

-RESEARCH ARTICLE-

## ARE GIG WORKERS PROTECTED? A POSSIBLE SOLUTION

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Citation (APA): Ali, M., Hussain, H. I., Nisar, Q. I., Chang, Y. W., Hamid, B. A., Mahomed, Z. (2023). Are Gig Workers Protected? A Possible Solution. *International Journal of Economics and Finance Studies*, 15(03), 282-302. doi:10.34111/ijefs.202315313

—Abstract—

The gig economy represents a relatively contemporary phenomenon that remains insufficiently examined or documented in academic literature. The term "gig economy" pertains to labour markets characterised by short-term, intermittent, on-demand, and predominantly task-oriented employment arrangements. Due to its non-traditional nature, part-time employment typically lacks the comprehensive benefits and safeguards associated with full-time employment. To gain a comprehensive understanding of the gig economy market, we utilise the partial least squares structural equation modelling technique. This approach allows us to specifically examine the factors that significantly contribute to the low insurance penetration among the gig economy workforce. In order to achieve our objective, we have gathered data from a total of 374 participants. Our research indicates that gig workers are facing a significant lack of coverage, and they express a willingness to enrol in a flexible and customised takaful product.

**Keywords:** Gig Economy; Takaful; Sustainable Development Goals; Malaysia.

**JEL** classifications: I13, I14, I18

## INTRODUCTION

The gig economy experienced significant growth during and following the crises of 2008 and 2009. The gig economy is transforming traditional economic structures and the methods by which companies recruit, train, compensate, and manage their workforce. Non-traditional employment typically lacks the benefits and safeguards associated with full-time employment. These encompass various forms of insurance, such as health and life insurance, unemployment insurance, income replacement insurance, and minimum wage protection. The gig economy workforce encounters various risks that are not covered by government schemes or traditional insurance providers (Tran & Sokas, 2017). These risks pose an additional financial burden on the government and are expected to increase as the gig economy continues to grow. The emergence of the gig economy has resulted in a notable lack of insurance and protection coverage, presenting a promising opportunity for micro-Takaful.

This study employs a combination of quantitative and qualitative methodologies. The quantitative approach examines factors influencing low insurance penetration among gig economy workers. The qualitative approach aims to develop a social security micro-Takaful model for the gig economy workforce, specifically designed to address the distinct risks they encounter. Our micro-Takaful model has the potential to alleviate the government's responsibility for addressing specific risks and simultaneously enhance insurance penetration within the country. This will ultimately support the government's objectives as stated in the 12th Malaysian Plan, specifically in terms of affordable healthcare, public safety and security, digital economy enhancement, and the promotion of

halal traceability. This aligns with the Sustainable Development Goals (SDGs), specifically in relation to eradicating extreme poverty, promoting good health and well-being, ensuring access to economic opportunities and employment, and upholding income equality.

## PROBLEM STATEMENT

The problem statement commences with the definition of Gig work. Gig work is a distinct category that encompasses both self-employment and non-contractual work arrangements. The term "Gig" was coined by Tina Brown, a journalist, to describe the concept of "contingent" work carried out on an online "marketplace" (Manyika et al., 2015). Smith (2016) states that the US Department of Commerce introduced a new definition for Gig companies. These companies are commonly referred to as "digital matching services" and typically possess the following characteristics:

- i) facilitate peer-to-peer transactions using online platforms or mobile apps;
- ii) utilize user-based rating systems;
- iii) offer workers flexibility in determining their hours; and
- iv) place responsibility on workers to provide whatever tools or assets are necessary to accomplish their work.

These companies generally belong to one of the following sectors:

Passenger Transportation - Carriage and Delivery of Goods or Food - Food Preparation and Sale - Manufacturing Products - Construction Works - Hawking or Trading - Service of Accommodation Premises - Online Business - Information Technology - Collecting and Processing of Data - Service of Agent - Professional, Scientific & Technical - Private Support Services - Performance, Film Activities, Artistic & Graphic Work - Services in Care, Treatment & Recovery of Health, Mental, Physical or Social - Household Services

The gig economy workforce comprises workers in these sectors who possess the aforementioned characteristics. The gig economy has emerged as a significant workforce trend in the past decade, experiencing rapid growth following the crisis of 2008 and 2009. The gig economy is transforming traditional economic structures and the methods by which companies recruit, train, compensate, and manage their workforce. While the gig economy offers advantages, it also entails various risks. Non-traditional employment typically lacks the benefits and safeguards associated with full-time employment. Some examples of these types of insurance are health and life insurance, unemployment insurance, income replacement insurance, and minimum wage protection. Gig workers face greater risks than traditional employees due to the absence of employer-provided insurance.

Moreover, individuals may lack awareness regarding various distinct and universal risks to which they are vulnerable, as gig work does not align neatly with either commercial or personal insurance coverage. The gig economy workforce encounters a variety of general

and distinct risks that lack protection from government schemes and traditional insurance providers (Tran & Sokas, 2017). These risks pose an additional burden on the government and will continue to grow as the gig economy expands. Hence, the emergence of the gig economy has resulted in a notable disparity in insurance coverage and safeguards for individuals engaged in such employment arrangements. Consequently, this situation presents a promising prospect for micro-Takaful, as it possesses the potential to offer customised insurance plans specifically designed to cater to the needs of gig workers.

In Malaysia, the government has actively developed general policies for the B40, which refers to the bottom 40% of the economy. The Malaysian government's 2019 budget includes initiatives such as the PeKa B40 healthcare protection scheme and MySalam. The recent inclusion of the middle 40% (M40) in the MySalam programme has resulted in coverage that is half as extensive as that provided to the bottom 40% (B40). SOCSO has implemented an additional measure to extend coverage to unemployed individuals. However, this coverage is restricted to general health insurance, resembling the coverage provided to conventional employees. It does not address the specific risks associated with income loss and unemployment faced by gig workers. The lack of success of SOCSO's self-employed worker scheme can be attributed to this factor. This study examines the distinct risks and factors contributing to the low level of insurance coverage among individuals working in the gig economy.

