

Determinants of Personal Cyber Insurance Purchase Intention in Malaysia

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Abstract

The recent increase in cyber threats has led to the development of cyber insurance to mitigate these risks. Both cyber insurance and personal cyber insurance emerged as the new insurance products to tackle the risks but with discouragingly low demand. This gap between what was expected, and the actual demand could be a subject worth studying. Furthermore, there is a lack of research that studies the factors influencing the purchase intention of personal cyber insurance in Malaysia. Therefore, this study aims to investigate the relationship between the dependent variables (Purchase Intention) and seven independent variables (Gender, Age, Education Level, Income, Price, Knowledge, and Risk Perceptions). This study adopts a deductive method, using primary data to conduct a cross-sectional quantitative study in Malaysia. Convenience sampling was employed with a total of 120 respondents from the Klang Valley completing the self-administered online questionnaires. The research concluded that only three independent variables: Income, Knowledge, and Risk Perceptions significantly influence the purchase intention of personal cyber insurance. Notably, income was found to have the most significant impact on purchase intention in this study. Moreover, it was observed that price is the only independent variable that exhibited a negative relationship with purchase intention. The findings of this study provide implications for insurers in developing and marketing personal cyber insurance by helping them to comprehend the determinants that affect consumers' purchase intention. Meanwhile, the study's findings also hold implications for scholars or students engaged in future research on personal cyber insurance.

Keywords: *Financial Planning, Future Time Perspective, Attitude Towards Retirement, Risk Tolerance, Malaysia*

1.0 Introduction

In Malaysia, an average of 31 cybersecurity incidents such as data breaches, fraud, and hacking occur each day (Yuen, 2021). According to the Royal Malaysian Police, there were 10742 reports of cybercrime to the Royal Malaysian Police in 2018, and 11875 in 2019 (National Security Council, 2020). The National Cyber Coordination and Command Centre (NC4) reported an increase in cyber security incidents since 2016 (National Security Council, 2020). Additionally, the COVID-19 pandemic has increased the use of digital technologies, thereby heightening the cyber risk in Malaysia (Kaos, 2021). According to a study in Malaysia, 72.9% of respondents experienced a high level of online phishing or malware distribution during the COVID-19 pandemic outbreak in Malaysia. Due to the implementation of the Movement Control Order (MCO) in Malaysia, cybercriminals were able to target and exploit new

vulnerabilities in various walks of life (Tharshini et al, 2022). As the personal cyber risk in Malaysia rises, insurers are beginning to offer personal cyber insurance to protect individuals from cyber risk. In 2020, Zurich Malaysia and Alliance Bank Malaysia introduced the first personal cyber insurance in Malaysia to protect Malaysians from cybercrime-related financial losses (Zurich Malaysia, 2020). In 2022, The Pacific Insurance Malaysia also introduced personal cyber insurance that protects against any unanticipated cyber events (The Pacific Insurance Berhad, 2022).

According to a survey conducted by Swiss Re, if respondents were required to purchase personal cyber insurance, 63% would prefer to buy it in combination with other products, whereas only 37% would purchase a standalone personal cyber insurance product. Overall, only 56% of respondents would purchase personal cyber insurance, which is considered low given the recent rise in cyber risk (Willi & Dr. Maya Bundt, 2019). Furthermore, personal cyber insurance is a relatively new product in the Malaysian insurance market. To ensure the stable and rapid growth of personal cyber insurance, it is hugely valuable for insurers to gain a thorough understanding of the behavioural characteristics of consumers involved in the purchase of personal cyber insurance (Ulbinaitė et al, 2013). Therefore, this research was conducted to investigate the determinants that affect individuals' cyber insurance purchase intention.

2.0 Literature Review

Literature theoretically defines “purchase intention” as the probability of an individual's desire to buy or own a product (Wilfred, 2020; Ooi et al., 2019). Purchase intention is typically associated with the behaviour, perceptions and attitude of an individual (Dr. Vahidreza Mirabi et al., 2015). The greater the intention behind an actual behaviour, the greater the likelihood that the behaviour will be performed (Bhasin, 2018, cited in Ooi et al. (2019).

2.1 Gender

Literature show that gender will significantly affect insurance purchase intention in general (Wang, 2010; Liu & Chen, 2002; Youn & Hall, 2008; Fatokun et al., 2019). According to Wang (2010), this may be due to males being the breadwinners of most of the families who were responsible for insurance purchases. The result of that past research shows a male respondent has a 17.94% higher likelihood to purchase insurance compared to a female respondent. However, Liu and Chen (2002) stated that males are less likely to purchase insurance than females. This may be because of females tend to focus more on family welfare than males in the women and economic development literature. In terms of cyber risk management behaviour, males are more cautious than females, implementing more precautions (Youn & Hall, 2008).

