BEHAVIOURAL DETERMINANTS OF FINANCIAL RISK TOLERANCE: EVIDENCE FROM MALAYSIA

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ABSTRACT

Financial risk tolerance is one of the fundamental inputs of investment management models and it differs among individuals. Past studies on this topic have focused mainly on background analysis particularly demographic characteristics. However, there have not been many empirical data that analyse why financial advisors fail to accurately assess financial risk tolerance and guide individuals despite of knowing the demographic characteristics. To address the shortcomings of the instruments used by financial advisors to assess and guide individuals, this study extensively synthesises related literature in other disciplines such as psychology, behavioural economics, and behavioural finance. Research in the psychology, behavioural economics and behavioural finance contexts have identified behavioural propensities as promising behavioural factors to overcome such limitations. Therefore, behavioural propensities literatures are reviewed, analysed, synthesised to improve the understanding on the assessment of individuals' financial risk tolerance and what other factors beyond individuals' demographic characteristics, should be also assessed.

To achieve this aim, this study investigates the influence of six (6) core behavioural factors (such as propensity for regret, propensity for trust, happiness in life, propensity to attribute success to luck, propensity for overconfidence, propensity for social interaction) on financial risk tolerance. This study also examines whether the levels of financial risk tolerance and behavioural propensities significantly differ among the gender and ethnic groups. In addition, the study analyses the role of religiosity and ethnicity in the relationship between behavioural factors (behavioural propensities) and financial risk tolerance. Empirical data were collected using a survey questionnaire. The questionnaires were distributed to the Malaysian undergraduate students based on quota

sampling method to confirm the representativeness of the targeted population. A total of 1679 questionnaires were distributed to six public universities in the Klang Valley. However only 1204 questionnaires were completed and used for analysis.

This study employs structural equation modelling to validate and assess proposed research model. The results of the analysis demonstrated some new findings. First, the findings indicate that propensity for regret, propensity for trust, happiness in life, propensity to attribute success to luck and propensity for overconfidence have significant influence on financial risk tolerance while propensity for social interaction does not. Second, this study finds significant differences in behavioural propensities and financial risk tolerance among gender and ethnic groups. Lastly, the findings provide support for the moderating effects of religiosity and ethnicity in the proposed research model.

Several implications emerge from these findings. The results highlights the important role of behavioural determinants to assess individuals' financial risk tolerance which in turn highlights the important role of behavioural factors as tools that can be used by financial advisors in ensuring appropriate advice is delivered to clients. Understanding financial risk tolerance is a complex process that goes beyond the exclusive use of demographic characteristics and behavioural factors. Thus, more research is clearly needed to resolve which additional factors can be used by financial advisors to increase the explained variance in financial risk tolerance differences.

ABSTRAK

Toleransi risiko kewangan merupakan salah satu input asas dalam model pengurusan pelaburan dan ia adalah berbeza di kalangan individu. Kajian-kajian yang lepas bagi topik ini bertumpu terutamanya pada analisa latarbelakang terutamanya ciri-ciri demografi. Akan tetapi, tidak terdapat banyak data empirikal yang menganalisa mengapa penasihat kewangan gagal mengukur dengan tepat toleransi risiko kewangan individu walaupun mengetahui ciri-ciri demografi. Bagi mengatasi kelemahan pada instrumen yang digunakan oleh penasihat kewangan, kajian ini menggabungkan secara menyeluruh literatur daripada bidang psikologi, ekonomi tingkah laku dan tingkah laku kewangan. Kajian dalam psikologi, ekonomi tingkah laku dan tingkah laku kewangan sudah mengenalpasti propensiti individu sebagai faktor tingkah laku yang berpotensi mengatasi kelemahan tersebut. Oleh itu, bidang propensiti individu dikaji, dianalisa dan digabungkan untuk menambahbaik dan memahami penilaian toleransi risiko kewangan individu, dan mengenalpasti factor lain, selain ciri-ciri demografi individu, yang mempengaruhinya.

Untuk mencapai tujuan ini, kajian ini menyelidiki enam faktor tingkah-laku (seperti kecenderungan untuk penyesalan, kecenderungan untuk amanah, untuk kebahagiaan hidup, kecenderungan atribut kejayaan kepada nasib, kecenderungan untuk terlalu yakin, kecenderungan untuk interaksi sosial) terhadap risiko kewangan. Di samping itu, kajian ini juga menyelidiki peranan keagamaan dan etnik dalam hubungan kecenderungan individu dan toleransi risiko kewangan. Data empirikal dikumpul dengan menggunakan kajian soal selidik. Soal selidik diagihkan kepada pelajar sarjana muda perniagaan dan ekonomi berdasarkan persampelan kuota untuk memastikan kerepresentatifan populasi yang disasarkan. Sejumlah 1679 soal selidik diagihkan

kepada enam universiti awam di Lembah Kelang. Namun begitu, hanya 1204 soal selidik yang diisikan dengan lengkap dan digunakan dalam analisa kajian ini.

Kajian ini menggunakan pemodelan persamaan struktur utuk mengesahkan dan menganalisa model kajian yang dicadangkan. Keputusan kajian menunjukkan beberapa penemuan baru. Pertama, hasil penyelidikan menunjukkan bahawa kecenderungan individu seperti kecenderungan untuk penyesalan, kecenderungan untuk amanah, untuk kebahagiaan hidup, kecenderungan atribut kejayaan kepada nasib, kecenderungan untuk terlalu yakin menunjukkan pengaruh yang signifikan terhadap toleransi risiko kewangan manakala kecenderungan untuk interaksi sosial tidak menunjukkan menunjukkan pengaruh yang signifikan. Kedua, penyelidikan ini mendapati perbezaan signifikan di dalam toleransi risiko kewangan dan kecenderungan individu di kalangan jantina dan tahap keagamaan yang berbeza. Ketiga, penemuan kajian mengesahkan kesan moderator, keagamaan dan etnik dalam model penyelidikan yang dicadangkan. Hasil penyelidikan memberikan beberapa implikasi. Hasil penyelidikan menunjukkan kepentingan peranan penentu tingkah-laku dalam menilai toleransi risiko kewangan individu yang menonjolkan kepentingan peranan faktor tingkah-laku sebagai alat yang boleh digunakan oleh penasihat kewangan agar nasihat yang sewajarnya diberikan kepada pelanggan mereka. Pemahaman tentang toleransi risiko kewangan merupakan proses yang kompleks jauh melebihi penggunaan ciri-ciri demografi dan faktor tingkah-laku. Oleh yang demikian, penyelidikan yang lebih mendalam diperlukan untuk memberikan faktor tambahan kepada penasihat kewangan untuk meningkatkan pemahaman mereka tentang varian di dalam perbezaan toleransi risiko kewangan.

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LIST OF ABBREVIATIONS AND SYMBOLS

ABBREVIATIONS

AGFI	Adjusted Goodness-of-fit Index
AVE	Average Variance Extracted
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CMIN/DF	Normed Chi-square
CR	Composite Reliability
CVR	Content Validity Ratio
EFA	Exploratory Factor Analysis
FRT	Financial Risk Tolerance
GFI	Goodness-of-fit Index
HL	Happiness in Life
IA	Irrationality Assumption
KMO	Kaiser-Myer-Olkin
MMHE	Malaysian Ministry of Higher education
NFI	Normed Fit Index
PASL	Propensity to Attribute Success to Luck
POC	Propensity for Overconfidence
PR	Propensity for Regret
PSI	Propensity for Social Interaction
PT	Propensity for Trust
REL	Religiosity
RMR	Root Mean Square Residual
RMSEA	Root Mean Square Error of Approximation
RO	Research Objective
RQ	Research Question
S.E.	Standard Error
SEM	Structural Equation Modelling
SMC	Squared Multiple Correlations
Std.	Standard deviation
TLI	Tucker-Lewis Index
VIF	Variance Inflating Factor

SYMBOLS

β	Beta
χ^2	Chi-square
r	Correlation
$\Delta\chi^2$	Difference in chi square value
Df	Degrees of freedom
$\geq$	Equals or more than
λ	Lamda
$<$	Less than
μ	Mean
$>$	More than
$\times$	Multiplication Sign
$\pm$	Plus or minus
p	Probability level

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Risk tolerance is related to financial planning process (Carr, 2014), modern investment management decision making models (Grable, 1997; Hanna, Waller, & Finke, 2008), portfolio asset allocation (Roszkowski & Davey, 2010; Sung & Hanna, 1996), determining government policies about consumer risks regarding financial decisions (Sung & Hanna, 1996) and others. Information about each client's risk tolerance is crucial to advisors as they use it to guide their clients for various financial decisions making (Carr, 2014; Grable, 2008; Pan & Statman, 2012). Furthermore, Chandra and Kumar (2011) noted that information about risk tolerance can be useful in profiling risk for individuals and designing appropriate investment strategies according to their levels of risk tolerance, thereby enabling them to earn optimum return on their investments. Similarly, studies have linked risk tolerance to achieving adequate retirement plans, making appropriate insurance policy and others. (Anbar & Eker, 2010; Lucarelli & Brighetti, 2011; Wang & Hanna, 2007; Yao, Gutter, & Hanna, 2005; Yao, Hanna, & Lindamood, 2004).

Likewise, West and Worthington (2012) pointed out that individual's risk tolerance has significant role in monetary and regulatory policy. Thus, risk tolerance is an important input in the modern investment management decision making models. Grable (1997) reported that a minimum of four factors are required as inputs into the development of investment and financial plans. Among the four factors (i.e., goals, time horizon, financial stability, and risk tolerance), risk tolerance is relatively complex and difficult to measure (Anbar & Eker, 2010). Grable (1997) found that the first three factors are

relatively easy to measure as they are objective in nature. Further, Carr (2014) pointed out that the likelihood of achieving financial plans increases when risk tolerance is accurately measured. Moreschi (2005) however, noted that if the risk tolerance assessment process is not carried out well (i.e., questions are not answered or not asked accurately), then financial plans may go wrong and end up with misunderstanding and disappointments. Therefore, to date, the necessity of developing appropriate tools for assessing risk tolerance is well documented in the literature and have been of interest to financial planners, regulators, consultants, financial advisors and researchers in recent years (Anbar & Eker, 2010; Carr, 2014; Lucarelli & Brighetti, 2011; Pan & Statman, 2012; West & Worthington, 2012).

Advisors have fiduciary as well as legal responsibility to determine the accurate levels of a client's risk tolerance and thereby suggesting the optimal investment portfolios (Carr, 2014; Rattiner, 2005). For instance, Gilliam, Chatterjee, and Grable (2010) add that according to the U.S. Department of Labour's Pension Protection Act of 2006, it is necessary for financial planners to understand their clients' risk tolerance when providing financial planning recommendations. Besides, Kahneman (2009) noted that "Advisor and advisee share a common interest: both want the relationship not to end in disappointment, and both want to reduce the potential for regret and for abrupt reversals" (p.1). Carr (2014) found that advisors, who can better understand their clients risk tolerance can also convey a positive impression to their clients to accept their recommendations with a greater level of confidence.

Studies that have linked financial risk tolerance with inequality of wealth (Anbar & Eker, 2010; Yao et al., 2005) found that individuals who are willing to take higher financial risk can earn higher financial returns over the long run which ultimately help

them to grow their personal wealth. However, Yao et al. (2004) noted that individuals, who tolerate inappropriately low level of financial risk, tend not to invest in risky asset like stocks and thus may face greater difficulty in achieving various financial goals such as adequate retirement plan. Wealth inequality is still an alive and relevant topic, particularly for countries with multi ethnic groups like the U.S., and Malaysia. Yao et al. (2005) found that in U.S., Whites have more financial wealth than Hispanics and Blacks. However, Khalid (2011) noted that in Malaysia, Chinese have the highest average wealth of RM 128,325 which is 76% and 47% higher than Malays and Indians respectively. Studies that have linked wealth disparity between ethnic groups to risk tolerance found that ethnic groups with high risk tolerance are wealthier than low risk tolerance ethnic group. For example, Yao et al. (2005) found that Whites are more financial risk tolerant than Hispanics and Blacks.

The demand for financial planning activities is linked to the growth of the middle income earners (Shafii, Abiddin, & Ahmad, 2009; Warschauer, 2002). Shafii et al. (2009) noted that the middle class in Malaysia is increasing and financial planning activities are getting popular among all ethnic groups. The development and outcomes of personal financial planning were found to be related to the accuracy of the measurement of risk tolerance. Moreschi (2005) found that if the financial planner is able to capture the right information in the risk tolerance assessment process, the entire financial plan has a better possibility of success.

In risk assessment research, by and large, most studies linked demographic and socio-economic factors to risk tolerance (Anbar & Eker, 2010; Grable, 200, 2008; Grable & Lytton, 1998; Roszkowski, Snelbecker, & Leimberg, 1993). As such, studies have used gender, age, marital status, education level, race, household income, employment status,

wealth and others as the determinants of risk tolerance (Anbar & Eker, 2010; Carr, 2014; Grable, 2000, 2008; Loomes & Sugden, 1982; Slovic, 1966; Yao & Hanna, 2005). However, risk tolerance assessment methods have ranged from single-item risk survey (e.g. The Survey of Consumer Finance SCF risk question) to choice dilemmas (e.g. Wallach & Kogan, 1959) to multidimensional measurements (e.g. Barsky, Juster, Kimball, Sahm, & Shapiro, 2008; Carr, 2014; Grable & Lytton, 1999, Hanna & Lindamood, 2004).

1.2 METHODS OF FINANCIAL RISK TOLERANCE ASSESSMENT

Although risk tolerance has been widely examined in the implementation of the financial planning process and development of investment management models, there is no universally accepted measure for risk tolerance. Currently, there are numerous methods available that intend to assess individuals' risk tolerance. According to Grable (2008), there are five different methods for assessing one's willingness to take risk (risk tolerance) and each of them contains at least one limitation. For instance, in method one (the personal/professional judgments), judgments can strongly be biased and often be not particularly accurate as it is subjective in nature. In method two (assessing risk tolerance through heuristics[1]), financial advisors and planners prefer to rely on heuristics to measure risk tolerance and thus they use factors like age, ethnicity, or employment status as base to make judgments about their clients' risk tolerance. The literature suggests that risk tolerance assessment though heuristics procedure is not used officially, nor it should be as it has lack of validity and it can potentially lead to miscalculation and incorrect clustering of individuals (Carr, 2014). Further, Snelbecker, Roszkowski and Cutler (1990) claimed that advisors have the tendency to be overconfident with their suggestions of their clients' risk tolerance assessments as they

[1] According to Grable (2008, p.8), a "heuristic is a simplified rule that results in a mental shortcut to solve a problem".

often feel that their education, training, and experience give them the ability to judge the statements made by their clients into accurate measurements of risk tolerance. The literature shows that judgments based on this intuition are not always true. Roszkowski and Grable (2005) argued that using various demographic variables only as rules of thumb to assess risk tolerance is an example of deficient method.

In general, in method three, advisors prefer to rely on the observation of the actual investments that give them a general sense of their clients' risk tolerance. This method has a clear shortcoming as their clients' riskiness of investment choices may also be owing to market transitory trends or external recommendations (from friends). The method four is based on single item risk question (such as The Survey of Consumer Finances, SCF) to measure financial risk tolerance (Chan & Finke, 1996; Car, 2014; Grable & Lytton, 1999; Sung & Hanna, 1996). Even though financial advisors rarely use SCF as it is, several studies claimed that these single question measures cannot possibly accurately assess such an ambiguous concept like risk tolerance as it is often affected by some distortions (Carr, 2014; Hanna & Chen, 1997; Grable & Lytton, 2001; Roszkowski et al., 2005). The method five considers psychometrically designed scales (Roszkowski, Davey, & Grable, 2005) to measure risk tolerance. Corter and Chen (2005) used this method to test whether there was any difference between the real financial risk tolerance and the levels of financial risk tolerance revealed through traditional questionnaires used by financial institutions. They found questionnaires were consistent but not correlated with the sensation seeking measure.

Traditionally, academics and practitioners (such as financial advisors) have differing views on the risk tolerance measurement process. Academics prefer to rely on scientific, lengthy surveys to measure individuals' risk tolerance while practitioners like to use

simple, quick, efficient questionnaires that satisfy their compliance for the regulatory and fiduciary duties. Pan and Statman (2012) argued that there are five possible reasons for the deficiency of traditional risk questionnaires that are used to assess investors' risk tolerance: (1) it fails to consider risk as a multidimensional concept, (2) suggested portfolio asset allocations are not linked with the questionnaire answers, (3) investors' risk tolerance differ by associated emotions and market trends, (4) investors' risk tolerance measured in hindsight is different than their risk tolerance measured in foresight, and (5) investor propensities are matter to advisors to advice their clients.

1.3 PROBLEM STATEMENT

The global financial crisis of 2008 and 2009 and its aftermath bring questions about the instruments used by financial advisors to evaluate risk tolerance and guide their clients back to the fore. Pan and Statman (2012) found "many investors who were assessed as risk tolerant in 2007 and assigned portfolios heavy in equities dumped their equities in 2008 and 2009 and some even dumped their advisors" (p. 54). Their statement clearly points out that the typical questionnaires for risk tolerance assessment are no longer exclusively sufficient to measure the individuals' true risk tolerance. This kick offs the doubt that there are shortcomings of the tools that are being used currently to measure the risk tolerance. A comprehensive measure for financial risk tolerance would require something more than a questionnaire of risk tolerance (Lucarelli & Brighetti, 2011; Pan & Statman, 2012). Anbar and Eker (2010) pointed out that the risk tolerance construct is relatively complex and difficult to measure compared to other three inputs of the investment management models (i.e., goals, time horizon, financial stability), because the assessment of risk tolerance can be strongly biased by the subjectivity of the measurement. Further, Pan and Statman (2012) add that individuals' measured risk tolerance can be exaggerated by their propensities (such as propensity for

overconfidence). Hence, it is difficult to understand whether the tools used by advisors can measure individuals' true risk tolerance (Gilliam et al., 2010). However, to date, no one has developed a proper research model to capture the influence of behavioural propensities on financial risk tolerance.

However, Fox and Tannenbaum (2011) suggested that strategies that include the influence of behavioural or situational factors on risk tolerance are needed to address the ambiguity of the risk tolerance assessment process. Similarly, Linciano and Soccorso (2012) suggested that a wide range of tools is needed to address the complexity of risk tolerance assessment and these tools must be able to combine the suggestions from classic economic literature and behavioural finance literature. Bouchey (2004) argued that although there are some flaws in the traditional ways of assessing financial risk tolerance, adding new components to the risk tolerance measures process is started. Furthermore, Hanna, Waller, and Finke (1998) noted that the consideration of behavioural constructs to the assessment process may enhance the validity of the financial risk tolerance estimate.

The study by Carr (2014) adds that apart from the concepts associated with Modern Portfolio Theory (MPT) and rational investor, individuals are also influenced by behaviour and emotions. The author also claimed that it is not always correct to assume that individuals are nearly always rational, and emotions have little impact on the risk tolerance and decision making process. Behavioural finance argues that individuals choices under uncertainty systematically contradict the assumption of rationality on which classical theory is founded (Linciano & Soccorso, 2012). Pan and Statman (2012) found that circumstances and emotions influence individuals' risk tolerance. More specifically, Reb, and Connolly (2009) noted that individuals' level of regret has

significant influence in the risk assessment process. They suggested that people with high levels of regret are more risk tolerant than low levels of regret people. Regret is not the only behavioural factor that is relevant in the assessment of individuals' risk tolerance process. The literature on psychology, behavioural economics and behavioural finance has identified several behavioural propensities (e.g. overconfidence, trust, belief in luck over skill, happiness in life, social interaction and others.) as promising determinant of risk tolerance. For example, Nosic and Weber (2010) found overconfidence increases risk tolerance. Further, Magnan and hinsz (2005) claimed that in addition to traditional questions, adding behavioural factors in the risk tolerance measurement process can increase the accuracy of the measurement. To summarize, it can be argued that the essential reason for behavioural factors to influence an individual's risk tolerance can be the assumption from behavioural finance paradigm that people are normal and not always rational, but sometimes act irrationally or emotionally.

Behavioural economists argue that risk is subjective in nature and multi-dimensional which is affected by cognitive limitations, psychological traits and emotional factors (Carr, 2014; Linciano & Soccorso, 2012; Nosic & Weber, 2010; Pan & Statman, 2012). Linciano and Soccorso (2012) posited that if the objective risk is quantified through a single parameter (variance, downsize risk, the CAPM beta and others.) as measured by classical finance theory, then emotions and other psychological traits should be included to study the subjective risk. Literature on risk assessment claimed that risk tolerance assessment cannot be fully understood through exploring only demographic and socioeconomic factors and psychological aspects, such as regret should be incorporated into risk assessment process (Magnan & Hinsz, 2005; Pan & Statman, 2012). For instance, many times individuals with high overconfidence might show high financial

risk tolerance and tend to have more demand and are not easily satisfied (Albaity & Rahman, 2012; Pan & Statman, 2012). But are such individuals' truly financial risk tolerant or is their overconfidence influencing the measurement of their financial risk tolerance to be high? This ambiguity is not fully addressed in risk tolerance assessment literature as very little research has focused on behavioural factors while investigating risk tolerance measurements.

To date, little research in consumer finance field has attempted to develop more accurate risk tolerance assessment tools for both practitioners and policy makers (Carr, 2014). Typical questionnaires do not fully account for the role that behavioural or personal factors play in influencing individuals' financial risk tolerance. Although Hanna et al. (1998) claimed that the inclusion of behavioural factors to the risk measurement process may enhance the validity of the financial risk tolerance estimate; researchers have yet to develop financial risk tolerance assessment system that uses behavioural factors to describe an individual's financial risk tolerance framework. This may be because the current methods of risk tolerance measurement process and traditional risk assessment frameworks assume individuals are nearly always rational, and emotions have little impact on the risk tolerance (Carr, 2014).

Risk tolerance is a determining factor when it comes to choosing how to allocate assets in a portfolio, as a result, it directly influences the definition of investment, the creation of products, and financing strategy. Therefore, studies related to this context attempt to determine factors that influence risk tolerance, but issues are yet to be fully addressed, especially regarding its determinants. Many studies have used several heuristics in order to determine individuals' risk tolerance while few studies have used behavioural dimensions. Considering the significance of the risk tolerance measure, the setback of

economics theories that approach full rationality and the scarcity of studies that demonstrate the influence of behavioural factors on risk tolerance, this study seeks to answer the question: what are the behavioural determinants of financial risk tolerance? In addition, Mokhlis (2009) adds that religiosity also influence individuals' behaviour. But, no one has examined the role of values (e.g. religiosity) on behavioural determinants of financial risk tolerance. Thus, this study proposes that religiosity moderates the relationship between behavioural determinants and financial risk tolerance.

Some studies have proven that ethnic group differences may further complicate the measurement process of financial risk tolerance (Anbar & Eker, 2010; Yao et al., 2005). In addition, several studies have proven the existence of a link between financial risk tolerance and inequality of wealth (Anbar & Eker, 2010; Yao et al., 2005). Although in Malaysia, there is an inequality of wealth between Chinese, Malays, and Indians (Khalid, 2011a; Shafii, Abiddin, & Ahmad, 2009), the relationship between ethnic status and financial risk tolerance is not well documented. Therefore, it is important to examine the relationship between ethnic status and financial risk tolerance in Malaysia.

Pertaining to financial planning activities, many Malaysians have started to rely on financial planners (Khalid, 2011a, 2011b; Shafii et al., 2009). Studies have found that there is a positive association between growth of the middle income earners and participation of individuals in financial planning activities (Shafii et al., 2009; Warschauer, 2002). Thus, the rise of middle class in Malaysia has become one of the important factors to increase the demand of financial planning activities irrespective of the ethnic groups (Shafii et al., 2009). Therefore, it is important to investigate the

factors that determine financial risk tolerance as the outcome of any financial plan is strongly linked to the accuracy of the assessment of financial risk tolerance.

In short, the above discussion uncovered several ideas: (a) risk tolerance is a complex construct and relatively difficult to quantify, (b) mostly prior studies used demographic and socioeconomic characteristics as determinant of risk tolerance, (c) there are numerous methods to assess individuals' risk tolerance but there is none that can perfectly explain the risk tolerance, (d) numerous researchers find behavioural factors should be included in the risk assessment process, (e) many studies have proven that ethnic group differences may further complicate the measurement process of financial risk tolerance, (f) in Malaysia, the relationship between ethnic groups and financial risk tolerance is not well documented, (g) financial planning activities are getting popular in Malaysia, and (h) accurate information about financial risk tolerance has positive impact on the successful outcome of the financial planning activities. The discussions about having a sizable middle-income group in Malaysia, increased individuals' participation in financial planning activities, and wealth disparity between Chinese, Malay and Indian justify the researcher's stance to study financial risk tolerance in Malaysia.

1.4 RESEARCH QUESTIONS

From the discussions presented in the section 1.1 and 1.2, there seems to be a crucial need to develop a comprehensive measure for risk tolerance. It is important to consider other determinants of financial risk tolerance, in addition to the demographic and socioeconomic characteristics. Further, this type of investigation can form the foundation for the construction of a new financial risk tolerance assessment, one that goes beyond traditional risk tolerance measure, and one that offers advisors better tools for guiding their clients. However, as financial planning activities become ever more

salient in Malaysia due to the growth of middle class people and other related issues, differences between gender and ethnic groups in financial risk tolerance and propensities may be important to investigate. Besides, studies have noted that financial risk tolerance is considered as a complex attitude and it can be influenced by many factors. Researchers and financial advisors have long been trying to address the question of what factors influence individual financial risk tolerance. Therefore in line with the existing research interest, the central research question to be investigated in the proposed study is:

Do behavioural propensities influence an individual's financial risk tolerance and how do they influence the financial risk tolerance of different ethnic groups in Malaysia?

This central research question is divided into four main questions to address the proposed study in much simpler way. However, pertaining to financial risk tolerance, none has examined these relationships; with that the following research questions are formulated:

- RQ 1: What are the behavioural predictors (behavioural propensities) of financial risk tolerance?
- RQ 2: Do different genders and ethnic groups vary in their behavioural propensities and financial risk tolerance?
- RQ 3: Does religiosity moderate the relationship between behavioural propensities and financial risk tolerance?
- RQ 4: Does ethnicity moderate the relationship between behavioural propensities and financial risk tolerance?

1.5 RESEARCH OBJECTIVES

The aim of this study is to contribute to the literature on financial risk tolerance and risk assessment. There are several objectives formulated to accomplish the tasks of this study. They are as follows:

- RO 1: To examine the relationship between behavioural propensities and financial risk tolerance of individuals
- RO 2: To examine the differences in financial risk tolerance and behavioural propensities of different ethnic groups and genders
- RO 3: To examine whether religiosity moderates the relationship between behavioural propensities and financial risk tolerance
- RO 4: To examine whether ethnicity moderates the relationship between behavioural propensities and financial risk tolerance

This study uncovers which behavioural propensities influence an individual's financial risk tolerance the most, and the mean difference for financial risk tolerance and behavioural propensities with respect to gender and ethnicity. This research further explores the concept that the demographic and socioeconomic variables are not the only factors in the assessment of one's financial risk tolerance. Finally, it is hoped that this study will contribute to the financial services industry to develop an accurate and uniform method of risk assessment.

1.6 SIGNIFICANCE OF THE STUDY

Provide useful input to financial advisors and advisees

This study highlights the essential function of financial risk tolerance. The identification of behavioural determinants that will influence the financial risk tolerance will provide insights to knowledge of financial management as well as behavioural finance. For example, based on the findings of the study, whether the behavioural factors apart from demographic characteristics do influence the measurement of financial risk tolerance can be determined. Besides, emphasis can be given on the relevant factors that influence the assessment of financial risk tolerance. For instance, financial advisors can emphasise on one's propensity for trust if it is found to be the most significant behavioural factors that influences financial risk tolerance of individuals. Both the financial advisors and advisees will be benefited in numerous ways by knowing the true financial risk tolerance and other behavioural factors of advisees. If the relationship between propensity for trust and financial risk tolerance is positive and the level of trust is high, financial advisors may develop a trusting bond with advisees faster which subsequently makes the guidance easier for advisors and leads to have more comprehensive assessment of financial risk tolerance.

This study finding may assist advisors in designing appropriate investment portfolios according to advisees' true financial risk tolerance and behavioural factors (behavioural propensities). This may result in achieving optimum returns on clients' investments and intention to return and recommend advisors besides spreading positive word of mouth. With that, financial advisors will be able to retain their existing clients besides attracting new ones. In return, the advisees will enjoy better financial returns for their investments without much regret and the relationship between advisor and advisee might not end in

disappointment. In addition, the advisees can be more careful about the influence of their behavioural factors which might exaggerate or underestimate their true financial risk tolerance and they also can avoid unreasonable/emotional investment decisions. Consequently, the financial advisors will be able to minimize the conflict of interest involved.

Contribute to the cumulative body of knowledge of investment management models and financial risk tolerance

Risk-assessment has been widely examined in the implementation of the financial planning process and development of investment management models. In relation to financial plans and investment management models, studies are centred on the risk-assessment rooted in economic utility theory, or tests of hypotheses related to demographic and socio-economic factors (Grable & Lytton, 1998). This research examines the influence of behavioural factors such as propensity for regret, propensity for trust, happiness in life, propensity to attribute success to luck, propensity for overconfidence, and propensity for social interaction on individuals' financial risk tolerance and how these propensities subsequently relates to one another. Besides, it also seeks to explore the differences between behavioural propensities, gender and ethnic groups in Malaysia. In addition, it examines the moderating effect of religiosity and ethnicity in the proposed model.

This study is a pioneer initiative, because as never before, it links the above mentioned relationships in risk-assessment within the behavioural finance research, particularly in financial plans and investment management models. Another contribution involves the introduction and measurement of behavioural factors and testing the moderating effect

of religiosity and ethnicity in behavioural finance research. These variables extend the existing line of research on investment management models and also behavioural finance literature as these behavioural factors not been measured in both contexts. Therefore, this study will provide theoretical insights through an empirical investigation.

Close gaps that currently exist in the relevant literature

Most of the research on risk tolerance measurement focuses on economic utility theory, demographic and socioeconomic variables. This study centred on behavioural factors and includes several behavioural predictors of financial risk tolerance namely propensity for regret, propensity for trust, happiness in life, propensity to attribute success to luck, propensity for overconfidence, and propensity for social interaction which receive little attention. Besides, the ethnicity of the individual has been left unexplored. By identifying the relationship between ethnicity, behavioural propensities and religiosity of individuals, this study illuminates what causes financial risk tolerance to vary according to individuals. In addition, there are numerous relationships that yet to be investigated particularly in the financial risk assessment context. Among them are the role of levels of religiosity and ethnicity as a moderator between the behavioural propensities and financial risk tolerance. On top of that, the extents to which behavioural propensities are related to one another is not known. This study explores these relationships and fills in the gaps in the literature.

In terms of methodology, this study employed quantitative method strategy. Scales are adapted for all the constructs. Even though scale is adapted, it does not mirror the perspective of finance research. Thus, this instigates the need to modify the existing measure and make it suitable to reflect the study's context. In addition, most of the

research focuses on single-item risk survey methods to measure risk tolerance. This study uses multiple-items risk survey to measure the financial risk tolerance. Moreover, this study employs structural equation modelling (SEM) to validate and analysis proposed research model instead of multiple regression analysis to capture the effects of behavioural factors and address the endogeneity issues.

The significance of researching behavioural propensities that influence financial risk tolerance is that it could identify the important propensities that affect individuals' financial risk tolerance and, in turn, ways that those characteristics can be well understood to overcome the limitations, if there is any. This study contributes to the finance literature in many ways. First it opens up new area of research in finance, because as never before, studies linked behavioural factors to financial risk tolerance and investment management models and tested moderating effects of religiosity and ethnicity within the behavioural finance research. Second, it examines a new framework for financial risk tolerance using SEM and subsequently relates findings to financial advisors to assess and guide advisees.

Third, this research expects to resolve the long-standing question (see Hanna, Waller, & Finke, 1998), adding what behavioural factors to the assessment of financial risk tolerance process may increase the validity of the risk tolerance estimate by proposing several behavioural factors (e.g. propensity for regret, propensity for trust, happiness in life, propensity to attribute success to luck, propensity for overconfidence, and propensity for social interaction). Fourth, this study contributes to the finance literature by thoroughly exploring related literature in other disciplines such as psychology behavioural economics, behavioural finance, and others. In order to address the shortcomings of the instruments used by financial advisors to assess and guide

individuals, this study extensively reviewed, analysed, and synthesised prior literature to improve the understanding of the assessment process of individuals' financial risk tolerance. Fifth, this research uses structural equation modelling (SEM) to analyse the data. Even though SEM has been used extensively in other disciplines, it is quite new in finance research. Moreover, this research discusses deficiencies of the risk tolerance measurement and offers remedies, based on a survey of Malaysian undergraduate students.

The basic idea of the current study is developed based on several key studies that include Carr (2014), Grable (1997) Grable (2008), and Pan and Statman (2012). However, Carr (2014) mainly developed clients' risk profile, in which he used risk tolerance as one of the constructs. While, Grable (1997) and Grable (2008) investigated whether demographic and socioeconomic characteristics could be used individually or in combination to both differentiate among levels of investor risk tolerance and classify individuals into risk-tolerance categories. Pan and Statman (2012) carried out correlation between risk tolerance and several investor propensities. They found significant correlation between risk tolerance, gender, age, propensity for maximization, overconfidence and trust. However, they used a single-item question to measure risk tolerance and other investor propensities. For example, they measured propensity for trust by asking only one question "Generally speaking, would you agree that most people can be trusted, or that you always have to be careful in dealing with people other than your family?" The literature suggests that a single-item measure has lack of validity (Hair et al., 2010; Singh, 2003). In fact, the use of single-item measures in academic research is often considered a fatal error (Wanous, Reichers, & Hudy, 1997). This study does not, however, aim to criticize their research rather it is this gap in the literature that the current study seeks to fill. This study differs from the study published

by Pan and Statman (2012) in the sense that it uses multi-items measures for all the constructs and develops a research framework to examine the influence of several behavioural propensities on financial risk tolerance using structural equation modelling (SEM). In addition, it also investigates the moderating effect of religiosity and ethnicity on the proposed research model for financial risk tolerance. In this sense, this study is a pioneer initiative, because as never before, it tests the moderating effect in the risk assessment model.

1.7 ORGANIZATION OF THESIS

This study consists of five chapters. Chapter one introduces the overview and background of this study. This chapter also discusses issues related to the measures of financial risk tolerance followed by the problem statement, research questions, and research objectives. The contribution of the study is also presented in this chapter.

Chapter two reviews the theoretical, empirical and subjective evidence drawn from previous works in relation to the variables that is examined in this study. Among the variables that are reviewed are financial risk tolerance, propensity for regret, propensity for trust, happiness in life, propensity to attribute success to luck, propensity for overconfidence, and propensity for social interaction, religiosity, and ethnicity. Besides, relevant issues which were not addressed by the previous works will be highlighted in line with the aims of the current study. The conceptual framework is derived based on these rationalizations. This chapter also presents the justification of the constructs tested in this study. In short, the main purpose of chapter two is to justify the current research.

Chapter three provides the research methodology research design and hypotheses development in addressing the research questions. Chapter three also covers the

justification on the instrument development, instrument and data gathering. It also provides insights on the statistical techniques that are used to analyse the data of the current study. Chapter four includes descriptive statistics of demographic profile, exploratory factor analysis (EFA), confirmatory factor analysis (CFA), and structural model analysis, the hypotheses testing on the direct relationships and moderating variables.

Finally, chapter five discusses the findings and the implications of this study in detail. The implications cover all three aspects; theoretical, methodological and management. This chapter also includes the limitation, future research directions and conclusion.

1.8 CHAPTER SUMMARY

This introductory chapter provides an overall synopsis of the current study. This chapter sets the tone for the thesis by explaining why the problem is a genuine area worthy to be investigated in the context of Malaysia. The corresponding research questions indicate issues that are being highlighted to be addressed in this study. The objectives are formulated to accomplish the main purpose of this study. The contributions outline the possible link between the findings of this study and their implications in both academic and industry. Finally, the contributions also attempt to clarify how the findings close gaps that currently exist in the relevant literature.

CHAPTER 2

LITERATURE REVIEW

2.1 CHAPTER OVERVIEW

This chapter reviews the financial frameworks, theoretical, empirical and subjective evidence drawn from previous works in relation to the variables that are examined in this study. Among the variables that are reviewed are financial risk tolerance, propensity for regret, propensity for trust, happiness in life, propensity to attribute success to luck, propensity for overconfidence, and propensity for social interaction, religiosity, and ethnicity. Besides, relevant issues which were not addressed by the previous works are highlighted in line with the aims of the current study. The conceptual framework is derived based on these rationalisations. This chapter also presents the justifications of the constructs tested in this study.

2.2 CONCEPTUAL FRAMEWORK

Financial risk tolerance has been extensively researched against investment management models and financial risk frameworks. The sub-sections below explain how financial risk tolerance eventually evolved and became part of the various financial management models. Furthermore, the importance of financial risk tolerance as an input of various investment management models and decision making process is explained. Lastly, there is a discussion on the theoretical framework used to guide this study and application of empirical model.

2.2.1 Review of conceptual background and financial frameworks

Financial advisors are largely concerned with their client investment decisions and allocation of financial resources as their investment behaviour are often irrational and are not rooted in traditional economic theory (Hanna, Waller, & Finke, 2008). The role of a financial advisor is to assess clients' risk tolerance and guide them to make appropriate investments in meeting their financial objectives. Knowledge about comprehensive factors that may influence individual financial risk tolerance assessment process might make the job relatively easy for advisors. Researchers and theorists have attempted to explain risk tolerance and outcomes from risky actions through normative and descriptive models.

Many prior studies have used risk tolerance as an important factor for investment decision making models (Carr, 2014; Grable, 1997; Hanna et al., 2008; Leimberg et al., 1993). Leimberg et al. (1993) were among the first who developed a comprehensive financial plans and investment decision making model in which individual willingness to accept financial risk (risk tolerance) was considered as necessary and important area of background analysis. They also noted that risk tolerance toward investment is just as important as net worth or income statement. It is also suggested that knowledge about clients' risk tolerance helps financial advisors to create more realistic and acceptable objectives while insufficient information about clients' risk tolerance may create problem for advisors to establish plans or achieve financial goals (Leimberg et al., 1993).

As conceptualized in the investment management models, a minimum of four factors is required to use as inputs to develop investment and financial plans (Grable, 1997). Financial risk tolerance, among others, is relatively complex and difficult to measure

(Anbar & Eker, 2010). The other three factors (i.e., goals, time horizon, financial and stability) are objective in nature and relatively easy to measure. As shown in Figure 2.1, financial risk tolerance is one of the four inputs in the investment management models that is subjective in nature. It shows that financial risk tolerance is an important factor for investment management decision making process. This indicates that accurate measurement of financial risk tolerance may help make the investment management decision making process relatively easy and smooth.

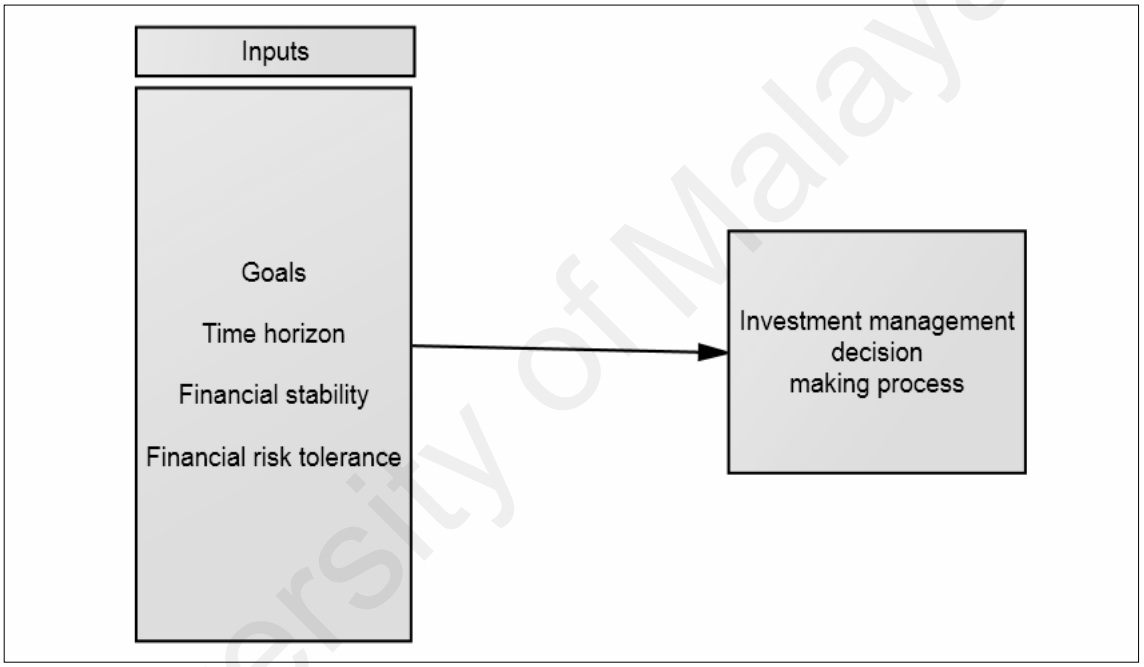


Figure 2.1: Modern investment management decision making model (Anbar & Eker, 2010; Grable, 1997; Trone, Allbright, & Taylor, 1996)

Yao et al. (2005) introduced a financial framework that utilizes financial risk tolerance (willingness to take risk) as one component. The conceptual framework, as illustrated in Figure 2.2, shows the links from life cycle characteristics to financial risk tolerance (willingness to take risk) as well as portfolio allocation, suggesting financial risk tolerance plays an important role in individual portfolio allocation decisions. Figure 2.2 also shows that race and ethnicity are the determinants of market expectations, which in turn impact on willingness to take risk. This relationships indicate that ethnicity is

relevant to assess risk tolerance. This framework provides justifications for investigating ethnicity in the context of assessing financial risk tolerance. The indirect relationship between race and ethnicity, and portfolio allocation also indicates that ethnic difference may contribute to the financial market volatile. Thus, it is necessary to properly carry out financial risk tolerance assessment process in order to have desired portfolio as the influence of ethnic group differences may further complicate the assessment of financial risk tolerance and its relationship with other factors (Yao et al., 2005).

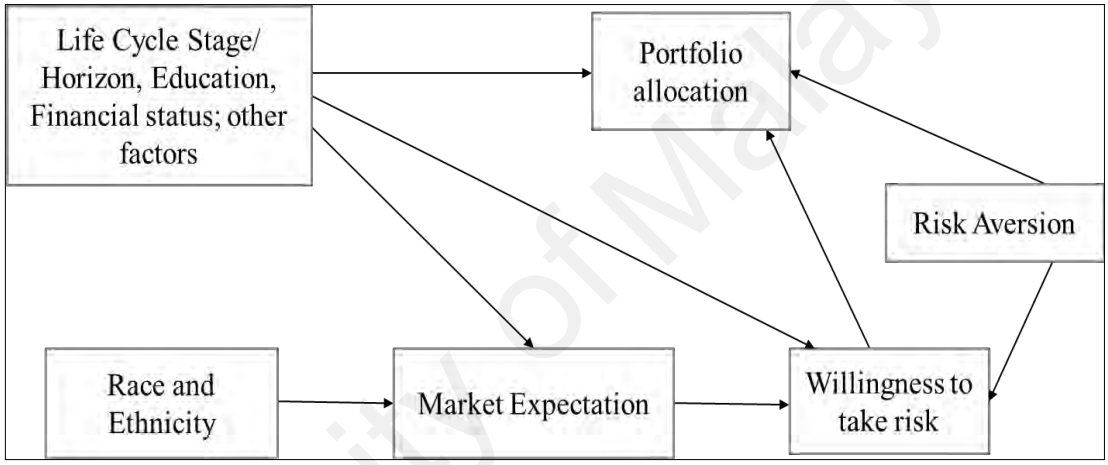


Figure 2.2: Conceptual relationship of race and ethnicity on risk preferences and portfolio behaviour (Yao, Gutter, & Hanna, 2005)

Hanna et al. (2008) developed a conceptual model for risk decision that utilized four separate factors (i.e., risk tolerance, risk capacity, expectations, and feelings about volatility), as indicated in the Figure 2.3 to develop comprehensive risk profile. Although Hanna et al. (2008) didn't explore the relationship between variables, their conceptual model suggests that risk tolerance is an important component of investment choices model. However, their research was extended by Carr (2014) incorporating comprehensive risk profile as a weighted-scale which further utilized to allocate investment assets appropriately as indicated in the Figure 2.4. Carr (2014) used three separate risk components to develop comprehensive risk profile. The author also noted that risk tolerance is a salient factor for the development of comprehensive risk profile

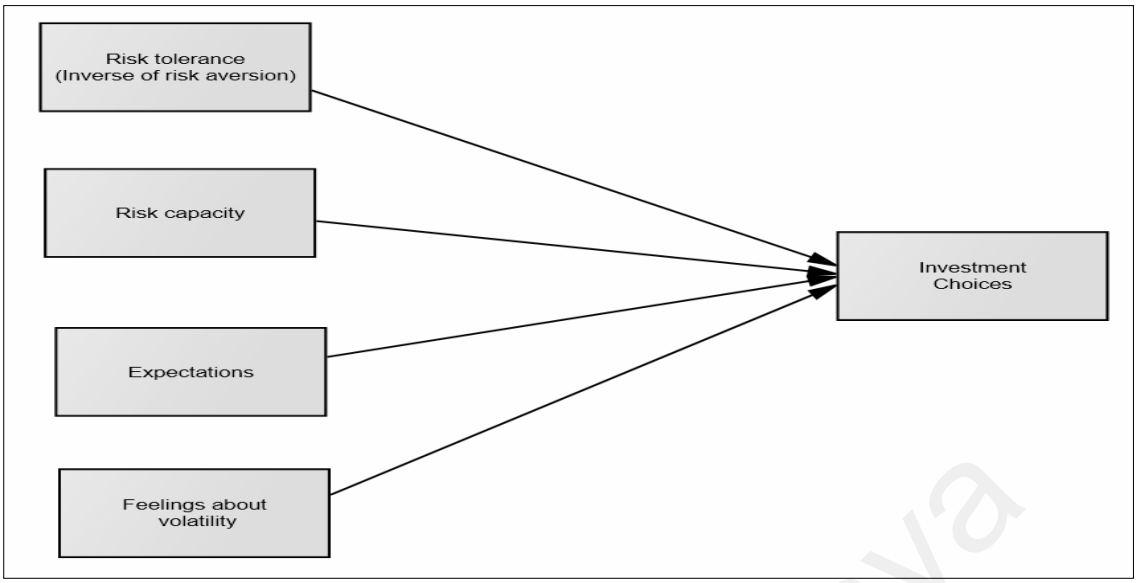


Figure 2.3: Conceptual model of investment choices involving risk (Hanna et al., 2008)

The accuracy of comprehensive risk profile also depends on the accuracy of the measurement of risk tolerance. In short, it can be concluded that appropriate allocation in investments also depend on the risk tolerance. This indicates that there is sufficient evidence to prove that risk tolerance plays an important role in the investment management decision making models.