## LITERATURE REVIEW

According to Patel (2007), insurance is a genuine necessity for the impoverished rather than a perceived one. Ehrlich and Becker (1972) proposed that insurance serves as a means of meeting fundamental needs, distinguishing it from typical goods and services. As stated by Brown (2001), exposure may not be the sole determinant of insurance demand. The literature extensively covers the determinants of demand for protection, including affordability and awareness (Elango, Chen, & Jones, 2019; Platteau, De Bock, & Gelade, 2017).

This study examines the workforce of the gig economy and its risk coverage. Determining the size of the gig economy workforce poses significant challenges. The majority of gig workers have multiple employers. In their study, Smith and Leberstein (2015) examined the contingent workforce in the United States. They discovered that 40% of these workers are employed by a minimum of two platforms, while one in seven individuals works for more than two companies. According to Smith (2016), a survey conducted by the Pew Research Centre found that 8% of respondents reported earning money through online platforms in 2015. According to Smith (2016), Gig economy workers tend to be younger than those in the traditional workforce. Hall and Krueger (2018) conducted a study on the Uber platform and observed that the average age of Uber drivers is lower in comparison to traditional taxi drivers. These studies indicate the expanding gig economy and the predominantly young age of its workers, who may

enter the workforce earlier than traditional workers and potentially have limited awareness of their occupational risks. According to [Benach and Muntaner \(2007\)](#), being young is considered an independent risk factor for work-related injuries.

One significant and common risk that gig workers face is their income, which can take many different forms. Gig jobs exhibit a higher incidence of wage theft. Nearly one-third (29%) of Gig workers did not receive compensation for their completed tasks ([Smith, 2016](#)). Gig workers lack benefits such as worker's compensation and health insurance provided by their employers. According to Uber data, just 49% of their drivers possess health insurance coverage provided by an alternative employer, a spouse, or another family member ([Hall & Krueger, 2018](#)). [Tran and Sokas \(2017\)](#) argue that gig workers who sustain injuries while working for online platforms are not eligible for workers' compensation from their gig employer, even if they have insurance coverage through another employer. Furthermore, it is important to note that gig economy workers in many countries, including Malaysia, do not have access to income replacement or unemployment insurance.

Both offline and online gig work are associated with various health and safety risks ([Tran & Sokas, 2017](#)). The absence of a formal employment relationship hinders the effectiveness of the regulatory framework in terms of prevention. Due to the lack of protective measures, gig work is associated with significant health and safety risks, according to a 2013 study by the Rockefeller Foundation.

The majority of gig workers belong to the B40 socioeconomic group. [Rom and Abdul Rahman \(2012\)](#) argue that microinsurance primarily addresses the need for coverage in three areas: basic healthcare costs, the death of the main family breadwinner, and property loss. The demand for micro-insurance is associated with the vulnerability, risk elimination, and risk management strategies utilised by low-income households ([Cohen & Sebstad, 2005](#)).

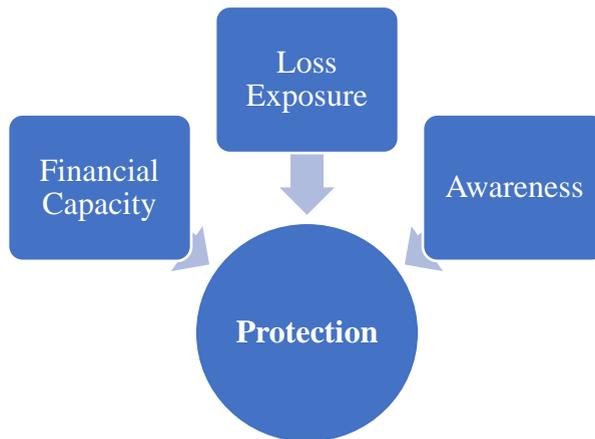
## METHODOLOGY

This study utilises a mixed-methods research design, incorporating qualitative and quantitative research approaches, to gain a comprehensive understanding of the risks encountered by the Gig economy workforce. This study aims to identify the insurable risks encountered by the Gig economy workforce and propose a micro-takaful framework to address these risks. This study will examine participants' awareness of insurance/takaful and their capacity to contribute to obtaining necessary financial protection.

The study will utilise a quantitative research design, employing a questionnaire that will be developed or adapted based on a review of existing literature. The questionnaires will undergo pilot testing and subsequent refinements. A 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree), will be used to measure the items in the constructs. The scale measurements will be revised and improved based on a thorough examination of the existing literature.

The study utilises non-probability purposive sampling, consisting of 374 respondents who are Gig economy workers from various sectors in Malaysia. We will employ the Partial Least Square – Structural Equation Modelling technique (PLS-SEM) for data analysis. Partial Least Squares Structural Equation Modelling (PLS-SEM) is a robust statistical analysis method that allows for the simultaneous examination of relationships among variables in a conceptual model. It encompasses both a measurement component and a structural component. Additionally, PLS-SEM aids in the development of theories (Hair, Black, Anderson, & Babin, 2018).

We present our research framework as follows:



**Figure 1:** Research Framework

Additionally, a focus group discussion was conducted in which gig workers from various industries were invited to assist in conducting a more comprehensive analysis of our survey results.

## FINDINGS

### Introduction

This section presents the empirical findings derived from the study. The initial step involved obtaining the response rate of the participants, followed by gathering information on the demographic characteristics of the respondents and conducting a preliminary analysis. The demographic analysis was conducted using the descriptive analysis in “Statistical Package for the Social Sciences (SPSS)” version 25. Additionally, the researchers employed confirmatory factor analysis (CFA) to assess the convergent and discriminant validity of the variables. The data analysis and path modelling were conducted using the "PLS-SEM (Partial Least Square-Structural Equation Modelling)" approach, employing Smart PLS 3.2.9 software. The researchers utilised structural equation modelling (SEM) as a methodological approach to evaluate the proposed hypotheses.