2.2 Age

Age is one of the demographic factors that affects consumer's behavioural beliefs, which in turn influence their behaviour. There is no consistent trend on the influence of demographic factors on behaviour since their effects on behavioural intention differ across behaviours (Kan & Fabrigar, 2017). According to Duker's research, as consumers' ages increase, their awareness of the need for life insurance tends to increase (Duker, 1969, cited in Annamalah (2013). This is due to the fact that as people age, they tend to have a higher income, and having children increases the necessity to purchase life insurance to insure against financial loss in the event of a contingency (Annamalah, 2013). Age also plays a significant role concerning cyber risk and cybersecurity behaviour. According to previous research on the cybersecurity behaviour of

university students, elder students (above age 30) have a higher perceived cyber risk and perceived severability of a cyberattack. However, the younger students (below age 30) are more familiar with the cyber risk. Eventually, this will have a substantial effect on their cybersecurity behaviour (Fatokun et al, 2019).

2.3 Educational Level

Past research theoretically defines “education level” as the acquired degree in education of the individual (Ulbaite et al, 2013). The majority of the research indicates that respondents with a higher level of education are more likely to purchase insurance, possibly because respondents with a higher level of education, can anticipate their incomes to be higher and grow at a faster rate (Hammond et al., 1976; Ferber & Lee, 1980; Burnett & Palmer, 1984; Gandolfi & Miners, 1996; Baek & DeVaney, 2005, cited in Li (2008). In addition, respondents with a higher education level are generally more aware of the need for an insurance policy to protect them from the risk of financial loss in an unforeseen event (Annamalah, 2013).

2.4 Income

According to previous research, "income" is defined as the money that is regularly earned through labour or investment (Ooi et al., 2019). There are vast majority of studies indicate that income has a strong and positive relationship with the intention to purchase life and health insurance (Li, 2008; Annamalah, 2013; Wilfred, 2020). Showers and Shotick, 1994 cited in Li (2008) analysed the impact of household characteristics on life insurance demand using a Tobit model with life insurance premium expenditures as the dependent variable. According to the Tobit analysis, there is a positive correlation between income and life insurance premium expenditure. Meanwhile, past research in the West African nation of Ghana states that rich foreigners are the ideal cybercrime victims for scammers (Warner, 2011). Therefore, rich people are perceived to have a higher cyber risk and loss in a cybercrime. Insurance is purchased as a protection against unexpected financial loss in the event of a catastrophe to manage the risk. Therefore, people have a greater incentive to buy insurance as their income increases (Li, 2008).

2.5 Price

A prior study defines price as the amount of money consumers must pay to acquire a good or service (Lim et al., 2020). Price has been identified as a significant factor in consumers' insurance purchase intention in the literature. In Pakistan, a unit price hike led to a 16.4% increase in the probability of a consumer switching insurance products offered by banks (Khan et al, 2010, cited in Lim et al. (2020). The results of the study even indicate that price has the strongest negative relationship with consumers' purchasing intention. This may be due to customers being willing to purchase insurance at a lower price as long as it provides adequate protection (Lim et al., 2020). Past research by Esau (2015) also suggested that price will significantly affect consumer purchase decisions on insurance. Furthermore, Ramamoorthy and Senthilkumar (2014) suggested that consumers will compare the price among different insurers and tend to purchase the insurance product with the lowest price while still fitting their needs.

2.6 Knowledge

According to Ooi et al. (2019), "knowledge" refers to actual experience with an insurance product and the consumer's awareness of the option to select a particular insurance product. Namukasa, Ssekakubo & Bagenda (2017) suggested that consumers will be dissuaded from purchasing insurance due to a lack of insurance knowledge and a preconceived notion that

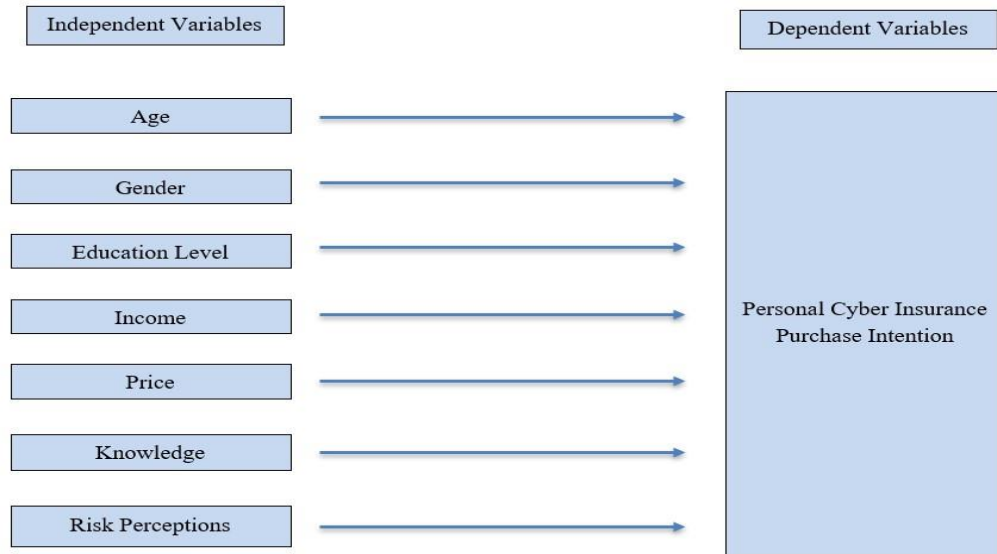
complicated claim procedures will make receiving compensation difficult. When consumers have a greater understanding of life insurance, they will be more confident in their ability to select an insurance product than those with less knowledge (Ooi et al., 2019). Bhat and Jain (2006) also suggested that awareness and knowledge are the major factors affecting consumers' purchase intention of insurance in India. The awareness and knowledge about insurance are really low even in urban areas of India. From the viewpoint of cyber insurance, 51% of global respondents do not understand the coverage of cyber insurance, causing the majority of businesses not to purchase cyber insurance to manage corporate cyber risk according to PartnerRe. The research indicates that knowledge of cyber insurance will have a significant impact on their cyber insurance purchase intention, as this is the second most influential factor (PartnerRe, 2020).