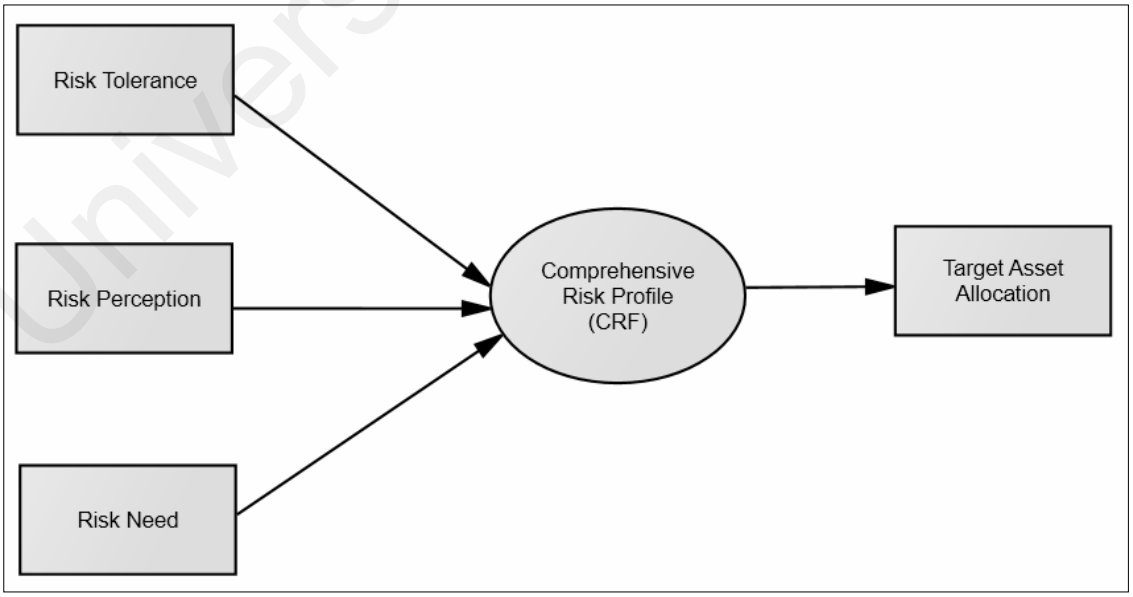


Figure 2.4: Framework for the comprehensive risk profile (Carr, 2014)

2.2.2 Theoretical framework to guide this study

A most promising conceptualization about establishing objectives and developing investment management strategy was introduced by Grable (1997) as indicated in Figure 2.5. Grable's financial plan and investment management strategy model incorporated several demographic variables as background analysis to carry out risk tolerance assessment process. Grable's (1997) financial plan and investment management strategy model offers a conceptualization of the activities involved in developing investment planning model to financial planners, advisors, and researchers. The model is useful as a working theoretical framework because it offers researchers a theoretical knowledge of how financial advisors and planners use demographic characteristics analysis and establishment of objectives as inputs to create framework for development of financial plans and investment management strategy.

The main objective of Grable's study was to test the role of gender, age, marital status, occupation, self-employment, income, race, and education in differentiating individuals' financial risk tolerance. Whereas, this study will examine several behavioural propensities to determine whether these propensities influence individuals' financial risk tolerance. Additionally, this study provides academics and practitioners with insight as to how ethnicity and gender are different with respect to financial risk tolerance and behavioural propensities. Although most of the prior studies have tested gender, age, race, marital status and education as determinants of risk tolerance, this study intends to test only gender and ethnicity because the respondents are undergraduate students and majority of them are not married and have the same range of age and education. However, this study also provides the information about whether religiosity moderates the relationship between behavioural propensities and financial risk tolerance. Lastly the

results will also indicate whether ethnicity moderates the relationship between behavioural propensities and financial risk tolerance.

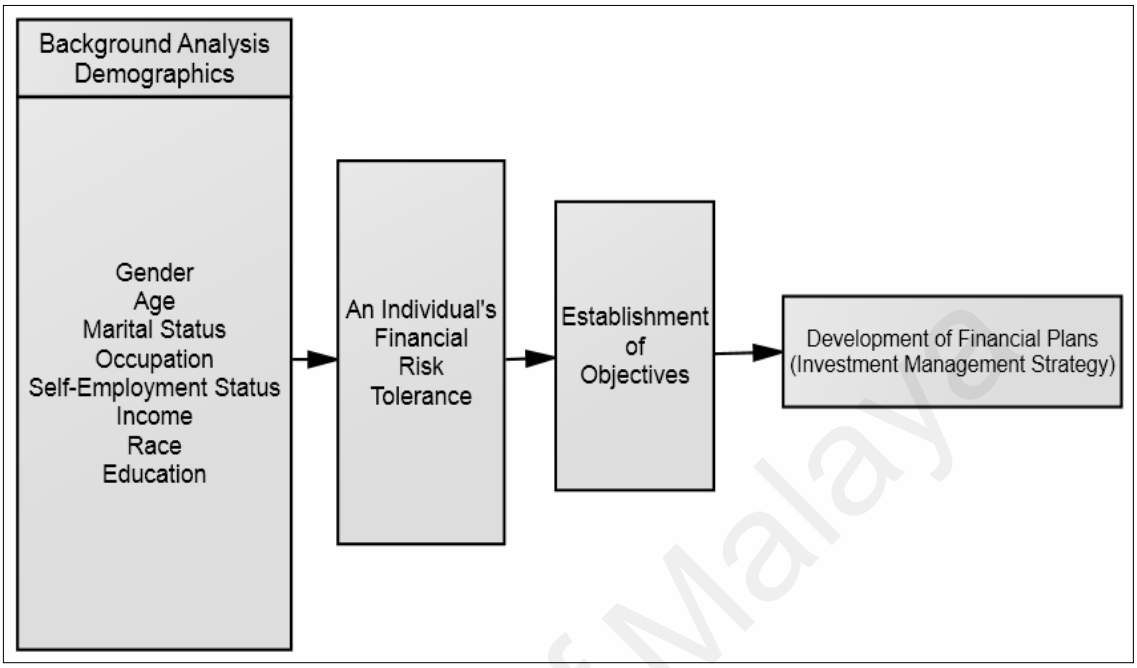


Figure 2.5: Framework for development of financial plans and investment management strategy (Grable, 1997)

Grable (1997) developed a framework (Figure 2.5) to explain the role of demographic characteristics in differentiating individuals' financial risk tolerance as well as the process of how advisors can effectively establish financial plans and investment management strategy. The model is similar to the model previously developed by Leimberg et al. (1993) to establish financial plans and investment decision making process. The Leimberg et al. (1993) framework utilized four stages of individual activities in the process developing investment and financial planning: (a) collecting background information, (b) determining financial objectives, (c) establishing financial plans, (d) and adjusting and executing plans. According to them an important area of individual background analysis has to do with financial risk tolerance (willingness to accept risk) that significantly contribute to the process of developing financial plans. As such, Grable's (1997) framework fits well within Leimberg et al.'s (1993) conceptualization. Both frameworks tend to develop investment management models by

analysing several factors including financial risk tolerance. In addition, Grable (1997) presented how the financial risk tolerance can be operationalized.

2.3 VARIABLES UNDER STUDY

The variables studied in this research were categorized into three groups. There are six independent variables, one dependent variable, and two moderating variables. The independent variables are propensity for regret, propensity for trust, happiness in life, propensity to attribute success to luck, propensity for overconfidence, and propensity for social interaction. The dependent variable is financial risk tolerance (FRT), while religiosity and ethnicity are the two moderating variables. A review of literature for dependent variable is presented first followed by independent variables and moderating variables.

2.3.1 Financial risk tolerance (FRT)

Although classical decision making theory has considered the propensity for high or low risk tolerance as situational (Kahneman & Tversky, 1979), many studies have long regarded that an individual's desire to tolerate high or low risk is a part of personality (e.g. Bromiley & Curley, 1992; Dahlback, 1990; Jackson, Hourany & Vidmar, 1972; Wall, Wood, Leach, Salas, Stagl, Burke, & Ohly, 2005). Generally individuals risk taking ability is high when their level of wealth and income are relatively higher than their liabilities (Borio & Zhu, 2012; Gregory, 1980; Stiglitz, 1969). While financial risk tolerance (willingness to take financial risk) is not always influenced by financial returns, rather it depends more on to demographic, socio-economic, and psychological, (Baron, 2010; Carr, 2014; Grable 1997, 2000; Yao, 2013).

Financial Risk Tolerance (FRT) is defined as the maximum amount of uncertainty that an individual is willing to accept when making any financial decision (Anbar & Eker, 2010; Carr, 2014; Grable, 2000, 2008; Lucarelli & Brighetti, 2011). The researcher considers this definition to define financial risk tolerance throughout this study.

The researcher is using the term financial risk tolerance instead of risk averse or risk seeking for this study because financial risk tolerance represents both and it satisfies the research objectives. Keister (2004) defined risk averse and risk seeking as "people are risk averse for gains with high probabilities and for losses with low probabilities, risk seeking for gains with low probabilities and losses with high probabilities" (p.297). Prior studies have documented that individuals' financial risk tolerance is very helpful for successful financial management (Anbar & Eker, 2010; Carr, 2014; Grable, 2008; Lucarelli & Brighetti, 2011).

Several studies have examined the willingness to take financial risk for different types of investors using many different methods (Cordell, 2001; Grable, 2008; Keister, 2000; Roosen & Hennessy, 2003; Schooley & Worden, 2003). For instance, Kogan and Wallach (1967) and Grable (1997) investigated the association between demographic characteristics and risk tolerance. Mostly prior studies that have analyzed individual financial risk tolerance were based on demographic characteristics (Anbar & Eker, 2010; Grable 1997, 2000; Yao, Gutter, & Hanna, 2005). There are some general consensus in the prior studies about the relationship between demographics and financial risk tolerance (Anbar & Eker, 2010; Roszkowski et al., 1993; Dohmen et al., 2011; Grable 1997, 2000; Pan & Statman, 2012; Yao, 2013):

(a) Males are more financial risk tolerant than females;

(b) increasing age is associated with decreasing financial risk tolerance;

(c) married individuals are less financial risk tolerant than are unmarried individuals;

(d) individuals employed in non-professional occupations, rather than professional occupations, tend to be less financial risk tolerant;

(e) self-employed individuals are more financial risk tolerant than those employed by others;

(f) income is positively linked with financial risk tolerance;

(g) Whites are more risk tolerant than non-Whites; and

(h) financial risk tolerance increases with levels of education.

In addition, there is also consensus among the researchers and investment managers that demographic characteristics can be applied to classify individuals into financial risk tolerance categories and differentiate among levels of individual financial risk tolerance. Nevertheless, there are still some issues with respect to the determinants of financial risk tolerance to be addressed. For instance, Pan and Statman (2012) claimed that there are some shortcomings in tools used for assessing financial risk tolerance as many investors who were assessed as risk tolerant before the global financial crisis in 2008 and 2009 and assigned portfolios heavy in equities dumped their equities as well as their advisors during crisis. They also examined and suggested some factors that should be addressed beyond usual determinants of individuals financial risk tolerance to offer better tools for financial advisors to serve their clients. Thus, the purpose of this study is to examine what other factors that can be used as determinants of financial risk tolerance.

Prior studies have documented that cultural differences in social norms play important role in individuals' financial risk tolerance (Bateman & Munro, 2005; Campbell, 2006; Morin & Suarez, 1983; Yao, 2013). But, individuals' willingness to take financial risk in many countries has not been well documented. However, Yao, Gutter, and Hanna

(2005) found that in the U.S., Whites are more risk tolerant than non-Whites. The information about the financial risk tolerance of different ethnic groups in Malaysia is not well documented. However, Albaity and Rahman (2012a) as well as Albaity and Rahman (2012b) studied several behavioural traits of Malaysians and found that differences exist between races, religions and genders. Nevertheless, financial risk tolerance between different ethnic groups and factors influencing their financial risk tolerance were not explored.

Knowing the factors that influence financial risk tolerance of individuals not only help individuals to be aware of their limitations and strength about financial decision making but also help financial advisors to recommend suitable financial products for the clients to balance their willingness to take risk and returns. Laakso (2010) demonstrates that people who do not have willingness to take higher financial risk (risk averse) are less likely to purchase risky investment like stocks. Some prior studies suggest that financial risk tolerance affects individuals' portfolio composition. Kahneman and Tversky (1979) found that females are one third less willing to take risk than males. Moreover, the most risk tolerant males combined with their personality type should invest 100% in equity base instruments, while the least risk tolerant females combined with their personality type should invest 100% in fixed income instruments. Usually, individuals with low level of financial risk tolerance are less likely to accept risky investment like stock (Laakso, 2010).

According to Yao (2013) financial risk tolerance determines the types of investment an individual will accept and the amount of wealth will be able to accumulate. Individuals that are less willing to take financial risk may end up with inadequate wealth while individuals that are willing to take more financial risks may result in unexpected losses

too. These results help to see the link between financial risk tolerance and investment decision making. It also helps to interpret the relationship among behavioural propensities, financial risk tolerance and their preferred future investments. For example, if this study finds that propensity for overconfidence is positively related to financial risk tolerance (willing to take risk) then it also indicates that individuals with high propensity for overconfidence is more willing to accept risky investment. The probability of accepting risky investment is higher for individuals who have high risk tolerance compared to low risk tolerant ones.

Similarly the relationships between other behavioural propensities (i.e., propensity for regret, propensity for trust, happiness in life, propensity to attribute success to luck, propensity for overconfidence, and propensity for social interaction) and financial risk tolerance are important for both clients and advisors. The understanding of direct and indirect association between behavioural propensities and financial risk tolerance help investment managers to know whether an individual is truly financial risk tolerates or their financial risk tolerances are exaggerated by their propensities. Even though some propensities are intricately related to each other, a proper knowledge about their relationships will help financial advisors to make appropriate adjustments. Furthermore, individual risk tolerance plays important role for the changes of price in the stock market (Shefrin, 2000) which further emphasises the importance of understanding one's financial risk tolerance. Finally, a country like Malaysia with three major ethnic groups along with four major religious affiliations will further make this investigation interesting and challenging.

2.3.2 Propensity for regret (PR)

This section reviews the literature on propensity for regret to observe its relations with financial risk tolerance and demographic factors in order to gain a better understanding of how these individual attributes are correlated. Regret refers to the emotion experienced ‘‘when realizing or imagining that our current situation would have been better, if only we had decided differently” (Zeelenberg & Pieters, 2007, p. 3). A similar definition of regret was proposed by Landman (1993) as “a painful cognitive and emotional state arising from a comparison of what has been with a better state of the world that could have been”. The two most important ideas in the definitions of regret are making alternative decision and better outcomes. However, this study adapts (Zeelenberg & Pieters, 2007) definition of regret as it seems suitable for the current research context. Regret is generated from a comparison between true outcome and the outcome that would have happened if the decision maker would choose alternatively (Bell, 1985; Van Dijk & Zeelenberg, 2002).

The main element of regret is accusing oneself or taking personal responsibility for making mistakes (Joel, MacDonald, & Plaks, 2012). Extensive prior literature on psychology and neurobiology agree with the assumption that regret affects decision making process under uncertainty. Connolly and Zeelenberg (2002, p. 212) for example, noted that ‘‘the emotion that has received the most research attention from decision theorists is regret”. Regret is one such emotion that can have significant influence on risk tolerance and risky decisions (Bailey & Kinerson, 2005).

Regret is one of the factors that are associated with risk taking in behavioural economics. Regret could lead to either risk aversion or risk seeking. Both risk seeking and risk aversions are related to regret and decision making (Inman & Zeelenberg,

2002; Zeelenberg et al., 1996; Zeelenberg & Beattie, 1997; Zeelenberg, 1999). The logic behind the dual relationship is that people tend to embark in regret minimizing process whenever a decision has to be made. This regret minimizing theory lead people to either become risk averse or risk taker. In regret minimizing-risk maximizing, the relationship is established when individuals are asked how regret will influence their current decisions (i.e. how would you feel if you made the wrong decision now?).

People tend to shield themselves against future regret by avoiding risk now hence opt for the less risky decision. For instance, Reb (2008) pointed out that people who have high levels of regret tend to make more careful decisions. In contrast, regret could lead to risk seeking behaviour (Reb & Connolly, 2009). This would have happened if the individual is faced with two options or more where one is more risky than the others and there is always feedback on the outcome of the riskier option. Therefore, if an individual faced with two choices where one is riskier than the other opting for the less risky option lead to regret if the riskier option turned out to be better than the less risky option (Larrick & Boles, 1995; Ritov, 1996). As a result, in many occasions, regret aversion of a bank's chief executive officer (CEO) makes the bank more tolerant to financial risks (Tsai, 2012). This result indicates that regret may have positive relation with financial risk tolerance. While, Bell (1982) found evidence that the relationship between regret and risk aversion is positive. This indicates that people who have high propensity for regret tend to have less financial risk tolerance. However, Pan and Statman (2012) found no correlation between regret and risk tolerance. The mix findings about the relationship between regret and risk tolerance demand for the reinvestigation of the relationship.

Thus, this study investigates the relationship between propensity for regret and financial risk tolerance by developing and testing the hypothesis. Financial advisors need to understand the relationship between propensity for regret and financial risk tolerance to make appropriate adjustments in the process of measuring individuals' financial risk tolerance as propensity for regret may exaggerate or underestimate the level of risk tolerance. Individuals' propensity for regret is important to financial advisors even if it is unrelated to financial risk tolerance as it guides individuals toward fitting portfolios.

The existing literature also suggests that regret has relationship with happiness and depression in life. For instance, Schwartz et al. (2002) noted that regret is correlated with lower level of happiness and higher level of depression in life. Furthermore, propensity for regret is positively related to maximization attitude (Nenkov, Morrin, Ward, Schwartz, Hulland, 2008; Pan & Statman, 2012). Regret is ever existing emotion among the people who have high propensity for maximization as they have always doubt that they could not make the best decision (Nenkov et al., 2008). This result indicates that people who have high propensity for regret look for perfection in their decision and get more depressed than satisficers. This could lead them to be demanding investors and high level of risk tolerant. The existing literature also suggests that propensity for regret is positively correlated with belief in luck over skill while negatively correlated with trust, overconfidence and happiness in life (Pan & Statman, 2012). These findings show that propensity for regret has links with many factors that are directly or indirectly related to financial risk tolerance. Thus, knowledge about the influence of propensity for regret could be beneficial for financial advisors in advising clients for making more appropriate investment allocation even if it turns out as unrelated to financial risk tolerance.

This is because financial choices or financial decisions making open the door to regret whether it is about buying a stock or selling stocks.

The propensity of regret is related to gender, age, race, culture, religion, religiosity and others. Men have lower propensity for regret than women and the relatively old have a lower propensity for regret than the relatively young (Pan & Statman, 2012). While, Statman (2008) found that women and men are almost equal in terms of regret. Hillier and Barrow (2014) reported that both white male and female workers show lower level of regret compared to white male and female. Albaity and Rahman (2012) demonstrated that Malaysian students have high levels of propensity for regret which is similar to the finding of Statman (2008). They also noted that there is a significant difference between religious affiliations and regret. For example, they found in Malaysia, the level of regret among Buddhists is higher compared to Christians and Muslims. They also suggested that individual risk taking behaviour seems to be negatively correlated with regret. The findings also show that propensity for regret has link with demographic factors that are directly or indirectly related to financial risk tolerance.

Thus, knowledge about the relationships between demographic factors and propensity for regret could be beneficial for financial advisors in advising clients for making more appropriate investment allocation. Therefore, this study investigates whether there is a significant difference between genders as well as ethnic groups with respect to propensity for regret.

2.3.3 Propensity for trust (PT)

Trust has been playing a role across many fields, including philosophy, psychology, sociology, economics, management, marketing, computer science etc. However, trust is also being considered recently in financial analysis particularly after the introduction of behavioural finance. Therefore, this section reviews the literature on propensity for trust to observe its relations with financial risk tolerance. Prior studies have documented many definitions of trust as it depends on context where it is applied (Mayer, Davis, & Schoorman, 1995; Mc-Knight, Cummings, & Chervany, 1998; Rousseau, Sitkin, Burt, & Camerer, 1998; Butler & Cantrell, 1984; Rotter, 1967; Webb & Worchel, 1986; Kee & Knox, 1970; Lewis & Weigert, 1985; Zand, 1972). For example, Mayer et al. (1995) defined trust as trustor's willingness to be vulnerable of trustee's actions, hoping the trustee will execute a particular action. Three years later, Rousseau et al. (1998) came up with a similar definition about trust "trust as a psychological state comprising the intentions to accept vulnerability based on positive expectations of the actions of the trustee" (p. 395).

However, two primary factors are common in both definitions: (1) Intention to allow vulnerability (e.g., Boon & Holmes, 1991; Deutsch, 1958; Govier, 1994; Zand, 1972), and (2) positive expectations (e.g., Barber, 1983; Boon & Holmes, 1991; Cook & Wall, 1980; Golembiewski & McConkie, 1975; Read, 1962; Roberts & O'Reilly, 1974). After couple of years, few researchers defined trust as the ''voluntary transfer of a good or favor to someone else, with future reciprocation expected but not guaranteed" (Gunnthorsdottir, McCabe, & Smith, 2002, p. 50). Considering the main financial aspects of the definition researcher, found Rousseau, et al. (1998) definition is suitable for the current study. This study aims to adopt Rousseau, et al. (1998) definition of trust

which is regarded as *"Trust as a psychological state comprising the intentions to accept vulnerability based on positive expectations of the actions or behaviour of another"*.

In investigating the relationship between trust and risk taking attitude, Luhmann (1979) found that there is a positive relationship between trust and risk taking, while Yamagishi and Yamagishi (1994) argued that trusting is equal to risk taking. Statman (2008) suggested that people who trust others are more willing to take risk. Furthermore, Luhmann (1988) suggested that risk must exist for trust to occur and when trust occur more risk will be attractive. However, some studies that found the negative relationship between trust and perceived risk are Siegrist (2000), Siegrest et al. (2000), Sjoberg (2001), Viklund (2003), and Olsen (2008). Moreover, studies have found that perceived risk significantly affects individuals' decision-making process (Weber & Hsee, 1998, Tsai, 2010). But some studies found little or no correlation between propensity for trust and overall level of risk aversion or risk tolerance (Ashraf, Bohnet, & Piankov, 2006; Eckel & Wilson, 2004). While in a study, Hurley (2006) found that people risk tolerance has a significant impact on their willingness to trust the trustee. The mix findings about the relationship between propensity for trust and risk tolerance further demand for the investigation of the relationship.

Thus, this study investigates the relationship between propensity for trust and financial risk tolerance by developing and testing the hypothesis. However, financial advisors need to understand the relationship between propensity for trust and financial risk tolerance to make appropriate adjustments in the process of measuring individuals' financial risk tolerance as propensity for trust may exaggerate or underestimate the level of risk tolerance.

Individuals' propensity for trust is important to financial advisors even if it is unrelated to financial risk tolerance as it guides individuals toward appropriate portfolios.

The literature on trust reports that propensity for trust is correlated with other propensities such as happiness in life, propensity for regret, attribute success to luck over skill, etc. (Albaity & Rahman, 2012; Pan & Statman, 2012). These studied have found that individuals who trust others more are happier than who do not. In other word, there is a positive correlation between trust and happiness in life. Moreover, they also found a significant positive relationship between propensity for trust and attributing success to luck over skill, whereas significant negative correlation was reported for the relationship between trust and propensity for regret. However, both Albaity and Rahman (2012) as well as Pan and Statman, (2012) found positive but insignificant relationship between trust and overconfidence. These findings indicate that people who have high propensity for trust are less regretful, happier in life, usually attribute success to luck over skill and might be overconfident (as overconfident was reported insignificant). These attributes could lead them to be highly risk tolerant. These findings show that propensity for trust has link with many factors that are directly or indirectly related to financial risk tolerance. Thus, knowledge about the influence of propensity for trust could be beneficial for financial advisors in advising clients for making more appropriate investment allocation even if it turns out as unrelated to financial risk tolerance. Furthermore, trust influences people to accept suggestions from advisors when consulting with financial planners or advisors for choosing portfolios. Therefore, it is very important for both clients and advisors to know about their level of interpersonal trust. Thus, this study measures the level of trust among the target population and shows the relations between propensity for trust and other propensities using correlation tests.

The propensity of trust is related to gender, age, race, culture, religion, etc. Men have lower propensity for trust than women (Albaity and Rahman, 2012) and the relatively old have a higher propensity for trust than the relatively young (Pan & Statman, 2012). While, Statman (2008) found women have less propensity for trust than men. But in a recent study, Pan and Statman (2012) found no significant difference in propensity for trust among men and women. These mix findings demand reinvestigation of the relationship between gender and propensity for trust. Alesina and LaFerrara (2002) found that there is a significant impact of having heterogeneity individuals on behavioural propensities such as trust since people tend to trust those people who share similar characteristics with them. Yao et al. (2005) noted that in the U.S., Whites are more risk tolerant than non-Whites. There is an obvious association between race and stock market participation and stock purchase is heavily influenced by levels of risk tolerance (Hong et al., 2005). For example, Hong et al. (2005) found that the non-Hispanic individuals' stock market participation rate is much higher, when controlling for education level and wealth. Studies have found that trust has an important impact on stock market participation and trust is also highly linked to ethnic background (Guiso, Sapienza, & Zingales, 2008). But, Alesina and LaFerrara (2002) found no significant association between ethnic origins and trust.

The above findings indicate that propensity for trust has link with demographic factors that are directly or indirectly related to financial risk tolerance. Thus, knowledge about the relationships between demographic factors and propensity for trust could be beneficial for financial advisors in advising clients for making more appropriate investment allocation. Therefore, this study investigates whether there is a significant difference between genders as well as ethnic groups with respect to propensity for trust.

2.3.4 Happiness in life (HL)

At early phase of behavioural science, Davis (1981) defined happiness in terms of desire, belief, and thought. More precisely, happiness is defined as "total satisfaction that is satisfaction with life as a whole" (Diener, Emmons, Larsen, & Griffin, 1985; Tatarkiewiez, 1976). Moreover, in recent literature, for example, Kalyuzhnova and Kambhampati (2008) defined happiness "as an affective measure related to people's moods and emotions" (p.286). Prior studies have treated happiness as a synonymous of life satisfaction (Veenhoven, 1991).This section reviews the literature on happiness in life to observe its relations with financial risk tolerance. In this study happiness in life refers to financial happiness/satisfaction in life. Therefore, items of this measure will be more reflective of "financial happiness/satisfaction" in life. However, to make it more simple and understandable to the layman, the author will be using the term "happiness in life" throughout the study instead of financial happiness/satisfaction in life.

Happiness has been played a role across many fields, including philosophy, psychology, sociology, economics, management, marketing, computer science and others. Behavioural economics studies individuals' behaviour to assist them in making various decisions rather than sticking to the assumption that individuals only like to maximize their "utility" (Dean, 2007).

However, the researcher adopts Tatakiewiez (1976) definition of happiness "happiness refers to total satisfaction that is satisfaction with life as a whole" (p.8) as the definition of happiness in life for this study. Easterlin (1974) found a positive relationship between happiness and individual income in US. Similar results were found in UK, Germany, Italy, Netherlands and Japan (Blanchflower & Oswald, 2004; Easterlin, 1995; Frey & Stutzer, 2002; Graham & Pettinato, 2002; Layard, 2005; Statman, 2008). While, Frey

and Stutzer (2002) reported that there is no clear cut negative or positive relationship between income and happiness. Argyle (1999) in his book mentioned that higher income is associated with greater happiness, although the relationship between income and happiness is stronger in relatively low-income countries than in relatively high-income countries such as the United States which was on average constant between 1942 and 1991. Few studies that have linked happiness to financial satisfaction include Michalos (1991), Michalos and Orlando (2006) and Van Praag et al (2010).

Happiness seems to increase with income up to a certain point, but not beyond it. Isen and Patrick (1983) reported that people who have high level of happiness in life tend to have low level of risk tolerance. The finding indicates a negative relationship between happiness in life and risk tolerance. On the other hand, Laakso (2010) documented a positive link between happiness and optimism. Some earlier studies found a positive link between optimism and high financial risk tolerance (Weinstein, 1980, 1984). Felton, Gibson, and Sanbonmatsu (2003) for instance, show that optimistic individuals are more willing to look for risky investment opportunities. Furthermore, Puri and Robinson (2007) noted that high level of optimistic individuals are more likely to own stocks compare to moderate level of optimistic individuals. Moreover, Chou, Lee and Ho (2007) revealed that people tend to tolerate more risk when they are in happy mood than sad mood. However, Pan and Statman (2012) found insignificant relationship between life satisfaction and risk tolerance. The above findings provide evidences for promising positive and negative relationship between happiness in life and risk tolerance.

The mixed findings about the relationship between happiness in life and risk tolerance further demand for the investigation of the relationship. Hence, this study aims to

investigate the relationship between happiness in life and financial risk tolerance by developing and testing hypothesis. Advisors need to understand the relationship between happiness in life and financial risk tolerance to make appropriate adjustments in the process of measuring individuals' financial risk tolerance as happiness in life may exaggerate or underestimate the levels of risk tolerance.

The literature on happiness in life reveals that happiness in life is correlated with other propensities such as propensity for overconfidence, propensity for regret, propensity for trust (Albaity & Rahman, 2012; Pan & Statman, 2012; Schwartz et al., 2002). Schwartz et al. (2002) using Simon's (1957) concept of satisficer studied the relations between happiness, maximization, regret, and optimism among other variables and found that happiness was negatively related with maximization and optimism. While, insignificant relationship between happiness and maximization was reported by Albaity and Rahman, (2012), and Pan and Statman (2012). Furthermore, Pan and Statman (2012) reported that people who are happy in life have high level of trust and overconfidence, while tend to have low level of regret. In addition, Albaity and Rahman (2012) disclosed that happiness makes people more confident and more trusting but they did not find any relationship between happiness, regret, maximization, and belief in luck. The above findings indicate a positive relationship between happiness, overconfidence and trust while negative or no relationship with regret. These attributes influence individuals to be either high or low financial risk tolerant.

The above findings show that happiness in life has link with many factors that are directly or indirectly related to financial risk tolerance and decision making behaviour. Thus, knowledge about the influence of happiness in life could be beneficial for financial advisors in advising clients for making more appropriate investment allocation

even if it turns out as unrelated to financial risk tolerance. Therefore, it is very important for both clients and advisors to know about their level of happiness in life. This study reports the relationships between happiness in life and other propensities using correlation tests.

Moreover, happiness is also linked to gender, age, race and others. For instance, Statman (2008) reported that men are less happy in their life than women. Meanwhile, some studies found no statistically significant relationship between happiness in life and gender (e.g. Albaity & Rahman, 2012; Pan & Statman 2012). In addition, Pan and Statman (2012) found that younger people are less happy in their life than older ones. However, in a recent study, Kalyuzhnova and Kambhampati (2008) investigated the determinants of individual happiness in Kazakhstan and found that ethnic Kazakhs are happier than ethnic Russians. Argyle (2003) noted that in South Africa, whites are happier than Indians, coloreds, and blacks. This study aims to examine the linkage between happiness in life and ethnic group in Malaysia as the population is a mixture of Malay, Chinese and Indians.

The above findings indicate that happiness in life has link with demographic factors that are directly or indirectly related to financial risk tolerance and decision making behaviour. Thus, knowledge about the relationships between demographic factors and happiness in life could be beneficial for financial advisors in advising clients for making more appropriate investment allocation. Therefore, this study investigates whether there is a significant differences between genders as well as ethnic groups with respect to happiness in life.

2.3.5 Propensity to attribute success to luck (PASL)

The concepts of belief in luck have been a central part of a number of recent studies in psychology, philosophy, marketing, economics, and behavioural finance. Luck refers to some folk conceptions: unstable and uncontrollable forces (Heider, 1958; Weiner, 1974) stable force that tends to influence events in one's own favor (Young, Chen, & Morris, 2009), luck is a deployable personal force that enhance the feeling of personal agency (Wohl & Enzle, 2002). On the other hand, skill is defined as a personal quality that tends to influence individuals to believe that outcomes are determined by one's own actions (Levenson 1974, 1981). In a study, Darke and Freedman (1997) illustrated that luck is a personal quality and somewhat constant over time. They also mentioned that people try to control luck by performing many common superstitions and rituals. Gamblers, for example, blow on dice before throwing them (Henslin, 1967; Langer, 1977). However, in this study, the definition of luck by Darke and Freedman (1997) as well as Young et al. (2009) has been adopted in order to define propensity to attribute success to luck.

Prior studies found a significant association between belief in good luck and positive expectation for the daily life decisions' outcomes (Darke & Freedman, 1997; Kelley, 1967; Rotter, 1966; Weiner et al., 1972). According to social learning theory, success and failure usually depends on four causal factors-luck, skill, effort, and task difficulties (Weiner, Nierenberg, & Goldstein, 1976, Darke & Freedman, 1997). People tend to attribute success to their own skills and failures to bad luck (Duval & Silvia, 2002). Blaine and Crocker (1993) found that individuals with high self-esteem believe that they are lucky and tend to exaggerate their control over events, especially successful events. Camerer and Lovallo (1999) reported lower level of luck when skill is not accounted for. Armor and Taylor (2002) indicate that greater uncertainty can induce greater

optimism such that people become risk taker. Certainly, the inclusion of a skill component might increase risk taking. Putting it differently, if skill does not help in success, luck can ignite optimistic beliefs and this beliefs lead to take more risk. Some studies that found positive relationship between experienced good luck and financial risk tolerance are Hanna, Waller, & Finke (2008), and Post,Van Den Assem, Baltussen, & Thaler (2008).

However, Pan and Statman (2012) noted that high risk tolerance is linked to high level of belief in luck over skill. In a recent study, Albaity and Rahman (2012) investigated the correlation between belief in luck and portfolio risk and they found that there is a positive relation between belief in luck and portfolio risk. This finding indicates that people who attribute success to luck are more willing to take financial risk. Therefore, this study aims to investigate the relationship between propensity to attribute success to luck and financial risk tolerance by developing and testing hypothesis. However, financial advisors need to understand the relationship between propensity to attribute success to luck over skill and financial risk tolerance to make appropriate adjustments in the process of measuring individuals' financial risk tolerance as attribute success to luck may exaggerate or underestimate the true level of risk tolerance.

The literature on belief in luck over skill for successful outcomes reports that propensity to attribute success to luck is correlated with other propensities such as propensity for regret, propensity for overconfidence, propensity for trust, optimism, satisfaction in life, etc. (Albaity & Rahman, 2012; Darke & Freedman, 1997; Maltby, Day, Gill, Colley, & Wood, 2008; Pan & Statman, 2012). In a study, Maltby et al. (2008) reported that belief in luck for successful outcomes of Shares is significantly positively associated with optimism and satisfaction in life while Pan and Statman (2012) found insignificant

relationship between belief in luck over skill and satisfaction in life. This finding indicates that propensity to attribute success to luck might be correlated to happiness in life. Furthermore, many individuals have high regard of their own decision (buying high performing stocks) making skills and confident to have the best options. Darke and Freedman (1997) found a positive relationship between belief in luck for successful outcomes and overconfidence. While, some studies have found significant negative relationship between belief in luck and overconfidence (e.g. Pan & Statman, 2012; Albaity & Rahman, 2012).

Albaity and Rahman (2012) reported that individuals who belief in luck for the successful outcomes tends to have less regret for their choices while, Pan and Statman (2012) reported inverse relationship. Albaity and Rahman (2012) also found that people who have high level of belief in luck tend to have high propensity for trust, which is similar to Pan and Statman (2012) findings. So the findings can be summarized in a way that people who have high propensity to attribute success to luck are less regretful, more or less overconfident, satisfied in life, and have high propensity for trust. These attributes could lead them to be high or low financial risk tolerant. These findings show that propensity to attribute success to luck has link with many factors that are directly or indirectly related to financial risk tolerance. Thus, knowledge about the influence of propensity to attribute success to luck could be beneficial for financial advisors to guide clients for making more appropriate investment allocation even if it turns out as unrelated to financial risk tolerance. Therefore, it is very important for both clients and advisors to know about their level of propensity to attribute success to luck. Thus, this study measures the level of propensity to attribute success to luck among the target population and reports the relations between propensity to attribute success to luck and other propensities using correlation tests.

In a study, Stipek and Gralinski (1991) surveyed 194 3rd graders and 279 junior high school students and found that boys attributed success to luck less than girls. This finding indicates that men have lower tendency to attribute success to luck than women, which is in line with Pan and Statman (2012) findings. Furthermore, previous studies also show that females prefer luck based decisions while males prefer skill based decisions (Deaux, White, & Farris, 1975). Meanwhile, Day and Maltby (2003) found insignificant differences between men and women. These mix findings demand reinvestigation of the relationship between gender and propensity to attribute success to luck.

The above findings indicate that propensity to attribute success to luck has link with demographic factors that are directly or indirectly related to financial risk tolerance and decision making behaviour. Thus, knowledge about the relationships between demographic factors and propensity to attribute success to luck could be beneficial for financial advisors in advising clients for making more appropriate investment allocation. Therefore, this study examines possible associations between propensity to attribute success to luck and genders and ethnic groups.

2.3.6 Propensity for overconfidence (POC)

In this section, researcher reviews the literature that demonstrate the relations between propensity for overconfidence, financial risk tolerance, and demographic factors in order to gain a better understanding of how these individual attributes are correlated. The term overconfidence is a robust phenomenon which has been widely investigated in psychology and received increasing attention in the behavioural science literature particularly in behavioural economics. It has been shown that overconfidence influences individuals' investment decision making, particularly on trade behaviour and financial

markets. For instance, previous researchers have identified three main consequences of overconfidence in the context of financial markets such as excessive trade (Odean, 1999; Barber & Odean, 2000; Kim & Nofsinger, 2002; Statman, Thorley, & Vorkink, 2006; Glaser & Weber, 2007), too much volatility (Daniel, Hirshleifer, & Subrahmanyam, 1998; Gervais & Odean, 2001), and both over and under reaction to information (Daniel et al., 1998; Daniel & Titman, 1999; Lee & Swaminathan, 2000; Glaser &Weber, 2007). In all, to sum up the findings from the literature on overconfidence in the context of financial markets, overconfident investors tend to overestimate the precision of their knowledge or their abilities. As a result, they hold riskier portfolios like risk tolerant investors (Barber & Odean, 2000; Dorn & Huberman, 2005). This finding provides evidence for the direct relationship between overconfidence and risk tolerance.

Overconfidence has been defined as overestimation of one's own ability in decisions making, better than average, positive self-image, self-serving bias as impractical optimism, and over optimism (Lambert, Bessiere, & N'Goala, 2012; Rosa, 2011). The current study adopts Rosa's (2011) definition of overconfidence, which is regarded as "overestimating the probability of favorable outcomes" (p.429).

Despite extensive research in overconfidence about financial decision, few studies have investigated the relationship between individuals' overconfidence and financial risk tolerance. In risk tolerance literature, the impacts of overconfidence have been insufficiently studied (Albaity & Rahman, 2012; Pan & Statman, 2012). In this study, the researcher investigates the impacts of overconfidence on financial risk tolerance and reports its relationship with other propensities. Previous studies mainly focused on the relationship between overconfidence and excessive trade (Barber & Odean, 2000, 2001;

Odean, 1999). They suggested that too much trading and earning low returns can be explained by overconfidence. They claim that overconfident investors tend to overestimate the precision of the information leading them to overestimate their gains which motivate them to trade too much even though they earn lower returns. Moreover, overconfidence clearly influences individuals' behaviour when they face comparatively complex tasks, investment decisions for example. Therefore, overconfidence may influence individual to underestimate financial risks and invest more in risky investment such as stocks.

Overconfidence can influence the measurement of financial risk tolerance since less-overconfident individuals tend to perceive risk as higher than overconfident individuals (Pan & Statman, 2012). This finding indicates that overconfidence might be related to individual financial risk tolerance. Financial advisors need to understand the relationship between overconfidence and financial risk tolerance to make appropriate adjustments in the process of measuring their financial risk tolerance as overconfidence may exaggerate the level of risk tolerance. Individuals' overconfidence is important to financial advisors even if it is unrelated to financial risk tolerance as it guides individuals toward appropriate portfolios. Usually overconfident individuals tend to resist advice regarding diversifying their portfolios (Pan & Statman, 2012). This finding indicates that individual high propensity for overconfident might be positively correlated with high financial risk tolerance.

Numerous measures and techniques have been employed to understand risk tolerance-the majority of the prior studies have suggested that there is a positive relationship between overconfidence and risk tolerance (opposite for risk aversion) (Hassan, Khalid, & Habib, 2014; Lambert, Bessière & Goala, 2012; Pan & Statman, 2012). Odean (1998)

noted that rational investors possess less risky portfolios than overconfident investors. Similar findings have been documented by Gervais and Odean (2001) and Kim and Nosfinger (2002). Moreover, these studies also noted that rational investors have higher performance than overconfident investors. Nevertheless, some studies have found no relations between risk tolerance and overconfidence (Frascara, 1999; Heath & Tversky, 1991; Kirchler & Maciejovsky, 2002). Doerr, Toman and Schmidt (2011) found that overconfidence is highly correlated to farmers' risk tolerance. Based on these persuasive findings, in this study, the researcher supposes that there is a positive relationship between the propensity for overconfidence and financial risk tolerance. However, overconfidence could have direct or indirect relations with other behavioural propensities that have direct relationship with financial risk tolerance as observed by Pan and Statman (2012) that some propensities are intricately related with other propensities. However, individuals' propensity for overconfidence is important to financial advisors even if it is unrelated to financial risk tolerance as it guides individuals toward appropriate portfolios.

The literature on overconfidence shows that overconfidence is correlated with other propensities such as happiness in life, attribute success to luck over skill and others. (Albaity & Rahman, 2012; Pan & Statman, 2012). Darke and Freedman (1997) found a positive relationship between belief in luck for the success and overconfidence. Furthermore, Pan and Statman (2012) noted that overconfidence is positively correlated with trust and happiness in life while negatively correlated with attribute success to luck over skill, and regret. This result indicates that people who have high propensity for overconfidence are more trusting and happy in their life than less confident people. This could lead them to be highly risk tolerant. These findings show that propensity for overconfidence has link with many factors that are directly or indirectly related to

financial risk tolerance and decision making behaviour. Thus, knowledge about the influence of propensity for overconfidence could be beneficial for financial advisors in advising clients for making more appropriate investment allocation even if it turns out as unrelated to financial risk tolerance. This is because financial choices or financial decisions making depends on investors' overconfident whether it is about buying a stock or selling stocks. Therefore, this study also reports the relations between propensity for overconfidence and other propensities using correlation tests.

Moreover, according to the literature, men and women are found to be different in terms of overconfidence (Baber & Odean, 2001; Lundeberg, Fox & Puncochar, 1994). For instance, Baber and Odean (2011) noted that men and women exhibit the overconfidence bias by trading excessively however, men tend to be more overconfident than women. Women being less overconfident than men can be linked to their risk tolerance behaviour in general. Similar results have been observed by Albaity and Rahman (2012), Bengtsson, Persson, and Willenhag (2005) as well as Pan and Statman (2012). Moreover, studies also found that race have a significant impact on the level of overconfidence (Albaity & Rahman, 2012; Menkhoff, Schmeling, & Schmidt, 2013). Chinese are more overconfident than Indians and Indians are more overconfident than Malay (Albaity & Rahman, 2012). These findings suggest that propensity for overconfidence has link with demographic factors that are directly or indirectly related to financial risk tolerance. Thus, knowledge about the relationships between demographic factors and propensity for overconfidence could be beneficial for financial advisors in advising their clients. Hence, this study investigates whether there is a significant difference between genders as well as ethnic groups with respect to propensity for overconfidence.

