	88	2.8
– Easily, I manage to save something	804	25.9
– With some difficulty, I only just manage to make ends meet	1554	50.1
– With difficulty, I have to withdraw from savings	466	15.0
– With great difficulty, I have to borrow	190	6.1
Q21. Would your household be able to cope with an unexpected expense of 700 euros today? (unexp_expenses)		
– Yes, very easily	187	6.0
– Yes, easily	688	22.2
– Yes, but with some problems	1132	36.5
– Yes, but with great difficulty	471	15.2
– No	624	20.1
Q22. Over the last twelve months has your household had problems even once: (difficulties)		
– Shopping for food (yes = 1; no = 0)	1886	60.8
– Buying essential clothing (yes = 1; no = 0)	396	12.8
– Paying gas, electricity, phone bills, etc. (yes = 1; no = 0)	265	8.5
– Paying condominium administration charges (yes = 1; no = 0)	230	7.4
– Paying the rent (yes = 1; no = 0)	171	5.5
– Paying the mortgage on your home (yes = 1; no = 0)	110	3.5
– Paying off loans for the purchase of cars, televisions, computers, etc. (yes = 1; no = 0)	44	1.4
Q23. In particular, have you got behind in paying: (arrears)		
– Gas, electricity, phone bills, etc. (yes = 1; no = 0)	2396	77.2
– Condominium administration charges (yes = 1; no = 0)	429	13.8
– Rent (yes = 1; no = 0)	177	5.7
– Paying the mortgage on your home (yes = 1; no = 0)	81	2.6
– Paying off loans for the purchase of cars, televisions, computers, etc. (yes = 1; no = 0)	19	0.6
Q24. Over the last twelve months have you or any member of your household had to, even once, go without specialised medical care for economic reasons? (medical_care)		
– Yes(=1)	2222	71.6
– No (=0)	880	28.4

Table 1 Scoring methodology by financial resilience component

	1	2	3	4
Economic resources				
Savings	No or negligible savings	Limited savings (1-2 months' income)	Moderate savings (3 months' income)	Significant savings/asset accumulation
Debt management	Over-indebted (unable to meet repayments)	Just managing to pay off debts	Comfortably paying off debts	Very comfortably paying off debts or no debts
Ability to raise \$2000 in an emergency	Unable to raise \$2000 in emergency	Unsure if able to raise \$2000 in emergency	Able to raise \$2000 from mainstream credit or family	Able to raise \$2000 from own savings
Ability to meet living expenses	Great difficulty meeting living expenses	Some difficulty meeting living expenses	Easy to meet living expenses	Very easy to meet living expenses
Household income quartile*	First national income quartile (lowest)	Second national income quartile	Third national income quartile	Fourth national income quartile (highest)
Average score for economic resources				
Financial resources				
Access to a bank account	No bank account	Basic access to banking	Effective use of banking system	Full use of wide range banking services
Access to credit	No access to credit or only use fringe lending	Uses informal credit or partly using fringe lending	Only use mainstream credit	Only use mainstream credit & used for asset building
Unmet credit demand	Strong/multiple unmet need for credit	Moderate unmet need for credit	Insignificant unmet need for credit	No unmet need for credit
Access to insurance	No access to any form of insurance cover	Under insured	Basic insurance cover	Significant insurance cover
Unmet insurance demand	Strong unmet need for insurance	Some unmet need for insurance	No significant unmet need for insurance	No unmet need for insurance
Average score for financial resources				
Financial knowledge and behaviour				
Knowledge	No knowledge of financial services and products	Basic knowledge of financial services and products	Good knowledge of financial services and products	Very good knowledge of financial services and products
Confidence	No confidence in using financial services and products	Limited confidence in using financial services and products	Reasonably confident using financial services and products	Very confident using financial services and products

Table 1 (continued)

	1	2	3	4
Advice	Would never consider financial advice	Would consider financial advice in some circumstances	Seeking financial advice	Has received financial advice
Proactive decisions	No proactive actions	Limited actions	Multiple actions	All types of actions
Average score for financial knowledge and behaviour				
Social capital				
Social networks	Socially isolated	Minimal social network relationships	Well connected	Well established connections
Support from social networks	Very unlikely to receive social support in times of crisis	Fairly unlikely to receive social support in times of crisis	Fairly likely to receive social support in times of crisis	Very likely to receive social support in times of crisis
Community and government support	Unable to access community or Government support	Receive specialised community or Government support	Not heavily reliant on community or Government support	No need for community or Government support
Average score for social capital				

Appendix C

Credit	Answer	% answering correctly
Making payments late on your bills can make it more difficult to take out a loan.	True	94
Saving		
With compound interest, you earn interest on your interest, as well as on your	True	72
If you buy certificates of deposit, savings bonds, or treasury bills, you can earn higher returns than on a savings account, with little or no added risk.	True	74
Mortgage		
When you use your home as collateral for a loan, there is no chance of losing your home.	False	91
General		
You should have an emergency fund that covers two to six months of your expenses.	True	94
Employers are responsible for providing the majority of funds that you will be need for retirement.	False	72