2.7 Risk Perceptions

The term “perceptions on cyber risk” refers to the process of people constructing their understanding and evaluation of risk through subjective judgement (Abdollahi & Vajargah, 2015; Larsen & Lund, 2021). Another research paper that studies cyber risk perceptions defined perceptions on cyber risk as the perceived possibility of a successful cyberattack and the perceived impacts of a successful cyberattack (Smidt & Botzen, 2018). Literature shows that the perceptions on cyber risk among the P&C industry and financial organizations are high, and most of them are vulnerable to attack. Therefore, most of them manage cyber risk by acquiring cyber insurance (Pooser et al., 2017). Another past study also states that businesses impacted by cyber risk encourage demand for cyber insurance as well as the growth of the cyber insurance market. (Xie et al., 2020) The reason for this happening is explained by a study that suggests cyber risk possesses an interdependent nature thus self-protection is relatively less effective (Ogut et al., 2005). Marotta et al. (2017) proposed that cyber risk is the combination of the probability of a cyberattack happening and the loss caused by a cyberattack. In the meantime, the probability and expected loss will have a significant mathematical impact on the expected utility of purchasing insurance. The expected probability of cyberattack has a positive relationship with expected utility, whereas expected loss has a negative relationship with expected utility. According to SwissRe, 44% of global respondents would not purchase personal cyber insurance because they perceive their risk of becoming a victim of a cyberattack to be low. This demonstrates that their perceptions of cyber risk will significantly and positively impact their purchase intention of personal cyber insurance (Willi & Dr. Maya Bundt, 2019).

Drawing upon the literature review underpinning this research, the research framework of this study is depicted in Figure 1:

Figure 1 – Research Framework



According to the research framework presented in Figure 1, the research hypotheses are as follows:

- H1: The gender of individuals will affect personal cyber insurance purchase intention.
- H2: The age of individuals will affect personal cyber insurance purchase intention.
- H3: The education level of individuals will affect personal cyber insurance purchase intention.
- H4: The income of individuals will affect personal cyber insurance purchase intention.
- H5: The price will affect personal cyber insurance purchase intention.
- H6: The knowledge on personal cyber insurance (Knowledge) will affect personal cyber insurance purchase intention.
- H7: The perceptions on cyber risk of individuals (Risk Perceptions) will affect personal cyber insurance purchase intention.

3.0 Methodology

This study applied a survey strategy using questionnaires to collect a substantial quantity of data from a sample of the population. In this study, questionnaires were created with Google Forms and distributed to the sample of the targeted population to collect quantitative data. The questions for respondent demographics were measured using a nominal scale (for Gender & Age) and while ordinal scale (for Education Level & Income Level) while all the other statements were measured with a 5-point Likert scale. The primary data collected was used to explain the relationships between the independent variables and personal cyber insurance purchase intention. This study employed non-probability sampling because it is the most practical and convenient method for student researchers (Saunders et al., 2019). The target population in this research covered citizens in Malaysia from Klang Valley. Lastly, the study used a sample size of 118. The data collected was then coded into numerical data for further analysis. To acquire a comprehensive understanding of the data, it is customary to make use of descriptive statistics, which entails examining the central tendency of the data. Pearson's correlation test and multiple regression analysis were conducted using IBM SPSS Statistics to test the hypotheses. Pearson's correlation test only focused on the relationship of each independent variable with the dependent variable. Meanwhile, multiple regression analysis was conducted to study the relationship of all independent variables with the dependent variable. The research conclusions were mainly based on the findings of multiple regression analysis

since it can reveal the correlation between all independent variables with the dependent variable.