2.3.7 Propensity for social interaction (PSI)

Social interaction has been playing a role across many fields, including sociology, economics, management, marketing, finance and others (Hong, Kubik, & Stein, 2005; Nofsinger, 2005; Statman, 2008). However, social interaction or sociability is also being considered recently in financial analysis particularly after the introduction of behavioural finance (Baker & Nofsinger, 2002). Behavioural economics are studying individuals' behaviour to assist them in making various decisions rather than being stick to the assumption that individuals only maximize their "utility" and investors are rational (Dean, 2007). Hong et al. (2005) have defined social households as "those who interact with their neighbours, or attend religious programs" (p.137). Thus, this study has defined social interaction or sociability as *the degree of individuals' involvement with their neighbours.*

Social interaction is related to willingness to take risk, stock market participation and other investments decision making (Hong, Kubik, & Stein, 2005; Lu, 2011; Statman, 2008). Similarly, Hsee and Weber (1999) noted that people of collective societies have high risk tolerance than people from individualistic societies because if they are in trouble then the society will provide a cushion. This indicates that people tend to tolerate high risk for any decision that has social confirmation as it serves as a shield against regret and it reduces the salience of risk (Cooper & Rege, 2011). However, Hong, Kubik, and Stein (2005) noted that social interaction is positively related to stock market participation. Meanwhile, some studies found that people who have high financial risk tolerance tend to buy more stocks (Baker & Nofsinger, 2002; DeBondt, 1998; Guiso et al., 2008; Renneboog & Spaenjers, 2012). This indicates a possible direct relationship between social interaction and financial risk tolerance.

Meanwhile, some studies that found significant relationship between various aspects of social interaction and individual decision making are Cook and Oliver (2011), Lu (2011), Nofsinger (2005), and Renneboog and Spaenjers (2012). Notably, some of the prior studies show the importance of peer-group effects on individuals' financial decision making process, for example, Madrian and Shea (2001) and Duflo and Saez (2002) demonstrate that individuals' participation decision in employer-sponsored retirement plans are influenced by the choice of their co-workers. This basically means that an individual decision influences other individual decision making process. Furthermore, prior studies also documented that if a mutual fund manager and a retail investor are neighbor then their trades are correlated (Hong, Kubik, & Stein ,2005; Ivkovic & Weisbenner, 2007; Shive, 2010).

The above findings indicate possible direct relationship between social interaction and individual investment decision making which is ultimately linked to financial risk tolerance (Bromiley & Curley, 1992; Dahlbäck, 1990). Therefore, this study aims to investigate the relationship between propensity for social interaction and financial risk tolerance by developing and testing the hypothesis that there is a positive relationship between the propensity for social interaction and financial risk tolerance. However, financial advisors need to understand the relationship between propensity for social interaction and financial risk tolerance to make appropriate adjustments in the process of measuring individuals' financial risk tolerance as propensity for social interaction may exaggerate or underestimate the level of true risk tolerance.

The literature on social interaction reveals that propensity for social interaction is related to other behavioural factors such as overconfidence, trust, regret, and happiness in life (Conner, Powers, & Bultena, 1979; Dunning, Griffin, Milojkovic, & Ross, 1990;

Dwyer, Hiltz, & Passerini, 2007; Tourani-Rad & Kirkby, 2005). Similarly, Zarnoth, and Sniezek (1997) found people show more confidence when work in a group than alone. They also suggested that interaction between group members provide greater confidence and greater influence to complete the task. However, Tao (2006) noted that both social interaction and trust are positively related to stock market participation. The author also indicated that trust increases with high level of social interaction and vice versa. Social interaction may decrease one's level of regret for daily life decision that involves risk and uncertainty (Cooper & Rege, 2011). They also revealed that under risk and uncertainty, social regret is a potentially powerful source of social interaction effects. In other words, people who interact more with other people have less regret than who do not. Conner et al. (1979) found positive relationship between social interaction and life satisfaction or happiness in life. Furthermore, in a study by Lu and Shih (1997), a qualitative analysis was performed to develop perceived sources of happiness. They found harmony of interpersonal relationships as one of the major sources of happiness.

The relationships found above indicate that people who have high propensity for social interaction are less regretful, happier in life, overconfident, and have high interpersonal trust. However, Alesina and LaFerrara (2002) found negative relationship between social interaction and trust among Black Americans. The relationships between the behavioural factors could lead people to be high or low financial risk tolerant. These findings show that propensity for social interaction has link with many factors that are directly or indirectly related to financial risk tolerance and decision making behaviour. Thus, knowledge about the influence of propensity for social interaction could be beneficial for financial advisors in advising their clients for making more appropriate investment allocation. Therefore, it is very important for both clients and advisors to have knowledge about client's level of social interaction. Hence, this study aims to

measure the level of social interaction among the target population and reports the relations between propensity for social interaction and other propensities.

The propensity for social interaction is related to gender, and race (Alesina & La Ferrara, 2002; Andrews, Brewin, & Rose, 2003). According to Alesina and La Ferrara (2002), men participate more in social activities than women because of the time constraint. In other words, men maintain high social interaction than women. They also noted that Black Americans participate more in social activities than White Americans. The above findings indicate that propensity for social interaction has link with demographic factors that are linked related to financial risk tolerance. Thus, knowledge about the relationships between demographic factors and propensity for social interaction could be beneficial for financial advisors in advising their clients. Therefore, this study investigates whether there is a significant difference between genders as well as ethnic groups with respect to propensity for social interaction in Malaysia.

2.3.8 Religiosity (REL)

In recent years, religiosity has been investigated widely to observe the relationship between religiosity and daily life activities. Religiosity, as noted by Eid and El-Gohary (2015) differs from religion. Prior studies have identified four basic dimensions of religiosity: cognitive, emotional, behavioural, and motivational (Keelson, 2012; Riquelme, 2001). However, researchers face difficulties in defining religiosity due to its subjectivity. Riquelme (2001) defined religiosity as personal beliefs about one's religion, feelings about many aspects of the religion, and actions towards religious obligation like attending religious activities, reading religious books, doing charities and others. Religiosity captures the degree to which individuals understand the world around

them in terms of religious beliefs, which may or may not be influenced through their involvement in religious activities, but are not constituted by attendance.

Religiosity has been understood to include both the components of religious participation and religious beliefs. Deciding how to conceptualize religiosity requires an understanding of the causal mechanisms of these components of religion as they pertain to religious devotion. Liu (2002) developed two kinds of religiosity which are known as mature religiosity and immature religiosity. Immature religiosity is now known as extrinsic religiosity that uses to develop personal connection with society through attending religious activities and God through praying for personal benefits (Singh & Goyal, 2009). There is a positive relationship between extrinsic religiosity and fear (Dewenter, Haucap, Luther, & Rötzel, 2007). In general, fear influences an individual's risk attitudes as well as decisions making. Mature religiosity is currently known as intrinsic religiosity that refers one's deep faith about God's presence in life which is positively correlated with tolerance and self-control (Geroski, Thompson, & Toker, 1989). According to Balakrishnan and Raj (2012) "intrinsic religiosity reflects the extent to which religion is the primary motivating factor in people's lives, drives behaviour, and influences decision-making." Based on the above discussion it is clear that extrinsic religiosity motivates people to use religion for their personal benefits whereas intrinsic religiosity influences people to follow religious teaching in their daily life activities. Prior studies have documented that extrinsic religiosity has positive correlation with racial prejudice and intrinsic religiosity has negative correlation with racial prejudice (Singh & Goyal, 2009). In addition, Mei Min, Ling Hong, Jian Ai, and Pei Wah (2011) found that extrinsic religiosity is positively correlated with negative attributes such as depression, irrationality, anxiety, and prejudice. So, it can be

concluded that religiosity influences individuals' economic and financial decisions making as religiosity enhances social interaction.

Tan and Vogel (2008) has defined religiosity "as the extent to which one ascribes to the beliefs, experiences, and rituals of a religion" (p.833). The researcher will adopt Tan and Vogel's definition of religiosity in this study as it satisfies the research objectives. Demaria and Kassinove (1988) found that religiosity is a very important guilt predictor. Religiosity has strong influence on people's beliefs and preference. For example, Helms and Thornton (2012) demonstrated a positive relationship between religiosity and charitable behaviour. Prior studies have found that people show common beliefs and preference when they are raised religiously (Guiso, Sapienza, & Zingales, 2003). Similarly, studies show that there is a positive relationship between individual religiosity, people's ethical behaviour and the level of risk tolerance. For instance, Hess (2012) found that religiosity significantly influences individual financial decision making behaviour. The author also found that people who live in the area where religious social norm is very strong has less bankruptcies cases compare to the people who are living in the lower level of religiosity area. Several other studies also documented that there is a strong relationship between religiosity and personal behaviour (Iannaccone, 1998; Lehrer, 2004).

Lehrer (2004) also noted that religiosity affects people economic and demographic behaviour due to its beneficial effects of religious involvement. However, religiosity not only affects the individual economic behaviour but also affect the firm behaviour. For example, previous studies that have noted the significant relationship between religiosity and firm behaviour includes Baxamusa and Jalal (2010), Grullon, Kanatas, and Weston (2010), McGuire, Omer, and Sharp (2010) and Hilary and Hui (2009).

Moreover, studied also noted that high level of religiosity makes people more ethical (Conroy & Emerson, 2004; Longenecker, McKinney, & Moore, 2004) and more risk averse (Hilary & Hui, 2009; Osoba, 2003; Miller & Hoffman, 1995). This means people who are highly religious have strong ethical values and less likely to tolerate risk. On the other hand people who have lower level of religiosity tend to take more risk while they make financial decision and have less ethical consideration.

However, religiosity also influence trust (Tan & Vogel, 2008) and trust has significant influence on decision making behaviour. The author suggested that people tend to trust someone when they find the trustee has high level of religiosity. Furthermore, the high level of truster's religiosity also increases the level of trusting. For example, Berggren and Bjørnskov (2009) stated that individual who always attend church trust other people a little higher than those who are not. Welch, Sikkink, and Loveland (2007) found no association between religiosity and trust. However, Alesina and La Ferrara (2002) also found that there is no significant relationship between religious beliefs and trust. Tuhin (1995) found religiosity is positively associated with risk-averse and regret. The author also found that highly risk-averse people have more regret and are more religious. Besides, religiosity affects individuals' financial satisfaction. Van Praag, Romanov, and Ferrer-i-Carbonell (2010) for example, found a significant relationship between religiosity and happiness. They also documented that both financial satisfaction and life satisfaction vary with religiosity.

Mostly prior studies have found the positive relationship between religiosity and happiness or life satisfaction (e.g. Cohen, 2002; Clark & Lelkes, 2005, 2009; Dehejia, DeLeire, & Luttmer, 2007; Helliwell, 2003). However, there is a debate about the relationship between religiosity and various construct such as risk tolerance, and self-

control that are indirectly linked with economic decision making. Some constructs were found related to religiosity. For example, significant positive relationship between religiosity and adjustment was reported by Koening and Larson (2001), and Gartner, Larson, and Allen (199). These studies also noted that the higher the level of religiosity individuals possess the lower the level of financial risk tolerance they have. Economists have long been interested in the relationship between religion and economic decisions. Religion is significantly related to our culture, social capital, and many others informal associations. Bukhari et al. (2013) found that there is a positive relationship between religiosity and income. They also documented that beliefs in afterlife influence one's savings and production decisions. On the other hand researchers also argue that the time spent in religious activities may have higher opportunity cost for one's economic development. In contrast many researchers argue that religiosity promotes many good conducts that indirectly help individuals to become more efficient in their economic life. For example religiosity influences them to uphold work ethics, be honest, efficient and avoid thrift and others which indirectly help the economic development of the individual as well as the employers as a whole.

Delener (1994) suggested that religiosity is a very important construct as it influences consumer decision-making through influencing individuals cognitively and behaviourally over time. The study conducted by Alam, Mohd, and Hisham (2011) in Malaysia revealed that entrepreneurs should not neglect religiosity in their marketing strategies because it has significant impact on consumer purchasing behaviour. Despite various opinions about the influences of religiosity on consumer behaviour across cultures, religiosity has long been acknowledged as an important social force that influences human behaviour. Researchers have argued that the effect of religion on consumer behaviour depends on an individual's levels of religious commitment in their

personal life since religion is highly personal (Mokhlis, 2009). The study conducted by Mokhlis (2009) in Malaysia suggested that highly religious people tend to be satisfied with their lives when age, income and sex are controlled. A study conducted by Alam et al. (2011) in Malaysia revealed that religiosity influences Muslim consumers to spend moderately.

Religiosity is an under-researched topic in consumer industry (Alam et al., 2011; O'Cass et al., 2013). Few consumer behaviour studies have used religiosity as a mediating or moderating variable. However, Alam et al. (2011) tested the mediating role of religiosity in the relationship between relative and contextual variables and purchase behaviour of Muslim consumers. Furthermore, O'Cass et al. (2013) used religiosity as a moderating variable in the relationship between status consumption and fashion consciousness. The empirical findings discussed above provide some interesting evidence of links between religiosity and various behavioural factors, economic and financial decision making behaviour. Thus, it can be concluded that religiosity is relevant for behavioural science research. However, in this study, researcher seeks to highlight the effect that religiosity has on the relationship between behavioural factors and financial risk tolerance. It will be interesting to see whether the relationship between behavioural factors and financial risk tolerance is moderated by the levels of religiosity regardless of the religion. In particular, this study focuses on examining the moderating role of religiosity in the relationship between behavioural propensities and financial risk tolerance in the proposed research model. Knowledge about the effects of religiosity on behavioural factors and financial risk tolerance could be beneficial for financial advisors in advising clients for making more appropriate investment allocation.

2.3.9 Ethnicity

This section highlights the significance of ethnicity as a preference shifter as well as provides rationale and meaning of ethnicity. In particular, this section will review the literature that has documented the relationship between ethnicity, financial risk tolerance and behavioural factors. Ethnicity refers to the distinction between groups of people based on behaviour, culture, biology, and physical characteristics (Edwards, Fillingim & Keefe, 2001). Studies have documented that cultural differences in social norms play important role in individuals' financial risk tolerance (Bateman & Munro, 2005; Campbell, 2006; Moren & Suarez, 1983; Yao, 2013). Alesina and La Ferrara (2002) found that there is a significant impact of having heterogeneity individuals on behavioural propensities such as trust since people tend to trust those people who share similar characteristics with them. Yao et al. (2005) noted that in the U.S., Whites are more risk tolerant than non-Whites.

While, Duasa and Yusof (2013) found that in Malaysia, Malays are risk averse, while Indians and Chinese are risk neutral. The study also noted that is no difference between Chinese and Indians on level of risk taking, but Malays are less willing to take risk compared to Chinese. The results were expected as Malays are well-known as risk-averse group in the society. The former Prime Minister, Abdullah Badawi was once stated that the Malays should develop a "new mindset and a fresh spirit" which are based on education and training in science and technology, and an approach that was not premised on "excessive reliance on the government". He also urged diversification and risk taking and stressed the necessity of developing a new culture of "excellence based on merit and performance among Bumiputeras" (Bennet, 2005).

Furthermore, Albaity and Rahman (2012a) documented several interesting links between ethnicity, behavioural propensities and religions, especially in Malaysian context. They found that Malaysian Malay males and females are significantly different in luck, overconfidence, maximization and general level of risk. Malaysian males and females believe more on skill when investing, are somewhat overconfident, tend to maximize the outcome of each decision, and are fairly risk averse. Malaysian Chinese have a different profile. Malaysian Chinese male and female differ in their propensity towards portfolio risk where males are more risk taker than females. In addition, Chinese males tend to aim for the best outcome than females. In addition, when they investigated how religious affiliation influence investment decisions, the result for Malaysian Muslims replicate the results of Malaysian Malay. On the other hand, Christian males and females tend to differ in term of trust where males believe that most people should not be trusted and females believe that most people should be trusted. Buddhist males and females are different in overconfidence and happiness. Both are somewhat overconfident but males are untrusting while females are trusting. Hindus do not differ in any of the variables. They also found that majority of the Malays are Muslim while majority of the Indians are Hindu. Chinese respondents are either Buddhist or Christian. However, link between ethnicity and religiosity in Malaysia is not well documented.

According to past studies, ethnicity can have significant impact on financial risk tolerance as culture shapes individual's behaviour (Yao et al., 2005). Guiso et al. (2008) argues that one's trust highly depends on his ethnic origin and religious background indicating the relationship between religion background, ethnic origin and risk taking behaviour. In contrast, Alesina and La Ferrara (2002) found that there is no significant effect of religious beliefs and ethnic origins on trust. Therefore, it will be interesting to

know what relationship exists in Malaysia within its multi-racial people along with various religious beliefs. Guiso et al. (2003) and Arrunada (2009) argue that religion has significant influence on the financial choices individuals make. Indeed, in many situation people make investment decision by relying on their luck as well.

According to the importance of ethnicity, the current study aims to explore the linkage between financial risk tolerance, behavioural propensities, and ethnic group in Malaysia. It then focuses on exploring the moderating effects of ethnicity on the relationship between behavioural propensities and financial risk tolerance. The findings may provide significant insights into future ethnic research as the Malaysian population is a mixture of Malay, Chinese and Indians. Finally, knowledge about effects of ethnicity on behavioural factors and financial risk tolerance could be beneficial for financial advisors in advising clients for making more appropriate investment allocation. The literature review and above discussion provide several ideas: (1) prior studies found mixed results in establishing the relationship between behavioural propensities and financial risk tolerance, (2) there are difference between ethnicity and gender with respect to risk tolerance and behavioural propensities, (3) behavioural propensities are related to one another, (4) religiosity is related to risk tolerance and behavioural propensities, and (5) ethnicity is related to various behavioural factors and risk tolerance.

2.4 CHAPTER SUMMARY

This chapter discusses literature of previous studies on investment management models and financial frameworks that included financial risk tolerance as an important input. This chapter begins by reviewing relevant investment management models and financial frameworks in detail. The two prominent models that used financial risk tolerance assessment for investment management model (e.g. Grable, 1997) and financial management model (e.g. Leimberg et al., 1993) have been extensively discussed. This chapter also discusses the empirical and subjective evidence drawn from previous works in relation to the variables that are examined in this study. The relationship among the variables and the gaps from the literature are discussed to provide justification for this study particularly for the problem statement and research questions. Finally, the literature of prior studies on two moderating variables (religiosity and ethnicity) is discussed in detail. The following Chapter Three will discuss about the proposed research model for this study. In the following chapter, testable hypothesises for the proposed research model will be discussed in detail.

CHAPTER 3

MATERIALS AND METHODS

3. 1 CHAPTER OVERVIEW

This study intends to provide a model of behavioural factors (behavioural propensities) that influence individual financial risk tolerance. It is very important to have a clear understanding about the problem statement and the research questions raised to confirm that the research questions address the problem statement (Stiglitz, 1969). The understanding of the problem statement and the research questions is also necessary for developing a suitable research model and selecting appropriate data analysis techniques. Chapter one discusses about the background of the study, problem statement, research questions, research objectives and significance of the study. However, chapter two outlines synthesis of the literature to backing the problem statement. The objective of this chapter is to provide the research methodology research design and hypotheses development in addressing the research questions. This chapter explains the research methodology to empirically test the research model. It also discusses the survey instrument that is administered to the target population. Finally, this chapter explains the analysing techniques.

3.2 RESEARCH PHILOSOPHY

There are two dominant paradigms in social science research, known as positivism and either interpretivism or constructivism (Baker, 2000; Punch, 2013). It is observed that positivism is mostly linked with quantitative research methods while either interpretivism and constructivism is usually associated with qualitative research methods (Punch, 2013). However, in a simpler term, paradigm is truly based on a set of philosophical assumptions, which guide the researcher to know the way of looking the world. In other word, paradigms mainly point out three fundamental characteristics, namely ontology (what the nature of the reality is like); epistemology (what the relationship is between the knower and the nature of the reality); and methodology (what techniques can be carried out to study that reality) (Carson, Gilmore, Perry, & Gronhaug, 2001; Punch, 2013).

In prior studies, many authors have defined the terms positivism, interpretivism and constructivism which were slightly different from one to another but their main ideas were combined and presented by Punch (2013). According to Punch (2013), positivism is "the belief that objective accounts of the world can be given, and that the function of science is to develop description and explanation in the form of universal laws- that is, to develop nomothetic knowledge while interpretivism concentrates on the meanings people bring to situations and behaviour, and which they use to make sense of their world, these meanings are essential to understanding behaviour, whereas according to constructivism realities are locals, specific and constructed; they are socially and experientially based, and depend on the individuals or groups holding them" (Guba & Lincoln, 1994, pp. 109-111). The more information about positivism and interpretivism are summarized in the Table 3.1.

Table 3.1: Broad definition/ explanation of positivist, interpretive, ontology, epistemology and methodology (Carson, Cilmore, Perry, & Gronhaug, 2001)

	Positivist	**Interpretivism**
Ontology Nature of 'being'/ nature of the world Reality	Have direct access to the real world.	No direct access to the real world.
Epistemology Grounds of knowledge/ relationship between reality and research	-Possible to obtain hard, secure objective knowledge. -Research focus is on generalisation and abstraction. -Thought is governed by hypotheses and stated theories.	-Understood through 'perceived' knowledge. Research focuses on the specific and concrete. -Seeking to understand specific context.
Methodology Focus of research Role of research	-Concentrates on description and explanation. -Detached, external observer. -Clear distinction between reason and feeling. -Aim to discover external reality rather than creating the object of study. -Strive to use rational, consistent, verbal logical approach. -Seek to maintain clear distinction between facts and value judgments. -Distinction between science and experience.	-Concentrates on understanding and interpretation. -Researchers want to experience what they are studying. -Allows feeling and reason to govern action. -Partially creates what is studied, meaning of the phenomena. -Use of pre-understanding is important. -Distinction between facts and value judgments is less clear. -Accepts influence from both science and personal experience.
Techniques used by the researcher	Formalizes statistical and mathematical methods. Predominant.	Primarily non-quantitative.

However, prior studies posit that positivism was used most frequently in social science research, particularly when quantitative research methods were involved (Neuman & Robson, 2011; Punch, 2013). Positivism approach explains the statistical association

between incidents and facts in order to prove that the final test of any knowledge is the test of causal theory and replication of prior studies (Neuman & Robson, 2011). Moreover, there is a belief among the positivist researchers that statistically examined survey based approach is acceptable research method (Chua, 1986). Beside, positivism approach is the one that suggest to test the theory empirically to boost the accuracy of the social reality (Neuman & Robson, 2011) which ultimately increase the understanding about the facts. Therefore, positivism approach was chosen in this study to examine empirically the theories, factors (behavioural propensities) that influence individual financial risk tolerance in Malaysia.

This study is truly grounded on positivist approach because the researcher find quantitative method as appropriate method for examining the association between independent and dependent variables and that is closely linked with positivism. However in terms of theoretical ground, this study is conducted in light of behavioural finance theories as it incorporates behavioural factors that deviate the full rationality assumption to examine whether these factors influence financial risk tolerance unlike conventional finance that assumes people are rational and only financial returns justify people's financial risk tolerance. Behavioural finance underpinning theories are not entirely new rather they are emerged from psychology, sociology (Glaser, Nöth, & Weber, 2004), and conventional finance discipline with adding to some parts and substituting some from existing parts in it (Statman, 2008). Behavioural finance offers alternative assumptions for each of the foundation assumptions of conventional finance for instance, investors are normal, markets are inefficient, and investors follow behavioural portfolio theory as well as behavioural asset pricing theory for making investment decisions. However, this study is adapting survey method for collecting

primary data to examine what behavioural propensities influence financial risk tolerance of Malaysian undergraduate students.

3.3 CONCEPTUAL FRAMEWORK

The conceptual framework of this study was developed based on the literature reviews on behavioural propensities regarded in this study as behavioural factors (Independent Variables) that consist of propensity for regret, propensity for trust, happiness in life, propensity to attribute success to luck, propensity for overconfidence, and propensity for social interaction. These variables are examined on its relationship with Financial Risk Tolerance (FRT). In this research, financial risk tolerance is used as the only dependent variable. Further examination is conducted to test whether religiosity and ethnicity moderate the relationship between behavioural propensities and financial risk tolerance.

Moreover, an investigation is carried out to test whether there is difference between ethnic groups and gender with respect to financial risk tolerance and behavioural propensities. Besides gender and ethnicity, age, marital status, educations are the most widely studied factor generally thought to be associated with financial risk tolerance. However, in this study, age, marital status, and educations are not considered for analysis as the target respondents are all undergraduate students, having almost same age range, same education level, and single marital status.

In this study, it is expected that not only demographic and socio-economic factors influence individual financial risk tolerance but also behavioural propensities such as propensity for regret, propensity for trust, happiness in life, propensity to attribute success to luck, propensity for overconfidence, and propensity for social interaction influence financial risk tolerance. All the independent variables that are used in this

study can be considered as new determinants of financial risk tolerance. Moreover, religiosity and ethnicity variables are also new variables that are being used in this study as moderating variables. Both the Grable's (1997) financial plan and investment management framework and the Leimberg et al.'s (1993) financial management framework serve as guidance to the empirical model for this research. In addition to these theoretical frameworks, the irrationality assumption is used to support the investigation of this study. Figure 3.1 presents the conceptual framework of this study**.**

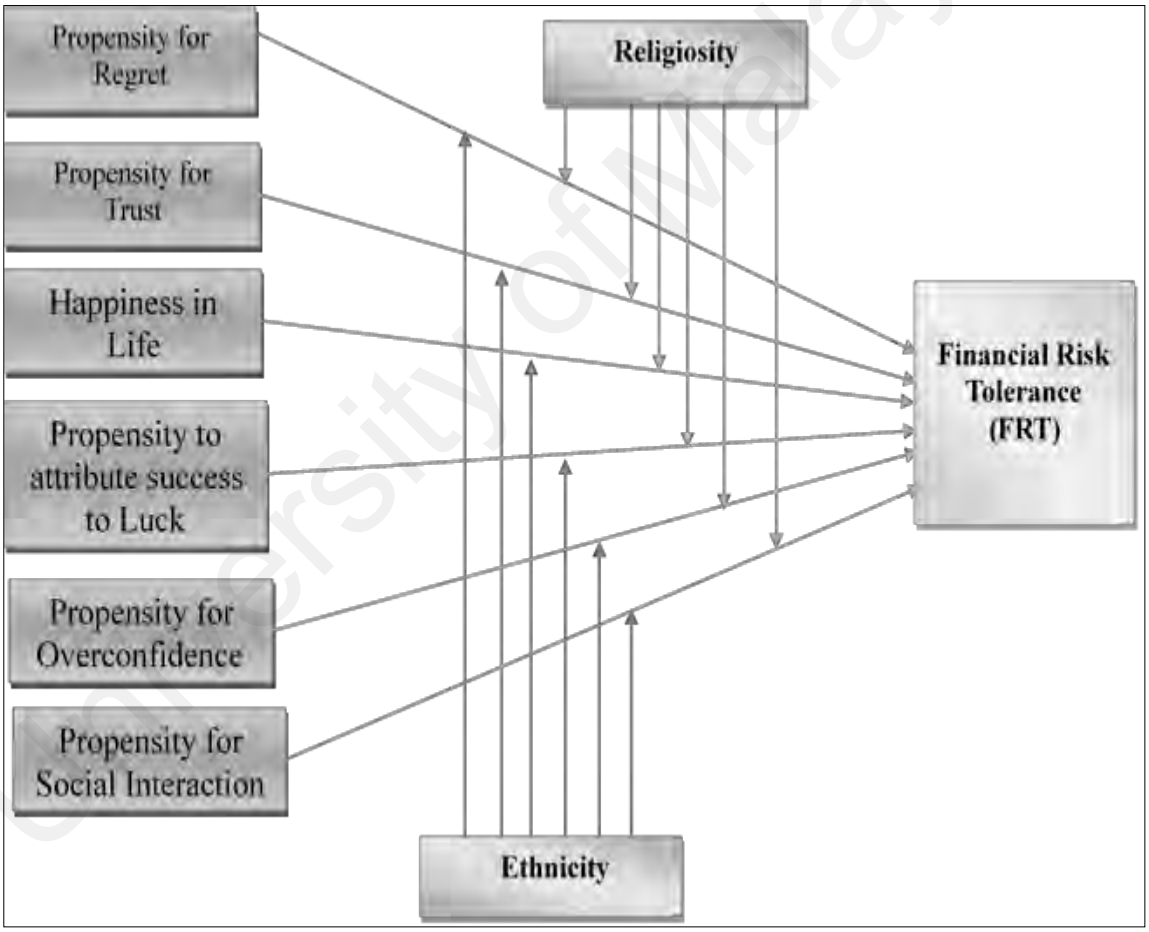


Figure 3.1: Conceptual framework

3.4 RESEARCH HYPOTHESES DEVELOPMENT

This section discusses a number of testable hypotheses developments to investigate the relationship between independent variables (behavioural propensities) and dependent variable (financial risk tolerance) in the proposed research framework. As stated earlier, behavioural factors are expected to facilitate financial advisors to appropriately measure their clients financial risk tolerance. Furthermore, knowledge about behavioural propensities and financial risk tolerance are also expected to be beneficial for financial advisors in advising clients for making more appropriate investment allocation.

In order to fulfil the objectives set out for this study, several research hypotheses are developed based on literature review. At the beginning, this section presents the hypotheses developed to fulfil the research objective one (to examine the relationship between behavioural propensities and financial risk tolerance of individuals) through testing the direct relationship between six independent variables (i.e., propensity for regret, propensity for trust, happiness in life, propensity to attribute success to luck, propensity for overconfidence, and propensity for social interaction) and the dependent variable (six hypotheses). Next, hypotheses that were formulated to test the mean difference between ethnic groups and gender with respect to the financial risk tolerance and behavioural propensities (14 hypotheses) are presented to fulfil the research objective two (to examine the difference between ethnic groups and gender with respect with respect to financial risk tolerance and behavioural propensities). Finally, the development of hypotheses to test the effect of moderating variables of religiosity and ethnicity (two moderating variables × six independent variables =12 hypotheses) is discussed. The hypotheses related to the moderating effect of religiosity are developed to fulfil the research objective three (to examine whether religiosity moderates the relationship between behavioural propensities and financial risk tolerance), while

hypotheses related to the moderating effect of ethnicity are developed to fulfil the research objective four (to examine whether ethnicity moderates the relationship between behavioural propensities and financial risk tolerance). There are total 32 hypotheses for this study.

3.4.1 Behavioural determinants of financial risk tolerance

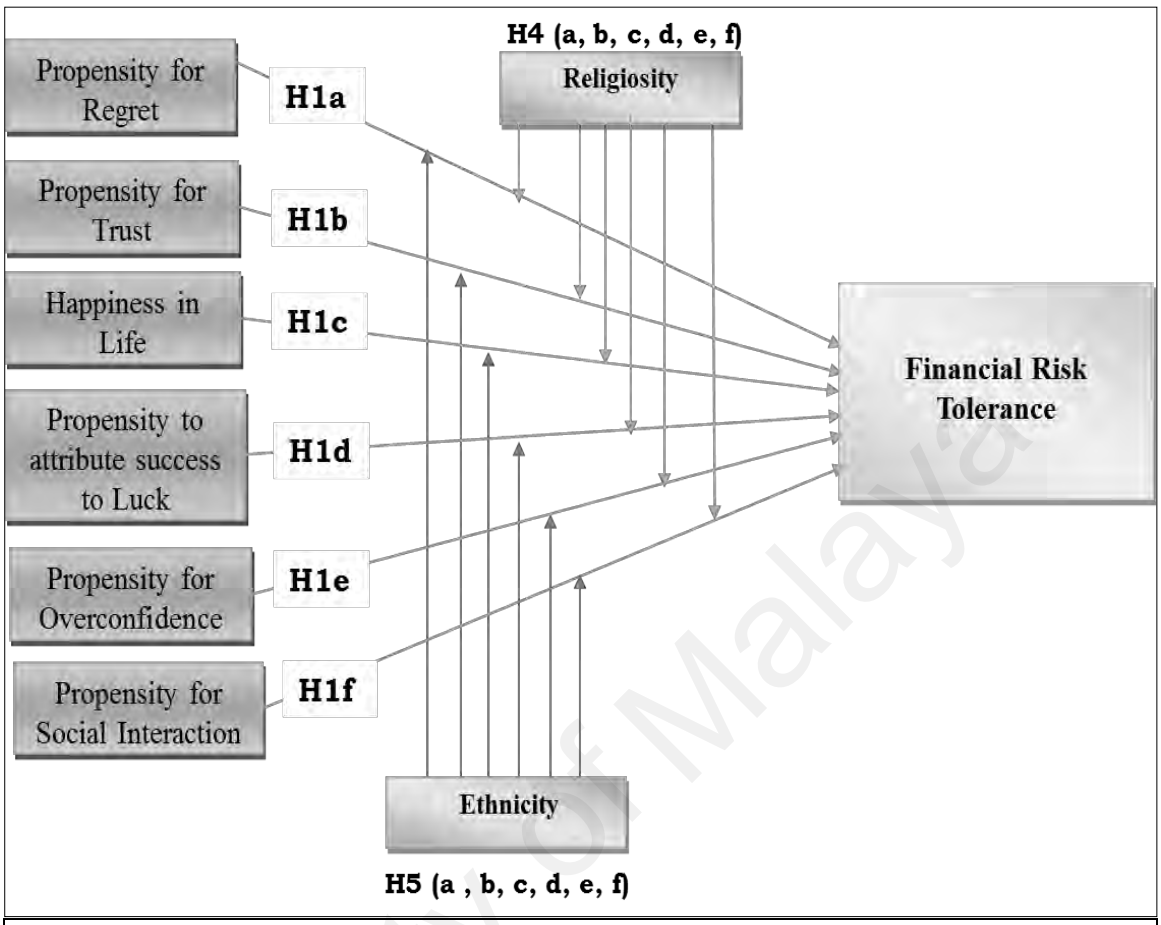
The individual propensity refers to the natural tendencies of people to behave in a certain way. Some people might have high propensity for trust and that may influence them to trust others more than who have low propensity for trust. This high level of trusting behaviour may influence individuals to be more risk tolerant. Studies have argued that only demographic and socio-economic are not sufficient to predict an individual's financial risk tolerance (Anbar & Eker, 2010; Carr, 2014; Grable, 2000; Pan & Statman, 2012). Pan and Statman (2012) claimed that the financial crisis of 2008 and 2009 happened not only due to the weaknesses of the existing financial system but also the shortcomings of the instruments used by the financial advisors to carry out the financial risk tolerance assessment process. To date, little research in consumer finance field has attempted to develop more accurate risk tolerance assessment tools for both practitioners and policy makers (Carr, 2014). Typical questionnaires do not fully account for the role that behavioural or personal factors play in influencing individuals' financial risk tolerance. Researchers have yet to develop financial risk tolerance assessment system that uses behavioural factors to describe an individual's financial risk tolerance framework.

Even though the behavioural factors are important components of risk tolerance assessment and risk decision making process (Pan & Statman, 2012) little knowledge is available about behavioural factors. Based on the above discussions and arguments that

behavioural factors can influence risk tolerance, this study intends to concentrate on individuals' behavioural factors (behavioural propensities) as merely looking at the individuals' demographic and socioeconomic factors do not provide a comprehensive assessment process and it is vital to expand the existing knowledge to gain a broader perspective. Therefore, the hypothesis one (H1) is about the examination of the relationship between behavioural propensities and financial risk tolerance. The proposed hypothesis is:

H1: There is significant relationship between behavioural factors (behavioural propensities) and financial risk tolerance.

Based on the number of behavioural propensities used in this study, six sub-hypotheses were developed from the hypothesis one (H1). In addition two other main hypotheses (H4 and H5) were developed based on the two moderating variables. The research framework as shown in the figure 3.2 is consisted of total 18 hypotheses as mentioned earlier in this section. The research framework can be tested empirically by examining the proposed 18 hypothesis. The subsequent sections will further discuss about the 18 hypotheses. However, hypothesis two (H2) and hypothesis three (H3) are not included in the research model as they are tested based on t-test and ANOVA. These two hypotheses are descriptive in nature and usually are not included in research framework (Mallasi, 2013; Moghavvemi, 2012). Both hypothesis two (H2) and hypothesis three (H3) are consisted of seven sub-hypotheses (H2a-H2g, H3a-H3g). The summary of the hypothesis two (H2) and hypothesis three (H3) are presented in the Table 3.2.2: and Table 3.2.3 respectively.



H2- Test of differences between gender

H3- Test of differences between ethnic groups

Figure 3.2: Research framework

3.4.1.1 Propensity for regret and financial risk tolerance

This study expects propensity for regret affects individuals' financial risk tolerance. In this study, propensity for regret is defined as "a realization or imagination that the current situation would have been better, if only we had decided differently" (Zeelenberg & Pieters, 2007, p. 3). According to Connolly and Zeelenberg (2002), "the emotion that has received the most research attention from decision theorists is regret" (p. 212). Regret is one such behavioural factor that can have significant influence on risk tolerance and risky decisions (Bailey & Kinerson, 2005). Both risk seeking and risk aversions are related to regret and decision making (Inman & Zeelenberg, 2002;

Zeelenberg et al., 1996; Zeelenberg & Beattie, 1997; Zeelenberg, 1999). The logic behind the dual relationship is that people tend to embark in regret minimizing process whenever a decision has to be made. This regret minimizing theory lead people to either become risk averse or risk lover. In regret minimizing-risk maximizing, the relationship is established when the individual were asked how regret influence their decisions.

Reb (2008) suggested that people who have high level of regret tend to make more careful decision. In contrast, regret could lead to risk seeking behaviour (Reb & Connolly, 2009). Usually, individual faced with two choices where one is riskier than the other opting for the less risky option lead to regret if the riskier option turned out to be better than the less risky option (Larrick & Boles, 1995; Ritov, 1996). Bell (1982) found evidence that the relationship between regret and risk aversion is positive. This indicates that people who have high propensity for regret may have less financial risk tolerance. However, Pan and Statman (2012) found no correlation between regret and risk tolerance. The mix findings about the relationship between regret and risk tolerance demand for the reinvestigation of the relationship. Extending the above findings to this study, it is expected that propensity for regret has positive influence on financial risk tolerance. Therefore, this study proposes the following hypothesis:

H1a: Propensity for regret has positive impact on financial risk tolerance.

3.4.1.2 Propensity for trust and financial risk tolerance

Propensity for trust is defined as "a psychological state comprising the intentions to accept vulnerability based on positive expectations of the actions of the trustee" (Rousseau et al., 1998, p. 395). Luhmann (1979) and Seligmen (1997) found that there is a positive relationship between trust and risk taking, while Yamagishi and Yamagishi,

1994 (1994) argued that trusting is equal to risk taking. Statman (2008) suggested that people who trust others are more willing to take risk. Furthermore, Luhmann (1988) suggested that risk must exist for trust to occur and when trust occur more risk is attractive.

Many studies that have reported the negative relationship between trust and perceived risk are Siegrist (2000), Siegrest et al. (2000), Sjoberg (2001), Viklund (2003), and Olsen (2008). Moreover, studies have found that perceived risk significantly affects individuals' decision-making process (Weber & Hsee, 1998; Tsai, 2010). Nevertheless, several studies have found little or no correlation between trust and overall level of risk aversion or risk tolerance (Ashraf & Bohnet, 2006; Eckel & Wilson, 2004). While in a study, Hurley (2006) suggested that individuals risk tolerance has a significant impact on their willingness to trust the trustee. The mix findings about the relationship between propensity for trust and risk tolerance further demand for the examination of the relationship. Thus, this study examines the relationship between propensity for trust and financial risk tolerance by developing the following hypothesis.

H1b: Propensity for trust has positive impact on financial risk tolerance.

3.4.1.3 Happiness in life and financial risk tolerance

Isen and Patrick (1983) reported that people who have high levels of happiness in life tend to take less risk. Happiness in life is defined as "total satisfaction that is satisfaction with life as a whole" (Tatarkiewiez, 1976, p.8). In this study happiness in life refers to financial happiness/satisfaction in life. Laakso (2010) found a positive link between happiness and optimism. Some earlier studies found a positive link between optimism and high financial risk tolerance (Weinstein, 1980, 1984). Felton, Gibson, and

Sanbonmatsu (2003) for instance, show that optimistic individuals are more willing to look for risky investment opportunities. Furthermore, Puri and Robinson (2007) noted that high level of optimistic individuals are more likely to own stocks compare to moderate level of optimistic individuals.

Moreover, Chou et al. (2007) revealed that people tend to tolerate more risk when they are in happy mood than sad mood. However, Pan and Statman (2012) found insignificant relationship between life satisfaction and risk tolerance. The above findings provide evidences for promising positive and negative relationship between happiness in life and risk tolerance. This mixed findings demand further investigation. Therefore, within the context of this study, it is believed that happiness in life influences financial risk tolerance. As a result, the following hypothesis is formulated:

H1c: Happiness in life has negative impact on financial risk tolerance.

3.4.1.4 Propensity to attribute success to luck and financial risk tolerance

Propensity to attribute success to luck is defined based on the definition of Young et al. (2009) as "stable force that tends to influence events in one's own favor". Many studies have found a significant association between belief in good luck and positive expectation for the daily life decisions' outcomes (Darke & Freedman, 1997; Kelley 1967; Rotter, 1966; Weiner et al., 1972). According to social learning theory, success and failure usually depends on four causal factors-luck, skill, effort, and task difficulties (Weiner, Nierenberg, & Goldstein, 1976; Darke & Freedman, 1997).

Studies that have documented that people tend to attribute success to their own skills and failures to bad luck include Zuckerman (1979), Miller and Ross (1975), Fiske and

Taylor (1991), Baumeister (1998), and Duval and Silvia (2002). Blaine and Crocker (1993) found that individuals with high self-esteem believe that they are lucky and tend to exaggerate their control over events, especially successful events. Armor and Taylor (2002) indicated that greater uncertainty can induce greater optimism such that people become risk taker. There is a direct relationship between experienced good luck and risk tolerance (Hanna, Waller, & Finke, 2008; Post,Van Den Assem, Baltussen, & Thaler, 2008). In a recent study, Albaity and Rahman (2012) investigated the correlation between belief in luck and portfolio risk and they found that there is a positive relation between belief in luck and portfolio risk. Based on the empirical evidences from prior studies that support that belief in luck for the successful outcomes is generally linked to risk tolerance, the hypothesis is proposed as:

H1d: Propensity to attribute success to luck has positive impact on financial risk tolerance.

3.4.1.5 Propensity for overconfidence and financial risk tolerance

Studies have identified three main consequences of overconfidence in the context of financial markets such as excessive trade (Glaser & Weber, 2007; Kim & Nofsinger, 2002; Odean, 1999; Barber & Odean, 2000), too much volatility (Daniel, Hirshleifer, & Subrahmanyam, 1998; Gervais & Odean, 2001), and both over and under reaction to information (Daniel et al., 1998; Daniel & Titman, 1999; Glaser & Weber, 2007; Lee & Swaminathan, 2000). Propensity for overconfidence is defined as "overestimating the probability of favorable outcomes" (Rosa, 2011, p.429). Overconfident people hold riskier portfolios similar to high risk tolerant investors (Barber & Odean, 2000; Dorn & Huberman, 2005).

Overconfidence can influence the measurement of financial risk tolerance since less-overconfident individuals tend to perceive risk as higher than overconfident individuals (Pan & Statman, 2012). Furthermore, overconfident individuals tend to resist advice regarding diversifying their portfolios (Pan & Statman, 2012). This finding indicates that individual propensity for overconfident might be positively correlated with high financial risk tolerance. Odean (1998) noted that rational investors possess less risky portfolios than overconfident investors. Similar findings have been documented by Gervais and Odean (2001) and Kim and Nosfinger (2002). Nevertheless, some studies have found no relations between risk tolerance and overconfidence (Frascara, 1999; Heath & Tversky, 1991; Kirchler & Maciejovsky, 2002). Doerr et al. (2011) found that overconfidence is highly correlated to farmers' risk tolerance. Therefore, together with all the above arguments, it is believed that propensity for overconfidence influences financial risk tolerance. Thus, the following hypothesis is proposed:

H1e: Propensity for overconfidence has positive impact on financial risk tolerance.

3.4.1. 6 Propensity for social interaction and financial risk tolerance

In this study, propensity for social interaction is defined based on Hong et al. (2005) definition of social households as the degree of individuals' involvement with their neighbors. Social interaction is related to willingness to take risk, stock market participation and other investments decision making (Hong et al., 2005; Lu, 2011; Statman, 2008). Similarly, Hsee and Weber (1999) noted that people of collective societies have high risk tolerance than people from individualistic societies because if they are in trouble then the society provides a cushion. Meanwhile, some studies have found that people who have high financial risk tolerance tend to buy more stocks (Baker & Nofsinger, 2002; Bondt, 1998; Guiso et al., 2008; Renneboog & Spaenjers, 2012).

Many studies have found significant relationship between various aspects of social interaction and individual decision making (Cook & Oliver, 2011; Lu, 2011; Nofsinger, 2005; Renneboog & Spaenjers, 2012). The above findings indicate possible direct and indirect relationship between social interaction and individual investment decision making which is ultimately linked with financial risk tolerance (Bromiley & Curley, 1992; Dahlbäck, 1990). Therefore, together with all the above arguments, it is expected that social interaction influences one's financial risk tolerance. As such, in line with the above literature the following hypothesis is formulated:

H1f: Propensity for social interaction has positive impact on financial risk tolerance.