## Demographics

This section deals with the demographic characteristics of respondents.

**Table 1: Profile of Respondents**

Demographic Variables	“Categories”	“Frequency”	“Percentage”
Gender	Male	207	55.3
	Female	167	44.7
Age	Below 20	102	27.3
	20 to 29	183	48.9
	30 to 39	37	9.9
	40 to 49	23	6.1
	50 to 59	21	5.6
	Above 60	8	2.1
Education	SPM	119	31.8
	STPM	103	27.5
	Diploma	47	12.6
	Bachelor's Degree	105	28.1
Job Status	Owner Manager	117	30.5
	Employee Manager	266	69.5
Monthly Income	Below RM5,000	150	40.1
	RM5,000-RM10,000	212	56.7
	More than RM10,000	12	3.2
	Less than five year	79	21.1
	5-10 years	179	47.9
	11-15 years	72	19.3
Types of Gig Work	16 to 20	44	11.8
	Delivery Services	68	18.2
	Freelance Information Tech	135	36.1
	Services	70	18.7
	Art (Music, Painting, Dance, Act)	63	16.8
	Self-Production/Sales	38	10.2

## Measurement Model Assessment (Outer Model)

The present study employed the Partial Least Squares Structural Equation Modelling (PLS-SEM) approach, which consisted of two distinct stages: the evaluation of the measurement model and the evaluation of the structural model (Chin, 1998; Hair, Sarstedt, Ringle, & Mena, 2012; Henseler, Ringle, & Sinkovics, 2009). The

measurement model refers to the relationship established between variables and items or indicators (Tabachnick & Fidell, 2007). Henseler, Ringle, and Sinkovics (2009) conducted a study in which they outlined the evaluation of the measurement model based on convergent validity and discriminant validity. The assessment of the reflective measurement model entails an evaluation of its validity and reliability concerning the latent variables (Hair, Hult, Ringle, & Sarstedt, 2017).

The present study employed confirmatory factor analysis (CFA) to evaluate the measurement model, specifically examining the relationship between the indicators/items and their respective variables. Confirmatory factor analysis was conducted to assess the internal consistency, convergent validity, and discriminant validity of all the scales. This study conducted an assessment of the measurement model's validity and reliability. The assessment of reliability was conducted through the utilisation of composite reliability (CR), while the evaluation of construct validity was accomplished by employing measures of convergent validity and discriminant validity.

### **Composite Reliability (CR)**

Composite reliability (CR) and Cronbach's alpha serve the same purpose, but composite reliability is considered superior to Cronbach's alpha (Barroso, Carrión, & Roldán, 2010). To address the limitations of the alpha coefficient, researchers employed a more robust approach called "composite reliability" to assess internal consistency reliability (Starkweather, 2012). The composite reliability (CR) was assessed to determine the internal consistency of the constructs. Factor loadings were calculated for all items within the constructs. Hair Jr, Sarstedt, Hopkins, and Kuppelwieser (2014) proposed that an item's loading should surpass the threshold of 0.50. Table 2 demonstrates that all items were successfully loaded onto their corresponding constructs. Figure 1 demonstrates that all loadings exceeded the recommended threshold of 0.50. Additionally, items with lower loadings were excluded in order to achieve the desired threshold value for composite reliability.

The study's results indicated that the internal consistency of all variables remained within an acceptable range after removing certain items from the measure. Table 2 shows that the composite reliability (CR) values for all variables in the collected data ranged from 0.808 to 0.928. These values exceed the recommended threshold of 0.70 (CR > 0.70), as suggested by Hair, Black, Babin, and Anderson (2010). The results indicated a high level of inter-item consistency for all variables.

### **Construct Validity**

“Construct validity assesses the extent that the results obtained from the use of a measure fit the theories around which the test is designed” (Sekaran, 2003). Convergent validity and discriminant validity are two primary components of construct validity (Bagozzi, Yi, & Phillips, 1991).

## Convergent Validity

Hair, Black, Babin, and Anderson (2010) proposed the use of the "average variance extract" (AVE) to assess convergent validity, which was subsequently validated by Hair Jr, Sarstedt, Hopkins, and Kuppelwieser (2014). To establish sufficient convergent validity, it is recommended that the average variance extract (AVE) of constructs exceeds 0.50 (Fernandes, 2012; Hair, Hult, Ringle, & Sarstedt, 2017; Hair, Ringle, & Sarstedt, 2011; Hair Jr, Sarstedt, Hopkins, & Kuppelwieser, 2014). Refer to Table 2, all values of "average variance extracted (AVE)" were in the satisfactory range for the data. The "average variance extracted (AVE)" values were higher than 0.50 and ranged from 0.521 to 0.666, which indicated adequate convergent validity. The AVE values exceeded 0.50, indicating that the latent constructs explained more than 50% of the variation in their respective indicators. Therefore, this study has confirmed the convergent validity of all the variables.