4.0 Data Analysis

A total of 200 sets of survey questionnaires were delivered through online social media for data collection, but only 120 sets of survey questionnaires were collected. Following the identification and removal of 2 outliers, 118 valid responses remained for further analysis. The data for independent variables (Gender, Age, Education Level) were purely analyzed from the respondents' demographic profile while the remaining independent variables (Income, Price, Knowledge and Risk Perceptions) and the dependent variable (Purchase Intention) were analyzed from the statements starting from third sections of the questionnaire.

Pearson's Correlation Test

Table 1 – Pearson's Correlation Statistics

Variables		Purchase Intention	Income	Price	Knowledge	Risk Perception
Purchase Intention	Coefficient	1				
	Sig. (2-tailed)	-				
Income	Coefficient	0.575**	1			
	Sig. (2-tailed)	0.000	-			
Price	Coefficient	-0.287*	-.376**	1		
	Sig. (2-tailed)	0.002	<0.001	-		
Knowledge	Coefficient	0.218*	0.028	-0.144	1	
	Sig. (2-tailed)	0.018	0.764	0.120	-	
Risk Perceptions	Coefficient	0.358**	0.268**	-0.246**	0.017	1
	Sig. (2-tailed)	0.000	0.003	0.007	0.854	-

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Source: Prepared by the authors (2023)

Pearson's correlation test is a bivariate correlation test used to measure the strength of a linear relationship between two continuous variables. In this study, only the five continuous variables, namely Income, Price, Knowledge, Risk Perceptions and Purchase Intention were examined using Pearson's correlation test. The coefficient of Pearson's correlation test ranges from -1 to 1, with -1 denoting a perfect negative linear correlation, 0 denoting no correlation, and 1 denoting a perfect positive correlation between two variables. In Pearson's correlation test, a significance value or a p-value smaller than 0.05 indicates that the variables have a significant relationship at a 0.95 confidence level (Williams et al., 2020).

According to Table 1, all four independent variables that were tested (Income, Price, Knowledge, and Risk Perceptions) have a statistically significant correlation with the purchase intention, with a p-value less than 0.05. This indicates that Income, Price, Knowledge and Risk Perceptions will significantly influence the Purchase Intention. Among the four independent variables, Income has the largest absolute value with a coefficient of 0.575 which implies Income has the strongest correlation with Purchase Intention. Furthermore, only Price has a negative correlation with Purchase Intention while Income, Knowledge and Risk Perceptions have a positive correlation with Purchase Intention. This implies that an increase in Income, Knowledge, and Risk Perceptions leads to an increase in Purchase Intention, while an increase

in Price results in a decrease in Purchase Intention. However, this test can only explore the potential relationships among variables but not to conclude the relationships since the dependent variable, Purchase Intention, is influenced by multiple factors in reality.

4.1 Multiple Regression Analysis

A multiple regression model was constructed in this study to determine the relationship between all independent variables and the dependent variable since it may provide a more comprehensive understanding of the factors affecting purchase intention. Table 2 shows all the variables fitted in the multiple regression model in this study.

Table 2 – Variables Fitted in the Multiple Regression Model

Variable	Types of Variable	Particulars
Gender (Female)	Independent Variable (Dummy Variable)	Baseline variable for gender
Gender (Male)	Independent Variable (Dummy Variable)	-
Age (18 – 30)	Independent Variable (Dummy Variable)	Baseline variable for age
Age (31 – 64)	Independent Variable (Dummy Variable)	-
Age (65 & Above)	Independent Variable (Dummy Variable)	-
Education Level (Secondary level & below)	Independent Variable (Dummy Variable)	Baseline variable for education level
Education Level (Pre-university or any equivalent)	Independent Variable (Dummy Variable)	-
Education Level (Undergraduate)	Independent Variable (Dummy Variable)	-
Education Level (Postgraduate)	Independent Variable (Dummy Variable)	-
Income	Independent Variable	Fitted with the summated average score (continuous data) of all questions under this variable.
Price	Independent Variable	Fitted with the summated average score (continuous data) of all questions under this variable.
Knowledge	Independent Variable	Fitted with the summated average score (continuous data) of all questions under this variable.
Risk Perceptions	Independent Variable	Fitted with the summated average score (continuous data) of all questions under this variable.
Purchase Intention	Independent Variable	Fitted with the summated average score (continuous data) of all questions under this variable.

Source: Prepared by the authors (2023)

Model Summary

Table 3 – Model Summary

No. of Independent Variables	R	R Square	Adjusted R Square
10	0.666	0.444	0.392

a. Dependent Variable: Purchase Intention

- b. Predictors: (Constant), Gender (Male), Age (31 – 64), Age (65 & above), Education Level (Pre-university & any equivalent), Education Level (Undergraduate), Education Level (Postgraduate), Income, Price, Knowledge, Risk Perceptions

Source: Prepared by the authors (2023)

According to Table 3 the R square value of the model is 0.444 which implies there are only 44.4% of the personal cyber insurance Purchase Intention can be explained by all the independent variables, Gender (Male), Age (31-64), Age (65&above), Education Level (Pre-university & any equivalent), Education Level (Undergraduate), Education Level (Postgraduate), Income, Price, Knowledge and Risk Perceptions collectively. The remaining 55.6% might be explained by other variables that are not studied in this research. Meanwhile, only 39.2% of the dependent variable can be explained by those independent variables with a relationship that is considered statistically significant as shown by the adjusted R square value.