Table 3.2.1: Summary of research hypothesis 1

H1a	Propensity for regret has positive impact on financial risk tolerance.
H1b	Propensity for trust has positive impact on financial risk tolerance.
H1c	Happiness in life has negative impact on financial risk tolerance.
H1d	Propensity to attribute success to luck has positive impact on financial risk tolerance.
H1e	Propensity for overconfidence has positive impact on financial risk tolerance.
H1f	Propensity for social interaction has positive impact on financial risk tolerance.

3.5 GENDER, ETHNICITY, BEHAVIOURAL PROPENSITIES AND FINANCIAL RISK TOLERANCE

There are some general consensus in the prior studies about the relationship between gender, ethnic group and financial risk tolerance (Anbar & Eker, 2010; Roszkowski et al., 1993; Dohmen et al., 2011; Grable 1997, 2000; Pan & Statman, 2012; Yao, 2013): (a) men are high financial risk tolerant than women and (b) Whites Americans are more risk tolerant than non-Whites. However, the information about the financial risk

tolerance of different ethnic groups in Malaysia is not well documented. Kahneman and Tversky (1979) found that females are one third less willing to take risk than males. Men have lower propensity for regret than women and the relatively old have a lower propensity for regret than the relatively young (Pan & Statman, 2012). Moreover, according to the literature, men and women are found to be different in terms of overconfidence (Baber & Odean, 2001; Lundeberg et al., 1994). For instance, Baber and Odean (2011) noted that men and women exhibit the overconfidence bias by trading excessively however, men tend to be more overconfident than women. Women being less overconfident than men can be linked to their risk tolerance behaviour in general. Similar results have been observed by Albaity and Rahman (2012), Bengtsson, Persson, and Willenhag (2005), and Pan and Statman (2012). Furthermore, many studies also found that race have a significant impact on the level of overconfidence (Albaity & Rahman, 2012; Menkhoff et al., 2013). In general, Chinese are more overconfident than Indians and Indians are more overconfident than Malay (Albaity & Rahman, 2012).

In terms of trusting others, men have lower propensity for trust than women (Albaity and Rahman, 2012). While, Statman (2008) found women have lees propensity for trust than men. But in a recent study, Pan and Statman (2012) found no significant difference in propensity for trust among men and women. Alesina and LaFerrara (2002) found that heterogeneity among people have significant impact on behavioural propensities. For example, people tend to trust those people who are similar to themselves (e.g. Chinese trust another Chinese more than Malay and Indian). Yao et al. (2005) noted that in the U.S., Whites are more risk tolerant than non-Whites. There is a significant association between race and stock market participation while stock participation is heavily influenced by levels of risk tolerance (Hong et al., 2005). For example, Hong et al. (2005) found that the non-Hispanic individuals' stock market participations rate is much

higher than others, when controlling for education level and wealth. Studies have found that trust has an important impact on stock market participation and it is also highly related to ethnic background (Guiso, Sapienza, & Zingales, 2008). However, Alesina and LaFerrara (2002) found no significant associations between ethnic origins and trust.

Stipek and Gralinski (1991) pointed out that boys attributed success to luck less than girls. Similarly, some studies have shown that female prefer luck based decisions while male prefer skill based decisions (Deaux, White, & Farris, 1975). Meanwhile, Day and Maltby (2003) found insignificant differences between men and women. Statman (2008) reported that men are less happy in their life than women. Prior studies have found no statistically significant relationship between happiness in life and gender (e.g. Albaity and Rahman, 2012; Pan & Statman 2012). However, Kalyuzhnova and Kambhampati (2008) found that ethnic Kazakhs are happier than ethnic Russians. Argyle (2003) noted that in South Africa, whites are happier than Indians and blacks. Social interaction is related to gender, and race (Alesina & LaFerrara, 2002; Andrews, Brewin, & Rose, 2003). According to Alesina and LaFerrara (2002), men participate more in social activities than women because of the time constraint.

Extending the above findings to this study, it is believed that there are difference between gender and ethnicity with respect to financial risk tolerance and behavioural factors (behavioural propensities). Therefore, together with all the arguments above, this study proposes two main hypotheses. As such, the two proposed hypothesises are:

H2: There is a significant difference between males and females with respect to financial risk tolerance and behavioural propensities.

H3: There is a significant difference between ethnic groups with respect to financial risk tolerance and behavioural propensities.

Hypothesis **2** is consisted of seven sub-hypothesises which are summarized in the Table 3.2.2.

Table 3.2.2: Summary of research hypothesis 2

H2a	Males are significantly different than females in financial risk tolerance.
H2b	Males are significantly different than females in propensity for regret.
H2c	Males are significantly different than females in propensity for trust.
H2d	Males are significantly different than females in happiness in life.
H2e	Males are significantly different than females in propensity to attribute success to luck.
H2f	Males are significantly different than females in propensity for overconfidence.
H2g	Males are significantly different than females in propensity for social interaction.

Similarly**,** hypothesis **3** is consisted of seven sub-hypothesises which are summarized in the Table 3.2.3.

Table 3.2.3: Summary of research hypothesis 3

H3a	Ethnic groups are significantly different in financial risk tolerance.
H3b	Ethnic groups are significantly different in propensity for regret.
H3c	Ethnic groups are significantly different in propensity for trust.
H3d	Ethnic groups are significantly different in happiness in life.
H3e	Ethnic groups are significantly different in propensity to attribute success to luck.
H3f	Ethnic groups are significantly different in propensity for overconfidence.
H3g	Ethnic groups are significantly different in propensity for social interaction.

3.6 RELIGIOSITY, BEHAVIOURAL PROPENSITIES AND FINANCIAL RISK TOLERANCE

Religiosity refers to "the extent to which one ascribes to the beliefs, experiences, and rituals of a religion" (Tan & Vogel, 2008, p.833). Demaria and Kassinove (1988) found that religiosity is a very important guilt predictor. Helms and Thornton (2012) reported a positive relationship between religiosity and charitable behaviour. Hess (2012) revealed that religiosity significantly influences individual financial decision making behaviour. Several other studies have documented that there is a strong relationship between religiosity and personal behaviour (Iannaccone, 1998; Lehrer, 2004). Moreover, studied also noted that high level of religiosity makes people more risk averse (Hilary & Hui, 2009; Osoba, 2003; Miller & Hoffman, 1995).

Berggren and Bjørnskov (2009) stated that individual who always attend church trust other people a little higher than those who are not. Tuhin (1995) found religiosity is positively associated with risk-averse and regret. Many studies have found positive relationship between religiosity and happiness or life satisfaction (e.g. Cohen, 2002; Clark & Lelkes, 2009; Dehejia et al., 2007; Helliwell, 2003). The study conducted by Alam et al. (2011) in Malaysia tested the mediating role of religiosity in the relationship between relative and contextual variables and purchase behaviour of Muslim consumers. Furthermore, O'Cass et al. (2013) used religiosity as a moderating variable in the relationship between status consumption and fashion consciousness. The high or low levels of religiosity can potentially strengthen or weaken the relationship between behavioural propensities and financial risk tolerance. Religiosity is an under-researched topic in finance. Within the context of this study, it is believed that religiosity will moderate the relationship between behavioural propensities and financial risk tolerance. Thus, the following hypothesis is formulated:

H4: Religiosity moderates the relationship between individuals' propensities and financial risk tolerance.

Hypothesis **4** is consisted of six sub-hypothesises which are summarized in the Table 3.2.4.

Table 3.2.4: Summary of research hypothesis 4

H4a	Religiosity moderates the relationship between propensity for regret and financial risk tolerance.
H4b	Religiosity moderates the relationship between propensity for trust and financial risk tolerance.
H4c	Religiosity moderates the relationship between happiness in life and financial risk tolerance.
H4d	Religiosity moderates the relationship between propensity to attribute success to luck and financial risk tolerance.
H4e	Religiosity moderates the relationship between propensity for overconfidence and financial risk tolerance.
H4f	Religiosity moderates the relationship between propensity for social interaction and financial risk tolerance.

3.7 ETHNICITY, BEHAVIOURAL PROPENSITIES AND FINANCIAL RISK TOLERANCE

Studies have documented that cultural differences in social norms play important role in individuals' financial risk tolerance (Bateman & Munro, 2005; Campbell, 2006; Morin & Suarez, 1983; Yao, 2013). In this study, ethnicity is defined as the distinction between groups of people based on behaviour, culture, biology, and physical characteristics (Edwards et al., 2001). Alesina and LaFerrara (2002) found that there is a significant impact of having heterogeneity individuals on behavioural propensities such as trust since people tend to trust those people who are similar to themselves. Yao et al. (2005) noted that in the U.S., Whites are more risk tolerant than non-Whites.

Alesina and LaFerrara (2002) noted that Black Americans participate more in social activities than White Americans. Kalyuzhnova and Kambhampati (2008) found that

ethnic Kazakhs are happier than ethnic Russians. Argyle (2003) noted that in South Africa, whites are happier than Indians and blacks. Moreover, studies also found that race have a significant impact on the level of overconfidence (e.g. Menkhoff et al., 2013). Albaity and Rahman (2012) found significant differences between ethnic groups in Malaysia in several behavioural biases. This study aims to examine the moderating effect of ethnicity in the proposed model as there is an existence of heterogeneous individuals in Malaysia and that could possible change or influence the strength of the relationship between an independent variable and a dependent variable. Ethnicity is the categorical variable and thus multi-group moderation technique is used to observe the effects of ethnicity (Hair et al., 2010). Within the context of this study, it is believed that ethnicity moderates the relationship between behavioural propensities and financial risk tolerance. Thus, this study hypothesises that:

H5: Ethnicity moderates the relationship between individuals' propensities and financial risk tolerance.

Hypothesis **5** is consisted of six sub-hypothesises which are summarized in the Table 3.2.5.

Table 3.2.5: Summary of research hypothesis 5

H5a	Ethnicity moderates the relationship between propensity for regret and financial risk tolerance.
H5b	Ethnicity moderates the relationship between propensity for trust and financial risk tolerance.
H5c	Ethnicity moderates the relationship between happiness in life and financial risk tolerance.
H5d	Ethnicity moderates the relationship between propensity to attribute success to luck and financial risk tolerance.
H5e	Ethnicity moderates the relationship between propensity for overconfidence and financial risk tolerance.
H5f	Ethnicity moderates the relationship between propensity for social interaction and financial risk tolerance.

3.8 RESEARCH DESIGN

The main purpose of this research is to examine the influence of behavioural propensities on financial risk tolerance. In addition, this study also aims to examine the moderating effect of religiosity and ethnicity on the relationship between behavioural propensities and financial risk tolerance. The investigated constructs are measured by a 5 point Likert scale with anchorage from strongly disagree (1) to strongly agree (5).

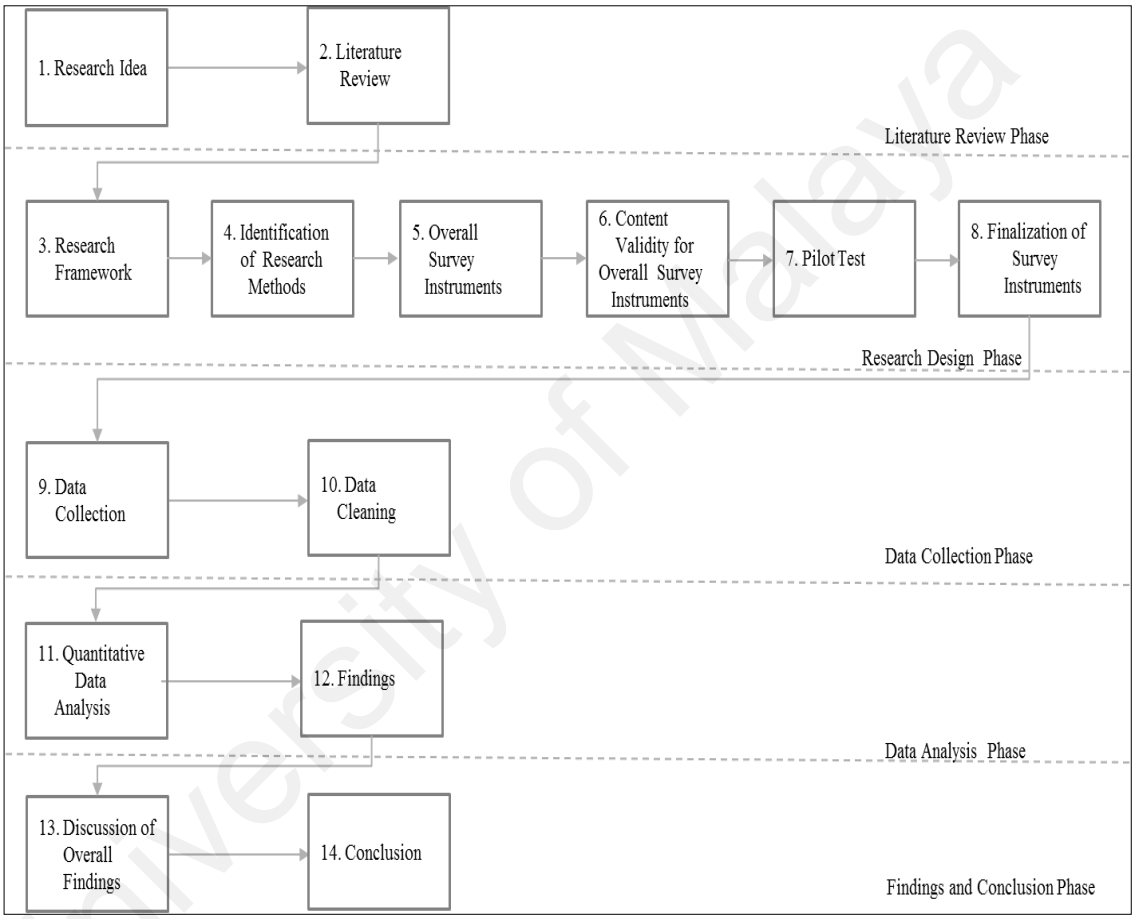


Figure 3.3: Research process

The proper research method for this study is quantitative research method. As such the study deploys self-administrative questionnaires to collect the primary data from the target population to empirically test the research framework. A total of 1679 questionnaires are distributed among the target population. The target population consists of local undergraduate business and economics students from Malaysian public universities in the Klang valley. Face validity or content validity, pilot test and

reliability test are carried out to verify and improve the survey tools. After finalizing the research questionnaires, the data is collected using quantitative approach.

Next, the complete returned questionnaires is screened and analysed to find out the relationship between behavioural propensities and financial risk tolerance. The collected data is cleaned and analyzed using SPSS and AMOS software. SPSS is used to conduct EFA, reliability analysis, normality, linearity, descriptive statistics, multicollinearity, t-test, and ANOVA as well as AMOS is used to carry out Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM). The empirical findings of this study show whether the research hypotheses are supported or not supported. The results also address the problem statement and research questions. Finally, the study is concluded with discussions and conclusion. Figure 3.3 maps the entire research process.

3.9 DEVELOPMENT AND OPERATIONALIZATION OF MEASURES

3.9.1 Measures development

This section discusses about the conceptual definitions of the variables and their operationalization or measurement of the items used in the research framework. The constructs used in the research model were adopted from past studies conducted in the field of economics, behavioural science, and psychology and thus, amended to fit this study. In this study, the definitions of the variables are adopted or combined from prior studies. Several definitions for the same construct were found in the prior literature. The researcher chooses the suitable and applicable definitions to match the research objectives and scope. The independent variables that have been used in this research model are propensity for regret, propensity for trust, happiness in life, propensity to attribute success to luck, propensity for overconfidence, and propensity for social

interaction, and financial risk tolerance as dependent variable. In addition, religiosity and ethnicity have been used as moderating variables in this study. Table 3.3 summarizes the definitions of the variables used in this study.

Table 3.3: Definitions of the variables

Constructs	Definition
Financial Risk Tolerance (FRT)	Willingness to take financial risk, specifically the maximum amount of uncertainty that an individual is willing to accept when making any financial decision
Propensity for Regret	The emotion experienced when realizing or imagining that our current situation would have been better, if only we had decided differently.
Propensity for Overconfidence	Overestimating the probability of favorable outcomes.
Propensity for Trust	Psychological state comprising the intentions to accept vulnerability based on positive expectations of the actions or behaviour of another.
Propensity to attribute success to Luck	Stable force that tends to influence events in one's own favor.
Happiness in Life	Total satisfaction that is satisfaction with life as a whole.
Propensity for Social interaction	The degree of involvement of individuals' with their neighbors.
Religiosity	The extent to which one ascribes to the beliefs, experiences, and rituals of a religion.
Ethnicity	The distinction between groups of people based on behaviour, culture, biology, and physical characteristics.

The propensities stated above have been used as independent variables for this study because prior studies have used them in the area of behavioural science particularly in investment decision making behaviour, purchasing behaviour, consumer behaviour in general, behavioural economics, as well as psychology in decision making which has direct and indirect link with willingness to take risk. Some of them were used as determinants of investment behaviour such as stock market participation, excessive trade volume, financial decision making, and choosing risky vs. safe investment. Moreover, in the literature, some of the propensities were linked to risk aversion, positive expectation in daily life decision outcomes, income, self-esteem and others. Thus, the study selected these propensities to predict financial risk tolerance of

Malaysian undergraduate students. The items to measure these propensities were adopted from prior studies and amended to suit to the respondents and research objectives of this study. Despite of having the prior validity and reliability of the constructs, all the constructs were validated for this study.

3.9.2 Pre-testing the measures

There are some limitations to use survey questionnaire as a main source of data collection instrument. The disadvantage of using questionnaire is that it creates validity issues for the research method and the survey data face the threat of mono-method bias (Campbell & Stanley, 1966). Validity has been defined as the evaluating test which measures what it claims to measure and nothing else (Cavana et al., 2001; Zikmund, 2012).

The validity test examines the goodness of the instruments used in the study to know whether it is measuring what it really intend to measure, and does so cleanly. The researcher has taken precaution to ease the common method bias and measurement errors. In order to ensure the reliability and validity of the measures, several pre-tests are performed in this study. The pre-tests are designed and implemented to ensure the internal consistency, reliability, construct validity, and external validity. Figure 3.4 presents the series of steps carried out to ensure the validity of the measurements.

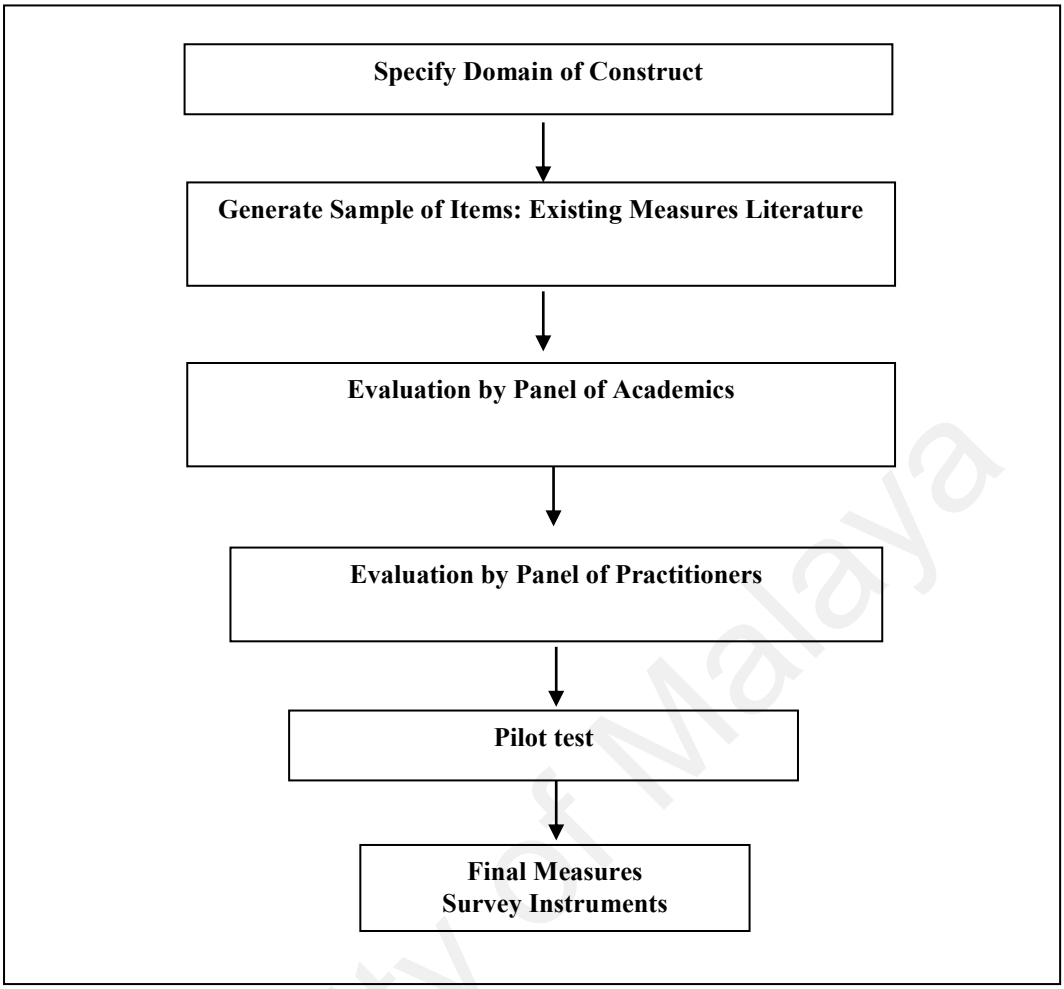


Figure 3.4: Framework for development of measures (Malhotra & Grover, 1998)

Face validity or content validity refers to the subjective judgment of experts that the content of the measure is accurate enough to represent the scale and the construct is precisely reflected by the measurement items (Zikmund, 2012). According to Zikmund (2012) both face validity and content validity refer to the same thing. Nevertheless, some studies have differentiated between face validity and content validity. For example, face validity has been defined as the evaluating test to examine whether the items are clear and understandable to the respondents, whereas content validity examines whether the items of the questionnaire represent and tap the content (Cavana et al., 2001). According to Cavana et al. (2001), content validity should be done by experts of the respective field, while face validity should be carried out among few

respondents. Therefore, the first pre-test was carried out through panel of academics while the second pre-test was performed to a sample of undergraduate students (the target population for this study).

To ensure the content validity, the questionnaire instrument was provided to six academic experts in the field of finance and one industry expert to evaluate how well the items of the questionnaire represent and tap the contract and whether the whole concept is reflected by the measuring scale. The selected persons were all experts in the field of finance included members from both public universities in Malaysia as well as finance industry. Each academic expert and the industry expert are asked to state their opinion about how well the set of items can measure the constructs under consideration on the scale of (1) very weak estimate to (5) very strong estimate.

The experts' feedback were carefully considered and used to refine the questions in the survey. In addition, the questions asked by the experts were clarified as well as ambiguous statements were modified based on the experts' opinions. However, in an effort to determine the face validity, the questionnaire was distributed to 30 undergraduate business and economic students to examine whether the questions were clear enough to understand. Refinements to the words used in the questions were carried out based on the feedback received from the respondents.

3.10 OPERATIONALISING THE MEASURES

3.10.1 Financial risk tolerance

There are many studies that have employed financial risk tolerance as an important factor in the process of developing investment and financial planning models (Grable 1997; Leimberg et al., 1993). There are numerous tools that attempt to measure financial risk tolerance. A number of empirical studies have used the Survey of Consumer Finance (SCF) single item risk tolerance assessment question (Gutter & Hanna, 2005). But, many researchers have questioned the use of single –item measure (Carr, 2014). However, in this study, the financial risk tolerance construct is adapted and modified from Ben-Ner and Halldorsson (2006), Wärneryd (1996), Weber, Weber, and Nosic (2013), and Wood and Zaichkowsky (2004). Prior studies used these questions to measure the willing to take risk (risk tolerance). Brooks, Davies, and Egan (2008) suggested that this scale differentiates individuals with high-risk tolerance from those with low-risk tolerance and that it has high reliability. However, risk tolerance is sometime referred as risk attitude as well as inverse of risk aversion in the literature (Carr, 2014; Hanna & Jonathan, 2003; Nosic & Weber, 2010).

In this study, these questions were modified to suit the objective and scope of measuring financial risk tolerance. Moreover, undergraduate business and economics students were chosen as respondents in this study as an attempt to resolve the issue of unfamiliarity of the financial terms. As many studies have questioned the assumption that many researcher make while administering the questionnaire that the respondents are financially literate (Carr, 2014). According to Carr (2014) one simple mistake might have big negative impact on the assessment of risk tolerance. Thus, the researcher dealt with the questions with care and attempted to make it suitable for the target respondents. In order to make the questionnaire simple and understandable for the respondents, this

study uses a 5-point Likert scales representing a range from (1) strongly disagree to (5) strongly agree. The items of the dependent variable (financial risk tolerance) are presented in Table 3.4.

Table 3.4: Scale items related to financial risk tolerance

	Financial Risk Tolerance	**Strongly Disagree** **Moderate** **Strongly Agree**
a.	If I believe an investment will carry profit, I am willing to borrow money to make this investment.	1--------2----------3----------4--------5
b.	I believe I need to take more financial risks if I want to improve my financial position.	1--------2----------3----------4--------5
c.	I am willing to run the risk of losing money if there is also a chance that I will make money.	1--------2----------3----------4--------5
d.	I am willing to take risks, such as starting a business or gambling, unlike other people who prefer a secure job with fixed pay to an uncertain venture.	1--------2----------3----------4--------5
e.	I want to be sure my investments are safe. (reverse-coded)	1--------2----------3----------4--------5

Financial risk tolerance construct is explained to the panel of academics and the practitioner as extent the to which they perceive that using financial risk related question will help financial advisors to measure individuals' financial risk tolerance. The academics rated at an average of 4 (on the scale of 1, very weak estimate to 5, very strong estimate) as the content validity of this construct, whereas the practitioner rated at an average of 3.5 (maximum score of 5.00). Last, the sample undergraduate students rated at an average of 4.5 (maximum score of 5.00) for the ease of answerability of this construct.

3.10.2 Propensity for regret

Based on the prior studies, propensity for regret is conceptualised in this study as the degree to which financial advisors can use it to improve the measure of individuals' financial risk tolerance (Albaity & Rahman, 2012; Pan & Statman 2012). The conceptualisation of propensity for regret construct is adapted and modified from Bergman et al. (2007), Bruine de Bruin et al. (2007), Heitmann et al. (2007), Saffrey et al. (2008), Spunt et al. (2009), Zeelenberg and Pieters (2007) and Creyer and Ross (1999). The wordings of the items and items scale are reported in Table 3.5.

Table 3.5: Scale items related to propensity for regret

	Propensity for Regret	**Strongly Disagree** **Moderate** **Strongly Agree**
a.	Whenever I make a financial choice, I am curious about what would have happened if I had chosen differently.	1--------2----------3----------4--------5
b.	Whenever I make any financial decision, I try to get information about how the other alternatives turned out.	1--------2----------3----------4--------5
c.	If I make a choice and it turns out well, I still feel like something of a failure if I find out that another choice would have turned out better.	1--------2----------3----------4--------5
d.	When I assess my financial performance due to my financial choice, I think about opportunities I have passed up.	1--------2----------3----------4--------5
e.	Once I make a financial decision, i dont look back. (reverse-coded)	1--------2----------3----------4--------5
f.	I think I will never really feel good about my financial decision where many alternatives are available.	1--------2----------3----------4--------5

Propensity for regret construct is explained to the panel of academics and the practitioner as the extent to which they perceive that using regret related question will help financial advisors to measure individuals' propensity for regret. The academics rated at an average of 4 (maximum score of 5.00) as the content validity of this construct, whereas the practitioner rated at an average of 3.6 (maximum score of 5.00).

Last, the sample undergraduate students rated at an average of 4.5 (maximum score of 5.00) for the ease of answerability of this construct.

3.10.3 Propensity for trust

Propensity for trust is important construct in predicting financial decision making and it is conceptualised in this study as the degree to which financial advisors can use it to improve the measure of individuals' financial risk tolerance (Luhmann, 1979; Statman, 2008; Seligmen, 1997). The operationalisation of propensity for trust is adapted and modified from Almond and Verba (1963), Ben-Ner and Halldorsson (2010) and Naef and Schupp (2009). The wordings of items and items scale are reported in Table 3.6.

Table 3.6: Scale items related to propensity for trust

	Propensity for Trust	**Strongly Disagree** **Moderate** **Strongly Agree**
a.	Generally speaking I think most of the people in the financial market can be trusted.	1--------2----------3----------4--------5
b.	I am confident that I can trust people to be involved in making financial investments.	1--------2----------3----------4--------5
c.	I am confident that I can trust financial institutions.	1--------2----------3----------4--------5
d.	I am confident that I can trust mutual fund manager's investment decision.	1--------2----------3----------4--------5
e.	I am confident that I can trust the information provided by financial advisors.	1--------2----------3----------4--------5
f.	I am confident that I can trust my friends' advices regarding financial investment.	1--------2----------3----------4--------5

Propensity for trust construct is explained to the panel of academics and the practitioner as the extent to which they perceive that using trust related question will help financial advisors to measure individuals' propensity for trust. The academics rated at an average of 4 (maximum score of 5.00) as the content validity of this construct, whereas the practitioner rated at an average of 3.9 (maximum score of 5.00). Last, the sample

undergraduate students rated at an average of 4.5 (maximum score of 5.00) for the ease of answerability of this construct.

3.10.4 Happiness in life

In this study happiness in life refers to financial happiness/satisfaction in life. Therefore, items of this measure are more reflective of "financial happiness/satisfaction" in life. However, to make it more simple and understandable to the layman, the term "happiness in life" is used throughout the study instead of financial happiness/satisfaction in life. The literature on happiness in life shows that it is an important construct in predicting financial decision making (Chou et al., 2007; Isen & Patrick, 1983; Pan & Statman, 2012). Happiness in life is conceptualised in this study as the degree to which financial advisors can use it to improve the measure of individuals' financial risk tolerance. The operationalisation of happiness in life is adapted and modified from Argyle et al. (1989), Diener et al. (1985), World Value Survey 2010-2012, Lelkes (2009), OHI, Argyle, Martin, and Crossland (1989), Pavot & Diener (1993), and Lyubomirsky and Lepper (1999). The wordings of the items and items scale are reported in Table 3.7.

Table 3.7: Scale items related to happiness in life

Happiness in Life	**Strongly Disagree** **Moderate** **Strongly Agree**
a. In general, I am very happy with my financial condition.	1--------2----------3----------4--------5
b. I am satisfied with the financial situation of my parents.	1--------2----------3----------4--------5
c. All things considered, I am very satisfied with my life as a whole.	1--------2----------3----------4--------5
d. I am not very much interested in other people financial wealth and happiness.	1--------2----------3----------4--------5
e. I rarely wake up feeling depressed for my daily life financial dealings.	1--------2----------3----------4--------5
f. I enjoy life regardless of my financial constraint, getting the most out of everything.	1--------2----------3----------4--------5

Happiness in life construct is explained to the panel of academics and the practitioner as the extent to which they perceive that using happiness related question will help financial advisors to measure individuals' happiness in life. The academics rated at an average of 4.2 (maximum score of 5.00) as the content validity of this construct, whereas the practitioner rated at an average of 4.3 (maximum score of 5.00). Last, the sample undergraduate students rated at an average of 4.4 (maximum score of 5.00) for the ease of answerability of this construct.

3.10.5 Propensity to attribute success to luck

Propensity to attribute success to luck is a strong factor in predicting individuals' financial risk tolerance (Hanna et al., 2008; Post et al., 2008). The conceptualisation of propensity to attribute success to luck construct is adapted and modified from Maltby, Day, Gill, Colley, and Wood (2008) and Wood and Zaichkowsky (2004). The wordings of items and items scale are reported in Table 3.8.

Table 3.8: Scale items related to propensity to attribute success to luck

	Propensity to Attribute Success to Luck	**Strongly Disagree Moderate Strongly Agree**
a.	Luck plays an important part in financial decisions' outcomes.	1--------2----------3----------4--------5
b.	Some people are consistently lucky, and others are unlucky in getting good financial returns.	1--------2----------3----------4--------5
c.	I believe in luck for any financial return.	1--------2----------3----------4--------5
d.	I often feel like it's my lucky day to make financial decisions.	1--------2----------3----------4--------5
e.	I consistently have good luck regarding financial outcomes.	1--------2----------3----------4--------5
f.	When one of my financial decisions performs poorly, I feel unlucky.	1--------2----------3----------4--------5

Propensity to attribute success to luck construct is explained to the panel of academics and the practitioner as the extent to which they perceive that using luck related question

will help financial advisors to measure individuals' propensity to attribute success to luck. The academics rated at an average of 4.2 (maximum score of 5.00) as the content validity of this construct, whereas the practitioner rated at an average of 4.1 (maximum score of 5.00). Last, the sample undergraduate students rated at an average of 4.6 (maximum score of 5.00) for the ease of answerability of this construct.

3.10.6 Propensity for overconfidence

Propensity for overconfidence is vital construct in predicting risky investment decision making, and this construct is concerned with the degree to which financial advisors can use it to improve the measure of individuals' financial risk tolerance (Baber & Odean, 2011; Doerr et al., 2011; Pan & Statman, 2012). The conceptualisation of propensity for overconfidence towards financial risk tolerance is measured using items adapted and modified from Wood and Zaichkowsky (2004). The wordings of the items and items scale are reported in Table 3.9.

Table 3.9: Scale items related to propensity for overconfidence

	Propensity for Overconfidence	**Strongly Disagree** **Moderate** **Strongly Agree**
a.	I feel more confident in my own opinions about financial decisions over opinions of my friends and colleagues.	1--------2----------3----------4--------5
b.	I believe that on average my financial decisions will be better than others.	1--------2----------3----------4--------5
c.	When I have a successful decision, I feel that my actions and knowledge affected the result.	1--------2----------3----------4--------5
d.	I feel more confident in the validity of financial information that I collect myself.	1--------2----------3----------4--------5
e.	I feel more confident in my own opinions about financial decisions over opinions of people that are expert in financial matters.	1--------2----------3----------4--------5

Propensity for overconfidence construct is explained to the panel of academics, and the practitioner as extent to which they perceive that using overconfidence related question will help financial advisors to measure individuals' propensity for overconfidence. The academics rated at an average of 4.2 (maximum score of 5.00) as the content validity of this construct, whereas the practitioner rated at an average of 3.8 (maximum score of 5.00). Last, the sample undergraduate students rated at an average of 4.6 (maximum score of 5.00) for the ease of answerability of this construct.

3.10.7 Propensity for social interaction

In the proposed research model, social interaction is defined as "the degree of individuals' involvement with their neighbors" (Hong et al., 2005). Based on the prior studies, propensity for social interaction is conceptualised in this study as the degree to which financial advisors can use it to improve the measure of individuals' financial risk tolerance (Hong et al., 2005). The conceptualisation of propensity for social interaction towards financial risk tolerance is measured using items adapted and modified from Hong et al. (2005) and Moely, Mercer, Ilustre, Miron, and McFarland (2002). The wordings of the items and items scale are reported in Table 3.10.

Table 3.10: Scale items related to propensity for social interaction

	Propensity for Social Interaction	**Strongly Disagree Moderate Strongly Agree**
a.	In the last four weeks, I often took part in the various activities organized by student clubs and societies (e.g., teaching program for orphans, educational, etc.).	1--------2----------3----------4--------5
b.	I often involve in doing some volunteer work in my faculty.	1--------2----------3----------4--------5
c.	I am an active member of my department society.	1--------2----------3----------4--------5
d.	I participate in faculty student society action program.	1--------2----------3----------4--------5
e.	I do not face difficulties in choosing subjects for any semester.	1--------2----------3----------4--------5
f.	I often attend my classmates' birthday party and marriage ceremony.	1--------2----------3----------4--------5

Propensity for social interaction construct is explained to the panel of academics, and the practitioner as extent to which they perceive that using social interaction related question will help financial advisors to measure individuals' propensity for social interaction. The academics rated at an average of 4 (maximum score of 5.00) as the content validity of this construct, whereas the practitioner rated at an average of 4.0 (maximum score of 5.00). Last, the sample undergraduate students rated at an average of 4.5 (maximum score of 5.00) for the ease of answerability of this construct.

3.10.8 Religiosity

Religiosity is considered as moderator in the proposed model on the relationship between behavioural factors and financial risk tolerance. This construct is concerned about individuals' level of religiousness. Based on the prior studies, religiosity is conceptualised in this study as the degree to which it can strength or weaken the relationship between behavioural propensities and financial risk tolerance. The operationalization of religiosity is measured using ten items adapted from Worthington et al. (2003). Mokhlis (2008) used this religiosity scale in the context of Malaysia, which was reported to be highly reliable ($\alpha = 0.85$). The wordings of the items and items scale are reported in Table 3.11.

Table 3.11: Scale items related to religiosity

	Religiosity	Strongly Disagree Moderate Strongly Agree
a.	Religion is especially important to me because it answers many questions about the meaning of life.	1--------2----------3----------4--------5
b.	I often read books and magazines about my religion.	1--------2----------3----------4--------5
c.	I spend time trying to grow the understanding of my faith.	1--------2----------3----------4--------5
d.	My religious beliefs lie behind my whole approach to life.	1--------2----------3----------4--------5
e.	I make financial contributions to my religious organization.	1--------2----------3----------4--------5
f.	I enjoy spending time with others of my religious affiliation.	1--------2----------3----------4--------5
g	Religious beliefs influence all my dealings in life.	1--------2----------3----------4--------5
h	It is important to spend time in private religious thought and prayer.	1--------2----------3----------4--------5
i	I enjoy taking part in activities of my religious organization.	1--------2----------3----------4--------5
j	I keep well informed about my local religious group and have some influence in its decision.	1--------2----------3----------4--------5

Religiosity construct is explained to the panel of academics, and the practitioner as extent to which they perceive that using religious practice related question will help financial advisors to measure individuals' level of religiosity. The academics rated at an average of 4.5 (maximum score of 5.00) as the content validity of this construct, whereas the practitioner rated at an average of 4.5 (maximum score of 5.00). Last, the sample undergraduate students rated at an average of 4.5 (maximum score of 5.00) for the ease of answerability of this construct.

3.11 SURVEY INSTRUMENT AND STRUCTURE

The questionnaire is self- administered to the target populations. In self-administered questionnaire, respondents read and respond to the questions without the help of a trained interviewer. The self-administered survey can be carried out across wide geographical area at minimum cost. Moreover, respondents can fill it out at their most convenient time. But the main disadvantage of self-administered survey is that the respondents may choose not to complete the full survey and leave it incomplete. Thus, researchers need to administer a larger number of questionnaires to obtain the targeted sample size.

The survey was consisted of four parts. The first part represented the questions of the behavioural propensities, to examine their influence on the Malaysian undergraduate students' financial risk tolerance. The second part presented the questions about religiosity, which has been used as a moderating variable to test whether religiosity moderates the relationship between behavioural propensities and financial risk tolerance. The third part consisted of questions that measured the dependent variable (financial risk tolerance). Finally, the fourth part consisted of questions regarding demographic characteristics of the respondents.

The first three parts were measured using a 5-point Likert scales with anchorage from strongly disagree (1) to strongly agree (5). One of the main advantages of Likert scale is that it is relatively easy for respondents to respond and less time consuming compared to open-ended questions. However, part four was consisted of five questions gender, age, ethnicity, marital status, and religion. Ethnicity is also used as moderating variable to test whether it moderates the relationship between behavioural propensities and financial risk tolerance. Moreover, ethnicity and gender were used to examine whether

there is a difference among ethnic groups and gender with respect to financial risk tolerance and behavioural propensities. Table 3.12 represents the variables used in this study and items for each variable.

Table 3.12: The parts, variables and items of the questionnaire

Part	Variables	No of Items	Total Items
1	**Behavioural propensities**		
	-Propensity for Regret	6	
	-Propensity for Trust	6	35
	-Happiness in life	6	
	-Propensity to attribute success to Luck	6	
	-Propensity for Overconfidence	5	
	-Propensity for Social interaction	6	
2	**Moderating Variable:**		
	-Religiosity	10	10
3	**Dependent Variable:**		
	Financial Risk Tolerance	5	5
4	Demographic Characteristics	5	5
	Total of Items		55

3.12 SAMPLING DESIGN

This section outlines the determination of the target population and discusses the sample size, sampling frame as well as sampling technique. Sampling refers to the procedures that determine sufficient samples from the target population to generalize the findings from sample to the whole population (Cavana et al., 2001). The reason behind collecting samples instead of considering the whole population is because the examination of the whole population is not viable in terms of time and cost particularly when the number of population is big. However, the sample should be representative to the population to draw conclusions on the whole population (Cooper & Schindler, 2003; Zikmund, 2012). Prior studies have also noted that the sample size should not under or overestimate the population as it may cause the biasness of the representative sample (Cooper & Schindler, 2003). The sample of this study is the Malaysian undergraduate business and economics students, which will be selected from the total local undergraduate students

registered at the faculty of business and economics in six public universities in the Klang Valley.

3.12.1 Population and sampling

This study is interested in the data of behavioural propensities that may influence financial risk tolerance particularly in case of Malaysia. The right respondents should have been the actual investors. However, as the purpose of this study is to capture individuals' perceived behaviour; so, Malaysian undergraduate business and economics students can be considered as a good proxy for the investors. Since, they have studied financial management courses and are aware about the financial terms used in the questionnaire. The appropriateness of student samples for the context of this research is notable. Thus, the notion that students cannot be considered as proxy of investors for this study as they do not have money to invest is fragile for the scope of this study. In addition, students have been used in many studies (Anbar & Eker, 2010; Chinen & Endo, 2012; Ford & Kent, 2009; Nga & Ken Yien, 2013).

The researcher decided to collect data from local undergraduate business and economics students registered in six public universities in the Klang Valley. The undergraduate business and economics students were chosen as respondents in this study as an attempt to resolve the issue of unfamiliarity of the financial terms. As many studies have questioned the assumption that many researchers make while administered the questionnaire that the respondents are financially literate (Carr, 2014). He also claimed that one simple mistake might have big negative impact on the assessment of risk tolerance. Thus, it is hoped that the student samples will address the issue raised by the researcher since business and economics students are aware about the finance terms used in the

questionnaire and will satisfy the research objectives as: (1) the main objective is to examine the relationship between behavioural propensities and financial risk tolerance.

Apart from the usefulness of student samples for the context of this research, it is generally a very attractive source of data for behavioural sciences studies particularly for academic research (Cunningham, Anderson, & Murphy, 1974; Enis, Cox, & Stafford, 1972). For instance, a business journal survey shows that 20% to 33% of consumer research articles employed student samples and 75% of it used convenience sampling (Cunningham et al., 1974).

Besides, prior studies on consumer behaviour research found significant accuracy of student responses to the other consumers. For example, Clevenger, Lazier, and Clark (1965) noted a substantial harmony in factor patterns between students and metropolitan housewives. Many marketing professors used male, undergraduate business student as samples, despite the fact that the consumer of interest is housewife (Enis et al., 1972). As Enis et al. (1972) suggested that students subjects effectiveness rests on several factors like research context, problem, objectives, and hypothesis. All these criteria indicate student as appropriate samples for this study. In addition, numbers of behavioural economics studies in decision-making suggest that young-adults act similarly to adult-adults when it relates to their core behaviours which justify the argument of using college students as a subject pool (Enis et al., 1972).

Moreover, many high impact factor journals' articles in behavioural finance, economics, and psychology used student as their samples, for example Statman (2008), Elliott, Hodge, Kennedy, and Pronk (2007), Noussair, Trautmann, and Van de Kuilen (2013), Weber, Blais, and Betz (2002), Wood and Zaichkowsky (2004), Gillespie,

Consulting, and Highhouse (2008), Jeffrey Inman (2007), and Schwartz et al. (2002). On a different note, Dan Ariely, a well-known Professor of Psychology and Behavioural Economics at Duke University for example, published many articles in scholarly journals of psychology, business, and economics using student as samples. In September 20 (2012), he posted a strong arguments in his Blog about "Real-world Endowment" to justify the reliance on student samples. In his argument, first, he mentioned that young adult act very similar to the adult-adults regarding their core actions. Second, he explained that the endowment effect[2] influences both students and experienced people, thus the assumption of the protective role of real-world experience is insignificant. Finally, he suggested that students and experienced individuals operate their brains and decisions making techniques under same restrictions therefore, the notion about students as the real people may have to be accepted (most of the time). In addition, the researcher have chosen only students from the faculty of business and economics since they have the basic knowledge about finance and perhaps most of them end up working with financial institutions. Thus, the assessment of financial risk tolerance of the student samples considered in this study has an important implication for financial advisors as well as for government in Malaysia.

3.12.2 Target population

It is necessary to identify the target population first to determine the required sample size. Target population refers to the total number of elements targeted to collect the sample for any research project. Target population is defined by Zikmund (2012) as "the specific complete group relevant to the research project". However the sample selection process must be scientific and the specifications of the sample as well as its characteristics should match with the target population to ensure the representativeness

[2] Endowment effect refers to the effect when we value the things we own more than identical products that we do not own. This causes a mismatch between buyers and sellers, where buyers are often willing to spend less than the seller deems an acceptable price.

of the entire population (Zikmund, 2012). In this study, the researcher confirmed that the sample specifications was within the target population and consistent in its characteristics. The target population for this study is Malaysian undergraduate business and economics students in Malaysian six public universities in the Klang Valley.