**Table 2: Reliability & Convergent Validity**

Ist Order Constructs	2nd Order Constructs	Items	Loadings	Alpha	CR	AVE
Awareness		A1	0.866	0.908	0.936	0.785
		A2	0.929			
		A3	0.916			
		A4	0.829			
Loss Exposure		LE1	0.603	0.646	0.811	0.594
		LE2	0.864			
		LE3	0.819			
Managing Money		MM1	0.82	0.869	0.911	0.718
		MM2	0.863			
		MM3	0.82			
		MM4	0.885			
Planning Ahead		PA1	0.826	0.905	0.934	0.78
		PA3	0.909			
		PA4	0.919			
		PA5	0.874			
Chosing Financial Products		CFP1	0.851	0.884	0.92	0.742
		CFP2	0.859			
		CFP3	0.87			
		CFP4	0.865			
Stay Informed		SI1	0.858	0.908	0.935	0.784
		SI2	0.916			
		SI3	0.885			
		SI5	0.882			
Finacial Capacity				0.922	0.934	0.54
		MM	0.829			
		PA	0.714			
		CFP	0.765			
		SI	0.847			
		P1	0.846			
		P2	0.804			
		P3	0.777			
		P4	0.694			
		P5	0.787			
	P6	0.781				
	P7	0.748				
	P8	0.744				

**Note:** AVE= Average Variance Extract; CR= Composite Reliability”

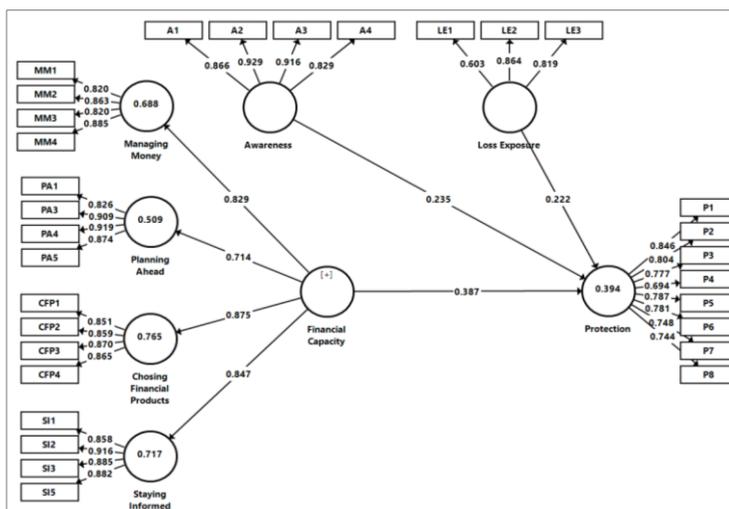


Figure 1: Measurement Model Assessment

### Discriminant Validity

The discriminant validity refers “to the degree to which a variable is actually distinct from other variables (Hair, Black, Babin, & Anderson, 2010). To evaluate discriminant validity, two methods were used in this study: Fornell & Larcker Criterion (Fornell & Larcker, 1981) and heterotrait-monotrait ratio (Henseler, Ringle, & Sarstedt, 2015).”

### Fornell & Larcker Criterion

Firstly, the discriminant validity was assessed by using the Fornell & Larcker Criterion, and the “square root of the AVE” for all the variables was used and matched compared to the correlation values of the other variables (Fornell & Larcker, 1981). Square root of the average variance extract (AVE) coefficients was demonstrated in the “correlation matrix” along the diagonal. Square root of the AVE should be greater than the square correlation estimates to confirm discriminant validity (Hair et al., 2006). Table 3 shows that the square root of the average variance extracted (AVE) values exceed the correlation among all variables. The diagonal elements in subsequent rows and columns were larger than the off-diagonal values, indicating acceptable discriminant validity of all variables.

Table 3: Fornell-Larcker Criterion

	AW	CFP	FC	LE	MM	PA	Pro	SI
Awareness	<b>0.886</b>							
Choosing Financial Products	0.540	<b>0.861</b>						
Financial Capacity	0.55	0.775	<b>0.735</b>					
Loss Exposure	0.159	0.125	0.134	<b>0.771</b>				
Managing Money	0.446	0.606	0.629	-0.012	<b>0.847</b>			
Planning Ahead	0.466	0.610	0.714	-0.024	0.706	<b>0.883</b>		
Protection	0.483	0.453	0.546	0.311	0.419	0.303	<b>0.774</b>	
Staying Informed	0.418	0.62	0.647	0.221	0.527	0.510	0.517	<b>0.885</b>

## Cross-Loadings

Cross-loadings of the items/indicators were evaluated. According to [Hair, Black, Babin, and Anderson \(2010\)](#), loading values should be equal to or greater than 0.50. Additionally, it is recommended to remove items that have the lowest factor loadings. [Hair, Hult, Ringle, and Sarstedt \(2016\)](#) suggest that all items of variables should have significant loadings on their respective variables. In [Table 4](#), the loadings of all items exceeded the cross-loadings of the other variables. The indicators/items were assigned to their respective variables without any cross-loading between the items/indicators in the dataset.