Evaluation of Model Fit

Table 4 – ANOVA Test Result of Model

	Sum of Squares	df	Mean Square	F	P-value
Regression	30.299	10	3.030	8.532	<.001
Residual	37.998	107	0.355		
Total	68.297	117			

- a. Dependent Variable: Purchase Intention

- b. Predictors: (Constant), Gender (Male), Age (31 – 64), Age (65 & above), Education Level (Pre-university & any equivalent), Education Level (Undergraduate), Education Level (Postgraduate), Income, Price, Knowledge, Risk Perceptions

Source: Prepared by the authors (2023)

To determine if the model developed is adequate in explaining the dependent variable, an ANOVA test was conducted. Table 4 shows the ANOVA test result, F-value of the model is 8.532 and the p-value is less than 0.001. Since the p-value is less than 0.05, this implies that the model constructed using all the independent variables is adequate and can describe the dependent variable better than the means.

4.2 Model Analysis

In this study, the validity of the research hypotheses was tested by using a multiple regression analysis. If the p-value of the independent variable is less than or equal to 0.05, the hypothesis would be accepted, indicating the independent variable is significantly affecting the dependent variable (Purchase Intention). Gender, Age and Education Level were fitted in the multiple regression model as dummy variables, thus the rejection of the hypothesis depends on the significance of all the dummy variables for the independent variable.

Table 5 – Summary of Regression Coefficients

Variable	Unstandardized Coefficients		Standardized Coefficients	t-value	P-value
	Beta	Std. Error	Beta		
(Constant)	-0.493	0.642	-	-0.768	0.444
Gender (Male)	0.051	0.115	0.033	0.439	0.661
Age (31 – 64)	0.097	0.156	0.057	0.623	0.534

Age (65 & Above)	0.309	0.190	0.131	1.627	0.107
Education Level (Pre-university & any equivalent)	0.253	0.219	0.127	1.157	0.250
Education Level (Undergraduate)	0.324	0.183	0.207	1.772	0.079
Education Level (Postgraduate)	0.142	0.308	0.038	0.462	0.645
Income	0.564	0.092	0.503	6.112	< 0.001*
Price	-0.013	0.103	-0.010	-0.123	0.902
Knowledge	0.183	0.071	0.193	2.577	0.011*
Risk Perceptions	0.265	0.090	0.231	2.960	0.004*

a. Dependent Variable: Purchase Intention

* Correlation is significant at the 0.05 level (2-tailed).

The equation of the multiple regression model developed:

Purchase Intention = -0.493 + 0.051Gender (Male) + 0.097Age (31 – 64) + 0.309 Age (65 & Above) + 0.253Education Level (Pre-university & any equivalent) + 0.324Education Level (Undergraduate) + 0.142Education Level (Postgraduate) + 0.564Income – 0.013Price + 0.183Knowledge + 0.265Risk Perceptions

Source: Prepared by the authors (2023)

According to Table 5, only 3 out of 10 variables in the model have a p-value lower than 0.05. This indicates there are only 3 variables (Income, Knowledge and Risk Perceptions) that have a significant relationship with the dependent variable (Purchase Intention). By referring to the magnitude of t-value or unstandardized beta coefficients, it has shown that income has the highest coefficient among all independent variables which indicates it is the independent variable that influences the purchase intention the most.

The equation above shows that only the variable Price has a negative relationship with the purchase intention while other variables [Gender (Male), Age (31 – 64), Age (65 & Above), Education Level (Pre-university & any equivalent), Education Level (Undergraduate), Education Level (Postgraduate), Income, Knowledge and Risk Perceptions] have a positive relationship with the purchase intention. This implies that if all other variables remain constant, an increase in price by one unit would result in a decrease of 0.013 units in purchase intention. In other words, as prices increase, consumers are less likely to purchase personal cyber insurance.

On the other hand, a male is expected to have a 0.051 unit of higher purchase intention than a female, indicating males are more likely to purchase personal cyber insurance than females.

Next, the purchase intention of individuals aged 31 to 64 is 0.097 units higher than individuals aged 18 to 30, while the purchase intention of individuals aged 65 and above is 0.309 units higher than individuals aged 18 to 30. This implies individuals aged 65 and above have the highest purchase intention than all individuals aged lower than 65 while individuals aged 18 to 30 have the lowest purchase intention.