The rationales for selecting students as target population are many as mentioned in the section 3.12.1. In addition to that, the cost of collecting responses from student is very low and thus it allows researchers to collect data from larger number of respondents (Johnston & O'Malley, 1985). Household or telephone surveys record the name, address and phone number of the respondents while in student survey these information of the respondents are undeclared, which presents a greater degree of anonymity and low non-response rate (Johnston & O'Malley, 1985). In addition, self-administration of the questionnaire is permitted in student survey (Johnston & O'Malley, 1985).

The Klang Valley (Malay: Lembah Klang) is known as the part of Selangor state in Malaysia comprising Kuala Lumpur, its suburbs, adjoining cities and towns ("Klang Valley", 2010). Since most of the Malaysian public universities' business and economics schools are located in the Klang Valley, the researcher finds it as suitable place for collecting data. Table 3.13 presents the number of registered Malaysian undergraduate business and economics students in each university selected for the study sample. The total population in the faculty of business and economics in these universities was 11,190 (Provided by the faculty of each university). The students were selected regardless of the enrolment year as each student may have different year of enrolment. As it is difficult to have each student's year of enrolment.

Table 3.13: Public universities and registered local undergraduates students in Business and Economics School

Universities	Student number
University of Malaya (UM)	1349
Putra University, Malaysia (UPM)	1324
National University of Malaysia (UKM)	1444
University Technology Malaysia (UTM)	658
MARA University of Technology (UiTM)	4000
International Islamic University Malaysia (UIAM)	2415
Total	**11,190**

3.12.3 Sampling technique (Quota sampling)

The present study is adapting the quota non-probability sampling technique for selecting survey respondents. Quota sample is considered as stratified non-random sample. Prior studies used quota sampling when the targeted population was highly heterogeneous and various characteristics such as ethnicity, religious affiliation explain the population (Cooper & Schindler, 2003). The purpose of using quota sampling in this study is to increase the representativeness of the elements in the targeted population and ensure the adequate elements from the minority groups.

In this study, the main control dimensions of the population are ethnicity and place of birth as the target population is Malaysian undergraduate business and economics students in Malaysian public universities in the Klang Valley. The researcher divides the population according to ethnic groups (e.g., Malay, Chinese, and Indian), then desired sample from each ethnic group is determined to have the representativeness of the population. However, the respondents are chosen non-randomly. When the quota for each ethnic group is achieved, the researcher stops recruiting respondents from that particular ethnic group.

3.13 SAMPLING FRAME

Sampling frame presents the element list from which sample is taken and closely relates to the population (Cooper & Schindler, 2003). In this study, the sampling frame is the listed and registered Malaysian undergraduate students studying in the Business and Economics School of the six public universities mentioned in Table 3.13.

3.14 SAMPLE AND PROCEDURES

According to the information provided by the faculties from six public universities mentioned in the Table 3.13, the total population of this study is 11,190. Prior studies have proposed some general guidelines for determining sample size. For example, Cavana et al. (2001) asserted that the appropriate number of respondents for most researches are larger than 30. However, the general consensus for sample size is that the larger the samples size the better (Pallant, 2010). According to Cavana et al. (2001), the sample size should be 10 times or more of the number of the constructs used in the study to run multiple regression analysis. Besides, Zikmund (2012) claimed that the accuracy and the preciseness of the research results depend on the sample size. In other word, the larger the sample size is, the more accurate the results of the study. In addition, large samples are better in a sense that it represents small groups in the population (Cooper & Schindler, 2003). In this study, a total of 1679 respondents, which is 15% of the targeted population of 11,190 were taken as a sample to have adequate number of respondents from the smallest group (Indian 7.5%) to make reliable conclusion.

The sample drawn from the six public universities is according to the percentage of undergraduate business and economics students in each university.

Table 3.14 represents the number of Malaysian undergraduate business and economics students in each university. To make the sample representative of the three ethnic groups, the researcher constructed the percentage based on the Tenth Malaysian Plan 2011-2015. According to the plan, the population size in 2012 is as follows: Malay 66.1%, Chinese 24.9%, Indian 7.5%, and others 1.5% (Gutter & Copur, 2011; Hurley, 2006). To investigate the financial risk tolerance among Malaysian undergraduate students, in terms of country of origin, the respondents will only be Malaysian. Table 3.14 represents the sample design of the study.

Table 3.14: Sample design

	UM	UPM	UKM	UTM	UITM	UIAM	Total
Total Population	1349	1324	1444	658	4000	2415	11,190
Respondents % in each university	12%	12%	13%	6%	36%	21%	100%
Sample size 15%	202	199	217	99	600	362	1679
Malay 66.1%	135	133	144	66	397	240	1115
Chinese 24.9%	51	50	54	25	150	91	421
Indian 7.5%	16	15	17	8	45	28	129

3.15 PILOT TEST

The purpose of conducting pilot test is to determine the reliability of the scale used in the study. It helps to ensure the reliability of the whole scale as well as to know whether the respondents clearly understand the questions. The reliability scores of the items ensure the consistency of the measurement instrument. Moreover, pilot test is also used to know whether there is any potential problem during actual data collection. Besides, the fundamental issues in the design of the survey tool can be examined through pilot test. However, Cavana et al. (2001) asserted that the questionnaire should be pilot-tested among few respondents from the targeted population. In this study, all the items of the

variables were adopted from the prior studies and modified to suit the research objectives. The pilot test was carried in February 2013.

The pilot test of this study was conducted among 200 Malaysian undergraduate business and economics students to examine its validity and reliability. A total of 169 completed questionnaires without missing data were used to test the reliability. The sample respondents in the pilot study were not included in the actual survey. According to Cavana et al. (2001) reliability analysis is related to the goodness of measures and displays consistency and stability of the measuring instrument. The main objective of the reliability analysis is to examine the internal consistency which basically checks the consistency among the items of the variables and whether the items of the scale measure the same construct. Moreover, Hair et al. (2011) stated that the items of the scale should be highly inter-correlated. The pilot test showed no serious problem and displayed consistency in measuring the instrument. However, minor modifications were made in the wording of the items of the constructs based on respondents' comments. For example, an original item of financial risk tolerance construct was "I am prepared to take greater risks (possibility of initial losses) in order to earn greater future returns" and the modified version is "I am willing to run the risk of losing money if there is also a chance that I will make money". According to an academic experts in the field of finance and one industry expert, both items carry the same meaning.

According to Hair et al. (2006) the Cronbach's alpha (α) value closer to 1 shows more consistency in the scale. They also noted that Cronbach's alpha (α) value .70 can be considered as the lower limit but in exploratory study it can be as low as .60. Overall, the reliability analysis showed the presence of sufficient reliability for all the constructs

in this study. The results of the pilot test also indicated the presence of face validity. Table 3.15 shows the results of the reliability analysis from pilot test.

Table 3.15: Reliability analysis from pilot test

Constructs	Cronbach's Alpha
Religiosity	0.922
Propensity for trust	0.824
Propensity for regret	0.670
Happiness in life	0.761
Propensity to attribute success to luck	0.754
Propensity for overconfidence	0.649
Propensity for social interaction	0.873
Financial Risk Tolerance	0.792

3.16 SURVEY MEDIUM

To collect the data, the finalized questionnaire was designed as a booklet with simple and short sentences that will take 10-15 minutes to complete. The next step after developing the questionnaire booklets is to distribute the questionnaire booklets among the targeted respondents to collect the data. To do so, the questionnaires are distributed via hardcopy booklets to reach to ultimate respondents. Professors and lecturers from the universities listed in the Table 3.13 are contacted through email and in person to allow the researcher to conduct survey in the class among their local undergraduate students. This strategy helped to increase the percentage of response rate for the survey compared to personally administered questionnaire. Similar approach has been adopted by others to improve response rate (Mallasi, 2013).

However two strategies were suggested to the lecturers and professors to choose. In the first strategy, the researcher distributes questionnaires during the class and students will fill it instantly. As a second strategy, the researcher provides the questionnaires to the

lecturers or professors before the class and they distribute to their students to take it home and return it in the next class. Next the researcher collects the questionnaires from the lecturers or professors. In an effort to have high response rate, a reminder e-mail is sent to the lecturers or professors to remind their students to bring back the questionnaire in the next class. However, in the data collection process, students were not briefed before answering the questionnaire as it might influence their choice of answer.

3.17 DATA ANALYSIS PLAN

Various statistical techniques are used in this study to analyse the collected data and test the hypotheses. According to Cavana et al. (2001) the collected data should be analysed using appropriate data analysis techniques to test the hypotheses. However, the main objective of data analysis is to transform the data into information. The sub-sections discuss about the purpose of each statistical technique used in this study. The data is collected through administration of the hardcopy survey and the collected data is entered in the statistical package for the social science (SPSS) version 17. The various statistical analyses are conducted using either SPSS version 17 or AMOS version 18. Precisely, the descriptive statistics of the respondents, testing normality, linearity, milticollinearity, reliability analysis and Exploratory Factor Analysis (EFA) are conducted using SPSS while Confirmatory Factor Analysis (CFA) for each variable, measurement model and structural model are carried out using AMOS. The following data analysis techniques are used in this study to achieve the research objectives:

- Descriptive statistics of demographic information of the respondents.
- Testing various assumptions such as normality, linearity and milticollinearity.
- Reliability test.
- Exploratory factor analysis for all variables.

- Confirmatory Factor Analysis (CFA) for independent variables and dependent variable
- Assessment of the structural model.
- ANOVA and t- test for examining the differences between ethnic groups and gender with respect to behavioural propensities and financial risk tolerance.
- SEM analysis for assessing moderating effect of religiosity and ethnicity.

3.18 RELIABILITY ANALYSIS

Reliability test refers to the analysis that is carried out after collecting the data to determine the adequacy of the internal consistence by observing the Cronbach's alpha (α) coefficient. Internal consistency is the degree to which all the items in the scale measure the same underlying characteristic (Pallant, 2010). The internal consistency can be measured in many ways but Cronbach's alpha is the most commonly used statistic. According to Hair et al. (2006), reliability is the extent to which the observed construct is error free and measures the true value. Thus, a reliability test is used to evaluate the goodness of the measurement scale and to see whether the measurement scale is indeed measuring what it supposed to measure. Hair et al. (2006) suggest that if α value of a construct is greater than 0.7, then the items scale are considered as reliable while Malhotra (2010) posits that a value above 0.60 is satisfactory. However, the high α value (near to 1) indicates greater reliability (Malhotra, 2007) and the higher reliability value of the construct provides better prediction to the dependent variable (Hair et al., 2006). The reliability analysis should be carried out despite the fact that the measurement instruments for the variables are adopted from previous studies. The reason behind this is that the scope and the target population of the current study are different from prior studies. As such, it can be expected that there could be some item that are not relevant to the context of this study.

3.19 EXPLORATORY FACTOR ANALYSIS (EFA)

The purpose of Exploratory Factor Analysis (EFA) is to refine and minimize the data to find a set of interrelated variables that reflect the original structure of the variables (Hair et al., 2006). Factor analysis is mainly used to check whether the items are in the right construct. Malhotra (2007) noted that factor analysis is carried out for the purpose of summarizing and reducing the data of interrelated variables and to identify a few factors to describe the association among those variables. Factor analysis is carried on all the variables even though all the items of the variables are adopted from past studies and those variables could be directly used for CFA. The reason behind performing the factor analysis is because some items of the variables are taken from various sources which may create problem for the items of the variables to be loaded together.

In addition, the researcher had a large set of variables and hypothesizes in which the observed variables can be interrelated to each other due to the underlying structure. But the nature of the structure was not known to the researcher which directed the researcher to perform EFA to uncover the exact structure. For instance, the explanatory factor analysis might define the number of factors exist and the correlation between factors and the association between variables and factors. The Kaiser-Meyer-Olkin (KMO) values within the range of 0.5 to 1.0 indicate that the EFA is significantly appropriate for the data collected (Hair et al., 2010). Bartlett's test of sphericity is also used to know the suitability of the factor analysis which is achieved when p value is significant.

3.20 PROCEDURE FOR CONFIRMATORY FACTOR ANALYSIS (CFA)

Confirmatory Factor Analysis (CFA) is performed to confirm the number of factors, relationship among them, and the relation between measurable variables and the factors. Malhotra (2007) suggest that CFA is used to identify the salient items that denote a specific variable. In addition, Ashill and Jobber (2010) noted that CFA is used to determine the convergent and discriminant validity. The objective of the CFA analysis is to examine the hypothesized structure and the theoretical model about the structure (Ullman, 2010). Usually, CFA is carried out using sample covariance instead of the correlation like EFA, which indicates the extent of linear relations in terms of measurement scale for the particular variables (Ullman, 2010). Moreover, it was reported that "CFA exhibits how well the specification of factors matches the actual data" (Hair et al., 2006, p. 774). CFA is better compared to EFA in order to produce precise number of factors as it includes sampling error (Conway & Huffcutt, 2003).

Multiple iteration process of CFA should be performed on the measurement models to purify the items. Item purification process involves finding potential items to be deleted from the measurement model. This purification process through CFA should be continued until the parameter estimates yields acceptable goodness-of-fit (GOF) for the measurement model (Hair et al., 2010). A model with good fit allows researchers to analyse the hypothesized relationships among variables. CFA will be carried on all the constructs used in this study. More specifically, independent variables (propensity for regret, propensity for trust, happiness in life, propensity to attribute to success to luck, propensity for overconfidence, and propensity for social interaction), moderating variable (religiosity), and dependent variable (financial risk tolerance) will be included in the measurement model. The GOF indices are presented in Table 3.16.

3.21 STRUCTURAL EQUATION MODELING (SEM)

There are number of SEM assumptions that need to be reviewed prior to examine a model. For example, the sample size must be adequate to successfully run the test on SEM. Ideally, the sample size need to be large to carry out SEM as compared to other multivariate tests (e.g. Chin, 1998; Hair et al., 2010). This is because the outcomes may be subject to unreliable with smaller data sample (Hair et al., 2010). Hair et al. (2010) posit that the sample size should be at least 100 in order to run SEM. Iacobucci (2010) also recommends that the adequate sample size to conduct SEM is 100-150. Furthermore, some researchers have suggested that 1:5 ratio (each parameter should be represented by at least five respondents) (Bentler & Chou, 1987). The total number of items for this study is 50 and a minimum of 250 is required to maintain 1:5 ratio. The sample of 1204 is clearly above the threshold size. Large samples are preferable as it allows the analysis to achieve proper solution (Anderson & Gerbing, 1988). Thus, this study fulfils the requirement to use SEM to assess the model.

Next, the number of items used to measure the variable should be a minimum of three (Iacobucci, 2010). The author also suggests not to be very conservative and too concerned with the fit measures. Basically, a good study should have sound explanations for academicians and practitioners. Finally, the data must be normal to carry out statistical analysis via SEM. The distribution of the data is very sensitive when testing hypotheses using SEM. Data that is highly deviated from normal distribution may inflate the chi-square statistics, which eventually affect the coefficients and standard errors of the construct (Hair et al., 2010; Steenkamp & Baumgartner, 2000). Thus, the normality is a salient assumption that needs to be reviewed prior to use SEM.

The examination of structural model is carried out after conducting CFA on the data set. Basically, SEM combines the measurement and structural models into a single model. The advantage of SEM is that it allows estimating the magnitude of error term while path analysis via multiple regression analysis assumes that the error terms are zero (Kaplan, 2000). Hair et al. (2006) noted that SEM has the ability to test a chain of dependent relationships simultaneously. For example, in trust – financial risk tolerance relationship, trust construct can be an independent variable in explaining the financial risk tolerance (dependent variable) and at the same time it also can be a dependent variable to financial risk tolerance (independent variable).Therefore, SEM has relatively higher analyzing capability with regard to nonlinearities, modelling-interactions, measurement errors, correlated error terms, and multiple latent independents/dependents relationships (Kumar et al., 2008). They also argue that the graphical modelling interface of SEM is attractive to the researchers as it eases the interpretation of the model. Thus, the present study uses structural equation modelling (SEM) to test both the direct relationship between independent variables (behavioural propensities) and dependent variable (financial risk tolerance) as well as moderating effect of religiosity and ethnicity on the proposed model.

3.22 FIT INDICES

The purpose of model-fit-indices analysis is to "determine the degree to which the sample varience-covarience data fit the SEM" (Schumacker & Lomax, 2004, p.100). The evaluation of model fit for the measurement model and the structural model is not straightforward and thus numerous model-fit-indices are documented in the literature. According to Hair et al. (2010) there is no need to report all the model-fit-indices as they can be redundant. There are three types of indices used to assess the model fit namely absolute, incremental, and parsimony indices (Hair et al., 2010). Hair et al.

(2010) also noted that absolute fit measures test how well the deduced theory fits the data. While, incremental fit measures examine how good a specified model fits relative to the null model. Null model refers to the model that assumes there is no correlation among the observed variables. Lastly, parsimony fit measures represent the adjusted R^2 in regression. Parsimony fit indices can be determined based on PRATIO, PCFI, PNFI. These three Goodness-of-Fit (GOF) indices help researchers to identify the best model among the competing models. Table 3.16 reports the model fit indices and recommended thresholds.

However, as claimed by Hair et al. (2010), the researcher should report χ^2 value and the associated of *df* along with at least one absolute index (e.g. RMSEA, RMR and GFI) and one incremental index (e.g. NFI and CFI). Chi-square value should not be used as the only indicator for model fit as it is affected by the sample size (Byrne, 2006; Hu & Bentler, 1999). Based on the recommendations from several authors (Byrne, 2006; Chinna, 2009; Hair et al., 2010; Schumacker & Lomax, 2004), this study will use three indices to assess the model fit (such as absolute, incremental and parsimony indices). In addition, Hoelter's critical N will be reported as it is used to determine whether the sample size is adequate (Hoelter's N > 200). Hoelter's N < 75 is deemed to be unacceptable (Hair et al., 2006; Hu & Bentler, 1999; Kline, 2005). However, there is no consensus on the indices that need to be reported. Hu and Bentler (1999) suggested the inclusion of SRMR, NNFI, TLI, RMSEA or CFI while Kline (2005) recommended the reporting of Chi-Square test, RMSEA, CFI and SRMR indices. Hinkin (1995) expressed that fit indices > 0.85 are acceptable.

Table 3.16: Model fit indices and recommended thresholds

Model Fit Indices	Note	Threshold Value	References
Absolute Fit Index:	Absolute Fit Index examines the level of effectiveness of the model		
χ^2	The chi-square is sensitive to large sample	$\rho > 0.05$	(Byrne, 2006 ; Chinna, 2009, Hair et al., 2010)
RMSEA	A lower value of RMSEA indicates a better model fit	≤0.08	Hooper, D., Coughlan, J., & Mullen, M. (2008).
RMR	A lower value of RMR indicates a better model fit	≤0.10	(Kline. 2005)
GFI	The possible range of GFI values is 0 to 1 with higher values indicating better fit	≥ 0.90	(Byrne, 2006 ; Chinna, 2009, Hair et al., 2010
Incremental Fit Index:	Incremental Fit Index-to investigate model fit to the relative baseline model		
CFI	The possible range of CFI value is 0 to 1 with higher values indicating better fit	≥ 0.90	
NFI	The possible range of NFI value is 0 to 1 with higher values indicating better fit	≥ 0.90	
Parsimony Fit Index:	Parsimony Fit Index is used to compare best model fit to its relative complexity		
CMIN/DF (χ^2/df)	Less than 3.00 is preferred, up to 5.00 is acceptable	≤5.0	(Schumacker & Lomax, 2004)
PRATIO		>.90	(Hair et al., 2006)
Other Important Fit Index:			
HOELTER 0.05 HOELTER 0.01		>200 >200	(Hair et al., 2006; Hu & Bentler, 1999; Kline, 2005)

Garver and Mentzer (1999) suggested that a model's unidimensionality, construct reliability and construct validity can be examined in measurement model. Unidimensionality indicates the extent to which the items measured are related with each other and the items represent one factor (Hattie, 1985). It can be tested using GOF (Garver & Mentzer, 1999) and direction of path and the significant level of each

variable (Byrne, 2001; Garver & Mentzer, 1999). Items with positive directions and statistically significant provide evidence for unidimensionality (Byrne, 2001).

3.22.1 Construct reliability

Construct reliability refers to the degree to which the items are representing a factor and it can be determined based on composite reliability (CR) and average variance extracted (AVE) (Peter 1979). The former signifies the consistency of the items within the same construct (Lu et al., 2007) while AVE refers to the amount of variance that represents the construct in relation to the variance caused by measurement error (Taylor & Hunter, 2003). The acceptable threshold for composite reliability value is 0.60 (Lawson-Body & Limayem, 2004; Nunnally, 1978). However, several authors noted that CR > 0.50 is also acceptable (Johnson & Stevens, 2001; Sridharan, Deng, Kirk, & Corbitt, 2010). According to Fornell and Larcker (1981) the items should explain at least 50% of variance (AVE > 0.50) of the construct. However, considering the recommendations by several authors (Bourgeois, Prater, & Slinkman, 2011; Kim & Li, 2009), this study will use 0.4 as the threshold. The composite reliability is calculated using the following formula.

Composite Reliability $$CR = \frac{\left(\sum \lambda_i\right)^2}{\left(\sum \lambda_i\right)^2 + \sum Var\left(\varepsilon_i\right)}$$

where λ_i = standardized loadings, Var denotes variance, and ε_i is the measurement errors (Raykov, 1997).

Likewise, AVE is calculated using the following formula.

Average Variance Extracted $$AVE = \frac{\Sigma\left(\lambda_i^2\right)}{\Sigma\left(\lambda_i^2\right) + \Sigma Var\left(\mathcal{M}_i\right)}$$

where λ_i is the standardized loadings, Var denotes variance, and $\mathfrak{M}_i$ is the measurement error (Fornell & Larker, 1981).

3.22.2 Construct validity

Construct validity can be determined using convergent and discriminant validity. Convergent validity refers to the extent to which the items are measuring the construct while the later refers to how distinct a construct is in relation to other constructs (Garver & Mentzer, 1999).

Convergent validity refers to "the extent to which multiple methods of a construct yield the same results" (Ahire & Devaraj, 2001, p. 321). Convergent validity can be achieved in two ways; first the standardized regression weights (factor loadings) must be significant ($\rho<0.001$) and secondly the loadings should be above 0.70 (Hair et al., 2006). According to Hair et al. (2006), a lower standardized regression weight > 0.50 is acceptable to determine the convergent validity. Once convergent validity is satisfied, an examination of discriminant validity follows. Discriminant validity is defined as the degree to which a construct is truly distinct from other constructs (Hair et al., 2006).

Discriminant validity can be determined by following two step procedures; (1) AVE of each construct need to be calculated and (2) it has to be compared with squared inter-construct correlation estimates (squared correlation). According to Fornell and Larcker (1981), discriminant validity is achieved when the square root of AVE score is higher than the correlations shared between two variables. In short, when the model achieves the unidimensionality, construct reliability (CR and AVE) and construct validity

(convergent and discriminant validity), then it can be concluded that the model fits quite well with the data and therefore the findings of this study can be generalized.

3.23 T-TEST AND ANOVA

In this study, t-test is carried out using social science (SPSS) version 17 to find whether there is a difference between male and female respondents in terms of behavioural propensities and financial risk tolerance. Next, ANOVA will be used to examine the difference between ethnic groups in terms of behavioural propensities, financial risk tolerance. The null hypothesis will be rejected if F-test is significant ($p < 0.05$), which indicates that there is difference between the groups. The finding of t-test is used to find out the difference between the variance of the two groups while ANOVA provides evidence to find out the difference between more than two groups.

3.24 CHAPTER SUMMARY

This chapter presents the independent, dependent and moderating variables and its relationships in the proposed research model. All together 32 hypotheses were developed to test the relationships in the model and fulfil the research objectives. It then discussed the survey instruments and sampling design covering population and sample, target population and sampling techniques. Prior to actual data collection, pilot test was carried out for reliability. Subsequently, survey medium and data analysis plan were discussed. It then discusses the EFA, CFA, and SEM analysis procedure. Finally, it reports fit indices and explains the procedure to test the construct reliability, construct validity, T-test, and ANOVA.

CHAPTER 4

DATA ANALYSIS AND FINDINGS

4.1 CHAPTER OVERVIEW

In chapter three, a detailed discussion about research methodology and research design are presented. However, data collection process along with response rate, examination of data entry and the treatment of missing values, assessment of various statistical assumptions such as normality, linearity, reliability and multicollinearity, respondents' profiles, Exploratory Factor Analysis (EFA), measurement model and structural model assessment as well as hypotheses testing using SPSS and AMOS software are described in this chapter. The goals of this chapter are to:

- Describe the data collection procedure and determine the response rate of the distributed questionnaires
- Examine the data management process as well as treatment of missing data to have cleaned data
- Assess various statistical assumptions to obtain unbiased results from the statistical analysis used in this study
- Describe the demographic analysis of the respondents participated in this study
- Report the exploratory factor analysis using SPSS
- Evaluate and analysis overall measurement model and structural model fit using AMOS
- Test hypothesis for full model and moderation effects of the research model

4.2 DATA COLLECTION PROCESS AND RESPONSE RATE

The data for this study were collected using administrative survey method. For the data collection, hard copy questionnaires were distributed among local undergraduate students, who are studying in the field of business, economics, finance and accountancy in Malaysian public universities in the Klang Valley. The Klang Valley is an area in the Selangor state of Malaysia, where most of the public universities that have large number of undergraduate students are located (Malaysian Ministry of Higher education, MMHE, 2010). The lecturers and professors were contacted to conduct the survey in their respective classes to reach bigger number of students.

A total of 1679 questionnaires were distributed in six public universities, namely the International Islamic University Malaysia (IIUM), University of Malaya (UM), University Kebangsan Malaysia (UKM), University Putra Malaysia (UPM), University Technology Malaysia (UTM) and University Technology of MARA (UiTM) by the help of many lectures and professors. English was used throughout, as the medium of instruction of the six public universities that were used for this study are English. In addition, based on the respondents view they were comfortable answering questionnaire in English. The data were collected during May 2013 to March 2014 and questionnaires were not distributed to the students during their examinations period. The survey instruments were only consisted of close-ended questions. However, the total 1314 questionnaires were returned, and only 1204 questionnaires were usable for the analysis, yielding a response rate of approximately 78 percent [(1314/1679) × 100 =78%]. (The rest of questionnaires had missing responses.) A sample of the questionnaire is enclosed in Appendix A.

4.3 EXAMINATION OF DATA ENTRY AND MISSING VALUES

The data analysis proceeded with the data screening and treatment of missing data. The evaluation of data entry and handling of missing data is essential step prior to perform data analysis (Hair et al., 2011). However, the data from a total of 1204 useable questionnaires were entered in SPSS. Prior to data analysis, an examination of data entry and treatment of missing data values were employed in this study. A frequency analysis was carried out on all the items to check the incorrect entries. Firstly, all the entries were checked case by case followed by checking the descriptive statistics including mean, standard deviation and frequency distribution.

Besides, the cleanness of the dataset was verified through checking whether entries of responses were in the range of 1 to 5 for all the 1204 respondents since a Likert scale of five (1–strongly disagree, 2-disagree, 3-neutral, 4- agree, 5-strongly agree) was used to collect the data for this study. This procedure was employed for the categorical demographic data, accordingly and no entries were found to be in disorder. Based on the frequency distribution statistics, no missing values were found in the dataset. Finally, some typo errors were found in some demographic variables and those errors were corrected in SPSS data sheet by checking back to the questionnaires.

4.4 ASSESSMENT OF NORMALITY AND OUTLIERS

In general, normality is a critical important assumption to conduct Structural Equation Modelling (SEM) analysis (Byrne, 2013). The validity for many statistical procedures, particularly parametric tests depends on the normality of the data, which refers to the shape of the data distribution of the variables (Ghasemi & Zahediasl, 2012). The aim of the normality test is to check whether the data are multivariate normal. Normality test helps to identify the appropriate techniques (parametric or non-parametric) to test the

hypothesis. Ghasemi and Zahediasl (2012) posited that the accuracy and reliability of conclusions about the reality are impossible when normality and other assumptions do not hold. Pallant (2010) reported that the violation of normality assumption is not an issue to worry about when the sample size is large enough (> 30 or 40). However, normality test was carried out in this study and used to determine the appropriate techniques in testing hypothesis, even though the sample size is 1204 which is considered as large sample size. In addition, the data outliers may also cause the dataset not to be normally distributed (Bianchi & Saleh, 2010), thus an attempt was made to find the outlier cases.

Two most popular ways to assess the normality are to check the skewness and kurtosis, which describe the distribution or shape of a dataset and complementary to the graphical normality assessment (Ghasemi & Zahediasl, 2012). Skewness examines the distribution of a dataset, whether it is highly skewed to the left or right while kurtosis examines the flatness or peakedness of a distribution. A skewness value of within ±2 standard error of skewness and a value of within ±3 standard error of kurtosis establish normality of the data (Hair et al., 2006).

The summary of the skewness and kurtosis values as documented in Table 4.1 shows that skewness value for financial risk tolerance is -0.238 while kurtosis is 1.512. Propensity for regret (PR) has skewness of -0.026 and kurtosis of 0.885. The skewness value of propensity for trust (PR) is -0.246 and kurtosis is 0.809. Skewness for happiness in life (HL) is -0.090 while kurtosis is 0.574. The skewness for Religiosity (REL) has a value of -0.643 while kurtosis value is 0.315. Next the skewness value for propensity for social interaction (PSI) is -0.022 and kurtosis is -0.189. Propensity to attribute success to luck (PASL) has a skewness value of -0.390 and kurtosis value of

0.862. Finally, propensity for overconfidence (POC) has a skewness value of 0.038 while kurtosis value of 0.758. The highest mean score reported among all the variables is for the REL, while lowest mean score is for PT.

Table 4.1: Descriptive statistics

Variables	Mean	Std. Deviation	Skewness	Kurtosis
FRT	3.605	.389	-.238	1.512
PR	3.506	.430	-.026	.885
PT	2.945	.510	-.246	.809
HL	3.218	.592	-.090	.574
PASL	3.162	.425	-.390	.862
POC	3.270	.542	.038	.758
PSI	3.110	.589	-.022	.189
REL	3.834	.728	-.643	.315

FRT = Financial risk tolerance, PR = propensity for regret, PT = propensity for trust, HL = happiness in life, PASL = propensity to attribute success to luck, POC = propensity for overconfidence, PSI = propensity for social interaction, REL = religiosity.

Based on the descriptive statistics results, it is found that no skewness and kurtosis scores are extreme (> 3) as shown in the Table 4.1. The above findings from the descriptive statistics confirm the existence of univariate normality in the data set as kurtosis scores for all the variables including the ultimate dependent variable are within the maximum level of normality range (≤3) (Bianchi & Saleh, 2010; Ghasemi & Zahediasl, 2012). Hence, it can be concluded that the cleaned data set are not having any serious issue in normality, and can be assumed that the data is normally distributed.

4.5 ASSESSMENT OF LINEARITY AND HOMOSCEDASTICITY

Correlation analysis describes the relationship between variables. Correlation analysis also examines the direction and the degree of the strength of the relationship between variables. Correlation analysis was carried out for all the eight variables in this study, including moderating variable (Religiosity). The results of the correlation analysis as presented in the Table 4.2 show the initial evidence of relationship between variables. From the correlation analysis Table 4.2, it is observed that all coefficients are significant at the 0.01 level. The dependent variable FRT had moderately strong relationship with PT (r=.331) and low strength of relationship with PSI (r=.077), though it is significant at the 0.01 level. The highest correlation coefficient for PR was (r=.206) with FRT and lowest correlation coefficient is (r=.114) with PT and both of the coefficients are significant. Similarly, the highest correlation coefficient for PT was (r=.331) with FRT and lowest correlation coefficient is (r=.095) with POC, but statistically significant.

However, a moderately strong relationship is exhibited between HL and POC with (r=.305). Next, PSI has moderately strong relationship with PT (r=.264). POC has moderately strong relationship with HL (r=.305) and low strength of relationship with PT (r=.095). Finally, the highest correlation coefficient for PASL is (r=.285) with POC and lowest correlation coefficient is (r= .113) with PSI.

The range of significant correlation coefficients for this study as indicated in the Table 4.2 is .076 to .331. According to Cohen's Guidelines, a correlation coefficient value between 0.3 and .49 is regarded as moderately strong and a value higher than .5 indicates high strength of relationship. It is observed from the results of the correlation analysis that all the correlation coefficients are significantly correlated to one another. Overall, the correlation among the variables range from moderate to low in strength.

Therefore, it can be concluded that the assumptions of linearity between the items of the variables are hold (since the variables are not strongly correlated).

Table 4.2: Correlation analysis

Variables	PT	HL	POC	PR	PSI	PASL	FRT
PT	1.000						
HL	0.135**	1.000					
POC	0.095**	0.305**	1.000				
PR	0.114**	-0.135**	0.180**	1.000			
PSI	0.264**	0.140**	0.076**	0.194**	1.000		
PASL	0.131**	0.188**	0.285**	0.155**	0.113**	1.000	
FRT	0.331**	-0.127**	0.217**	0.206**	0.077**	0.220**	1.000

** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed). FRT = Financial risk tolerance, PR = propensity for regret, PT = propensity for trust, HL = happiness in life, PASL = propensity to attribute success to luck, POC = propensity for overconfidence, PSI = propensity for social interaction, REL=Religiosity.

Next, P-P plot is also observed in this study to test the linear relationship among variables as recommended by Hair et al. (2006) and Pallant (2010). An observed pattern of the plots close to the diagonal line in P-P plots graph shows the existence of linearity (linear relationship among variables). The P-P plots graph for eight variables as enclosed in Appendix B, shows that the linearity between the items for the variables is achieved.

Finally, scatterplot was used to test the homoscedasticity of the data. Homoscedasticity refers to the variance uniformity of "dependent variables exhibiting similar amounts of variance across the range of predictor variables" (Stamatis, 2001, p.140). Commonly, Scatterplot and Boxplot are used to evaluate homoscedasticity. In this study, scatterplot was used to test the homoscedasticity of the data. The scatterplot graph for seven variables as enclosed in Appendix D, shows the achievement of homoscedasticity assumption.

4.5.1 Correlations between behavioural propensities and financial risk tolerance

Table 4.2 illustrates the correlations between behavioural propensities which includes propensity for regret, propensity for trust, happiness in life, propensity to attribute success to luck, propensity for overconfidence, and propensity for social interaction.

In terms of propensity for regret, the result indicated that regret is positive and significantly related to all others variables under studied except happiness in life. This finding indicates that respondents who have high regret are less happy in their life. Moreover, respondents with relatively high levels of regret have relatively high financial risk tolerance, high propensity for trust, high propensity for overconfidence, high propensity for social interaction, and high propensity to attribute success to luck. However, the strongest relationship between propensity for regret and other propensities is associated with propensity for social interaction. Thus, financial advisors can emphasis one's propensity for social interaction, while they analysis the relationship between propensity for regret and financial risk tolerance.

Pertaining to propensity for trust, the results indicate that trust is positive and significantly related to all others variables under studied. More specifically, respondents with relatively high levels of trust have relatively high financial risk tolerance, high propensity for overconfidence, high propensity for social interaction, high propensity for regret, high propensity to attribute success to luck, and higher levels of happiness in life. It might seem odd that a high propensity for trust is associated with a higher level of happiness in life, yet propensity for trust is associated with high financial risk tolerance, while happiness in life is associated with low financial risk tolerance. It is possible that a high propensity for trust increases financial risk tolerance as it reduces

the salience of risk, while happiness in life reduces financial risk tolerance as it reduces the importance of regret.

The results show that respondents who have high levels of happiness in life possess relatively high propensity for trust (PT), high propensity for overconfidence (POC), high propensity for social interaction (PSI), high propensity to attribute success to luck (PASL), low propensity for regret (PR), and low financial risk tolerance (FRT). It might seem odd that a higher level of happiness in life is associated with a high PT, POC, PSI, and PASL, yet happiness in life is associated with low financial risk tolerance, while PT, POC, PSI, and PASL are associated with high financial risk tolerance. It is possible that a high propensity for PT, POC, PSI, and PASL increase financial risk tolerance as it reduces the salience of risk, while happiness in life reduces financial risk tolerance as it reduces the importance of regret.

High propensity for overconfidence is associated with high propensity for trust (PT), high levels of happiness in life (HL), high propensity for social interaction (PSI), high propensity to attribute success to luck (PASL), high propensity for regret (PR), and high financial risk tolerance (FRT). However, the relationships are strong between HL, PASL and POC. Thus, financial advisors can emphasis one's HL and PASL, while they analysis the relationship between POC and FRT. Moreover, the strongest relationship between propensity for social interaction and other propensities is associated with propensity for trust. Therefore, financial advisors can emphasis one's propensity for trust, while they analysis the relationship between propensity for social interaction and financial risk tolerance.

4.6 DEMOGRAPHIC ANALYSIS

This part deals with the analysis of respondents characteristics who participated in this study. Table 4.3 illustrates the demographic profile of the respondents which includes gender, age, ethnicity, religion and marital status. The demographic analysis is based on a total of 1204 responses collected.

In terms of gender, the result indicated that the female respondents are more compare to male respondents. From the responses of the survey, 391out of 1204 respondents are male, which is approximately 32% and 813 respondents are female, which represents about 68% of the total responses collected. The reason behind the difference in the percentage is because in the target population (local undergraduate university students studying business, economics and accountancy), the number of female is higher than male (Malaysian Ministry of Higher education [MMHE], 2010). However, in terms of age, the result reports that it varied between bellow 20 to 30 years old and above. The results show that the majority of the respondents are in the range of 21 to 25 years about (68%), followed by the age group of 20 years and bellow (29.8%) and the age group between the range of 26 to 30 (2.2%). The researcher aimed for 66.1% Malay, 24.9% Chinese, and 7.5% Indian respondents, which represents Malaysian population according to the Tenth Malaysian Plan 2011-2015. The results show that the majority of the respondents are Malays approximately (67%), followed by Chinese about (25%), and Indian approximately (8%).Thus the sample of this study is representative to the ethnicity in the structure composition of the Malaysian population. The categories of the marital status show that majority of the respondents are single with 1083 people about (90%) while 115 respondents are married (9.6%) and others (0.5%). Regarding the religion of the respondents, the majority of 836 respondents are Muslim which

represents about 70% of the responses, while approximately 22% of the respondents are Buddhists, about 5% are Hindus and approximately 3% are Christians.

According to the Tenth Malaysian Plan 2011-2015, the majority of the Malaysian population is Muslim. To some extent, this study demonstrates some similarities in Religion in the structure of the Malaysian population.

Table 4.3: Demographic profile

Variables	Group	Frequency	Percentage
Gender	Female	813	68
	Male	391	32
Age	20 years and bellow	358	29.8
	21 to 25	820	68
	26 to 30	26	2.2
Race	Malay	806	67
	Chinese	301	25
	Indian	97	8
Marital status	Single	1083	90
	Married	115	9.6
	Others	6	0.05
Religion	Buddhists	266	22
	Christians	38	3
	Hindus	64	5
	Muslim	836	70

4.7 RELIABILITY TEST

Reliability test determines the adequacy of the internal consistence by observing the Cronbach's alpha (α) coefficient (Pallant, 2010). Table 4.4 reports the results of the reliability test for all the constructs. Cronbach's alpha indicates that all the measures are reliable with alpha ranging from as low as 0.60 to as high as 0.94 (Hair et al., 2010; Malhotra, 2010; Pallant, 2010). According to Hair et al (2006) when the α value of a

construct is greater than 0.7, then the items scale are considered as reliable while Malhotra (2010) suggests that a value above 0.60 is satisfactory. However, the high α value (near to 1) indicates greater reliability (Malhotra, 2007) and the higher reliability value of the construct provides better prediction to the dependent variable (Hair et al., 2006).

After (RT5) deleted, FRT construct achieves α value of 0.80, which is above 0.70 and acceptable according to Malhotra (2007). The deleted item is a reverse coded item. The item RT5 is "I want to be sure my investments are safe." REL construct achieves Cronbach's alpha (α) value of 0.92 while PT, PASL and PSI achieves Cronbach's alpha value of 0.80, 0.79, and 0.85 respectively. Finally, PR, HL, and POC achieves Cronbach's alpha value of 0.65, 0.69, and 0.69 respectively which are regarded as reliable according to Malhotra (2007). As shows in Table 4.4 of the reliability results, all variables have the required level of Cronbach's alpha value exceeding 0.60, hence, showing that the scale uses in measuring the internal consistency of the constructs achieves the required level of internal consistency.

Table 4.4: Reliability score of the constructs

Constructs	Cronbach's Alpha
Religiosity	0.92
Propensity for trust	0.80
Propensity for regret	0.65
Happiness in life	0.69
Propensity to attribute success to luck	0.79
Propensity for overconfidence	0.69
Propensity for social interaction	0.85
Financial Risk Tolerance	0.80

FRT = Financial risk tolerance, PR = propensity for regret, PT = propensity for trust, HL = happiness in life, PASL = propensity to attribute success to luck, POC = propensity for overconfidence, PSI = propensity for social interaction, REL=Religiosity.

4.8 EXPLORATORY FACTOR ANALYSIS (EFA)

The value of Kaiser-Meyer-Olkin (KMO) for both independent variables and dependent variable together is 0.848, indicating that the EFA is significantly appropriate for the data collected since KMO is within the range of 0.5 to 1.0, while the Bartlett's test of sphericity indicate p value as 0.000, which is highly significant as the p value is less than 0.001, indicating the suitability of the factor analysis. Table 4.6 shows that all the items are sorted into eight components or factors and the factor loadings for all the items loaded together with a variable are above 0.50 which is regarded as significant (Hair et al., 2010). Therefore, all items of the variables can be retained and used in the multivariate analysis. In addition, the EFA results reveal that Eigen value of all the eight variables are more than 1 and represents 59.489 in terms of the total variance explained. Moreover, five items (REL4, RE5, OC4, H4, and RT5) are eliminated from the factor analysis due to their low factor loading value (<.50) and loading alone under one factor, which is recommended by Pallant (2010).

Table 4.5: KMO and Bartlett's test for independent variables

Kaiser-Meyer-Olkin and Bartlett's Test	Results
Measure of Sampling Adequacy	.848
Bartlett's Test of Sphericity- Chi Square	18807.307
Df	741
Significance	.000

Table 4.6: EFA outputs of the main variables

Final Factors									
Items	1	2	3	4	5	6	7	8	
	REL	**PR**	**PT**	**PSI**	**PASL**	**POC**	**HL**	**FRT**	**Reliability**
REL1	.775								0.92
REL2	.799								
REL3	.776								
REL5	.750								
REL6	.771								
REL7	.832								
REL8	.803								
REL9	.819								
REL10	.685								
RE1		.783							0.68
RE2		.697							
RE3		.579							
RE4		.686							
T1			.700						0.80
T2			.749						
T3			.770						
T4			.799						
T5			.725						
S1				.678					0.85
S2				.826					
S3				.880					
S4				.892					
S5				.839					
S6				.855					
L1					.765				0.80
L2					.703				
L3					.778				
L4					.828				
L5					.673				
OC1						.790			0.70
OC2						.755			
OC3						.789			
H1							.771		0.70
H2							.767		
H3							.729		
RT1								.801	0.81
RT2								.697	
RT3								.730	
RT4								.744	
Eigen Value	6.29	2.27	2.65	3.27	4.16	1.42	1.76	1.822	
Variance explained	15.4	5.6	8.3	7.8	7.2	4.6	5.6	5.8	
Total variance explained = 59.498 %									

FRT = Financial risk tolerance, PR= propensity for regret, PT = propensity for trust, HL = happiness in life, PASL = propensity to attribute success to luck, POC = propensity for overconfidence, PSI = propensity for social interaction, REL = religiosity.

4.9 MEASUREMENT MODEL

After a solution is selected from various estimated EFA solutions, Confirmatory Factor Analysis (CFA) is performed to confirm the number of factors, relationship among them, and the relation between measurable variables and the factors. According to Malhotra (2007), CFA is used to identify the salient items that denote a specific variable. In addition, Davis and Cosenza (1993) note that CFA is used to determine the discriminant validity. The objective of the CFA analysis is to examine the hypothesized structure and the theoretical model about the structure (Ullman, 2010). Usually, CFA is carried out using sample covariance instead of the correlation that used in EFA, which indicates the extent of linear relations in terms of measurement scale for the particular variables (Ullman, 2010). However, CFA is performed using AMOS software for all unobserved constructs, independent variables, moderating variable (religiosity) and dependent variable before examining the full structural model. Figure 4.1 presents the measurement model of this study.

4.9.1 Assessment of goodness of fit

CFA is carried out on measurement model to assess the validity and unidimentionality of the items of all the variables. Multiple iteration process of CFA is performed on the measurement models to purify the items. Item purification process involves finding potential items to be deleted from the measurement model. This purification process through CFA continues until the parameter estimates yields acceptable goodness-of-fit for the measurement model.