**Table 4: Cross Loadings**

	AW	CFP	LE	MM	PA	Pro	SI
A1	<b>0.866</b>	0.447	0.15	0.339	0.316	0.397	0.332
A2	<b>0.929</b>	0.467	0.162	0.347	0.367	0.431	0.361
A3	<b>0.916</b>	0.511	0.131	0.422	0.473	0.46	0.376
A4	<b>0.829</b>	0.485	0.123	0.468	0.485	0.42	0.412
CFP1	0.503	<b>0.851</b>	0.071	0.582	0.586	0.382	0.538
CFP2	0.437	<b>0.859</b>	0.128	0.49	0.447	0.377	0.549
CFP3	0.464	<b>0.87</b>	0.147	0.485	0.511	0.428	0.536
CFP4	0.454	<b>0.865</b>	0.086	0.526	0.555	0.376	0.514
LE1	0.126	0.143	<b>0.603</b>	0.06	0.103	0.198	0.188
LE2	0.125	0.054	<b>0.864</b>	-0.101	-0.173	0.28	0.152
LE3	0.119	0.109	<b>0.819</b>	0.043	0.064	0.232	0.183
MM1	0.286	0.439	-0.002	<b>0.82</b>	0.589	0.29	0.403
MM2	0.374	0.423	-0.002	<b>0.863</b>	0.571	0.373	0.454
MM3	0.358	0.538	-0.131	<b>0.82</b>	0.629	0.301	0.383
MM4	0.474	0.632	0.08	<b>0.885</b>	0.606	0.442	0.532
PA1	0.394	0.512	-0.108	0.579	<b>0.826</b>	0.224	0.401
PA3	0.463	0.591	0.022	0.631	<b>0.909</b>	0.283	0.467
PA4	0.411	0.534	-0.004	0.64	<b>0.919</b>	0.284	0.484
PA5	0.375	0.514	-0.004	0.641	<b>0.874</b>	0.277	0.447
P1	0.485	0.431	0.241	0.34	0.272	<b>0.846</b>	0.44
P2	0.422	0.427	0.239	0.317	0.278	<b>0.804</b>	0.432
P3	0.315	0.283	0.304	0.333	0.19	<b>0.777</b>	0.389
P4	0.306	0.323	0.205	0.377	0.295	<b>0.694</b>	0.436
P5	0.395	0.38	0.242	0.37	0.243	<b>0.787</b>	0.419
P6	0.407	0.355	0.222	0.233	0.218	<b>0.781</b>	0.376
P7	0.284	0.239	0.26	0.294	0.157	<b>0.748</b>	0.35
P8	0.34	0.332	0.219	0.329	0.204	<b>0.744</b>	0.345
SI1	0.385	0.56	0.184	0.502	0.446	0.431	<b>0.858</b>
SI2	0.372	0.564	0.196	0.458	0.47	0.476	<b>0.916</b>
SI3	0.34	0.496	0.164	0.461	0.429	0.438	<b>0.885</b>
SI5	0.382	0.576	0.238	0.445	0.462	0.485	<b>0.882</b>

## Heterotrait-Monotrait Ratio

Henseler, Ringle, and Sarstedt (2015) proposed a new criterion for assessing discriminant validity in the context of "structural equation modelling". The authors contended that the "Fornell-Larcker criterion" and "cross-loadings" failed to identify discriminant validity in different research contexts. Henseler, Ringle, and Sarstedt (2015) introduced a new approach called the "heterotrait-monotrait ratio of correlations" to assess discriminant validity. This method uses the "multitrait-multimethod matrix" as its foundation.

Henseler, Ringle, and Sarstedt (2015) propose two approaches for assessing discriminant validity using the HTMT ratio: the criterion-based approach and the statistical analysis approach. The initial method, which Clark and Watson (1995) and Kline (2011) proposed, predicts that the HTMT ratio will be less than 0.85 (HTMT<0.85). Alternately, Gold, Malhotra, and Segars (2001) suggested a threshold of less than 0.90 (HTMT<0.90). When the HTMT ratio exceeds the thresholds mentioned earlier, it indicates a concern regarding discriminant validity.

Table 5 displays the HTMT ratio values for all variables under investigation. All the values of the Heterotrait-Monotrait Ratio (HTMT) or all the variables were found to be below the threshold of 0.90, thereby meeting the established criterion of HTMT<0.90 (Gold, Malhotra, & Segars, 2001). Therefore, it can be concluded that discriminant validity has been established for all the variables based on these findings. Therefore, the discriminant validity of all the constructs has also been established.

**Table 5: HTMT Ratio**

	AW	CFP	FC	LE	MM	PA	Pro	SI
Awareness								
Choosing Financial Products	0.601							
Financial Capacity	0.599	0.965						
Loss Exposure	0.212	0.177	0.245					
Managing Money	0.495	0.683	0.927	0.157				
Planning Ahead	0.511	0.681	0.783	0.194	0.796			
Protection	0.526	0.501	0.594	0.406	0.468	0.331		
Staying Informed	0.46	0.692	0.925	0.297	0.589	0.562	0.569	

## Structural Model Assessment (Inner Model)

After the evaluation of the measurement model, a structural model was also measured. This section provides a detailed explanation of the methods and criteria employed for assessing the structural model. The evaluation of the model's significance was

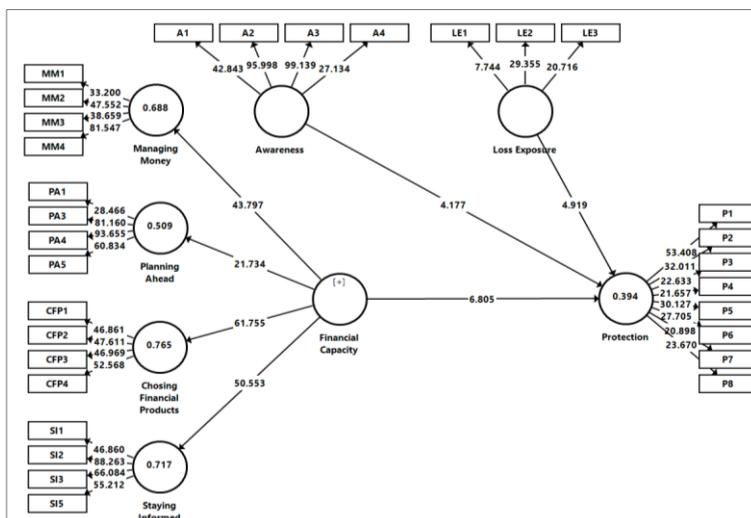
conducted by considering the t-values, path coefficients, and standard errors. The main and direct effects hypotheses were evaluated using the bootstrapping technique in Smart PLS 3 (Ringle, Wende, & Will, 2005). Furthermore, the researchers also evaluated the coefficient of determination (R2) as recommended by Cohen and Sebstad (2005) and Chin (1998) in order to assess the extent to which the predictors explained the variance in the endogenous constructs.