Meanwhile, the findings demonstrate that individuals holding a pre-university or equivalent education level exhibit a purchase intention that is 0.253 units higher than those with a secondary level or lower education. Additionally, individuals with an undergraduate education

level show a purchase intention that is 0.324 units higher than those with a secondary level or lower education. Lastly, individuals with a postgraduate education level have a purchase intention that is 0.142 units higher than those with a secondary level or lower education.

Lastly, the study found that an increase of 1 unit in Income, Knowledge and Risk Perceptions is associated with an increase in purchase intention by 0.564, 0.183 and 0.265 units respectively while holding all other variables constant. This implies as the income of consumers increases, their purchase intention will also increase. Besides, consumers with more knowledge on personal cyber insurance and have higher risk perceptions will tend to purchase personal cyber insurance.

4.3 Summary of Multiple Regression Analysis

Based on the results from the multiple regression analysis, the researcher concluded that only hypotheses H4, H6 and H7 were accepted while other hypotheses of the study, including H1, H2, H3 and H5 were rejected at a confidence level of 0.95 as shown in Table 6.

Table 6 – Summary of Hypotheses

Hypothesis	Supported (p-value < 0.05)	Not Supported (p-value > 0.05)
H1: The Gender of individuals will affect personal cyber insurance Purchase Intention.		√
H2: The Age of individuals will affect personal cyber insurance Purchase Intention.		√
H3: The Education level of individuals will affect personal cyber insurance Purchase Intention.		√
H4: The Income of individuals will affect personal cyber insurance Purchase Intention.	√	
H5: The Price will affect personal cyber insurance Purchase Intention.		√
H6: The knowledge on personal cyber insurance (Knowledge) will affect personal cyber insurance Purchase Intention.	√	
H7: The perceptions on cyber risk of individuals (Risk Perceptions) will affect personal cyber insurance Purchase Intention.	√	

Source: Prepared by the authors (2023)

5.0 Discussion

5.1 Relationship Between Gender and Purchase Intention

This study has shown that Gender has no significant impact on personal cyber insurance Purchase Intention. Thus, the outcome of this study is inconsistent with several previous research including Wang (2010); Liu & Chen (2002); Youn & Hall (2008); Fatokun et al. (2019). However, this study shows that males are more likely to purchase personal cyber insurance which is supported by past research from Wang (2010).

According to Wang (2010), males are often the breadwinners of families in China leading to a significant impact on the ownership of insurance, with males are more likely to purchase insurance. However, Malaysia has shifted from a sole breadwinner model to a dual breadwinner model over the past decade (Noor Rahamah Hj. Abu Bakar & Mohd. Yusof Hj. Abdullah, 2013). As a result, this trend may cause females become the newcomers in purchasing insurance, leading to Gender is no longer a significant factor influencing insurance Purchase Intention. However, the male labour force is still higher than the female labour force in

Malaysia (Noor Rahamah Hj. Abu Bakar & Mohd. Yusof Hj. Abdullah, 2013). Thus, generally, males are still more likely to purchase personal cyber insurance.

Furthermore, the sampling limitation of the study might also lead to a biased result causing the Gender not significantly affecting Purchase Intention. The gender ratio of the sample in this study was 40.68% male to 59.32% female, whereas the gender ratio of the population in Malaysia was 51.99% male to 48.01% female in 2022 (Department of Statistics Malaysia, 2022). Therefore, the sample of this study may not accurately reflect the actual population of Malaysia, leading to potential bias in the results.

5.2 Relationship Between Age and Purchase Intention

The result shows that both Age (31 – 64) and Age (65 & above) have a positive relationship with Purchase Intention while the baseline variable for Age is Age (18-30). This indicates that consumers aged 31 and above are more likely to purchase personal cyber insurance than consumers aged 18 to 30. However, consumers aged 65 & above have the highest purchase intention than other age groups. The reason that younger adults (aged 18-30) have the lowest purchase intention may be because younger adults are more familiar with the cyber risk. This viewpoint was supported by a previous study by Fatokun et al. (2019). Thus, younger adults may perceive themselves as more knowledgeable in managing and avoiding cyber risks on their own, rather than relying on personal cyber insurance for protection. Meanwhile, old age adults (aged 65 & above) have the highest purchase intention among all age groups. This may be due to old age adults are generally fear of managing cyber risk since they feel it is complicated and difficult to manage cyber risk by themselves (Morrison et al., 2021). Therefore, purchasing personal cyber insurance for them might be an easy and convenient approach to managing cyber risk. Moreover, Annamalah (2013) suggested as people get older, they tend to become more aware of the need for insurance, especially since older people typically have higher incomes. As a result, they may have a higher purchase intention on insurance to protect themselves against financial losses.