Figure 4.1 presents the measurement model of this study which includes independent variables, dependent variable and moderating variable. However, measurement model which includes only independent variables is presented in Appendix E. final

measurement model after some modification, achieves a satisfactory goodness-of-fit (GOF) with relative chi-square value CMIN/df of 3.582, RMSEA 0.046, CFI of 0.911, GFI of 0.912, NFI of 0.90, and PNFI of 0.787 as reported in the Table 4.7. GFI, AGFI, CFI, RMSEA indices are more than threshold and Hoelter's critical N‘for 0.5 and 0.1 level is above 200 representing that the sample is adequate (Refer Table 4.7). The output of the regression weight table (Refer Table 4.8) also shows that all the items indicate positive directions and the paths are statistically significant at (α=0.001). Thus, based on GOF, direction of the path, and significant level, it can be concluded that there is a presence of unidimentionality of the items of all the constructs. Furthermore, the model achieves convergent validity, as the standardized regression weights of the model are above 0.50 (Refer Table 4.8). Finally, parsimony goodness-of-fit index (PRATIO) = 0.892 indicates the complication (number of estimated parameters) of the hypothesized model in the assessment of overall model fit. Thus, the measurement model achieves the required GOF.

The acceptable goodness-of-fit for the independent variables measurement model are achieved after one item is deleted from PR variable, two items deleted from PSI variable, one item from REL and one item from PASL. But, no items are required to be eliminated from HL, POC and PR. Five items are eliminated from the initial measurement model to attain the required GOF. However, the reasons behind the deletion of four items from the independent variables are owing to large error covariance among the items and low standardized loadings (λ) values. There is no enormous agreement about the cut-off point of the factor loading; the recommendation range from 0.40 to 0.70. However this study uses the cut-off point of 0.50 as many researchers claim that factor loading above 0.5 is good (Hair et al., 2006, 2010) even though 0.40 is deemed to be sufficient for scale development purposes (Nunnally,

1978). However, the standardized loadings (λ) for all the items of the variables are more than 0.50, which also show unidimensionality among the items of the dependent variable.

Table 4.7: Fit indices for measurement model

Model Fit Indices	Note	Threshold Value	Observed value
Absolute Fit Index:	Absolute Fit Index examines the level of effectiveness of the model		
χ^2	The chi-square is sensitive to large sample	$\rho > 0.05$	.000
RMSEA	A lower value of RMSEA indicates a better model fit	≤0.10	.046
RMR	A lower value of RMR indicates a better model fit	≤0.10	.044
GFI	The possible range of GFI values is 0 to 1 with higher values indicating better fit	≥ 0.90	.912
Incremental Fit Index:	Incremental Fit Index-to investigate model fit to the relative baseline model		
CFI	The possible range of CFI value is 0 to 1 with higher values indicating better fit	≥ 0.90	.911
NFI	The possible range of NFI value is 0 to 1 with higher values indicating better fit	≥ 0.90	.902
Parsimony Fit Index:	Parsimony Fit Index is used to compare best model fit to its relative complexity		
CMIN/DF (χ^2/df)	Less than 3.00 is preferred, up to 5.00 is acceptable	≤5.0	3.582
PRATIO		>.90	.892
Other Important Fit Index:			
HOELTER 0.05 HOELTER 0.01		>200 >200	371 386

Table 4.8: Measurement model regression weights

			Estimate	S.E.	C.R.	P	SRW
T3	<---	PT.	1.000				.690
T2	<---	PT.	.753	.044	16.958	***	.553
H3	<---	HL.	1.000				.608
H2	<---	HL.	1.167	.080	14.670	***	.684
H1	<---	HL.	1.117	.076	14.657	***	.674
OC2	<---	POC.	1.000				.741
OC1	<---	POC.	.717	.063	11.337	***	.622
RE2	<---	PR.	1.000				.599
RE1	<---	PR.	1.288	.095	13.558	***	.717
OC3	<---	POC.	.805	.071	11.399	***	.601
S4	<---	PSI.	1.000				.900
S3	<---	PSI.	.956	.027	35.843	***	.862
S2	<---	PSI.	.759	.026	29.166	***	.730
S1	<---	PSI.	.627	.031	20.470	***	.559
RE3	<---	PR.	1.005	.088	11.367	***	.623
RE4	<---	PR.	.894	.072	12.380	***	.612
L3	<---	PASL	1.000				.774
L2	<---	PASL	.816	.049	16.691	***	.525
L1	<---	PASL	1.029	.046	22.238	***	.705
T4	<---	PT.	1.204	.052	23.035	***	.859
L4	<---	PASL	1.109	.046	24.006	***	.797
T5	<---	PT.	.974	.046	21.367	***	.719
RL8	<---	REL.	1.148	.047	24.358	***	.783
RL7	<---	REL.	1.161	.046	25.278	***	.818
RL6	<---	REL.	1.053	.043	24.221	***	.778
RL5	<---	REL.	1.013	.045	22.496	***	.715
RL3	<---	REL.	.954	.043	21.955	***	.697
RL2	<---	REL.	1.184	.050	23.575	***	.755
RT4	<---	FRT.	1.000				.730
RT3	<---	FRT.	1.593	.168	9.492	***	.714
RT2	<---	FRT.	1.271	.134	9.473	***	.595
RT1	<---	FRT.	1.001	.126	7.973	***	.801
RL1	<---	REL.	1.029	.045	22.728	***	.723
RL10	<---	REL.	1.000				.672
RL9	<---	REL.	1.207	.047	25.709	***	.834

SRW = Standardized Regression Weight

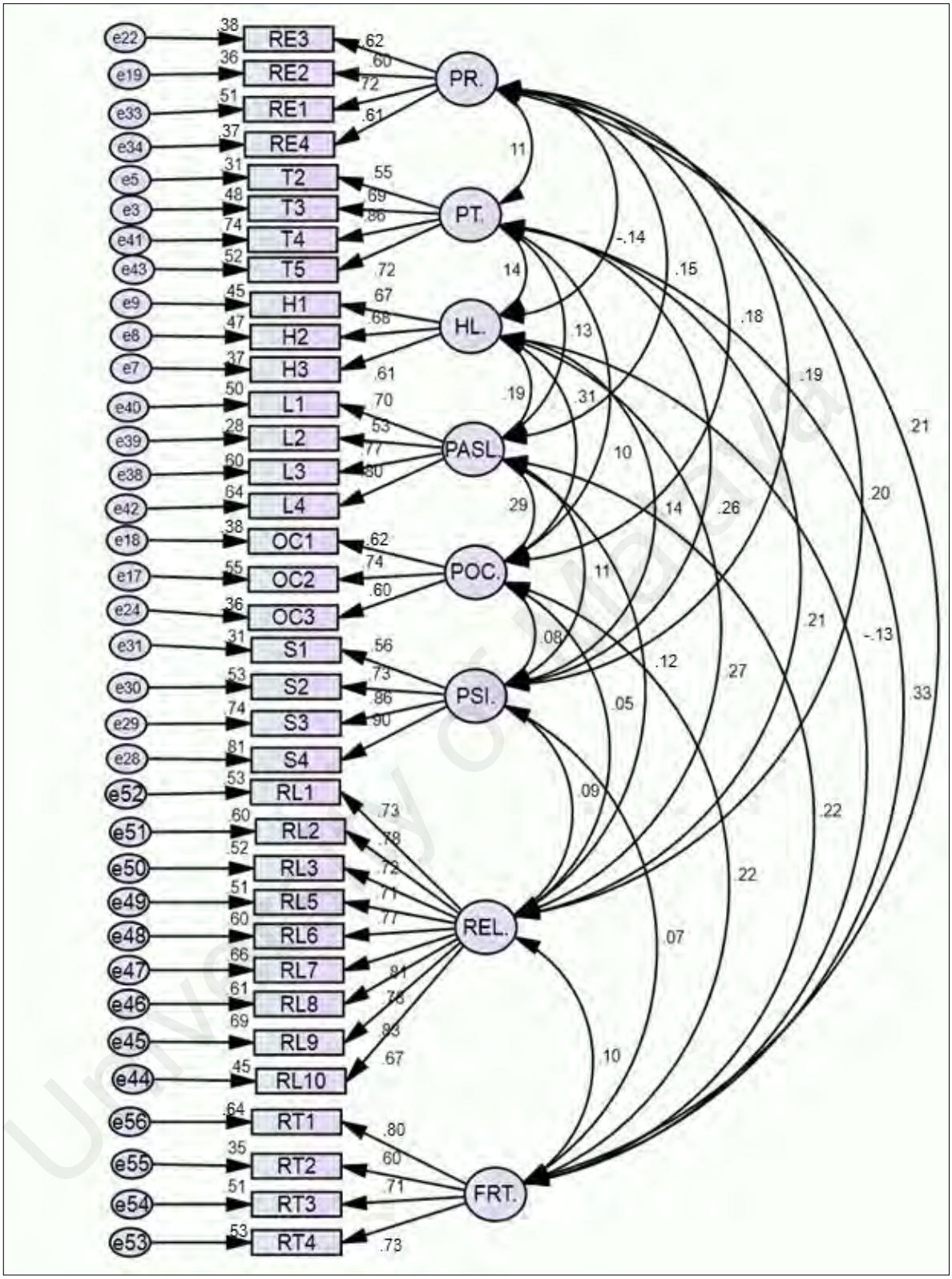


Figure 4.1: Measurement model (CFA Diagram for independent variables, dependent variable and moderation variable).

4.9.2 Construct reliability

This study determines construct reliability using composite reliability (CR> .70) and average variance extracted (AVE> 0.50). The CR value more than 0.70 indicates high level of consistency. The CR of Propensity for regret (0.68) is above the threshold of 0.60 (Lawson-Body & Limayem, 2004; Nunnally, 1978). Happiness in life (0.43), Propensity for overconfidence (0.43) and Propensity for regret (0.41) report lower convergence validity (AVE < 0.50). Few researchers accept the cut-off point of 0.40 for AVE (Bourgeois et al., 2011; Kim & Li, 2009). Happiness in life, Propensity for overconfidence and Propensity for regret are regarded acceptable as the respective variables' standardized regression weight of the items are greater than 0.50, representing significant p-values and maintain a satisfactory level of composite reliability (CR). The highest AVE is scored by Propensity for social interaction with a percentage of 60.0%.

Table 4.9: Measurement model CR and AVE

Variables	CR	AVE	REL	PT	HL	POC	PR	PSI	PASL	FRT
REL	0.92	0.57	**0.755**							
PT	0.80	0.51	0.216	**0.714**						
HL	0.70	0.43	0.266	0.135	**0.656**					
POC	0.70	0.43	0.049	0.095	0.305	**0.653**				
PR	0.68	0.41	0.208	0.114	-0.135	0.180	**0.638**			
PSI	0.85	0.60	0.092	0.264	0.140	0.076	0.194	**0.774**		
PASL	0.80	0.50	0.122	0.131	0.188	0.285	0.155	0.113	**0.708**	
FRT	0.81	0.504	0.103	0.331	-0.127	0.217	0.206	0.073	0.220	**0.710**

FRT = Financial risk tolerance, PR= propensity for regret, PT = propensity for trust, HL = happiness in life, PASL = propensity to attribute success to luck, POC = propensity for overconfidence, PSI = propensity for social interaction, REL = religiosity, CR= composite reliability, AVE= average variance extracted.

4.9.3 Construct validity

In this study, construct validity is determined using convergent validity and discriminant validity

4.9.3.1 Convergent validity

Standardized factor loading (standardized regression weights) of 0.70 and above as well as significant p-values show the presence of convergent validity (Hair et al., 2010) as shown in Table 4.8. However, a value above 0.50 is also accepted (Hair et al., 2006). The standardized factor loading ranged from 0.53 to 0.90 and the p-values ($p<0.001$) of all items establish convergent validity in the model.

4.9.3.2 Discriminant validity

Discriminant validity is established in this study while EFA is conducted as the items clearly loaded on its factor with high factor loading without cross loading. Table 4.9 reports that all the items are sorted into eight components or factors and the factor loadings for all the items loaded together with a variable are above 0.50 which is regarded as significant (Hair et al., 2010). However, discriminant validity can also be assessed using square root of AVE of the construct and correlation between constructs (Fornell & Larcker, 1981; Hair et al., 2006). Table 4.9 presents that the diagonal value (square root of AVE score of all the constructs score) is higher than the correlation shared between two variables. This implies that all the construct are strong in discriminating each of its own items from other constructs.

The findings show that the model has achieved the unidimensionality, construct reliability (CR and AVE) and construct validity (convergent and discriminant validity). Therefore, it was concluded that the measurement model fits quite well with the data and therefore the findings of this study can be generalized.

4.10 STRUCTURAL EQUATION MODELING (SEM)

Structural Equation Modelling (SEM), also known as covariance structure analysis falls under the advanced multivariate techniques use for determining a series of interrelated dependence associations between variables, simultaneously (Naik & Reddy, 2013). According to Ullman (2001) SEM is a method that combines EFA and multiple regression analysis while Schreiber, Nora, Stage, Barlow, and King (2006) argued that SEM is consisted of CFA and multiple regression analysis as it demonstrates a confirmatory rather than exploratory approach to test the dependence relationship. SEM is performed on the proposed framework to test the hypothesis developed for this study. Prior to conduct structural equation modelling, the necessary assumptions such as minimum sample size of 100 (Hair et al., 2006), minimum three items per variable (Iacobucci, 2010), linear relationship between variables (Hair et al., 2006) are examined and satisfied except multicollinearity, which is tested in the next section.

4.10.1 Assessment of multicollinearity

Multicollinearity refers to the high correlation among independent variables that weaken the predicting power of independent variables and reduce the total variance explained in dependent variable (Hair et al., 2006). The correlation coefficient value of 1 indicates perfect collinearity between variables (Hair et al., 2006). According to Pallant (2010), a correlation coefficient value above 0.7 indicates the presence of multicollinearity and highly recommended to remove one of the variables showing the high ρ value in the inter-correlate independent variables from the model being tested since it might influence the model estimation and affect the statistical significant sign of the variables. None of the correlation coefficients values of the variables in this study as indicated in the Table 4.2 are exceeded 0.7 showing the absence of the multicollinearity problem

among the independent variables. In addition, multicollinearity also exhibits when two separate variables truly measure the same thing.

However, high correlation between independent variables, known as multicollinearity can also be observed through checking the tolerance level and the Variance Inflation Factor (VIF). Hair et al. (2006) defined tolerance as the degree of variability of the specified independent variable which is not explained by the other independent variables. On the other hand, VIF value is inversely calculated to the tolerance value. The tolerance level less than 0.1 and the variance inflation factor more than 10 indicate severe multicollinearity problem (Hair et al., 2006). The presence of VIF value more than 10 indicates redundancy in independent variables and can be resolved through either eliminating the variable or combining the variables into one.

Tolerance and VIF values as indicated in the Table 4.10 are thoroughly checked in this study to detect the presence of multicollinearity for all the variables. From the multicollinearity analysis, it is observed that the tolerance values for all the variables are close to 1.0 or more than 0.1 while VIF values are less than 10 which justify the absence of multicollinearity in this study according to Hair et al. (2006). Thus, all these items and variables are included in the final structural model of this study and used to test the proposed hypothesis. It is observed that RE has the tolerance value of 0.930 and VIF value of 1.076 while TR has a tolerance value of 0.938 and VIF value of 1.066. Happiness observed tolerance value of 0.891 and VIF value of 1.122, whereas BLV observed the tolerance value of 0.805 and VIF value of 1.242. The tolerance level of OVC is 0.683 and VIF is 1.463 while Social interaction has a tolerance level of 0.865 and VIF of 1.157. Finally, the tolerance value of REL is 0.893 and VIF is 1.120. Therefore it can be assumed that the items and the variables understudied indicate no

serious issue regarding normality, linearity and multicollinearity and further statistical analysis can be carried out to test the proposed model and hypothesis.

Table 4.10: Analysis for multicollinearity

Variables	Tolerance	VIF
Propensity for regret (PR)	.930	1.076
Propensity for trust (PT)	.938	1.066
Happiness in life (HL)	.891	1.122
Propensity to attribute success to luck (PASL)	.805	1.242
Propensity for overconfidence (POC)	.683	1.465
Propensity for social interaction (PSI)	.865	1.157
Religiosity (REL)	.893	1.120

4.10.2 Full structural model

Both independent and dependent variables are combined into a single model to test the relationship between them, which is demonstrated as a full structural model. The full structural model determines the causal relationship as it portrays the relationship between independent and dependent variables (Cheng, 2001). The proposed model of this study is validated by EFA and CFA is forwarded to use in structural model for testing hypotheses. The initial structural model is presented in Appendix E.

The structural model confirms the presence of absolute fit, incremental fit and parsimony fit shows as indicated in the Table 4.11. The full structural model achieves a satisfactory goodness-of-fit with relative chi-square value CMIN/df of 3.567, RMSEA 0.046, RMR .038, CFI of 0.914, GFI of 0.937, NFI of 0.885, and TLI of .90. The

standardized loadings (λ) for all the items of the variables are more than 0.50 with significant corresponding t-values.

Figure 4.2 represents the full structural model and Table 4.11 and Table 4.12 show the output of the full structural model fit summary and standardized regression analysis respectively. The model shows satisfactory model fit in the first attempt as all items are already refined through EFA and CFA. Separate measurement model including only independent variables are provided in appendix E. Table 4.12 contains relationships between independent variables and dependent variable, estimate, Standard Error (S.E.), and p value. The summary of standardized regression analysis as indicated in Table 4.12 show that there is a significant relationship between PR and FRT with $\beta = 0.141$ (S.E. = 0.043) and p-value = 0.001 which is equal to $\alpha = 0.001$ or less than $\alpha = 0.05$. Likewise, a highly significant relationship is found between PT and FRT with $\beta = 0.297$ (S.E. = 0.035) and p-value = 0.000 which is less than $\alpha = 0.001$. Next, highly significant negative relationship is found between HL and FRT with $\beta = -0.148$ (S.E. = 0.035) and p-value = 0.002 which is less than $\alpha = 0.05$. Furthermore, a significant relationship is found between PASL and FRT with $\beta = 0.147$ (S.E. = 0.028) and p-value = 0.000 which is less than $\alpha = 0.001$. Finally, a significant relationship is found between POC and FRT with $\beta = 0.178$ (S.E. = 0.039) and p-value = 0.000 which is less than $\alpha = 0.001$.

However, only one variable namely PSI is turned out as insignificant with $\beta = 0.030$ (S.E. = 0.016) p-value = 0.409. The p-value for PSI was above $\alpha = 0.05$ which indicates that the variable has insignificant relationship with dependent variable. Figure 4.2 also demonstrates that the R^2 for the dependent variable FRT is 0.204, which indicates that all the six independent variables contributes to 20.4% of the variance explained in the dependent variable.

Based on the results of the full structural model, it can be concluded that five independent variables (PR, PT, HL, PASL, POC) out of six independent variables (PR, PT, HL, PASL, POC, and PSI) are significant independent variables, indicating adequate significance of the model understudied.

Table 4.11: Model-fit-indices and recommended threshold value

Model Fit Indices	Note	Threshold Value	Observed value
Absolute Fit Index:	Absolute Fit Index examines the level of effectiveness of the model		
χ^2	The chi-square is sensitive to large sample	$\rho > 0.05$	.000
RMSEA	A lower value of RMSEA indicates a better model fit	≤0.10	.046
RMR	A lower value of RMR indicates a better model fit	≤0.10	.038
GFI	The possible range of GFI values is 0 to 1 with higher values indicating better fit	≥ 0.90	.937
Incremental Fit Index:	Incremental Fit Index-to investigate model fit to the relative baseline model		
CFI	The possible range of CFI value is 0 to 1 with higher values indicating better fit	≥ 0.90	.914
NFI	The possible range of NFI value is 0 to 1 with higher values indicating better fit	≥ 0.90	.885
Parsimony Fit Index:	Parsimony Fit Index is used to compare best model fit to its relative complexity		
CMIN/DF (χ^2/df)	Less than 3.00 is preferred, up to 5.00 is acceptable	≤5.0	3.567
PRATIO		>.90	.855
Other Important Fit Index:			
HOELTER 0.05 HOELTER 0.01		>200 >200	386 408

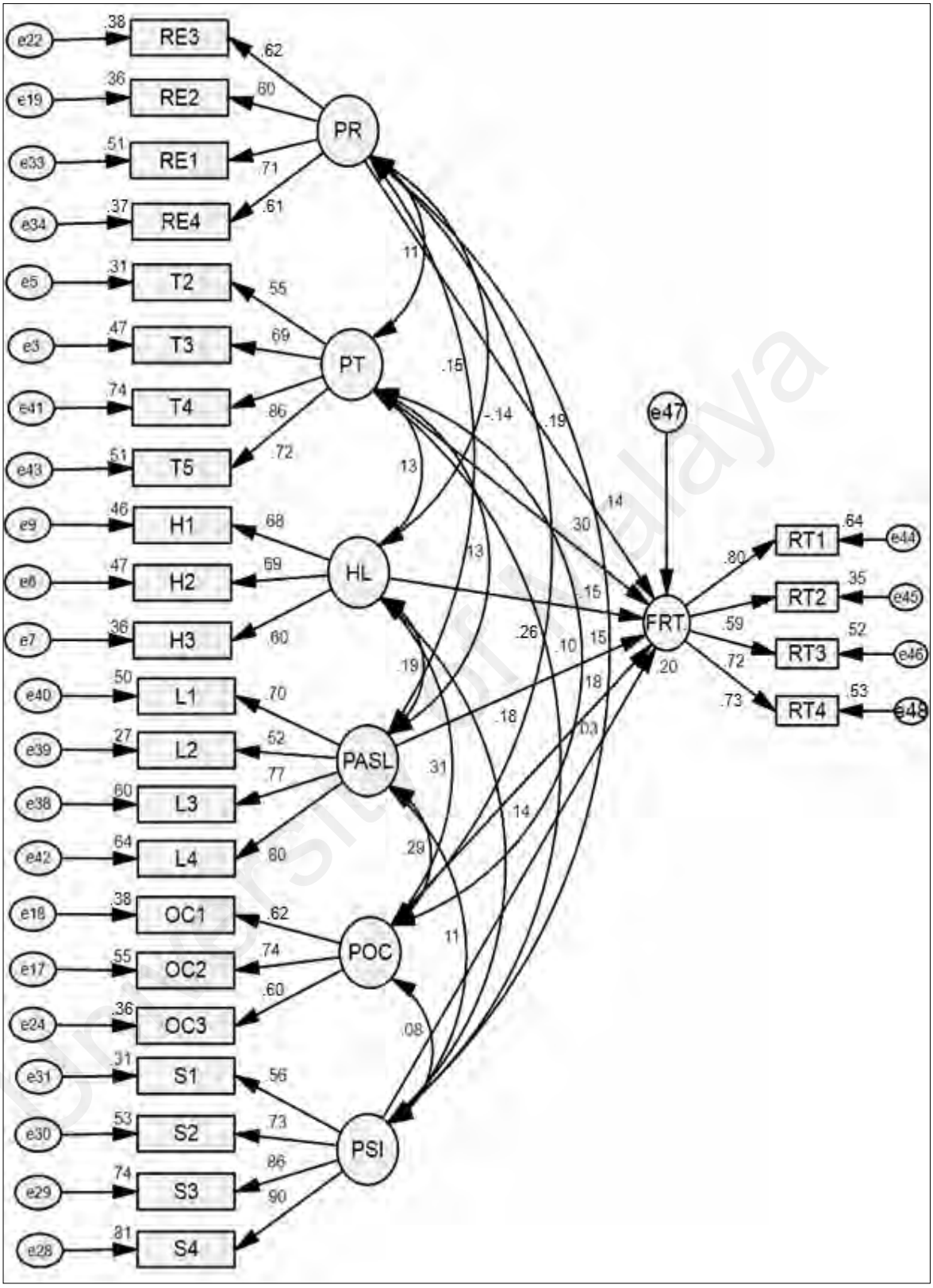


Figure 4.2: Full model (direct relationship) analysis

Table 4.12: Standardized regression results analysis

Relationship	Estimate	S.E.	P-value	Supported
FRT <--- PR	0.141	0.043	.001	Yes
FRT <--- PT	0.297	0.035	.000	Yes
FRT <--- HL	-0.148	0.035	.002	Yes
FRT <--- PASL	0.147	0.028	.000	Yes
FRT <--- POC	0.178	0.039	.000	Yes
FRT <--- PSI	0.030	0.016	.409	No

H1	Hypothesis	Results
H1a	Propensity for regret has positive impact on financial risk tolerance.	Supported
H1b	Propensity for trust has positive impact on financial risk tolerance.	Supported
H1c	Happiness in life has negative impact on financial risk tolerance.	Supported
H1d	Propensity to attribute success to luck has positive impact on financial risk tolerance.	Supported
H1e	Propensity for overconfidence has positive impact on financial risk tolerance.	Supported
H1f	Propensity for social interaction has positive impact on financial risk tolerance.	Not Supported

4.10.3 Testing research hypothesis (H1)

In order to address research question 1: "what are the behavioural propensities of financial risk tolerance?" the SEM analysis is conducted. Based on the findings from the analysis, the proposed hypotheses are tested to determine whether the results support or reject the hypotheses of the current study. Hypothesis 1 includes six sub-hypotheses (H1a, H1b, H1c, H1d, H1e, and H1f). The relationship between propensity for regret (PR) and financial risk tolerance (FRT) is examined based on Figure 4.2, Table 4.11, and Table 4.12. The standardised coefficient beta for the path connecting PR to FRT is 0.141 with p-value of 0.001, which is less than $\alpha = 0.05$. This finding indicates that

there is a significant positive relationship between PR and FRT. However, the positive sign of standardised coefficient beta suggests that those respondents who have a high PR tend to tolerate more financial risk than those who have low PR. This results support hypothesis 1a.

H1a: Propensity for regret has positive impact on financial risk tolerance.

Next, the findings as presented in Table 4.12 show that the standardised coefficient beta value for the path connecting propensity for trust (PT) to FRT is 0.297 with p-value of 0.000, which is less than $\alpha = 0.001$ indicating highly significant relationship. It indicates that there is a significant positive relationship between PT and FRT. However, the positive sign of standardised coefficient beta posits that those respondents who have a high PT tend to tolerate more financial risk than those who have low PT. This findings support hypothesis 1b.

H1b: Propensity for trust has positive impact on financial risk tolerance.

When examining the relationship between happiness in life (HL) and FRT, the standardised coefficient beta for the path connecting HL to FRT is -0.148 with p-value of 0.002. The p-value is less than $\alpha = 0.05$, thus it can be concluded that the data collected provide evidence for significant relationship between HL and FRT. The negative sign of standardised estimate beta indicates that those respondents who have a high level of HL tend to tolerate lower level of financial risk than those who have low level of HL. Therefore, the hypothesis 1c is supported.

H1c: Happiness in life has negative impact on financial risk tolerance.

A significant positive relationship is observed between propensity to attribute success to luck (PASL) and FRT as the standardised coefficient beta for the path connecting PASL to FRT is 0.147 with p-value of 0.000. The p-value is less than $\alpha = 0.001$, thus it can be concluded that the data collected provide evidence for highly significant relationship between PASL and FRT. However, the positive sign of standardised coefficient beta suggests that those respondents who have a high PASL tend to tolerate more financial risk than those who have low PASL. This finding provides evidence that the hypothesis 1d in this study is supported.

H1d: Propensity to attribute success to luck has positive impact on financial risk tolerance.

Similarly, the findings of Figure 4.2 and Table 4.12 show that the standardised coefficient beta for the path connecting propensity for overconfidence (POC) to FRT is 0.178 with p-value of 0.000, which is less than $\alpha = 0.05$ indicating significant positive relationship between POC and FRT. Moreover, the positive sign of standardised estimate posits that those respondents who have a high POC tend to accept more financial risk than those who have low POC. This result was found supportive to the hypothesis 1e.

H1e: Propensity for overconfidence has positive impact on financial risk tolerance.

Finally, it is observed from the findings that the regression of coefficient beta for the path connecting propensity for social interaction (PSI) to FRT is 0.030 with p-value of 0.409, which is greater than α value of 0.05 indicating that the data collected fails to provide significant relationship between PSI and FRT. This finding indicates that there

is no significant relationship between PSI and FRT. It suggests that the propensity for social interaction of respondents does not influence their financial risk tolerance may be because Malaysians cannot get the full benefit of social interaction due to ethnic differences. Hence, hypothesis 1f (*Propensity for social interaction has positive impact on financial risk tolerance*) is not supported.

In conclusion, the findings from the SEM analysis reveal that five behavioural propensities (PR, PT, HL, PASL, and POC) out of six studied propensities were found to have significant influence on financial risk tolerance of Malaysian undergraduate students. It is clear from the findings that PT has the strongest coefficient ($\beta = 0.297$), followed by POC ($\beta = 0.178$), HL ($\beta = -0.148$), PASL ($\beta = 0.147$), PR ($\beta = 0.141$), and PSI ($\beta = 0.030$) respectively. Table 4.12 summarises the outcome of the hypothesis 1, which answers the research question1 in the current study.

4.11 MEAN SCORES DIFFERENCE ANALYSIS

T-tests (for gender) and one way ANOVA (for ethnicity) are used to analyse the difference between male and female as well as ethnic groups in terms of financial risk tolerance and behavioural propensities. Table 4.13 reports the t-test results that show the difference between male and female in terms of financial risk tolerance and behavioural propensities. The outputs show that t-values for FRT, PR, HL, PASL, POC, and PSI were significant with ($t=5.53$, $p< 0.01$), ($t= -1.80$, $p< 0.10$), ($t=-1.84$, $p< 0.10$), ($t=2.31$, $p< 0.05$), ($t=2.43$, $p< 0.05$), and ($t= -2.22$, $p< 0.05$) respectively. This finding indicates the rejection of null hypotheses when equal variance is assumed (See Appendix C). However, the significant t-tests results for equality of means for these six variables indicate that there are differences between the means for gender. Males scored significantly higher than females in FRT, PASL, and POC while females score

significantly higher than males in PR, HL, and PSI. However, t-value for PT is insignificant. This finding indicates that there is no significant difference between males and females in terms of PT.

Table 4.13: Relations between behavioural propensities, FRT and gender.

Characteristic	FRT	PR	PT	HL	PASL	POC	PSI
Gender:							
Male	3.40	3.71	3.17	3.44	2.92	3.70	3.00
Female	3.17	3.77	3.22	3.53	2.82	3.61	3.12
t	5.53***	-1.80*	-1.36	-1.84*	2.31**	2.43**	-2.22**

Dependent Variable: Financial Risk Tolerance. REL = religiosity, PR = propensity for regret, PT = propensity for trust, HL = happiness in life, PASL = propensity to attribute success to luck, POC = propensity for overconfidence, PSI = propensity for social interaction, *** Significant at p<0.01., ** Significant at p<0.05, * Significant at p<0.10.

The ANOVA results as show in the Table 4.14 reports that significant difference are found between respondents from three different ethnic groups for four variables (FRT, PR, PT, and HL) and the rest (PASL, POC, and PSI) are found insignificant. The outputs show that F-values for PR, PT, HL, REL, and FRT are significant at (p< 0.01 and p<0.05) respectively. The findings also suggest that there is no significant difference between the respondents from the three ethnic groups for PASL, POC, and PSI (see Appendix C). Chinese and Malay are found significantly different than Indian respondents for FRT. While, no significant differences are found between Chinese and Malay respondents for FRT. Chinese and Malay scored higher than Indian respondents in FRT. However, in terms of PR, Chinese was found significantly different than Malay respondents. While, no significant differences are found between Chinese and Indian respondents as well as Malay and Indian respondents. The mean scores indicate that Malay scored higher than both Indian and Chinese respondents while Indian scored higher than Chinese respondents. The findings of PT from ANOVA report that Malay is

significantly different than Chinese and Indian respondents. Nevertheless, the differences between Chinese and Indian respondents are found insignificant. Malay scored higher than both Chinese and Indian respondents while Chinese scored higher than Indian respondent.

Table 4.14 and Post Hoc Tests results (see Appendix C) report that in terms of HL, Chinese and Indian are found significantly different than Malay respondents. While, no significant differences are found between Chinese and Indian respondents. The mean scores indicate that Malay scores higher than both Indian and Chinese respondents while Chinese scores higher than Indian respondents.

Table 4.14: Relations between behavioural propensities, FRT and ethnicity.

Characteristic	FRT	PR	PT	HL	PASL	POC	PSI
Ethnicity:							
Chinese	3.24	3.66	3.10	3.41	2.89	3.66	3.10
Indian	3.10	3.73	3.00	3.33	2.76	3.65	2.97
Malay	3.27	3.79	3.28	3.55	2.85	3.63	3.11
F	4.14**	5.81***	21.10***	6.29***	1.30	0.26	0.89

Dependent Variable: Financial Risk Tolerance. REL = religiosity, PR = propensity for regret, PT = propensity for trust, HL = happiness in life, PASL = propensity to attribute success to luck, POC = propensity for overconfidence, PSI = propensity for social interaction, *** Significant at p<0.01., ** Significant at p<0.05, * Significant at p<0.10.

The mean scores for PASL show that Chinese scored slightly higher than both Malay and Indian respondents but no significant differences are found between one another. Furthermore, the mean scores for POC present that Chinese scored slightly higher than both Malay and Indian respondents but no significant differences are found between one another. Finally, the mean scores for PSI indicate that Malay scored slightly higher than both Chinese and Indian respondents but no significant differences are found between one another.

4.11.1 Testing research hypothesis (H2)

Based on the findings from the t-tests, the hypothesis 2 is examined to determine if the results provide support to the hypothesis of the current study to answer the first part of the research question 2: "Do different genders and ethnic groups vary in their behavioural propensities and financial risk tolerance?" Hypotheses 2 and 3 are developed to fully answer the research question 2. Here, hypothesis 2 is discussed while hypothesis 3 is discussed in the next section.

The difference between males and females with respect to FRT are examined based on Table 4.13. The t value between males and females with respect to FRT is 5.53 with p-value of 0.000, indicating highly significant difference exist since p-value is less than α value of 0.01. Similarly, t-values for PASL, POC, and PSI are 2.31, 2.43, and -2.22 respectively with p-value less than α value of 0.05. In addition, t-values for PR, HL, and REL are -1.80, -1.84, and -1.74 respectively with p-value less than α value of 0.10. In contrast, t-value for PT was insignificant. The above discussions show that males and females are significantly different across all the variables except PT. In terms of propensity for trust, there is no statistically significant difference between males and females in Malaysia. A possible reason for insignificant difference in propensity for trust between males and females can be their similar socialization process. Findings also indicate that the data collected provides sufficient evidence of the difference between genders with respect to FRT and five behavioural propensities. Hence, we can conclude that the hypothesis 2 is partially (as six out of seven sub-hypotheses) supported. Table 4.15 presents the summary of the results for sub-hypothesises of hypothesis 2.

H2: There are significant differences between males and females with respect to financial risk tolerance and behavioural propensities.

Table 4.15: Summary results of testing sub-hypothesises of hypothesis 2

	Hypothesises	Results
H2a	Males are significantly different than females in financial risk tolerance.	Supported
H2b	Males are significantly different than females in propensity for regret.	Supported
H2c	Males are significantly different than females in propensity for trust.	Not Supported
H2d	Males are significantly different than females in happiness in life.	Supported
H2e	Males are significantly different than females in propensity to attribute success to luck.	Supported
H2f	Males are significantly different than females in propensity for overconfidence.	Supported
H2g	Males are significantly different than females in propensity for social interaction.	Supported

4.11.2 Testing research hypothesis (H3)

Hypothesis 3 is discussed here which is made to answer the second part of the research question 2: "Do different genders and ethnic groups vary in their behavioural propensities and financial risk tolerance?" Based on the results from ANOVA, the hypothesis 3 is tested to know whether the results provide support to the hypothesis.

The differences between ethnic groups with respect to FRT are examined based on Table 4.14. The F value between ethnic groups with respect to FRT is 4.14 with p-value of 0.016, indicating significant difference exist since p-value is less than α value of 0.05. Similarly, F-values for PR, PT, HL, and REL are 5.81, 21.10, 6.29, and 365 respectively with p-value less than α value of 0.01. On the other hand, F-values for PASL, POC, and PSI are found insignificant. The details of the ANOVA outputs that show the mean scores difference with respect to FRT and behavioural propensities are collectively shown in Appendix C. The above discussions posit that ethnic groups are significantly different across FRT, PR, PT, HL, and REL except PASL, POC, and PSI. This indicates that the data collected provides sufficient evidence of the difference

between ethnic groups with respect to FRT and three behavioural propensities. Hence, we can conclude that the hypothesis 3 is partially supported (as four out of six behavioural propensities turned out to have significant difference) supported. Table 4.16 reports the results for sub-hypothesises of hypotheses 3.

H3: There is a significant difference between ethnic groups with respect to financial risk tolerance and behavioural propensities.

Table 4.16: Summary results of testing sub-hypothesises of hypothesis 3.

	Sub-hypothesises	Results
H3a	Ethnic groups are significantly different in financial risk tolerance.	Supported
H3b	Ethnic groups are significantly different in propensity for regret.	Supported
H3c	Ethnic groups are significantly different in propensity for trust.	Supported
H3d	Ethnic groups are significantly different in happiness in life.	Supported
H3e	Ethnic groups are significantly different in propensity to attribute success to luck.	Not Supported
H3f	Ethnic groups are significantly different in propensity for overconfidence.	Not Supported
H3g	Ethnic groups are significantly different in propensity for social interaction.	Not Supported

In terms of PASL, POC and PSI, there is no statistically significant difference between ethnic groups in Malaysia and thus hypotheses (H3e, H3f, and H3g) are not supported. The possible reasons for insignificant difference in propensity to attribute success to luck between Chinese, Indian and Malay are: similar socialization process and cross-culture effect. These effects may influence Malaysians, particularly young generation not to be significantly different from each other.

4.12 MODERATING EFFECT OF RELIGIOSITY AND ETHNICITY

The researchers usually examine moderating effect where there are existences of heterogeneous individuals or situational research settings that could possible change or influence the strength of the relationship between an independent variable and a dependent variable. Moderation is defined as the effect that influences the relationship between predictors and outcomes. This effect is also known as interactive effect (Hair et al., 2011). Moderating effect can be identified via observing the changes occur in the relationship between independent variable and dependent variable. For instance, the moderating effects exist when a third variable influences or changes the relationship between a predictor and an outcome in a way that is significantly different from the original strength of the relationship (Aguinis, 1995). This study is using two moderators to examine whether there is moderating effect in the relationship between behavioural propensities (independent variables) and financial risk tolerance (dependent variable). Ethnicity is the categorical moderating variable, while religiosity is the continuous moderating variable.

Multi-group moderation technique is commonly used to observe the effects of categorical moderating variable (Hair et al., 2010). While, the moderating effects of continuous moderating variables can be observed using both subsample (multi-group) analysis and cross-product indicator analysis (Stone-Romero & Anderson, 1994). According to Chin (1998), cross-product technique entails multicollinearity problem as all the items for each predictor variable need to be multiplied to create moderator variable. In order to avoid the multicollinearity issue many researchers use multi-group moderation technique (e.g. Zhao & Cavusgil, 2006). Therefore, multi-group (subsample) moderation technique is adopted via multi-group SEM model to observe the moderation effect of religiosity and ethnicity in this study. However, before testing

the moderating effect of religiosity and ethnicity (Chinese, Indian, and Malay) on the relationship between each path of the independent variables (behavioural propensities) and dependent variable (financial risk tolerance), this study uses chi square difference ($\Delta\chi^2$) test to check whether there is moderating effects at the model level.

Once the moderation effect at the model level is confirmed, the path by path moderating effects can be observed. In order to examine the moderating effect, first, the sample need be divided in different subsamples. However, for continuous variable the sample can be divided based on the mean scores. The first subsample can be created using the data below the mean value while in the second subsample, using above the mean value. For categorical moderating variable multi-group moderation technique is used. Next, in order to test the χ^2 difference at the model level, first, the parameters need to be constrained and check the χ^2 value (e.g. the path between the behavioural propensities and financial risk tolerance), which can be named as Model X and then the model Y is estimated without constraining the parameters. The difference in χ^2 value between model X and model Y confirms whether there is moderating effect on the relationship between independent variables and dependent variable. A significant difference in chi square value at the model level provides evidence that at least one path between independent variables and dependent variable is significantly moderated by the moderating variable.

4.12.1 Moderating effects of religiosity and hypothesis testing

In order to examine the moderating effect of religiosity, first, the sample is split into two groups based on the mean score of the religiosity. The data below the mean is defined as low religiosity, and the data above the mean as high religiosity. The purpose of this study is to investigate more into the two extremes of religiosity rather than all levels. Usually the medium point (e.g. Medium religiosity) does not help in the explanation of the moderating effect. Thus the sample was split in two groups. The first group represents the higher religious individuals (n = 673) while the second group represents lower religious individuals (n = 531). Next, in order to test the χ^2 difference at the model level, first, all the parameters are constrained (e.g. the path between the behavioural propensities and financial risk tolerance), which is referred here as constrained model and then the basic model which is estimated without constraining the parameters. A significant difference is found in χ^2 value between constrained model or model X (χ^2 =1521.498, df = 562) and basic model or model Y (χ^2 = 1500.376, df = 556). However, the difference in chi square value ($\Delta\chi^2$ = 21.122) at the model level is significant ($p < 0.01$). This result indicates that religiosity moderates the relationship between behavioural propensities and financial risk tolerance. Thus, this study further examines the influence of religiosity on the relationship between each individual propensity and the dependent variable (financial risk tolerance) as reported in Table 4.17.

However, in order to address research question 3, this study examines hypothesis 4 which is consisted of six sub-hypotheses (H4a, H4b, H4c, H4d, H4e, and H4f). In this section, the moderation effect of religiosity is reported with the six behavioural propensities (PR, PT, HL, PASL, POC, and PSI) to determine what role religiosity plays in the relationship between behavioural propensities and financial risk tolerance. First, hypothesis 4 is tested based on the results from the multi-group SEM model.

In order to use multi-group SEM model, first, the path from propensity for regret (PR) to financial risk tolerance (FRT) is constrained to equal and run the model. Second, the path is unconstrained and run the model. The significant chi square value difference ($\Delta\chi^2 = 2.72$, $p < .10$) between the constrained and basic model (unconstrained) indicates that religiosity moderates the relationship between PR and FRT. The coefficients for both high religiosity group and low religiosity group are significant ($p < .05$). However, the coefficient of the low religiosity group ($\beta = .138$, $p < .05$) is greater than the high religiosity group ($\beta = .134$, $p < .05$). This indicates that low level of religiosity strengthens the relationship between PR and FRT more than the high level of religiosity. Therefore, hypothesis 4a is supported.

H4a: Religiosity moderates the relationship between the propensity for regret and financial risk tolerance.

Next, in order to examine the effect of religiosity on the path from propensity for trust (PT) to financial risk tolerance (FRT), the parameter is constrained to equal. Second, the path is unconstrained and run the model. The significant chi square value difference ($\Delta\chi^2 = 3.55$, $p < .10$) between the constrained and basic model (unconstrained) indicates that religiosity moderates the relationship between PT and FRT. The coefficients for both high religiosity group and low religiosity group are significant ($p < .01$). However, the coefficient of the low religiosity group ($\beta = .356$, $p < .01$) is greater than the high religiosity group ($\beta = .250$, $p < .01$). This finding indicates that there is sufficient evidence that the low level of religiosity strengthens the relationship between PT and FRT more than the high level of religiosity. Thus, hypothesis 4b is supported.

H4b: Religiosity moderates the relationship between the propensity for trust and financial risk tolerance.

When examining the effect of religiosity on the path from happiness in life (HL) to financial risk tolerance (FRT), the parameter is constrained to equal. Next, the parameter is unconstrained. The findings report that there is a significant chi square difference ($\Delta\chi^2$ = 3.19, $p < .10$) between the constrained and basic model which indicates that religiosity moderates the relationship between HL and FRT. The coefficient for high religiosity group is significant ($p < .10$), while the coefficient for the low religiosity group is significant ($p < .01$). However, the coefficient of the low religiosity group (β = -.215, $p < .01$) is greater than the high religiosity group (β = -.111, $p < .01$). This result proves that there is adequate evidence that the low level of religiosity strengthens the relationship between HL and FRT more than the high level of religiosity. Hence, hypothesis 4c is supported.

H4c: Religiosity moderates the relationship between the happiness in life and financial risk tolerance.

Table 4.17 reports that there is significant influence of religiosity on the relationship between propensity to attribute success to luck (PASL) and FRT chi square difference ($\Delta\chi^2$ = 3.86, $p < .05$). The coefficients for both high religiosity group and low religiosity group are significant ($p < .01$). However, the coefficient of the low religiosity group (β = .217, $p < .01$) is greater than the high religiosity group (β = .155, $p < .01$) indicating that there that the low level of religiosity fortifies the relationship between PASL and FRT more than the high level of religiosity. Thus, hypothesis 4d is supported.

H4d: Religiosity moderates the relationship between the propensity to attribute success to luck and financial risk tolerance.

The findings in Table 4.17 reveal that when examining the effect of religiosity on the parameter from propensity for overconfidence (POC) to financial risk tolerance (FRT), the chi square difference ($\Delta\chi^2$ = 8.62, $p < .01$) is found significant between the constrained and basic model indicating that religiosity moderates the relationship between POC and FRT. The coefficient for high religiosity group is insignificant, while the coefficient for the low religiosity group is highly significant ($p < .01$). However, the coefficient of the low religiosity group (β = .336, $p < .01$) is greater than the high religiosity group (β = .072, $p > .10$). This finding shows that there is satisfactory evidence that the low level of religiosity strengthens the relationship between POC and FRT more than the high level of religiosity. Thus, hypothesis 4e is supported.