### Path Analysis

This section provides a detailed explanation of the direct correlation between the variables under investigation. Table 6 presents a visual representation of the hypothesised association between the variables under investigation. The study utilised the structural equation modelling technique (SEM), and the resulting path coefficients are displayed in Table 6. The results indicated a statistically significant relationship between awareness and protection ( $\beta = 0.235$ ,  $t = 4.177$ ; LL = 0.145, UL = 0.325), providing support for Hypothesis 1. In addition, it is worth noting that there was a significant correlation between loss exposure and protection ( $\beta = 0.222$ ,  $t = 4.919$ ; LL = 0.152, UL = 0.298), thus providing further support for Hypothesis 2. Additionally, according to Table 6, it was hypothesised that there is a significant and positive relationship between financial capacity and protection ( $\beta = 0.387$ ,  $t = 6.805$ ; LL = 0.269, UL = 0.465), thus H3 was supported.

**Table 6: Path Analysis**

		Beta	S.D	t value	P value	LL	UL	Decision
H1	Awareness -> Protection	0.235	0.056	4.177	P<0.05	0.145	0.325	Supported
H2	Loss Exposure -> Protection	0.222	0.045	4.919	P<0.05	0.152	0.298	Supported
H3	Financial Capacity -> Protection	0.387	0.057	6.805	P<0.05	0.269	0.465	Supported



**Figure 4.2: Structural Model Assessment**

## Valuation of the Coefficient of Determination (R<sup>2</sup>)

“The coefficient of determination (R<sup>2</sup>) is the variance explained in the endogenous construct by all the exogenous constructs” (Henseler, Ringle, & Sinkovics, 2009). The coefficient of determination (R<sup>2</sup>) represents the predictive ability of the endogenous variables within the structural model. It encompasses the collective impact of all the exogenous constructs on the endogenous constructs (Chin, 2010; Hair Jr, Sarstedt, Hopkins, & Kuppelwieser, 2014; Henseler, Ringle, & Sinkovics, 2009).

In addition, Götz, Liehr-Gobbers, and Krafft (2010) have observed that the coefficient of determination (R<sup>2</sup>) serves as an alternative method for assessing the quality of a structural model within the context of structural equation modelling (SEM). Furthermore, various criteria have been employed to assess it, including the propositions put forth by Chin (1998) and Cohen and Sebstad (2005), which propose a heuristic for the R<sup>2</sup> coefficient. According to Cohen (1992), the R<sup>2</sup> value for the endogenous variables can be categorised as weak (0.02), moderate (0.13), and substantial (0.26). In contrast, Chin (2010) found that R<sup>2</sup> values of 0.25, 0.50, and 0.75 are considered to represent "weak, moderate, and substantial" relationships for the endogenous constructs, respectively.

In a similar vein, a separate investigation conducted by Chin (1998) put forth the notion that R<sup>2</sup> values of 0.19, 0.33, and 0.67 within the context of Partial Least Squares Structural Equation Modelling (PLS-SEM) can be classified as indicative of weak, moderate, and substantial relationships, respectively. Table 7 presents the R<sup>2</sup> coefficients for each of the endogenous variables. According to the data presented in Table 7, the exogenous constructs, namely "big data analytics, cloud computing, artificial intelligence, robotics, and the internet of things," accounted for a significant portion of the variance in sustainable organisation performance, specifically 58.5%.

**Table 7: R-square of Endogenous Constructs**

Construct	R <sup>2</sup>	Effect
Protection	0.394	Substantial

## Summary of the Findings

Table 8 summarizes the hypotheses testing between the independent variables and dependent variable.

**Table 8: Summary**

	Hypotheses	Decision
H1	Awareness has positive significant relations to protection.	Supported
H2	Lose exposure has positive significant relations to protection.	Supported
H3	Financial capacity has positive significant relations to protection.	Supported

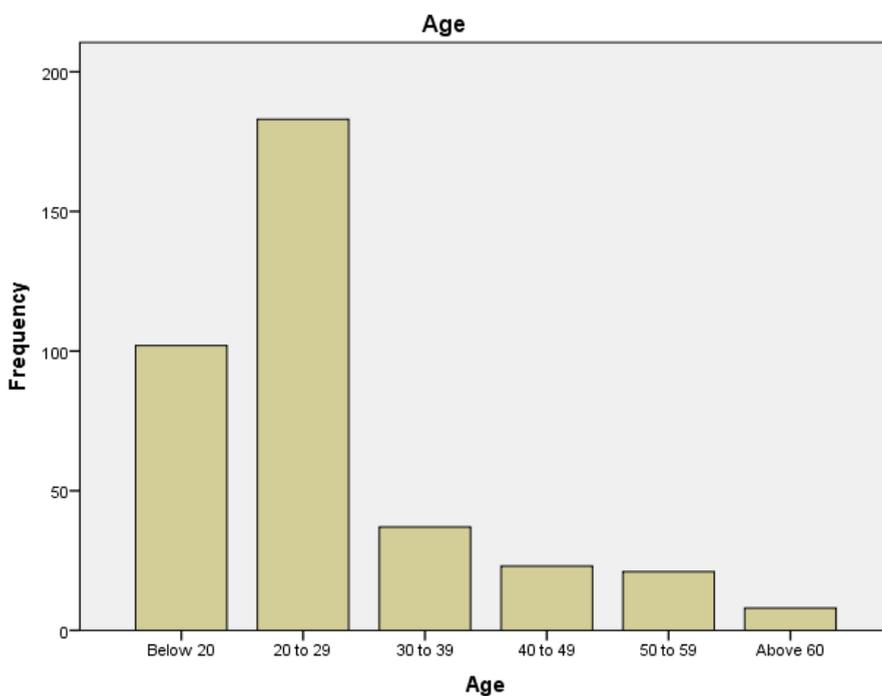
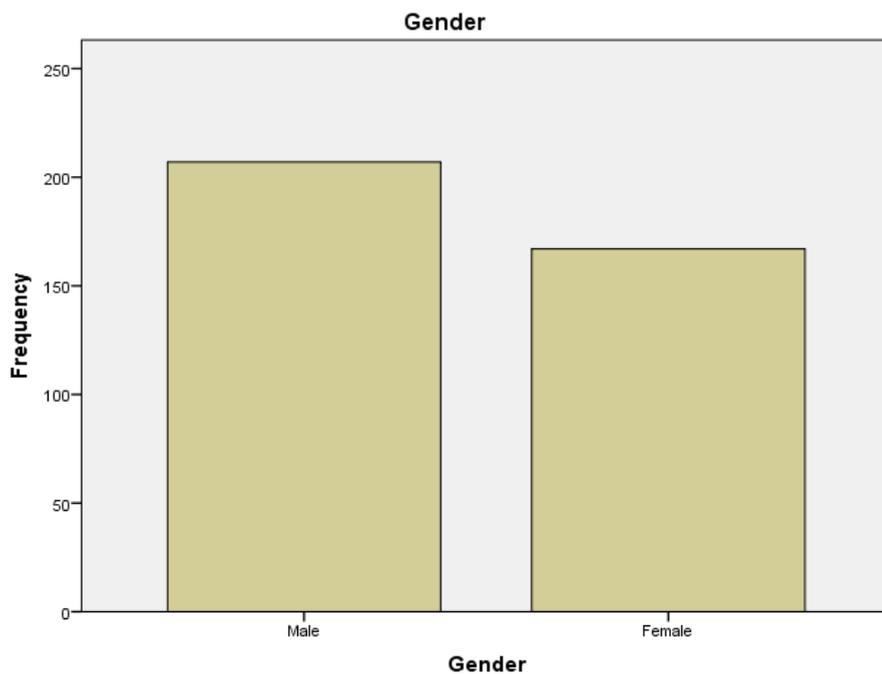
## Conclusion and Recommendations