Furthermore, this study's findings show that there is no significant relationship between Age and personal cyber insurance Purchase Intention. This result is inconsistent with Kan and Fabrigar (2017); Annamalah (2013); Fatokun et al. (2019). This may be due to the sample of this study might be too small to measure the impact of Age. As evidence, the ratio for the population of working adults (age 15-64) to old-age adults (age 65 & above) was 90.84% to 9.16% in 2022 (Department of Statistics Malaysia, 2022). Despite this, the ratio of the sample for working adults (age 18-64) to old age adults (age 65 & above) in this study was 87.5% to 12.5% which is considered as close to the ratio of the actual population. However, the sample size is just 120 respondents. This implies only 15 respondents aged 65 and above participated in the survey. Thus, the data collected for the old age range might be insufficient to measure its impact on the purchase intention.

5.3 Relationship Between Education Level and Purchase Intention

The study findings reveal that individuals with tertiary education levels generally exhibit a higher purchase intention compared to non-tertiary-educated individuals, which aligns with the findings of Annamalah (2013). This trend can be elucidated by several factors. Firstly, individuals with higher education levels may have higher incomes and thus be more aware of the need for insurance to protect against potential financial loss, as suggested by Annamalah (2013). Secondly, as noted by Annamalah (2013), higher-educated individuals are more likely to purchase insurance as they understand the importance of having an insurance policy to mitigate risks. Thirdly, according to Fatokun et al. (2019), those with higher levels of education

may possess a better understanding of cyber risks, which may increase their purchase intention of personal cyber insurance to safeguard against cyber threats.

Additionally, this study reveals that undergraduates show the highest level of purchase intention compared to individuals with different education levels, which is consistent with the findings of Fatokun et al. (2019). This phenomenon could be attributed to undergraduates' heightened familiarity with cyber threats, which might even surpass that of postgraduates, as suggested by Fatokun et al. (2019). Furthermore, Fatokun et al. (2019) suggest that undergraduates tend to respond more promptly to cybersecurity alerts, potentially making them more receptive to the concept of cyber insurance. This is noteworthy considering that cyber insurance is a relatively novel insurance type designed to safeguard against cyber risks.

However, the relationship between Education Level and Purchase Intention was found to be insignificant. This may be due to the limited knowledge that most of the respondents have regarding personal cyber insurance, which is a relatively new insurance product. Even highly educated individuals may not understand how personal cyber insurance works. This lack of knowledge about personal cyber insurance was reflected in the low mean score of the statements related to knowledge. As a result, the positive correlation between Education Level and Purchase Intention may not be significant.

Moreover, the limitations of the research sampling method may have also contributed to the insignificant relationship. The sample size of the study was relatively small, and this research employed a convenience sampling method, which may have resulted in a limited number of respondents for certain education levels. For instance, there was only one respondent who completed primary school and PhD each. The data collected for these education levels may be insufficient to measure their impact on Purchase Intention.

5.4 Relationship Between Income and Purchase Intention

The findings indicate that Income has a significant positive relationship with personal cyber insurance Purchase Intention which is in line with previous studies by Li (2008); Warner (2011); Annamalah (2013); Wilfred (2020). Wilfred (2020) stated income has a direct impact on the demand of insurance where consumers, which are people with higher salaries have higher intention to purchase insurance. This may be due to people with high income may pose a high financial risk in a contingent event since they are expected to lose more financially which is suggested by Li (2008) and Annamalah (2013). Similarly, Warner (2011) also supported this viewpoint by stating that rich people are ideal victims of cyberattacks. As a result, they may have a stronger incentive to purchase personal cyber insurance to safeguard against unexpected financial loss in a cyberattack. This reasoning could also be applied to this study, as consumers with higher income may perceive themselves are posing to higher risk of financial loss in a cyberattack. Thus, they have a greater incentive to purchase personal cyber insurance, leading to a positive relationship between Income and Purchase Intention.

Apart from that, Wilfred (2020) also suggested that people with lower incomes are more likely to be deterred by the price when deciding whether to purchase insurance. Insurance might be a luxury and costly product to individuals with lower incomes. Thus, individuals with high income are more open to purchase insurance regardless of the price since they were aware of the importance of insurance. This may also be a reason that the result of this study shows Income has a significant positive relationship with Purchase Intention.

5.5 Relationship Between Price and Purchase Intention

This study has shown that Price has a negative impact on personal cyber insurance Purchase Intention but the impact is not statistically significant. The result is inconsistent with previous studies by Lim et al. (2020); Esau (2015); Ramamoorthy and Senthilkumar (2014) that suggested Price has a significant negative impact on insurance Purchase Intention.

Literatures state that Price will significantly influence insurance Purchase Intention since consumers tend to purchase insurance products that they think are priced reasonably. Furthermore, Ramamoorthy and Senthilkumar (2014) suggested it is normal for consumers to compare the prices of insurance products among different insurers. Consumers are more likely to select the insurance product with a lower price if it provides similar protection to others. However, there are only a few insurers offering personal cyber insurance in Malaysia since it is relatively a new product in the market. Therefore, it is difficult for consumers to compare prices among insurers. This may lead to Price is not significantly influencing the Purchase Intention of personal cyber insurance.