H4e: Religiosity moderates the relationship between the propensity for overconfidence and financial risk tolerance.

Finally, the moderating effects of religiosity on the path between propensity for social interaction (PSI) and financial risk tolerance (FRT) is found insignificant as the chi square difference was ($\Delta\chi^2$ = 1.39, $p > .10$). The coefficients for both high and low religiosity groups are insignificant. However, the coefficient of the high religiosity group (β = .062) is greater than the low religiosity group (β = .034). This finding fails to provide evidence religiosity moderates the relationship between PSI and FRT. Contrary to the other hypotheses, moderating effect of religiosity on the relationship between PSI and FRT is not significant thus, hypothesis 4f is not supported.

H4f: Religiosity moderates the relationship between the propensity for social interaction and financial risk tolerance.

The structural model for moderating effects of religiosity confirms the presence of absolute fit and incremental fit, though lacking of parsimony fit. The model achieves a satisfactory goodness-of-fit with relative chi-square value CMIN/df of 2.699, RMSEA 0.036, CFI of 0.89, GFI of 0.910, NFI of 0.84, and PNFI of 0.715. Hence, it concludes that the model has satisfactory level of fit and the moderating variable influence the relationship between five behavioural propensities and financial risk tolerance except propensity for social interaction. In fact, the direct relationship between propensity for social interaction and financial risk tolerance is insignificant. Figure 4.3 presents the structural model for moderating effect of high religiosity while Figure 4.4 presents structural model for moderating effect of low religiosity.

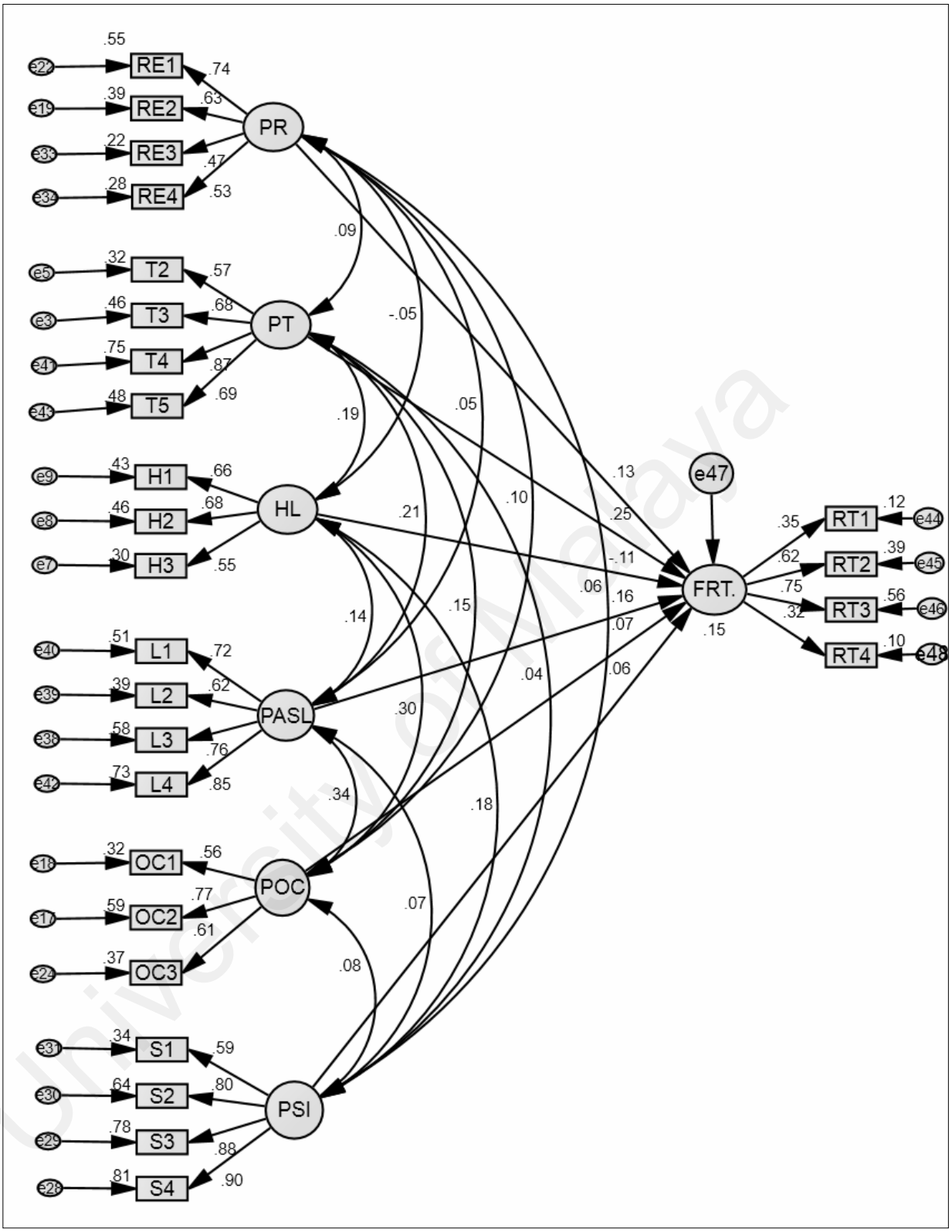


Figure 4.3: Structural model for moderating effect of high religiosity

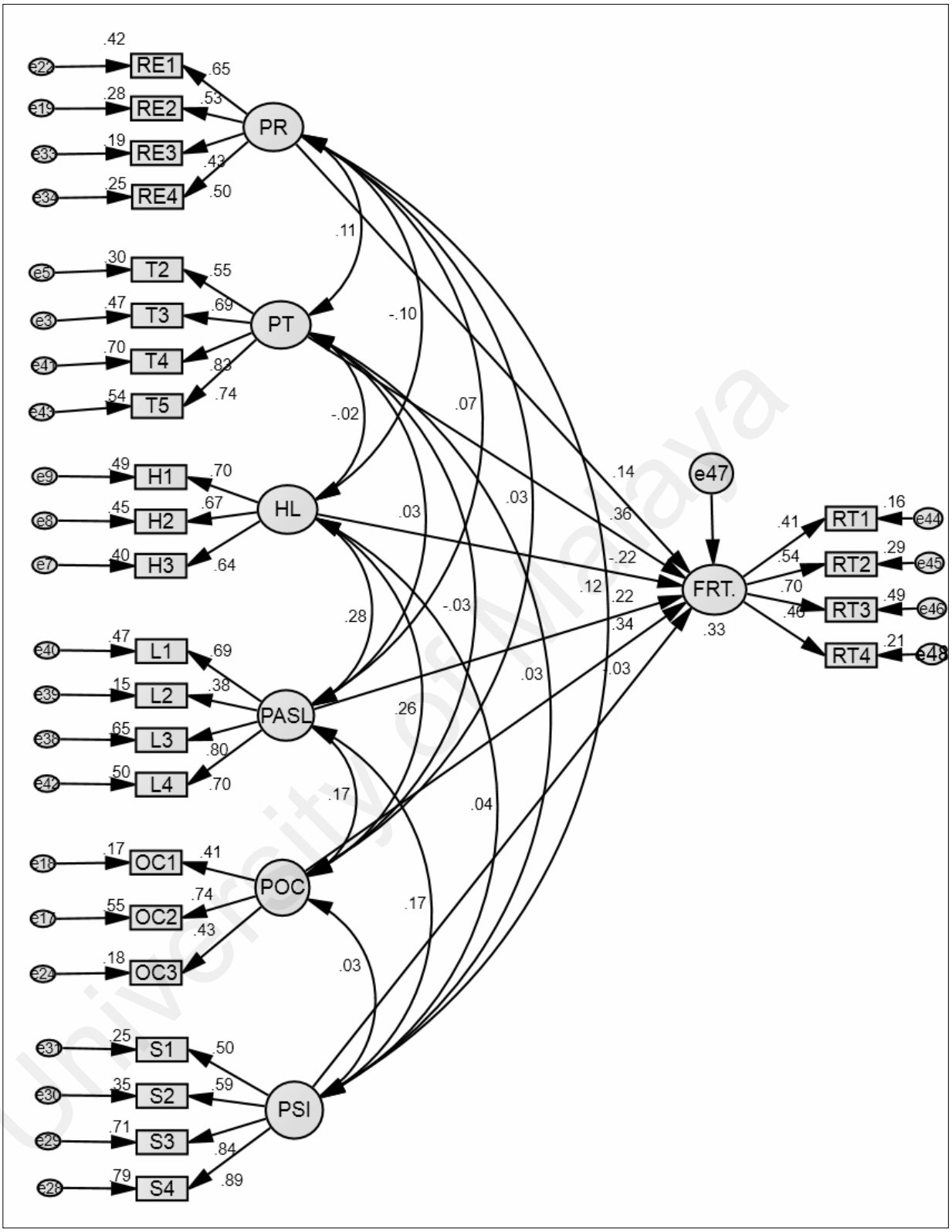


Figure 4.4: Structural model for moderating effect of low religiosity

Table 4.17: Testing moderating effect of religiosity

Relationship	Moderator	Hypotheses	Coefficient	Constrained model λ^2	Basic model λ^2	Difference in λ^2	Supported
PR to FRT	High religiosity Low religiosity	**H4a**	.134** .138**	1503.10	1500.376	2.72*	Yes
PT to FRT	High religiosity Low religiosity	**H4b**	.250*** .356***	1503.921	1500.376	3.55*	Yes
HL to FRT	High religiosity Low religiosity	**H4c**	-.111* -.215***	1503.565	1500.376	3.19*	Yes
PASL to FRT	High religiosity Low religiosity	**H4d**	.155*** .217***	1504.231	1500.376	3.86**	Yes
POC to FRT	High religiosity Low religiosity	**H4e**	.072 .336***	1508.988	1500.376	8.62***	Yes
PSI to FRT	High religiosity Low religiosity	**H4f**	.062 .034	1501.765	1500.376	1.39 (n.s.)	No

Dependent Variable: Financial Risk Tolerance. REL = religiosity, PR = propensity for regret, PT = propensity for trust, HL = happiness in life, PASL = propensity to attribute success to luck, POC = propensity for overconfidence, PSI = propensity for social interaction, *** Significant at p<0.01., ** Significant at p<0.05, * Significant at p<0.10.

The following Table 4.18 summarises the outcome of the hypothesis 4.

Table 4.18: Summary result of hypothesis 4

H4	Hypothesis	Results
H3a	Religiosity moderates the relationship between the propensity for regret and financial risk tolerance.	Supported
H3b	Religiosity moderates the relationship between the propensity for trust and financial risk tolerance.	Supported
H3c	Religiosity moderates the relationship between the happiness in life and financial risk tolerance.	Supported
H3d	Religiosity moderates the relationship between the propensity to attribute success to luck and financial risk tolerance.	Supported
H3e	Religiosity moderates the relationship between the propensity for overconfidence and financial risk tolerance.	Supported
H3f	Religiosity moderates the relationship between the propensity for social interaction and financial risk tolerance.	Not supported

4.12.2 Moderating effects of ethnicity and hypothesis testing

Ethnicity is a categorical moderator variable thus, subsample analysis technique is adopted to detect the moderating effects of ethnicity on the relationship between independent variables (behavioural propensities) and dependent variable (financial risk tolerance). In order to observe the moderating effect of ethnicity, first, the sample is split into three groups. The first group represents the Chinese respondents (n = 304) and the second group represents Indian respondents (n = 95) while third group Malay has the highest representation (n = 805). Next, in order to test the χ^2 difference at the model level, first, all the parameters are constrained (e.g. the path between the behavioural propensities and financial risk tolerance), which is referred here as constrained model and then the basic model which is estimated without constraining the parameters. A significant difference is found in χ^2 value between constrained model (χ^2 =1996.493 df = 846) and basic model (χ^2 = 1973.084, df = 834). However, the difference in chi square value is ($\Delta\chi^2$ = 23.409) significant ($p < 0.05$) at the model level.

This finding indicates that ethnicity moderates the relationship between behavioural propensities and financial risk tolerance. Thus, this study further examines the influence of ethnic groups on the relationship between each individual propensity and the dependent variable (financial risk tolerance) as reported in Table 4.19. However, in order to address the research question 4, this study examined hypothesis 5 which is consisted of six sub-hypotheses (H5a, H5b, H5c, H5d, H4e, and H5f). The moderation effect of ethnicity is reported with the six behavioural propensities (PR, PT, HL, PASL, POC, and PSI) to determine what role different ethnic groups play on the relationship between behavioural propensities and financial risk tolerance. Hypothesis 5 is tested based on the results from the multi-group SEM moderation model. Figure 4.5 presents the structural model for moderating effect of Chinese while Figure 4.6 and Figure 4.7 presents structural model for moderating effect of Indian and Malay respectively.

Table 4.19 demonstrates the differences in Chi-square value ($\Delta\chi^2$) between constrained model and baseline model validate the moderating effect of ethnicity on the relationship between propensity for regret (PR), propensity for trust (PT), happiness in life (HL), propensity to attribute success to luck (PASL), propensity for overconfidence (POC) and financial risk tolerance (FRT).Thus, hypotheses H5a, H5b, H5c, H5d, and H4e are supported. Nevertheless, the differences in Chi-square value ($\Delta\chi^2$) between constrained model and baseline model does not validate the moderating effect of ethnicity on the relationship between propensity for social interaction (PSI) and financial risk tolerance (FRT), thus hypothesis 5f is not supported. Table 4.20 provides the summary results of hypothesises 5.

The outputs in Table 4.19 report that the impact of propensity for regret on financial risk tolerance is stronger for Chinese respondents ($\beta = .291$, $p < .05$) compare to Indian respondents ($\beta = .058$) and Malay respondents ($\beta = .098$, $p < .10$). Thus, hypothesis 5a is supported.

H5a: Ethnicity moderates the relationship between the propensity for regret and financial risk tolerance.

This finding suggests that financial advisors or financial planners may place more importance to the level of regret Chinese individuals possess to measure their financial risk tolerance than Malay and Indian respondents. For Chinese respondents, the impact of propensity for regret in financial risk tolerance is high and significant. While, for respondents belong to Malay ethnic group, the impact of propensity for regret in financial risk tolerance is moderated and significant. Meanwhile, the impact of propensity for regret in financial risk tolerance for Indian respondents is lesser and not significant. This result indicates that for Chinese and Malay respondents, the higher the level of their propensity for regret, the higher their tendency to tolerate the financial risk. It seems for Indian respondents, the higher the level of their propensity for regret, the higher the tendency to tolerate the financial risk, although the relationship is not significant.

Next, the findings in Table 4.19 reveal that the moderating effect of ethnicity on the relationship between propensity for trust and financial risk tolerance is higher for Indian respondents ($\beta = .370$, $p < .05$) compared to Chinese respondents ($\beta = .177$, $p < .05$) and Malay respondents ($\beta = .302$, $p < .01$). Thus, hypothesis 5b is supported.

H5b: Ethnicity moderates the relationship between the propensity for trust and financial risk tolerance.

However, when comparing Indian, Malay, and Chinese, it seems that the impacts of propensity for trust for Indian respondents are stronger on financial risk tolerance among the three ethnic groups. The impact of propensity for trust on financial risk tolerance for all ethnic groups are found to be significant. Findings indicate that for Indian, Malay and Chinese respondents, the higher the level of their propensity for trust, the higher the tendency to tolerate the financial risk. This finding suggests that advisors may place more importance to the level of trust Indian individuals possess to measure their financial risk tolerance than Malay individuals and Chinese individuals. For Chinese respondents, the impact of propensity for trust on financial risk tolerance is weaker compared to Malay and Indian respondents.

Table 4.19: Testing moderating effects of ethnicity

Relationship	Moderator	Hypotheses	Coefficient	Constrained model λ^2	Basic model λ^2	Difference in λ^2	Supported
PR to FRT	Chinese Indian Malay	**H5a**	.291** .058 .098*	1975.95	1973.084	2.87*	Yes
PT to FRT	Chinese Indian Malay	**H5b**	.177** .370** .302***	1975.821	1973.084	2.74*	Yes
HL to FRT	Chinese Indian Malay	**H5c**	-.131 -.177 -.202***	1977.490	1973.084	4.41**	Yes
PASL to FRT	Chinese Indian Malay	**H5d**	.307*** .311* .094*	1977.920	1973.084	4.84**	Yes
POC to FRT	Chinese Indian Malay	**H5e**	.287** .072 .158**	1975.890	1973.084	2.81*	Yes
PSI to FRT	Chinese Indian Malay	**H5f**	.160* .017 .024	1975.536	1973.084	2.45	No

Dependent Variable: Financial Risk Tolerance. REL = religiosity, PR = propensity for regret, PT = propensity for trust, HL = happiness in life, PASL = propensity to attribute success to luck, POC = propensity for overconfidence, PSI = propensity for social interaction, *** Significant at p<0.01., ** Significant at p<0.05, * Significant at p<0.10.

Furthermore, Table 4.19 reports that the moderating effect of ethnicity on the relationship between happiness in life and financial risk tolerance is negative and significant for Malay respondents (β = -.202, $p < .01$) but not to Chinese respondents (β = - .131) and Indian respondents (β = -.177). Hypothesis 5c is supported.

H5c: Ethnicity moderates the relationship between happiness in life and financial risk tolerance.

Findings suggest that for Malay respondents, the higher the level of their happiness in life, the lower their tendency to tolerate the financial risk. It seems for Indian and Chinese respondents, the higher the level of their happiness in life, the lower their tendency to tolerate the financial risk, although the relationships are not significant. This finding posits that advisors may place more importance to the level of happiness in life Malay individuals possess to measure their financial risk tolerance than Indian individuals and Chinese individuals. For Chinese respondents, the impact of happiness in life on financial risk tolerance is weaker compared to Malay and Indian respondents.

Table 4.19 illustrates that the moderating effect of ethnicity on the relationship between propensity to attribute success to luck and financial risk tolerance is stronger for Indian respondents (β = .311, $p < .10$) compared to Chinese respondents (β = .307, $p < .01$) and Malay respondents (β = .094, $p < .10$). The hypothesis 5b is supported.

H5d: Ethnicity moderates the relationship between the propensity to attribute success to luck and financial risk tolerance.

However, when comparing between Indian, Malay, and Chinese, it seems that the impact of propensity to attribute success to luck for Indian respondents are stronger in financial risk tolerance among the three ethnic groups. However, the impact of propensity to attribute success to luck in financial risk tolerance for all ethnic groups are found to be significant. Findings indicate that for Indian, Malay and Chinese respondents, the higher the level of their propensity to attribute success to luck, the higher the tendency to tolerate the financial risk. This finding suggests that advisors may place more importance to the level of propensity to attribute success to luck that Indian individuals possess to measure their financial risk tolerance than Chinese individuals and Malay individuals. For Malay respondents, the impact of propensity to attribute success to luck in financial risk tolerance is weaker compared to Indian and Chinese respondents.

Meanwhile, Table 4.19 illustrates that the moderating effect of ethnicity on the relationship between propensity for overconfidence and financial risk tolerance is significant to Chinese respondents ($\beta = .287$, $p < .05$) and Malay respondents ($\beta = .158$, $p < .05$) but not to Indian respondents ($\beta = .072$). Thus, hypothesis 5e is supported.

H5e: Ethnicity moderates the relationship between propensity for overconfidence and financial risk tolerance.

Findings suggest that for Chinese and Malay respondents, the higher the level of their propensity for overconfidence, the higher their tendency to tolerate the financial risk. It seems for Indian individuals, the higher the level of their propensity for overconfidence, the higher their tendency to tolerate the financial risk.

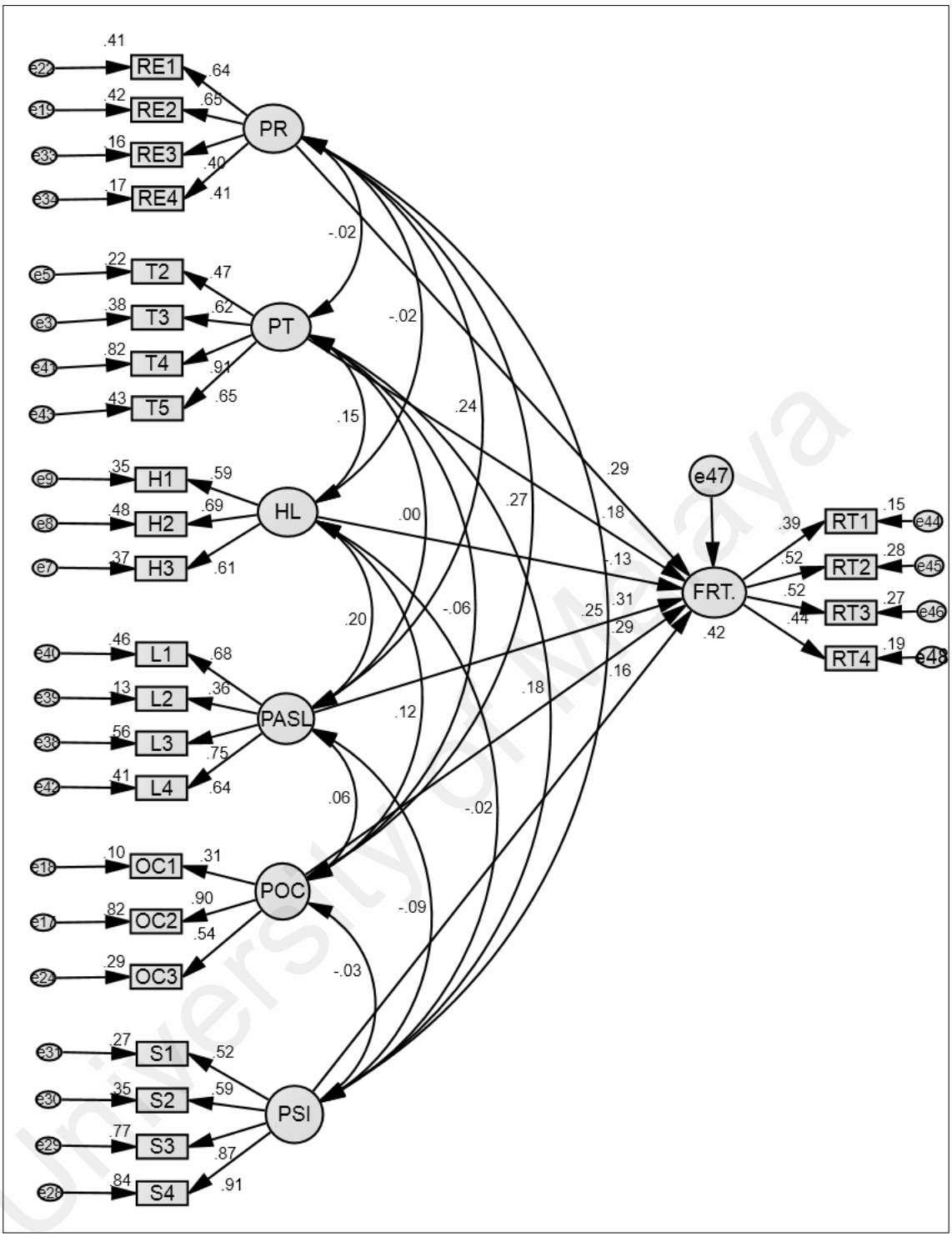


Figure 4.5: Moderating effect of Chinese ethnicity

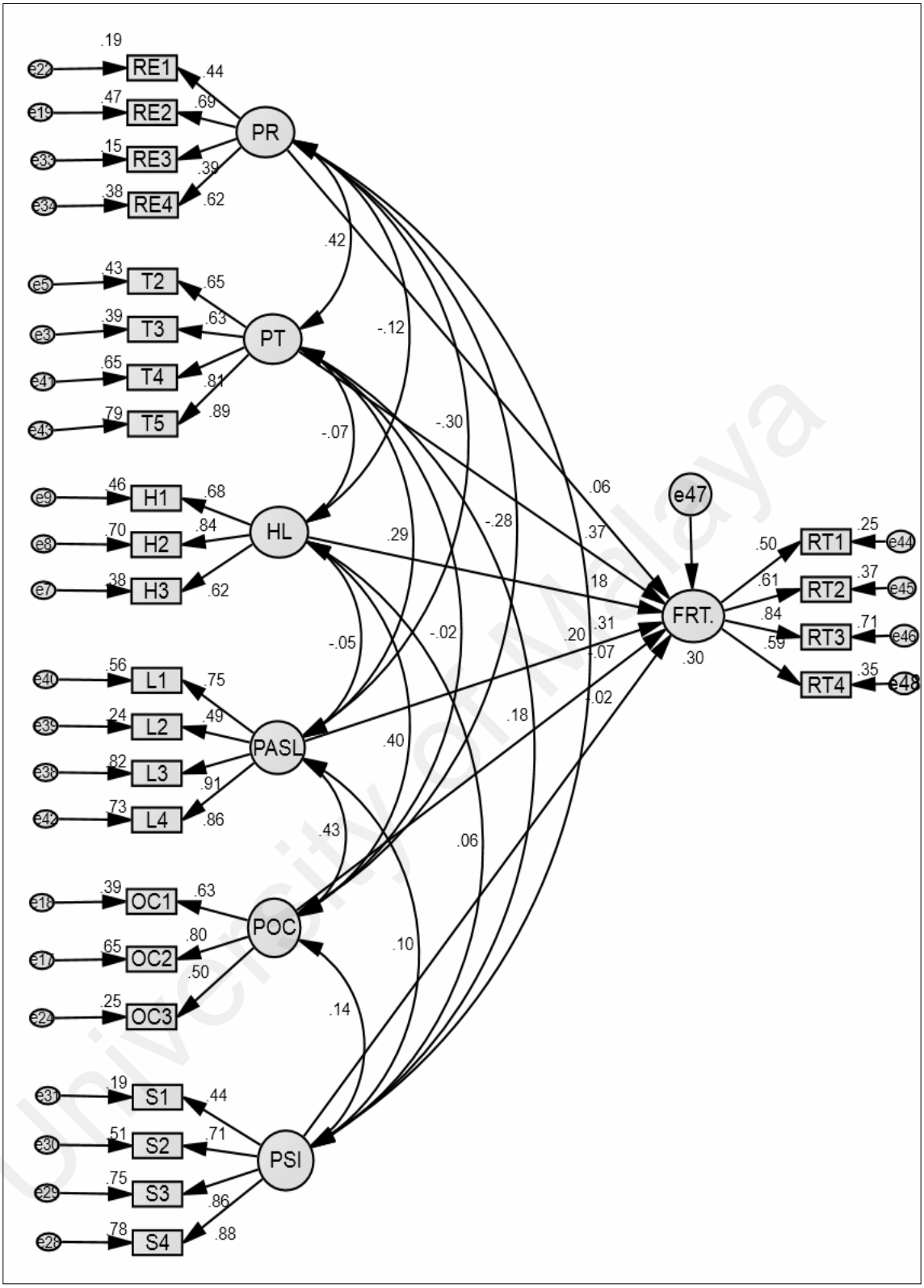


Figure 4.6: Moderating effect of Indian ethnicity

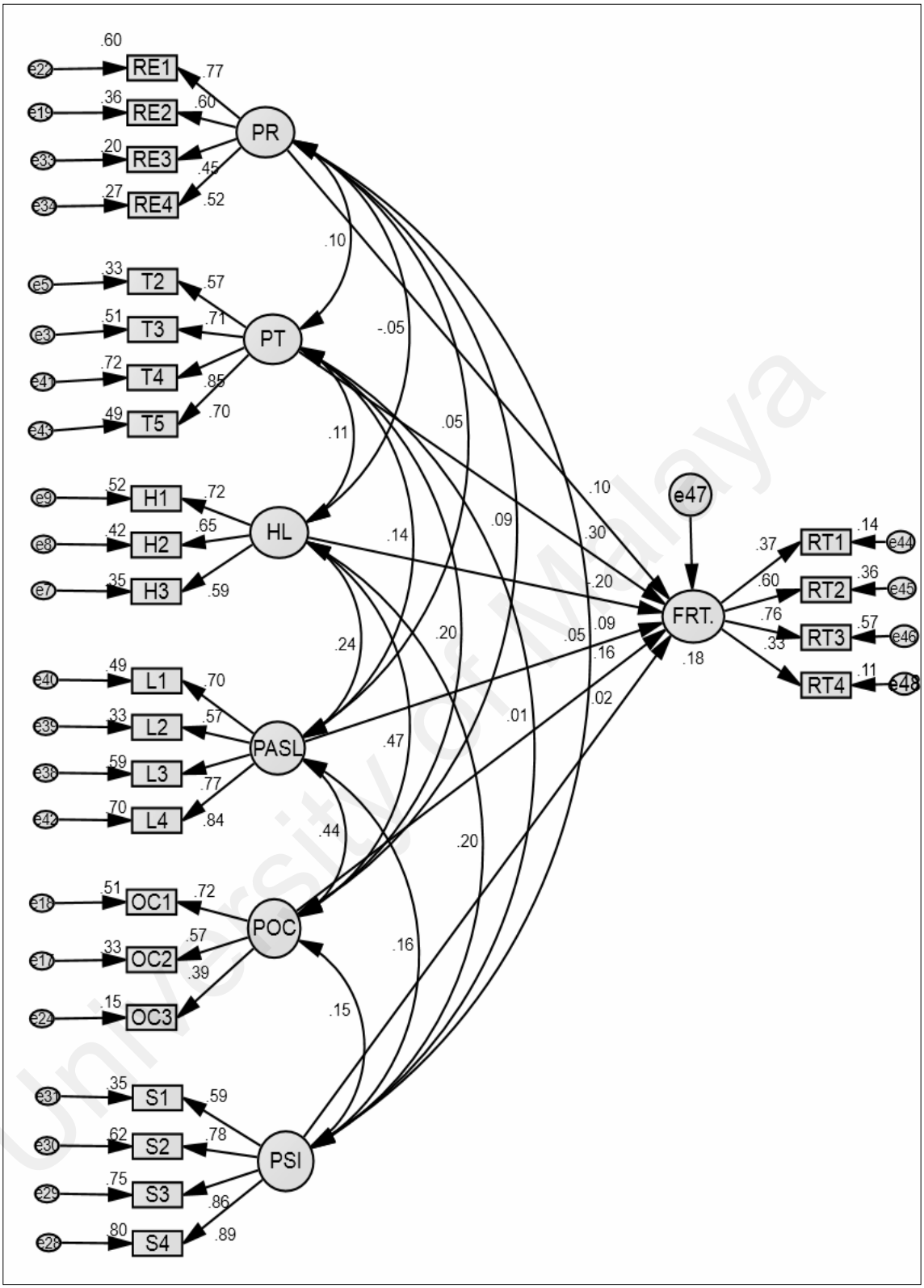


Figure 4.7: Moderating effect of Malay ethnicity

This finding posits that financial advisors may place more importance to the level of propensity for overconfidence Chinese individuals possess to measure their financial risk tolerance than Malay individuals and Indian individuals. For Indian respondents, the impact of propensity for overconfidence on financial risk tolerance is weaker compared to Chinese and Malay respondents.

Finally, the moderating effects of ethnicity on the path between propensity for social interaction (PSI) and financial risk tolerance (FRT) is found insignificant as the chi square difference was ($\Delta\chi^2 = 2.45$, $p > .10$). However, as Table 4.17 illustrates that the moderating effect of ethnicity on the relationship between propensity for social interaction and financial risk tolerance is significant to Chinese respondents only ($\beta = .160$, $p < .10$) while, for Malay respondents ($\beta = .024$, $p < .05$) and Indian respondents ($\beta = .017$) are not significant. Based on the above discussion, it can be concluded that hypothesis 5f is not supported. Ethnicity does not moderate the relationship between PSI and FRT.

H5f: Ethnicity positively moderates the relationship between the propensity for social interaction and financial risk tolerance.

The structural model for moderating effects of ethnicity confirms the presence of absolute fit and incremental fit, though lacking of parsimony fit. The model achieves a satisfactory goodness-of-fit with relative chi-square value CMIN/df of 2.366, RMSEA 0.034, CFI of 0.87, GFI of 0.89, NFI of 0.80, and PNFI of 0.684. Hence, it concludes that the model has satisfactory level of fit and the moderating variable influence the relationship between five behavioural propensities and financial risk tolerance except

propensity for social interaction. In fact, the direct relationship between propensity for social interaction and financial risk tolerance is not significant.

Table 4.20: Summary results of hypothesises 5

H5	Hypothesis	Results
H5a	Ethnicity moderates the relationship between the propensity for regret and financial risk tolerance.	Supported
H5b	Ethnicity moderates the relationship between the propensity for trust and financial risk tolerance.	Supported
H5c	Ethnicity moderates the relationship between the happiness in life and financial risk tolerance.	Supported
H5d	Ethnicity moderates the relationship between the propensity to attribute success to luck and financial risk tolerance.	Supported
H5e	Ethnicity moderates the relationship between the propensity for overconfidence and financial risk tolerance.	Supported
H5f	Ethnicity moderates the relationship between the propensity for social interaction and financial risk tolerance.	Not supported

4.13 CHAPTER SUMMARY

This chapter presents the data collection procedure and the response rate of the distributed questionnaires. Next, data management process and treatment of missing data to have cleaned data process are reported. Then various statistical assumptions are documented that researchers usually consider to obtain unbiased results and to identify the outlier cases from the statistical analysis. Demographic analysis is carried out to explain the respondents participated in this study. EFA and CFA are then conducted on the independent variables and dependent variable. The assessments of research findings and hypotheses testing are performed using AMOS. The chapter presents the mean scores analysis for all the variables studying in this research and test hypotheses related to mean scores differences. This chapter also presents the findings of the measurement model, structural model for the direct relationship between independent variables (behavioural propensities) and dependent variable (financial risk tolerance), structural model for the moderating effects of religiosity and ethnicity.

CHAPTER 5

DISCUSSIONS AND CONCLUSIONS

5.1 CHAPTER OVERVIEW

Chapter five discusses in detail the research findings of the empirical investigation of financial risk tolerance framework and hypotheses testing. The first section of this chapter presents the overall summary of the current study. Section two discusses the overview of the objectives and findings of the study. Section three presents in detail the findings and interpretations of the financial risk tolerance framework of this study. This chapter then presents the contributions of the study. Finally, it presents the conclusion of the study.

5.2 REVISIT OF OVERALL STUDY

Financial risk tolerance is one of the fundamental inputs of investment management models and it differs among individuals. Past studies on this topic have focused mainly on background analysis particularly demographic characteristics. However, there have not been many empirical data that analyse why financial advisors fail to accurately assess financial risk tolerance and guide individuals despite of knowing the demographic characteristics. To address the shortcomings of the instruments used by financial advisors to assess and guide individuals, this study extensively synthesises related literature in other disciplines such as psychology behavioural economics, behavioural finance. Research in the psychology, behavioural economics and behavioural finance context have identified behavioural propensities as promising behavioural factors to overcome such limitations. Hence, behavioural propensities literatures are reviewed, analysed, synthesised to improve the understanding on the

assessment of individuals' financial risk tolerance and what other factors beyond individuals' demographic characteristics, should also be assessed.

The current study sets out to examine the impact of behavioural factors (particularly, behavioural propensities) on financial risk tolerance. From the literature on risk tolerance, it is observed that although the concept of risk tolerance has been existence for more than couple of decades, nevertheless, there are opportunities for conducting empirical research to improve theoretical foundation to assist practitioners (e.g. financial advisors) and academics to have deeper knowledge about the significance of financial risk tolerance. As early as 1960s, the risk tolerance is defined for researchers to investigate consumer financial issues. Risk tolerance plays an important role in a wide range of individual financial decisions making such as choosing debt versus savings, type of mortgage, use and manage of credit cards (Anbar & Eker, 2010; Campbell, 2006; Carr, 2014; Grable, 1997, 2008; Yao, 2013). Financial risk tolerance is one of the significant inputs of financial planning models, investment suitability analysis, and consumer decision frameworks (Anbar & Eker, 2010; Carr, 2014; Grable, 1997, 2008; Yao et al., 2005).

Researchers and theorists have used normative and descriptive models to explain risk tolerance. The earlier studies in the field of risk tolerance were conducted through experimental economics methods (Bateman & Munro, 2005; Kahneman & Tversky, 1979). Much of the earlier researchers in the fields of finance who recognized risk and surveying propensities of individuals to take risks include Cohn et al. (1975), Markowitz (1952), and Siegel and Hoban (1982). Usually financial risk tolerance is determined by analyzing individuals demographic, socioeconomic, and attitudinal characteristics such as gender, age, marital status, education, race, income, employment

status, wealth and others (Anbar & Eker, 2010; Carr, 2014; Grable, 2000, 2008; Loomes & Sugden, 1982; Pan & Statman, 2012; Slovic 1966; Yao et al., 2005). Nevertheless, the unresolved questions regarding the determinants of financial risk tolerance is yet to be fully addressed (Anbar & Eker, 2010).

Mostly prior studies have focused on demographics characteristics and there is general consensus among researchers and investment managers that demographic information can be used to determine individual financial risk tolerance. There is evidence that financial planners and advisors can have shortcomings in estimating the financial risk tolerance of the clients despite of knowing their demographic, socioeconomic, and attitudinal characteristics (Carr, 2014; Pan, & Statman, 2012; Yao et al., 2005). These shortcomings in the estimation of individual financial risk tolerance may disappoint clients and creates misunderstanding between advisors and clients as well as create problem in the financial market (Grable, 2000; Pan & Statman, 2012; Carr, 2014). The literature has documented many shortcomings of the typical risk tolerance assessment process for not having sufficient quality to measure financial risk tolerance of the clients. Pan and Statman (2012) argued that one of the reasons might be for the deficiency of the typical financial risk tolerance assessment process is because of not considering behavioural propensities that might be associated with risk tolerance and matter to financial advisors while working with clients.

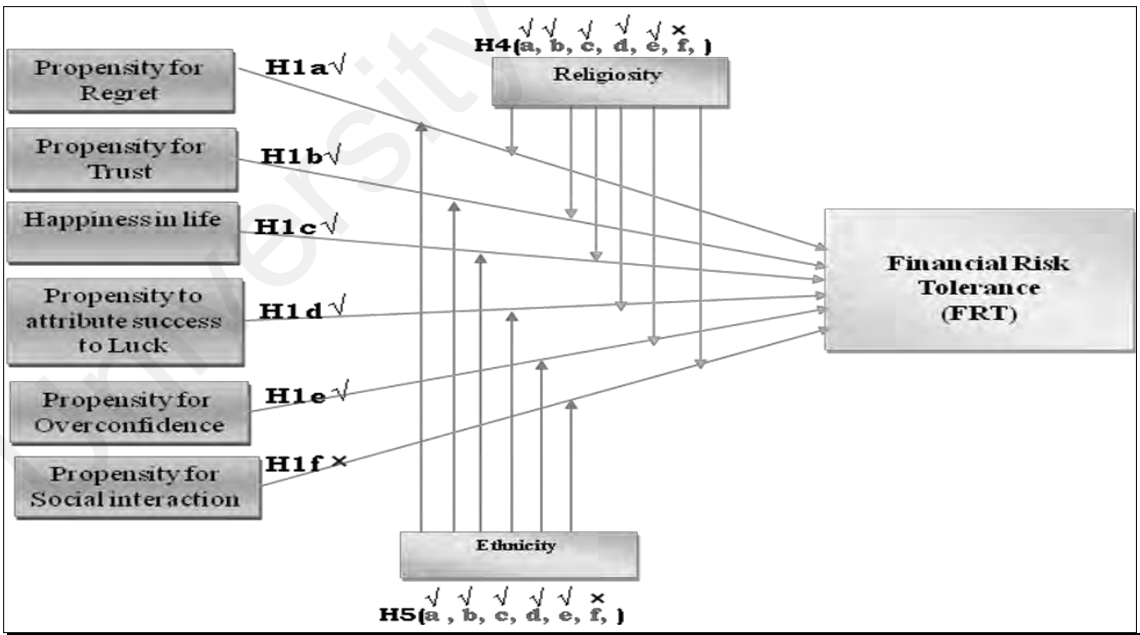
As discussed in the motivation that financial risk tolerance is a complex attitude which can be contributed by many factors. Besides, an individual's financial risk tolerance is not static and subject to change over time as it is influenced by age, income, education and others (Anbar & Eker, 2010; Yao et al., 2005). In addition, studies have documented that ethnic group differences further complicate the assessment of financial

risk tolerance and its relationship with other factors (Yao et al., 2005). Therefore, it is interesting to know which behavioural factors have impact on financial risk tolerance among Malaysians and their level of financial risk tolerance with respect to different ethnic group along with the level of religiosity. Results from this study can contribute to the existing literature by examining the relationship between financial risk tolerance and behavioural propensities along with demographic characteristics such as gender and ethnicity.

The questionnaires were distributed to the Malaysian undergraduate students based on quota sampling method to confirm the representativeness of the targeted population. A total of 1679 questionnaires were distributed to six public universities in the Klang Valley. However, only 1204 complete responses were obtained and used for analysis. Data analysis started with handling of missing data, assessment of normality and outliers, linearity testing, descriptive statistics, reliability analysis, EFA for process flexibility, CFA, assessment of goodness of fit, construct reliability, construct validity (e.g. construct validity, convergent validity and discriminant validity), structural model analysis and hypothesises testing, moderating effect analysis and hypothesises testing

Profile of 1204 respondents indicate female respondents are more compared to male respondents. From the responses of the survey, 391out of 1204 respondents are male, which is approximately 32% and 813 respondents are female, which represents about 68% of the total responses collected. The descriptive statistics show that the majority of the respondents are Malays approximately (67%), followed by Chinese about (25%), and Indian approximately (8%), which is representative to the ethnicity in the structure composition of the Malaysian population (Tenth Malaysian Plan 2011-2015). The descriptive statistics and normality testing indicated that the data is suitable for

parametric testing as there is no serious departure from the normal distribution. Next, the reliability, EFA, CFA, and validity are carried out followed by SEM and hypothesis testing. A total of 32 hypothesises are involved in this study. Based on the findings for hypothesis one, five sub-hypothesises (H1a, H1b, H1c, H1d, and H1e) are supported and one sub-hypothesis (H1f) is not supported. The findings of hypothesis two shows that six sub-hypothesises (H2a, H2c, H2d, H2e, H2f, and H2g) are supported and one sub-hypothesis (H2b) is not supported. The findings also reveal that four sub-hypothesises (H3a, H3b, H3c, and H3d) are supported and three sub-hypothesises (H3e, H3f, H3g) are not supported. Finally, the findings confirm the moderating effects of religiosity and ethnicity in the proposed research model. Table 5.1 presents the summary of the 32 hypothesises with their corresponding results while Figure 5.1 maps the results of the hypothesis proposed in the research model except H2 and H3 which are related to gender and ethnic group.



H2- Test of differences between gender
H3- Test of differences between ethnic groups

Figure 5.1: Final empirical model to the hypothesized framework

Table 5.1: Summary hypothesises testing results

H1: Behavioural factors (behavioural propensities) have significant impact on financial risk tolerance.		
	Sub-hypothesises	Results
H1a	Propensity for regret has positive impact on financial risk tolerance.	Supported
H1b	Propensity for trust has positive impact on financial risk tolerance.	Supported
H1c	Happiness in life has negative impact on financial risk tolerance.	Supported
H1d	Propensity to attribute success to luck has positive impact on financial risk tolerance.	Supported
H1e	Propensity for overconfidence has positive impact on financial risk tolerance.	Supported
H1f	Propensity for social interaction has positive impact on financial risk tolerance.	Not Supported
H2: There is a significant difference between males and females with respect to financial risk tolerance and behavioural propensities		
	Sub-hypothesises	Results
H2a	Males are significantly different than females in financial risk tolerance.	Supported
H2b	Males are significantly different than females in propensity for regret.	Supported
H2c	Males are significantly different than females in propensity for trust.	Not Supported
H2d	Males are significantly different than females in happiness in life.	Supported
H2e	Males are significantly different than females in propensity to attribute success to luck.	Supported
H2f	Males are significantly different than females in propensity for overconfidence.	Supported
H2g	Males are significantly different than females in propensity for social interaction.	Supported
H3: There is a significant difference between ethnic groups with respect to financial risk tolerance and behavioural propensities		
	Sub-hypothesises	Results
H3a	Ethnic groups are significantly different in financial risk tolerance.	Supported
H3b	Ethnic groups are significantly different in propensity for regret.	Supported
H3c	Ethnic groups are significantly different in propensity for trust.	Supported
H3d	Ethnic groups are significantly different in happiness in life.	Supported
H3e	Ethnic groups are significantly different in propensity to attribute success to luck.	Not Supported
H3f	Ethnic groups are significantly different in propensity for overconfidence.	Not Supported
H3g	Ethnic groups are significantly different in propensity for social interaction.	Not Supported

H4: Religiosity moderates the relationship between behavioural propensities and financial risk tolerance.		
	Sub-hypothesises	Results
H4a	Religiosity moderates the relationship between the propensity for regret and financial risk tolerance.	Supported
H4b	Religiosity moderates the relationship between the propensity for trust and financial risk tolerance.	Supported
H4c	Religiosity moderates the relationship between the happiness in life and financial risk tolerance.	Supported
H4d	Religiosity moderates the relationship between the propensity to attribute success to luck and financial risk tolerance.	Supported
H4e	Religiosity moderates the relationship between the propensity for overconfidence and financial risk tolerance.	Supported
H4f	Religiosity moderates the relationship between the propensity for social interaction and financial risk tolerance.	Not supported
H5: Ethnicity moderates the relationship between behavioural **propensities and financial risk tolerance.**		
	Sub-hypothesises	Results
H5a	Ethnicity moderates the relationship between the propensity for regret and financial risk tolerance.	Supported
H5b	Ethnicity moderates the relationship between the propensity for trust and financial risk tolerance.	Supported
H5c	Ethnicity moderates the relationship between the happiness in life and financial risk tolerance.	Supported
H5d	Ethnicity moderates the relationship between the propensity to attribute success to luck and financial risk tolerance.	Supported
H5e	Ethnicity moderates the relationship between the propensity for overconfidence and financial risk tolerance.	Supported
H5f	Ethnicity moderates the relationship between the propensity for social interaction and financial risk tolerance.	Not supported

5.3 DISCUSSION BASED ON RESEARCH QUESTIONS

This section discusses the findings in detail based on the research questions. The research hypothesises are developed to answer the research question of this study. As stated in Chapter one, this study aims at examining four research questions. The main objective of this thesis is to examine the relationship between behavioural factors (behavioural propensities) and financial risk tolerance. The behavioural factors are propensity for regret (PR), propensity for trust (PT), happiness in life (HL), propensity to attribute success to luck (PASL), the propensity for overconfidence (POC) and propensity for social interaction (PSI). Next, the study aims to explore the difference

between ethnic groups and gender with respect to financial risk tolerance and behavioural propensities. Finally, this study attempts to explore the moderating effects of religiosity (REL) and ethnicity on the relationship between behavioural propensities and financial risk tolerance. The problem statement of this thesis is addressed by posing four research questions. Table 5.2 outlines the research questions (RQ), research objectives (RO), research hypothesises (RH) and research findings (RF).