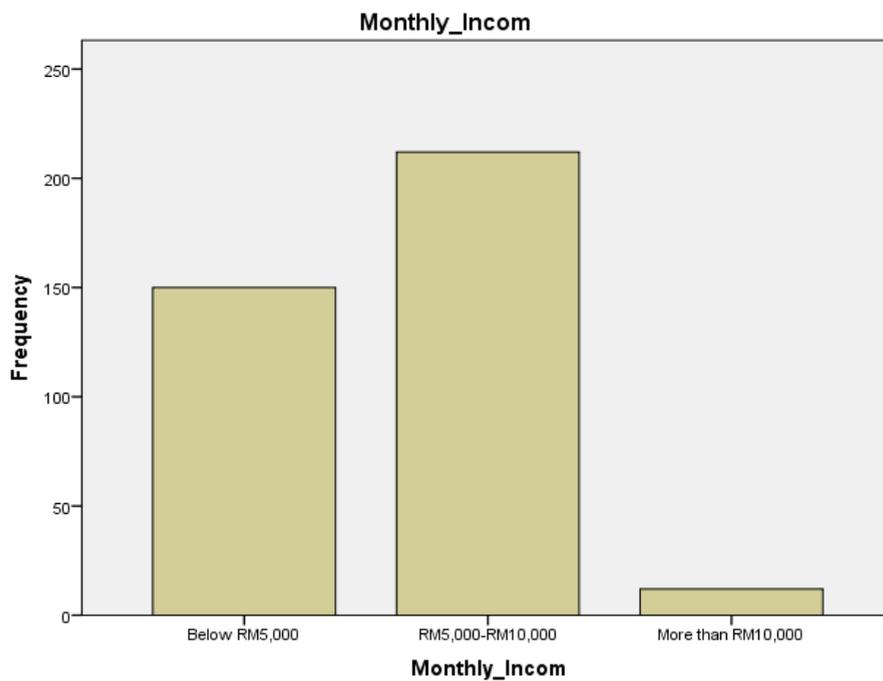
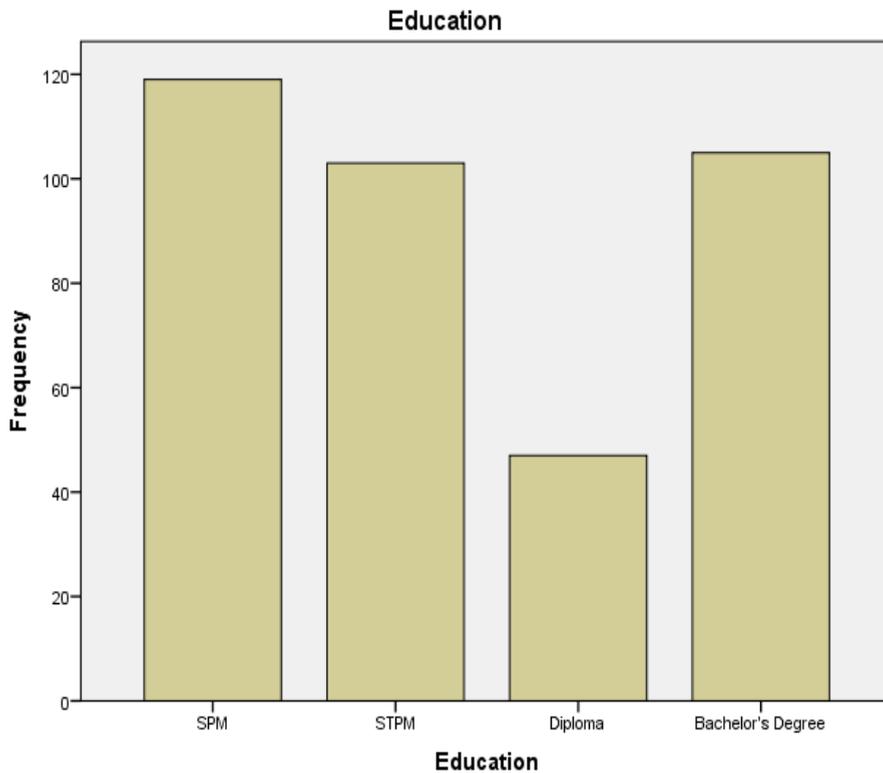
This study represents an early exploration of the risks encountered by the gig economy workforce, with a specific focus on the Malaysian context. The relevance of this issue stems from the continuous expansion of the gig economy, which consequently leads to a rise in uninsured risks. It is imperative for the diverse range of stakeholders, encompassing gig workers, regulators, takaful industry participants, and other relevant parties, to gain a comprehensive understanding of the distinct risks encountered by gig workers. The study reveals that there are positive and significant associations between protection and variables such as awareness, loss exposure, and financial capacity.