On the other hand, the survey of this study shows that most of the respondents do not pay much attention to the price of personal cyber insurance and its coverage. As a result, respondents may have limited knowledge about whether the product is priced reasonably and if it is worth paying at the given price. Although the survey questionnaire provided information about the annual premiums for the only 2 personal cyber insurance available in Malaysia. However, the premiums are generally affordable by most of the respondents, with a maximum of RM120 per year (less than RM10 per month). This affordability may have made respondents insensitive to price especially when they have limited knowledge on personal cyber insurance.

5.6 Relationship Between Knowledge and Purchase Intention

The findings of this study suggest that Knowledge will statistically impact individuals' Purchase Intention on personal cyber insurance with a positive relationship. This result is in line with past research by Ooi et al. (2019); Namukasa, Ssekakubo & Bagenda (2017); Bhat and Jain (2006); (PartnerRe, 2020).

The relationship between Knowledge and Purchase Intention may be attributed to the fact that a lack of understanding about personal cyber insurance may lead to a loss of interest in purchasing it. This argument is supported by Ooi et al. (2019); Namukasa, Ssekakubo & Bagenda (2017) who suggested that the lack of customers' knowledge about insurance may cause them to think the claim procedures are complicated leading to a reluctant to purchase personal cyber insurance. Individuals may also lack of awareness of the importance of personal cyber insurance if they do not know the coverage of it, as indicated by Bhat and Jain (2006). Even if they are aware of the coverage, a lack of understanding may also cause individuals to have less confidence in the protection and effectiveness of personal cyber insurance (Ooi et al., 2019). In short, possessing adequate knowledge about personal cyber insurance will notably and positively influence individuals' purchase intention.

5.7 Relationship Between Risk Perceptions and Purchase Intention

The study indicates Risk Perceptions have a significant and positive relationship with personal cyber insurance Purchase Intention which is consistent with the findings by Pooser et al. (2017); Xie et al. (2020); Willi and Dr. Maya Bundt (2019). Pooser et al. (2017) show that most of the organizations with high-risk perceptions purchased cyber insurance to manage cyber risk. This

viewpoint is also supported by Xie et al. (2020); Willi and Dr. Maya Bundt (2019) who suggested respondents with higher cyber risk perceptions have higher purchase intention.

Ogut et al. (2005) explained that cyber risk is a complex type of risk where self-protection is relatively difficult and less effective. Therefore, purchasing cyber insurance is considered cost-effective in terms of time and money compared to investing in network security, which may lead to a significant and positive relationship between Risk Perceptions and Purchase Intention. This is also supported by the expected utility model developed by Marotta et al. (2017). Marotta et al. (2017) found that the perceived possibility of a cyberattack significantly increases the expected utility for purchasing cyber insurance. Thus, the higher the expected possibility of a cyberattack an individual perceives, the higher the possibility an individual will purchase personal cyber insurance. In short, individuals with high cyber risk perceptions are more likely to purchase personal cyber insurance.

6.0 Conclusion

The objective of this study was to assist general insurers in Malaysia in understanding the market for personal cyber insurance in the country. The study aimed to investigate the factors influencing individuals' purchase intention of personal cyber insurance, including Gender, Age, Education Level, Income, Price, Knowledge, and Risk Perceptions. The results of the study indicated that three factors, namely Income, Knowledge, and Risk Perceptions, were significantly correlated with Purchase Intention, while four factors, including Gender, Age, Education Level, and Price, were not significantly correlated with Purchase Intention based on multiple regression analysis. Additionally, Price was found to have a negative relationship with Purchase Intention, while the other independent variables (Gender, Age, Education Level, Income, Knowledge, and Risk Perceptions) have a positive correlation with Purchase Intention. The results showed that Income has the most significant relationship with Purchase Intention among all the factors studied.

There are several limitations in this study which may affect the accuracy of the result. Firstly, there are only six independent variables studied in the research, but the determinants are not restricted to six variables only. In addition, there is the possibility that the independent variables have a correlation with each other that is not being investigated in this study. This is due to the fact that past research indicates that some factors can indirectly affect other factors and ultimately affect the respondents' purchasing intention. Furthermore, the demographic of the sample does not strictly follow the ratio of population in Malaysia since the study relied on convenience sampling. This may cause biasness to the result as the sample may not reflect the actual population. Lastly, the sample size of the study is 120 which is considered small. A large sample size may yield more accurate and less biased results, as the data pattern will tend toward normal distribution according to the central limit theorem.

In terms of recommendations, future researchers can take into consideration of other variables that may influence personal cyber insurance purchase intention such as perceived usefulness and awareness of personal cyber insurance. Furthermore, future researchers may want to consider using a different sampling method instead of convenience sampling. Stratified sampling is a good sampling method that can avoid possible biases in this study since it divides the population into subgroups according to demographics such as gender, age range, income, etc. The researcher will then calculate the number of respondents required for each subgroup. Thus, it allows the researcher to draw a conclusion on the population using the sample more precisely.

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