Table 5.2: Summary of the RQ, RO, RH and RF

Research Questions	Research Objectives	Hypothesises	Findings
1. What are the behavioural predictors (behavioural propensities) of financial risk tolerance?	**1.** To examine the relationship between behavioural propensities and financial risk tolerance of individuals	**H1a.** Propensity for regret has positive impact on financial risk tolerance. **H1b.** Propensity for trust has positive impact on financial risk tolerance. **H1c.** Happiness in life has negative impact on financial risk tolerance. **H1d.** Propensity to attribute success to luck has positive impact on financial risk tolerance. **H1e.** Propensity for overconfidence has positive impact on financial risk tolerance. **H1f.** Propensity for social interaction has positive impact on financial risk tolerance.	**1.** The behavioural propensities include propensity for regret, propensity for trust, happiness in life, propensity to attribute success to luck, propensity for overconfidence, and propensity for social interaction. PR, PT, PASL and POC have positive impact on financial risk tolerance but HL has a negative impact on financial risk tolerance. Whereas, the impact of PSI on financial risk tolerance was found insignificant.
2. Do different genders and ethnic groups vary in their behavioural propensities and financial risk tolerance?	**2.** To examine the differences in financial risk tolerance and behavioural propensities of different ethnic groups and genders	**H2a.** Males are significantly different than females in financial risk tolerance. **H2b.** Males are significantly different than females in propensity for regret. **H2c.** Males are significantly different than females in propensity for trust. **H2d.** Males are significantly different than females in happiness in life. **H2e.** Males are significantly different than females in propensity to attribute success to luck. **H2f.** Males are	**2.** The difference between males and females with respect to FRT was highly significant. Similarly males and females were significantly different in PASL, POC, PR, HL, REL and PSI except PT. This indicates that the data collected provides sufficient evidence of the difference between genders with respect to FRT and five out of six behavioural propensities. 3. The difference between ethnic groups with respect to FRT

		significantly different than females in propensity for overconfidence. **H2g.** Males are significantly different than females in propensity for social interaction. **H3a.** Ethnic groups are significantly different in financial risk tolerance. **H3b.** Ethnic groups are significantly different in propensity for regret. **H3c.** Ethnic groups are significantly different in propensity for trust. **H3d.** Ethnic groups are significantly different in happiness in life. **H3e.** Ethnic groups are significantly different in propensity to attribute success to luck. **H3f.** Ethnic groups are significantly different in propensity for overconfidence. **H3g.** Ethnic groups are significantly different in propensity for social interaction.	was highly significant. Similarly ethnic groups were significantly different in PR, PT, HL, and REL except PASL, POC, and PSI. This indicates that the data collected provides sufficient evidence of the difference between ethnic groups with respect to FRT and three out of six behavioural propensities.
3. Does religiosity moderate the relationship between behavioural propensities and financial risk tolerance?	**3.** To examine whether religiosity moderates the relationship between behavioural propensities and financial risk tolerance	**H4a.** Religiosity moderates the relationship between propensity for regret and financial risk tolerance. **H4b.** Religiosity moderates the relationship between propensity for trust and financial risk tolerance. **H4c.** Religiosity moderates the relationship between happiness in life and financial risk tolerance. **H4d.** Religiosity moderates the relationship between propensity to attribute success to luck and financial risk tolerance. **H4e.** Religiosity moderates the relationship between propensity for overconfidence and financial risk tolerance. **H4f.** Religiosity moderates the relationship between	**4.** The finding provided sufficient evidences that religiosity moderates the relationship between five behavioural propensities (PR, PT, HL, POC, and PASL) and financial risk tolerance. Whereas, religiosity does not have a moderating effect on the relationship between propensity for social interaction and individuals' financial risk tolerance.

		propensity for social interaction and financial risk tolerance.	
4. Does ethnic group in Malaysia moderate the relationship between behavioural propensities and individual financial risk tolerance?	**4.** To examine whether ethnicity moderates the relationship between behavioural propensities and financial risk tolerance	**H5a.** Ethnicity moderates the relationship between propensity for regret and financial risk tolerance. **H5b.** Ethnicity moderates the relationship between propensity for trust and financial risk tolerance. **H5c.** Ethnicity moderates the relationship between happiness in life and financial risk tolerance. **H5d.** Ethnicity moderates the relationship between propensity to attribute success to luck and financial risk tolerance. **H5e.** Ethnicity moderates the relationship between propensity for overconfidence and financial risk tolerance. **H5f.** Ethnicity moderates the relationship between propensity for social interaction and financial risk tolerance.	**5.** Ethnic groups in Malaysia include Malays, Chinese, and Indians. Ethnicity was found to have a moderating effect on the relationship between five behavioural propensities (e.g. PR, PT, HL, POC, and PASL) and individuals' financial risk tolerance. Whereas, ethnicity does not have a moderating effect on the relationship between propensity for social interaction and individuals' financial risk tolerance.

5.3.1 Research Question 1

What are the behavioural predictors (behavioural propensities) of financial risk tolerance?

Many studies have stated that regret, trusting others, happiness in life, belief in luck for the outcomes, overconfidence and social interaction influence risk tolerance (Albaity & Rahman, 2012, Hong et al., 2005; Inman & Zeelenberg, 2002; Pan & Statman, 2012). Therefore, this study examines propensity for regret (H1a), propensity for trust (H1b), happiness in life (H1c), propensity to attribute success to luck (H1d), and propensity for overconfidence (H1e), along with propensity for social interaction (H1f) as the behavioural determinants of financial risk tolerance. The outcomes of this study reveal that five hypotheses are supported and one hypothesis (H1f) is not supported. All the relationships are in positive direction except for happiness in life variable. Propensity for trust (ß=0.30) has more effect on financial risk tolerance as compared to propensity for regret (ß=0.14), happiness in life (ß=-0.15), propensity to attribute success to luck (ß=0.15), propensity for overconfidence (ß=0.18), and propensity for social interaction (ß=0.03). The subsequent sections present each of the behavioural determinants in detail.

Propensity for regret and financial risk tolerance

Among the behavioural determinants of financial risk tolerance, as this study expects, propensity for regret has positive impact on financial risk tolerance. This finding suggests that respondents with relatively high levels of propensity for regret have relatively high financial risk tolerance. It seems that high levels of regret make risky investment acceptable. This finding suggests that advisors should consider advisees' levels of regret while assessing their financial risk tolerance as, it may exaggerate or

underestimate their true financial risk tolerance. Furthermore, the finding also indicates that financial advisors may recommend risky investment portfolios to the clients who have relatively high levels of regret.

Reb and Connolly (2009) found that people with high propensity for regret tend to have risk seeking behaviour (making them high risk tolerant). Similarly, Tsai (2012) suggested that in many occasions, regret aversion of a bank's chief executive officer (CEO) makes the bank more tolerate to financial risks. In this study, high propensity for regret influences respondents to be highly financial risk tolerant. This finding is consistent with the findings of Reb and Connolly (2009). Perhaps, the possible explanation for the positive relationship between the two is that when an individual faced with two choices where one is riskier than the other opting for the less risky option lead to regret if the riskier option turned out to be better than the less risky option (Larrick & Boles, 1995; Ritov, 1996). Therefore, people with high propensity for regret are more likely to tolerate high financial risk as they are always in doubt that they could have made a better choice if they would go for the riskier option (Tsai, 2012). This indicates that the propensity for regret is associated to financial risk tolerance even though some studies reported the two are distinct (Pan, & Statman, 2012). This study finding also contradicts with some prior studies that pointed that risk tolerance is negatively related with regret (Lai, 2010; Reb, 2008).

The knowledge about the relationship between propensity for regret and financial risk tolerance matters to financial advisors because it may assist them to make appropriate adjustments in the process of measuring individuals' financial risk tolerance as propensity for regret may exaggerate or underestimate their true financial risk tolerance. Information about individuals' true financial risk tolerance assists financial advisors in

advising clients for making more appropriate investment allocation. People with high propensity for regret tends to complain more to the financial advisors if the outcome of their portfolio is not the best than people with low propensity for regret. Thus, understanding individuals' propensity for regret is important to financial advisors even it would turn out as unrelated to financial risk tolerance as all types of financial choices (e.g. buying or selling stocks) open the door for regret.

The information about individuals' propensity for regret is useful in profiling individuals and designing suitable investment portfolios, thereby enabling them to earn optimum return on their investments which is expected to satisfy the common interest of both advisors and advisee. It is also believed that understanding the relationship between propensity for regret and financial risk tolerance will further assist not to end the relationship between financial advisor and advisee in disappointments and in high level of regret.

Propensity for trust and financial risk tolerance

In relation to propensity for trust, the findings indicate that respondents with relatively high levels of trust have relatively high financial risk tolerance, as they believe to have less possibility of being cheated. This is in concurrence with Pan and Statman (2012) who noted that high propensity for trust is associated with high risk tolerance. Similarly, some studies that documented positive relationship between trust and risk tolerance are Hurley (2006), Luhmann (1979), Seligmen (1997), and Statman (2008). Another possible explanation for the relationship between propensity for trust and financial risk tolerance is the ease for the advisor to guide trusting individuals compared to less trusting one.

This finding suggests that respondents with relatively high levels of propensity for trust have relatively high financial risk tolerance. It seems that high levels of trust make risky investment acceptable. This finding suggests that advisors should consider advisees' levels of trust while assessing their financial risk tolerance as, it may exaggerate or underestimate their true financial risk tolerance. Furthermore, the finding also indicates that financial advisors may recommend risky investment portfolios to the clients who have relatively high levels of trust.

Pan and Statman (2012) believe that trust is important to advisors not only because it might be correlated to risk tolerance but also because less trusting investors are difficult to guide. Individuals are more willing to accept advice (e.g. buy or sell risky stocks) from the advisor when they have high level of trust to the advisor. The information about the relationship between propensity for trust and financial risk tolerance enables financial advisors to make appropriate adjustments in the process of measuring individuals' financial risk tolerance as propensity for trust may exaggerate or underestimate their true financial risk tolerance. Information about individuals' true financial risk tolerance will assist financial advisors in advising clients for making more appropriate investment allocation.

The information about individuals' propensity for trust is useful in profiling individuals and designing suitable investment portfolios, thereby enabling them to earn optimum return on their investments which is expected to satisfy the common interest of both advisors and advisee. It is also believed that understanding the relationship between propensity for trust and financial risk tolerance further assist not to end the relationship between financial advisor and advisee in disappointments and in mistrust.

Happiness in life and financial risk tolerance

Among the behavioural determinants of financial risk tolerance, as this study expects, happiness in life has negative impact on financial risk tolerance. This finding suggests that respondents who are relatively happy in life have low financial risk tolerance. It seems that high levels of happiness in life make risky investment unpopular. The finding suggests that advisors should consider advisees' levels of happiness in life while assessing their financial risk tolerance as, it may exaggerate or underestimate their true financial risk tolerance. Furthermore, the finding also indicates that financial advisors should recommend less risky investment portfolios to the clients who are relatively happy in their life as a whole. Information about the levels of individuals' happiness in life is important because it is subjective and wealthy people generally exceeds that of the poor, but wealthy people with $ 50 thousands monthly income suffer low levels of happiness in life if they set their benchmarks at $100 thousands. In contrast, relatively poor people with $5,000 monthly income enjoy high levels of happiness in life if they set their benchmarks at $4,000.

The finding of this study is consistent with Isen and Patrick (1983) who argued that people who have high levels of happiness in life tend to have low level of risk tolerant. The finding indicates a negative relationship between happiness in life and risk tolerance. This study finding also contradicts with some prior studies that pointed that risk tolerance is significantly and positively related with happiness in life (Gibson & Sanbonmatsu, 2003; Laakso, 2010) and not significantly related with life satisfaction (Pan & Statman, 2012).

The knowledge about the relationship between happiness in life and financial risk tolerance matters to financial advisors because it may assist them to make appropriate

adjustments in the process of measuring individuals' financial risk tolerance as it may exaggerate or underestimate their true financial risk tolerance. Information about individuals' true financial risk tolerance will assist financial advisors to guide their clients for making more appropriate investment allocation.

The information about individuals' happiness in life is useful in profiling individuals and designing suitable investment portfolios, thereby enabling them to earn optimum return on their investments which is expected to satisfy the common interest of both advisors and advisee. It is also believed that understanding the relationship between happiness in life and financial risk tolerance further assist not to end the relationship between financial advisor and advisee in disappointments.

Propensity to attribute success to luck and financial risk tolerance

As expected, this study finds strong support on the relationship between propensity to attribute success to luck (PASL) and financial risk tolerance, indicating PASL is a predictor of financial risk tolerance. In relation to PSAL, the findings indicate that respondents with relatively high levels of PASL have relatively high financial risk tolerance, as their belief in luck serving as a shield against regret. This finding is consistent with Pan and Statman (2012) who argued that high PASL is associated with high risk tolerance. Similarly, some studies that found positive relationship between experienced good luck and financial risk tolerance are Albaity and Rahman (2012), Hanna et al. (2008), and Post et al. (2008).

Another possible explanation for the relationship between PASL and financial risk tolerance is that people who belief in luck for any successful or unsuccessful outcome tend to be overconfident which increases their risk tolerance and decrease the

significance of risk. The finding of this study suggests that respondents with relatively high levels of PASL have relatively high financial risk tolerance. It seems that high levels of PASL make risky investment acceptable.

This finding suggests that advisors should consider advisees' levels of belief in luck while assessing their financial risk tolerance as, it may exaggerate or underestimate their true financial risk tolerance. Furthermore, the finding also indicates that financial advisors may recommend relatively risky investment portfolios to the clients who have relatively high levels of PASL. Information about individuals' true financial risk tolerance will assist financial advisors to guide their clients for making more appropriate investment allocation.

The information about individuals' PASL is useful in profiling individuals and designing suitable investment portfolios, thereby enabling them to earn optimum return on their investments which is expected to satisfy the common interest of both advisors and advisee. It is also believed that understanding the relationship between PASL and financial risk tolerance will further assist not to end the relationship between financial advisor and advisee in disappointments.

Propensity for overconfidence and financial risk tolerance

As expected, propensity for overconfidence (POC) has significant positive impact on financial risk tolerance. This finding indicates that respondents with relatively high levels of POC have relatively high financial risk tolerance, as they tend to overestimate the precision of their knowledge or their abilities. This finding is consistent with Barber and Odean (2000) and Dorn and Huberman (2005) who illustrated overconfidence investors hold riskier portfolios like high risk tolerant investors. Similarly, majority of

the prior studies have suggested that there is a positive relationship between overconfidence and risk tolerance (opposite for risk aversion) (Doerr et al., 2011; Hassan et al., 2014; Lambert et al., 2012; Pan & Statman, 2012). Furthermore, Pan and Statman (2012) believe that overconfidence can influence the measurement of financial risk tolerance because less-overconfident individuals tend to perceive risk as higher than overconfident individuals. This study finding also contradicts with some prior studies that pointed out that risk tolerance is insignificantly related with POC (Frascara, 1999; Heath & Tversky, 1991; Kirchler & Maciejovsky, 2002).

This this finding suggests that respondents with relatively high levels of POC have relatively high financial risk tolerance. It seems that high levels of POC make risky investment acceptable. This finding suggests that advisors should consider advisees' levels of overconfidence while assessing their financial risk tolerance as, it may exaggerate or underestimate their true financial risk tolerance. Besides, overconfident individuals usually tend to resist advice regarding diversifying their portfolios (Pan & Statman, 2012). This study finding also indicates that financial advisors may recommend risky investment portfolios to the clients who have relatively high levels of overconfidence.

Pan and Statman (2012) believe that level of overconfidence is important to advisors not only because it might be correlated to risk tolerance but also because they tend to overestimate the precision of their knowledge or their abilities. The information about the relationship between POC and financial risk tolerance enables financial advisors to make appropriate adjustments in the process of measuring individuals' financial risk tolerance as POC may exaggerate or underestimate their true financial risk tolerance.

Information about individuals' true financial risk tolerance will assist financial advisors to guide their clients for making more appropriate investment allocation.

The information about individuals' POC will be useful in profiling individuals and designing suitable investment portfolios, thereby enabling them to earn optimum return on their investments which is expected to satisfy the common interest of both advisors and advisee. It is also believed that understanding the relationship between POC and financial risk tolerance will further assist not to end the relationship between financial advisor and advisee in disappointments and in misunderstanding.

Propensity for social interaction and financial risk tolerance

This study finds propensity for social interaction (PSI) has statistically insignificant but positive impact on financial risk tolerance. One possible explanation for this finding is that the challenge for the individual in realizing the full benefit from the social interaction when a society is consisted of heterogeneous people (e.g. Malaysia). Thus, in Malaysia, one may not have the firm influence of any attribute (e.g. risk tolerance) that is adapted from the social interaction because levels of risk tolerance differ between Chinese, Indian and Malay. This finding from the current study is not consistent with Hsee and Weber (1999) who noted significant positive relationship between PSI and willingness to take high risk (risk tolerance). This finding suggests that respondents with relatively high levels of PSI have relatively high financial risk tolerance but the relationship is not statistically significant.

However, the literature on social interaction reveals that propensity for social interaction is related to other behavioural factors such as overconfidence, trust, regret, and happiness in life (Conner et al., 1979; Dunning et al., 1990; Dwyer et al., 2007).

Meanwhile, these behavioural factors are direct or inversely related to financial risk tolerance. This finding suggests that advisors should consider advisees' levels of social interaction while assessing their financial risk tolerance as, it may exaggerate or underestimate their true financial risk tolerance through influencing other behavioural factors such as trust, happiness in life and others.

The information about the relationship between PSI and financial risk tolerance through other behavioural factors enables financial advisors to make appropriate adjustments in the process of measuring individuals' financial risk tolerance. In addition, the information about individuals' PSI will be useful in profiling individuals and designing suitable investment portfolios, thereby enabling them to earn optimum return on their investments which is expected to satisfy the common interest of both advisors and advisee. Measuring individuals' level of PSI is still important to advisors to have true financial risk tolerance even it is not correlated to risk tolerance because it is related to other behavioural factors that has significant impact on financial risk tolerance. For example Lu and Shih (1997) found positive relationship between social interaction and overconfidence. Meanwhile this study found overconfidence has positive relationship with financial risk tolerance.

5.3.2 Research Question 2

Do different genders and ethnic groups vary in their behavioural propensities and financial risk tolerance?

Hypotheses 2 and 3 are developed to fully answer the research question 2. Hypothesis 2 is examined to answer the first part of the research question 2: *"Do different genders vary in their behavioural propensities and financial risk tolerance?"* The findings of hypothesis 2 reveal that men are generally more financial risk tolerant than women. This finding is consistent with many prior studies (e.g. Dohmen et al., 2011; Grable, 2000; Pan & Statman, 2012; Yao, 2013). The outcomes of hypothesis 2 also note that men have relatively high propensity for overconfidence (POC) and high propensity to attribute to success to luck (PASL) but they have relatively low levels of happiness in life, low propensity for regret and low propensity for social interaction. These findings indicate that women respondents are relatively happier in their life and have relatively high levels of propensity for regret and propensity for social interaction. It is interesting to note that all behavioural factors significantly differ between male and female respondents except for propensity for trust. As pointed out by Pan and Statman (2012) that there is no significant difference in propensity for trust between men and women.

Relating to gender difference, the findings from this study are consistent with prior studies while some of them contradict. For instance, Pan and Statman (2012) noted that Men have lower propensity for regret than women. Likewise, in terms of overconfidence, Baber and Odean (2011) reported that men tend to be more overconfident than women. In relation to PASL, this study finding contradicts Stipek and Gralinski (1991) that boys generally attribute success to luck less than girls. One possible explanation for the findings of this study is that the positive link between PASL

and financial risk tolerance. As male respondents are found more financial risk tolerant than female respondents, thus the male respondents may have high PASL as well. With respect to happiness in life, Statman (2008) found that men are less happy in their life than women and it supports this study finding. Finally, this study finding contradicts Alesina and Ferrara (2002) who documented that men participate more in social activities than women.

However, the findings of hypothesis 3 that is developed to answer the second part of the research question 2: *"Do different ethnic groups vary in their behavioural propensities and financial risk tolerance?"* reveal that Chinese and Malay respondents are more financial risk tolerance than Indian respondents. But Chinese and Malay respondents are not significantly different in terms of financial risk tolerance. This finding indicates that financial advisors should not generalize about the financial risk tolerance of their clients in Malaysia as it differs between ethnic groups. Furthermore, financial advisors may also have to consider individuals' ethnicity while making recommendation for any investment portfolio to the clients. This finding is similar with Yao et al. (2005) who found difference in financial risk tolerance between ethnic groups in USA. They pointed out that Whites are more risk tolerant than non-Whites. However, based on researcher's knowledge the information about the financial risk tolerance of different ethnic groups in Malaysia is not well documented.

However, Malay respondents are more regretting than Chinese respondents and Indian respondents but they are significantly different from Chinese respondent only not the Indian respondents. This finding is similar with Hillier and Barrow (2014) who found difference in levels of regret between ethnic groups in USA. They noted that White workers show lower level of regret compared to non-Whites. However, based on

researcher's knowledge the information about regret levels of different ethnic groups in Malaysia is not known. In relation to propensity for trust (PT), Malay respondents have high levels of PT compared to Chinese respondents and Indian respondents and they are significantly different from Chinese respondents and Indian respondents. Nevertheless, the differences between Chinese and Indian respondents were insignificant. This finding is consistent with Guiso et al. (2008) who reported trust is also highly linked to ethnic background. Furthermore, Alesina and Ferrara (2002) found that there is a significant impact of having heterogeneity individuals on trust since people tend to trust those people who share similar attributes to themselves.

In the case of happiness in life (HL), Malay respondents have high levels of HL compared to Chinese respondents and Indian respondents and they are significantly different from Chinese respondent and Indian respondents. Nevertheless, the differences between Chinese and Indian respondents are found insignificant. This finding is similar with Argyle (2003) who found difference in levels of HL between ethnic groups in South Africa. They found that Whites are happier than Indians, and Blacks. However, based on researcher's knowledge the information about levels of HL of different ethnic groups in Malaysia is not documented. However, the findings of this study also suggest that there is no significant difference between the respondents from the three ethnic groups for propensity to attribute success to luck, propensity for overconfidence, and propensity for social interaction.

To summarize, the above findings indicate that Malaysian people are different for many of their behavioural factors which indicate that financial advisors should not generalize about their behaviour and financial risk tolerance while advise.

5.3.3 Research Question 3

Does religiosity moderate the relationship between behavioural propensities and financial risk tolerance?

Religiosity is introduced in this study as a moderating variable on the relationship between behavioural factors (behavioural propensities) and financial risk tolerance, which has not been studied before in the context of financial risk tolerance. Therefore, this study examines moderating effect of religiosity on the relationship between propensity for regret (H4a), propensity for trust (H4b), happiness in life (H4c), propensity to attribute success to luck (H4d), and propensity for overconfidence (H4e), along with propensity for social interaction (H4f) and financial risk tolerance. The outcomes of this study reveal that five hypotheses are supported and one hypothesis (H1f) is not supported.

The role of religiosity as a moderator between propensity for regret (PR) and financial risk tolerance is supported (FRT). The findings also reveal that low level of religiosity strengthens the relationship between PR and FRT more than the high level of religiosity. Accordingly, with the decrease in religiosity, respondents' regret will be more influential to their financial risk tolerance. The more religious the respondents will be, the more likely they will be able to reduce the impact of their regret on their financial risk tolerance. In other words, respondents who are less religious and have high regret tend to have high financial risk tolerance than those who are highly religious and have high regret.

The role of religiosity as a moderator between propensity for trust (PT) and financial risk tolerance is supported (FRT) as the results show that the difference of the chi-square values is significant. However, the coefficient of the low religiosity group and

high religiosity group indicate that the low level of religiosity strengthens the relationship between PT and FRT more than the high level of religiosity. Accordingly, with the decrease in religiosity, respondents' trust will be more influential to their financial risk tolerance. In other words, respondents who are less religious and have inner trust toward others tend to have high financial risk tolerance than those who are highly religious and have inner trust toward others.

The role of religiosity as a moderator between happiness in life (HL) and financial risk tolerance is supported (FRT) as the results show that the difference of the chi-square values is significant. Based on the coefficients of high and low religiosity group, the result proves that there is adequate evidence that the low level of religiosity strengthens the relationship between HL and FRT more than the high level of religiosity. In view of that, with the decrease in religiosity, respondents' happiness in life will be more influential to their financial risk tolerance. In other words, respondents who are less religious and relatively happy in their life tend to have low financial risk tolerance than those who are high religious and relatively happy in their life.

The role of religiosity as a moderator between propensity to attribute success to luck (PASL) and financial risk tolerance is supported (FRT) as the results show that the difference of the chi-square values is significant. The finding also indicates that the low level of religiosity fortifies the relationship between PASL and FRT more than the high level of religiosity. In other words, respondents who are less religious and have relatively high PASL tend to have high financial risk tolerance than those who are high religious and have relatively high PASL.

The role of religiosity as a moderator between propensity for overconfidence (POC) and financial risk tolerance is supported (FRT) as the results show that the difference of the chi-square values is significant. This finding shows that there is satisfactory evidence that the low level of religiosity strengthens the relationship between POC and FRT more than the high level of religiosity. For that reason, with the decrease in religiosity, respondents' POC will be more influential to their financial risk tolerance. In other words, respondents who are less religious and have relatively high POC tend to have high financial risk tolerance than those who are highly religious and have relatively high POC.

The role of religiosity as a moderator between propensity for social interaction (PSI) and financial risk tolerance is not supported (FRT) as the results show that the difference of the chi-square values is not significant. This finding failed to provide evidence that religiosity moderates the relationship between PSI and FRT.

The structural model for moderating effects of religiosity confirms the presence of absolute fit, incremental fit and parsimony fit. The model achieved a satisfactory goodness-of-fit with relative chi-square value CMIN/df of 2.699, RMSEA 0.036, CFI of 0.89, GFI of 0.910, and NFI of 0.84,. Hence, it concludes that the model has satisfactory level of fit and the moderating variable influence the relationship between five behavioural propensities and financial risk tolerance except propensity for social interaction. In fact, the direct relationship between propensity for social interaction and financial risk tolerance is insignificant. Finally, the findings of this study are consistent with the findings of prior studies (e.g. Dunn, 2005; Mattila et al., 2001; Pulson et al., 1998) who proposed that religiosity is an influential factor positively affecting human behaviour.

5.3.4 Research Question 4

Does ethnicity moderate the relationship between behavioural propensities and financial risk tolerance?

As expected, ethnic groups have significant influence on the relationship between behavioural factors (behavioural propensities) and financial risk tolerance. The findings of this study indicate that the impacts of propensity for regret (PR), propensity for trust (PT), happiness in life (HL), propensity to attribute success to luck (PASL), and propensity for overconfidence (POC) on financial risk tolerance (FRT) is moderated by ethnic groups. In the case of PR, the impact of this factor on financial risk tolerance is higher for Chinese respondents compare to Indian and Malay respondents

The findings also suggest that for Chinese and Malay respondents, the higher the level of their propensity for regret, the higher their tendency to tolerate the financial risk. It seems for Indian respondents, the higher the level of propensity for regret, the higher the tendency to tolerate financial risk, although the relationship is not significant. This finding suggests that financial advisors may place more importance to the levels of regret that Chinese individuals possess to assess their financial risk tolerance than Malay and Indian.

In relation to PT, the impact of this factor on financial risk tolerance is higher for Indian respondents compared to Chinese and Malay respondents. However, when comparing between Indian, Malay, and Chinese, it seems that the impact of propensity for trust on financial risk tolerance is stronger for Indian compared to the other ethnic groups. However, the impact of propensity for trust in financial risk tolerance for all ethnic groups found significant. Findings indicate that for Indian, Malay and Chinese respondents, the higher the level of their propensity for trust, the higher the tendency to

tolerate the financial risk. This finding suggests that financial advisors may place more importance to the level of trust that Indian individuals possess to assess their financial risk tolerance than Malay and Chinese. For Chinese individuals, the impact of propensity for trust in financial risk tolerance is weaker compared to Malay individuals and Indian Individuals.

In the case of HL, the impact of this factor on financial risk tolerance is significant for Malay respondents but not among Chinese and Indian respondents. These findings suggest that for Malay respondents, the higher the level of their happiness in life, the lower their tendency to tolerate the financial risk. This finding posits that financial advisors or financial planners may place more importance to the levels of happiness in life Malay individuals possess to measure their financial risk tolerance than Indian and Chinese individuals.

The impact of PASL on financial risk tolerance is higher for Indian respondents compared to Chinese and Malay respondents. The findings of this study also indicate that for Indian, Malay and Chinese respondents, the higher the level of their propensity to attribute success to luck, the higher the tendency to tolerate the financial risk. This finding also suggests that financial advisors or financial planners may place more importance to the level of propensity to attribute success to luck that Indian individuals possess to measure their financial risk tolerance than Chinese individuals and Malay individuals.

In addition, the impact of POC on financial risk tolerance is significant to Chinese and Malay respondents but not to Indian respondents. Findings suggest that for Chinese and Malay respondents, the higher the level of their propensity for overconfidence, the

higher their tendency to tolerate the financial risk. This finding also posits that financial advisors may place more importance to the level of propensity for overconfidence Chinese individuals possess to measure their financial risk tolerance than Malay and Indian individuals. For Indian individuals, the impact of propensity for overconfidence on financial risk tolerance is weaker compared to Chinese individuals and Malay Individuals.

Finally, the moderating effects of ethnicity on the path between propensity for social interaction (PSI) and financial risk tolerance (FRT) is insignificant as the chi square difference was ($\Delta\chi^2 = 2.45$, $p > .10$). However, the structural model for moderating effects of ethnicity confirms the presence of absolute fit, incremental fit and parsimony fit. The model achieved a satisfactory goodness-of-fit with relative chi-square value CMIN/df of 2.366, RMSEA 0.034, CFI of 0.87, GFI of 0.89, and NFI of 0.80. Hence, it concludes that the model has satisfactory level of fit and the moderating variable influence the relationship between five behavioural propensities and financial risk tolerance except propensity for social interaction. In fact, the direct relationship between propensity for social interaction and financial risk tolerance is not significant. Lastly, the findings of this study are consistent with the findings of prior studies (e.g. Operario & Fiske, 2001; Yao et al., 2005; Cox, Lobel, & McLeod, 1991) who proposed that ethnic identity is an influential factor affecting human behaviour.

5.4 CONTRIBUTION

5.4.1 Theoretical contributions

The essential reason for behavioural factors to have influence on individuals' financial risk tolerance is the assumption from behavioural finance paradigm that people are normal and not always rational. Thus, Irrationality Assumption (IA) is used to explain the phenomenon investigated in this study. This study is indeed an attempt to use academic theory to address the shortcomings of the instruments used by financial advisors to assess and guide advisee (Pan & Statman, 2012). Many measures have been developed to assess individual financial risk tolerance, but mostly focus on either demographic and socio-economic factors, or single-item risk survey.

This study extends the research line by investigating the behavioural determinants of financial risk tolerant. This study is pioneering in the sense that it examines the following relationships to measure individuals' financial risk tolerance:

- the relationship between behavioural factors (behavioural propensities) and financial risk tolerance
- the relationship between gender, behavioural propensities and financial risk tolerance
- the relationship between ethnic groups, behavioural propensities and financial risk tolerance
- the moderating role of religiosity and ethnicity

The current study uncovers numerous novel ideas to the theory and practice. As noted in Chapter 1, this study specifically accumulates knowledge to the area of financial planning, investment management models and particularly measurement of financial risk tolerance in many ways.

This study attempts to examine the factors that were neglected in the previous studies. Accordingly, the impact of behavioural factors on financial risk tolerance is tested. Risk-assessment has been widely examined in the implementation of the financial planning process and development of investment management models. In relation to financial plans and investment management models, studies are centred on the risk-assessment rooted in economic utility theory, or tests of hypotheses related to demographic and socio-economic factors (Grable & Lytton, 1998). Nevertheless, this study found five behavioural factors such as propensity for regret, propensity for trust, happiness in life, propensity to attribute success to luck, and propensity for overconfidence have significant impact on individuals' financial risk tolerance. This finding supports the conception of adding a behavioural factor to the assessment process of risk tolerance may increase the validity of risk estimate (Hanna et al., 1998). Accordingly, the study proves that the assessment of financial risk tolerance not only depends on demographic and socio-economic factors but also influenced by behavioural factors (e.g. behavioural propensities).

In addition, this study seeks to explore the relationship between behavioural propensities, gender and ethnic groups in Malaysia. Furthermore, it also examines the moderating effect of religiosity and ethnicity in the proposed model. This study is a pioneer initiative, because as never before, it links the above mentioned relationships in risk-assessment within the behavioural finance research, particularly in financial plans and investment management models. Another contribution involves the introduction and measurement of behavioural factors and testing moderating effect of religiosity and ethnicity in behavioural finance research. This study provides evidence on how behavioural propensities are connected to the assessment of financial risk tolerance and how high and low levels of religiosity can influence on the relationship between

behavioural propensities and financial risk tolerance. Furthermore, it also provides evidence on how Chinese, Indian and Malay ethnic groups strengthen or weaken the relationship between behavioural propensities and financial risk tolerance. The role of religiosity and ethnicity as moderating variables broaden the horizon of behavioural factors in the context of investment management and various decision makings. In short, these variables extend the existing line of research on investment management models and behavioural finance literature as behavioural factors have not been measured in both contexts mentioned above. This study provides theoretical insights into risk assessment measures, financial planning process, investment management models, and behavioural finance particularly in reference to the Irrationality assumption.

5.4.2 Practical contributions

The main implication of this study is the influence of behavioural propensities on financial risk tolerance. This provides financial advisors with insight that financial risk tolerance tools alone are not sufficient to guide their clients and behavioural propensities along with risk tolerance questions offers better solutions for serving their clients. Yet, the combination of behavioural propensities and risk tolerance questionnaire is only one instrument within the process of advising for investment. There might be many other factors that may influence the advising process such as listening carefully and asking clients about their goals, proposing alternatives, educating about recent events, and following up from time to time.

This study highlights the essential function of financial risk tolerance. The identification of behavioural determinants that will influence the financial risk tolerance will provide insights to knowledge of financial management as well as behavioural finance. For example, based on the findings of the study, whether the behavioural factors apart from demographic characteristics do influence the measurement of financial risk tolerance

can be determined. Besides, emphasis can be given on the relevant factors that influence the assessment of financial risk tolerance. For instance, financial advisors can emphasise on one's propensity for trust if it is found to be the most significant behavioural factor that influences financial risk tolerance of individuals. Both the financial advisors and advisees will be benefited in numerous ways by knowing the true financial risk tolerance and other behavioural factors of advisees. If the relationship between propensity for trust and financial risk tolerance is positive and the level of trust is high, the financial advisors may develop a trusting bond with advisees faster which subsequently makes the guidance easier for advisors and leads to more comprehensive assessment of financial risk tolerance.

This study findings may assist advisors designing appropriate investment portfolios according to advisees' true financial risk tolerance and behavioural factors (behavioural propensities). This may result in achieving optimum returns on clients' investments and intention to return and recommend advisors besides spreading positive word of mouth. With that, the financial advisors will be able to retain existing clients besides attracting new ones. In return, the advisees will enjoy better financial returns for their investments without much regret and the relationship between advisor and advisee might not end in disappointments. In addition, the advisees can be more careful about the influence of their behavioural factors which might exaggerate or underestimate their true financial risk tolerance and they also can avoid unreasonable/emotional investment decisions. Consequently, financial advisors will be able to minimize the conflict of interest involved.

5.4.3 Research and methodological implications

Most of the research on risk tolerance measurement focuses on economic utility theory, demographic and socioeconomic variables. This study centred on behavioural factors and includes six behavioural predictors of financial risk tolerance namely propensity for regret, propensity for trust, happiness in life, propensity to attribute success to luck, propensity for overconfidence, and propensity for social interaction which receive little attention. Besides, individual's ethnicity has been left unexplored. By identifying the relationship between ethnicity, behavioural propensities and individuals' religiosity, this study illuminates what causes financial risk tolerance to vary according to individuals. In addition, there are numerous relationships that yet to be investigated particularly in the financial risk assessment context. Among them are the role of levels of religiosity and ethnicity as a moderator between the behavioural propensities and financial risk tolerance. On top that, the extents to which behavioural propensities are related to one another is not known. This study explores these relationships and fills in the gap in the literature.

In terms of methodology, this study employed quantitative method strategy. Scales are adapted for all the constructs. Even though scale has been adapted, it does not mirror the perspective of finance research. Thus, this instigates the need to modify the existing measure and make it suitable to reflect this study context. In addition, most of the research focuses on single-item risk survey methods to measure risk tolerance. This study uses multiple-items risk survey to measure the financial risk tolerance. Moreover, this study employs structural equation modelling (SEM) to validate and analysis proposed research model instead of multiple regression analysis to capture the effects of behavioural factors and address the endogeneity issues

The significance of researching behavioural propensities that influence financial risk tolerance is that it could identify the important propensities that affect individuals' financial risk tolerance and, in turn, ways that those characteristics can be well understood to overcome the limitations if there is any. This study contributes to the finance literature in many ways. First it opens up new area of research in finance, because as never before, studies linked behavioural factors to financial risk tolerance and investment management models and tested moderating effects of religiosity and ethnicity within the behavioural finance research. Second, it examines new framework for financial risk tolerance using SEM and subsequently relates to financial advisors to assess and guide advisees.

Third, this research expects to resolve the long-standing question (see Hanna, Waller, & Finke, 1998), adding what behavioural factors to the assessment of financial risk tolerance process may increase the validity of the risk tolerance estimate by proposing six behavioural factors (e.g. propensity for regret, propensity for trust, happiness in life, propensity to attribute success to luck, propensity for overconfidence, and propensity for social interaction). Fourth, this study contributes to the finance literature by thoroughly exploring related literature in other disciplines such as psychology behavioural economics, behavioural finance and others. In order to address the shortcomings of the instruments used by financial advisors to assess and guide individuals, this study extensively reviewed, analysed, and synthesised prior literature to improve the understanding of the assessment process of individuals' financial risk tolerance. Fifth, this research uses structural equation modelling (SEM) to analysis the data. Even though SEM has been used extensively in other disciplines, it is quite new in finance research. To summarize, this research discusses deficiencies of the risk tolerance measurement and offers remedies, based on a survey of 1,204 individuals.

5.5 LIMITATIONS AND FUTURE RESEARCH

Although much has been done, this dissertation is not without limitations. First, the scope of this study is confined to university students in Malaysia. The working individuals or investors may differ from the university students in terms of income, experiences, and characteristics. These elements may affect behavioural propensities and subsequently to the financial risk tolerance. Thus, care must be taken to generalize to the Malaysian population. Future research may carry out comparative studies between university students and working individuals or investors. It is also recommended to conduct studies on other countries and subsequently carry out cross country examination to identify similarities and differences.

In addition, the behavioural determinants of financial risk tolerance are confined to propensity for regret, propensity for trust, happiness in life, propensity to attribute success to luck, propensity for overconfidence, and propensity for social interaction. The second limitation is that, it did not investigate propensity for maximization, propensity for fear, propensity for exuberance. This is because adequate research gaps are recognized for the behavioural factors considered in this study. Besides, additional construct will require more samples as there will be an increase in the total numbers of items. Thus, these behavioural factors are not included due to time and costs constraints. Future studies could incorporate these factors to predict financial risk tolerance.

The third limitation is that, this study was unable to combine the impact of behavioural factors and other socio-economic factors such as income, work experience, wealth on the measurement of financial risk tolerance as the respondents are university student. Though, this study examined the effect of gender and race. Thus, future studies could include the demographic and socio-economic factors in the current research model. Next, the current study has identified the need to understand the behavioural factors to

assess the individuals' financial risk tolerance for developing country context, and future research could carry out empirical validation in different study context. Meanwhile, exploratory studies will help identify unique behavioural factors for the different context. In addition, this study can be further extended by linking financial risk tolerance to personal savings, investment behaviour, wealth accumulation, financial planning, asset allocation or portfolio selection and others (Anbar & Eker, 2010; Carr, 2014; Venter et al., 2012; Yao et al., 2005).

In terms of methodology, the present study applied pure positivistic research methodology (only self-administered questionnaire). Future studies can apply neo-positivistic research methodology (mixed method, qualitative method followed by a quantitative study or other way around). This strategy might help to explore the reasons for the shortcoming of the tools used by financial advisors to assess and guide investors. In relation to the technique used to examine the research model, this study used structural equation modelling (SEM). In the future, this can be tested by using other statistical techniques such as, multiple regression analysis.

5.6 CONCLUSION

Risk tolerance is the main key of financial planning process and modern investment management decision making models. Therefore, in order to obtain the benefit of financial risk tolerance, there must be a comprehensive financial risk tolerance measurement system to be used. The significant role of financial risk tolerance in the success of financial management encourages those who care about financial planning process and modern investment management decision making models to find out the factors that influence financial risk tolerance measures. The present study attempts empirically to fill the gap in the literature of the behavioural factors that predict

individuals' financial risk tolerance and to examine the role of religiosity and ethnicity in the relationship between behavioural factors (behavioural propensities) and financial risk tolerance. It also tries to examine the difference between ethnic groups and gender with respect to financial risk tolerance and behavioural propensities. Various constructs were combined from different disciplines such as psychology, behavioural economics, and behavioural finance in the light of few theories such as regret theory, overconfidence bias, and herd behaviour to build the research model of this study to predict individuals' financial risk tolerance.

The current study is quantitative in nature and uses a field survey to collect the data from Malaysian undergraduate students. The findings of the study support most of the hypotheses proposed. Behavioural factors (propensity for regret, propensity for trust, propensity to attribute success to luck, and propensity for overconfidence) are found positively significant towards financial risk tolerance while happiness in life is found negatively significant. However, propensity for social interaction is found not to be significant to financial risk tolerance. The results also indicate that men are generally more financial risk tolerant than women. In addition, men have relatively high propensity for overconfidence and high propensity to attribute to success to luck but they have relatively low levels of happiness in life, low propensity for regret and low propensity for social interaction. However, all the behavioural factors and financial risk tolerance significantly differ between male and female respondents except for propensity for trust.

Furthermore, Chinese and Malay respondents are found significantly more financial risk tolerant than Indian respondents, but Chinese and Malay respondents are indifferent in terms of financial risk tolerance. Malay respondents are found significantly more

regretting than Chinese respondents. In relation to propensity for trust, Malay respondents are found significantly different from Chinese and Indian respondents. Moreover, Malay respondents are found significantly different from Chinese and Indian respondents. In short, the results indicate that financial advisors should not generalize about behaviour of Malaysians as they are found to be different for many propensities and financial risk tolerance.

The outcomes of this study reveal that religiosity moderate the relationship between all behavioural factors and financial risk tolerance except propensity for social interaction. In regards to the moderating effect of ethnicity, the results indicate that the impacts of propensity for regret, propensity for trust, happiness in life, propensity to attribute success to luck, and propensity for overconfidence (POC) on financial risk tolerance (FRT) is moderated by ethnic groups.

Theoretical and practical contributions are highlighted based on the study findings. The study also shed light on behavioural factors as predictors of financial risk tolerance among undergraduate students in Klang Valley in Malaysia. The findings provide a better understanding of the behavioural determinants of financial risk tolerance. The results also highlight the significant role of religiosity and ethnicity on the relationship between behavioural factors and individuals' financial risk tolerance. In addition, the findings provide knowledge about the difference between ethnic groups and gender in Malaysia with respect to financial risk tolerance and behavioural propensities. This contribution could be a useful source of information for advisors to guide their clients.

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