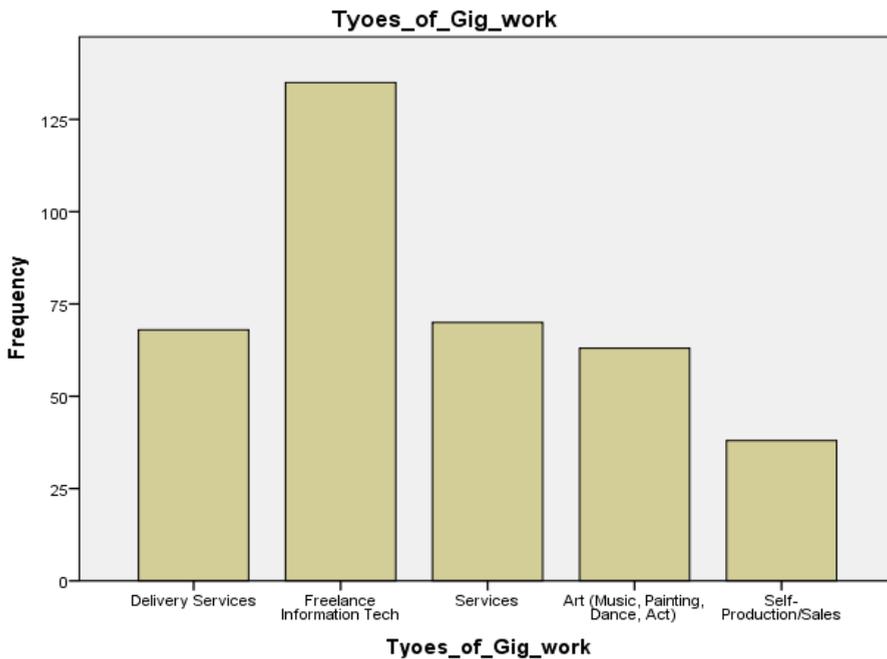
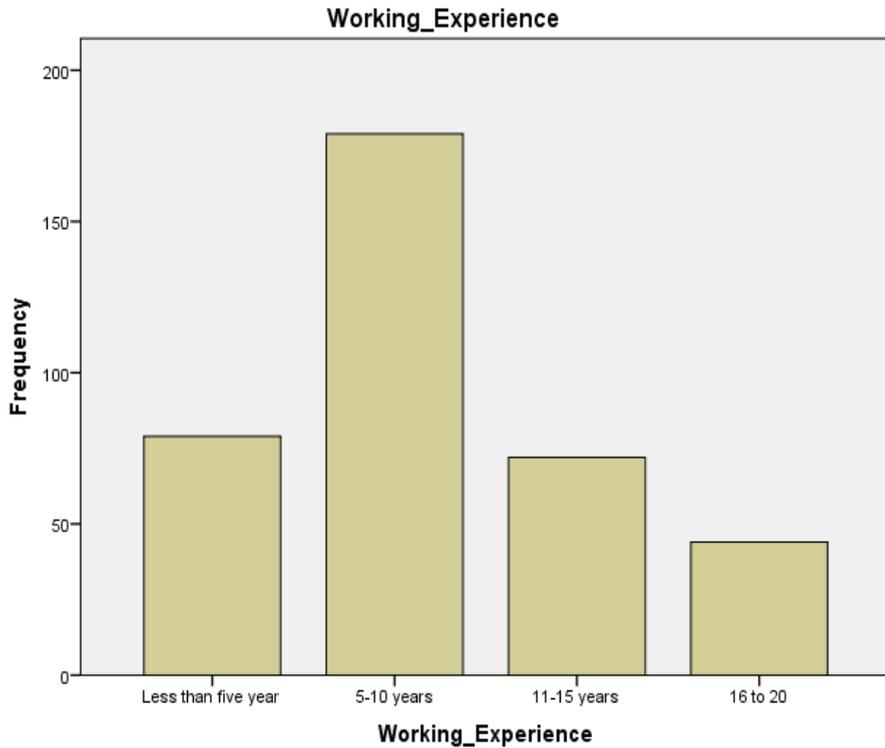
This study enhances our comprehension of the escalating array of risks encountered by the overall economy as a result of the expanding gig economy. Based on the findings of the focus group discussion, it is recommended that telematics be incorporated into takaful products to enhance pricing accuracy and effectively manage participants' risks. It is crucial for authorities to increase awareness among gig workers and offer affordable takaful solutions through public-private partnerships.

Moreover, a considerable percentage of gig workers are categorised as living in poverty. Gig workers may be regarded as potential participants in micro-takaful policies. According to [Biener and Eling \(2011\)](#), group-oriented policies can address issues of adverse selection and moral hazard in micro-insurance markets. Similarly, micro-takaful arrangements can be implemented using a similar approach.

## APPENDIX







**Note:** This study is funded by Ministry of Higher Education (MOHE), Malaysia under the FRGS grant FRGS/1/2020/SS01/TAYLOR/02/4.

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