Chapter 1: Introduction

1.1. Background:

In recent years, consumers have to be more knowledgeable in administering their finances efficiently because too many factors have become important and complicated in financial markets (Wothington, 2006). Easier access to credit cards, deregulation of financial markets, new marketing techniques, improvements in technology and introduction of many new financial instruments have left many consumers with confusing variety of investing opportunities (Consumer and Financial Literacy Taskforce, 2004).

The literature suggests that there is a strong relationship between financial literacy and household welfare. Studies indicate that household with less financial knowledge or literacy, tend not to plan for their retirement (Lusardi and Mitchell, 2007a), receive lower asset levels (Lusardi and Mitchell, 2007a), and usually borrow at higher interest rates (Stango and Zinman, 2006). These results have convinced policy makers in both developed and developing countries to support the increase in spending on literacy education, so they can increase saving of household and participation in financial markets, in order to improve wellbeing and reduce poverty, because financial capability and literacy enables people to increase and handle their earnings. So overall, people can manage their life events such as education, disease, job loss or retirement better than

before. Higher financial literacy also upgrades understanding and acceptance of important political reforms, such as healthcare and pension reforms.

Low levels of financial literacy may cause individuals to start saving too little or too late in life to realize their specified retirement goals. As a result, it may not be possible for them to obtain an optimum balance between current expending during working and coming expenditure in retirement. Moreover, insufficiency of knowledge regarding the risk-return distribution of different investments can cause them to allocate their wealth and portfolios improperly.

1.2. Problem statement

Different countries around the world want to increase their overall saving so they can provide funds for long term investments and infrastructure development. Furthermore, high saving can also hedge countries against economic downturns and financial crisis. One way is to increase national saving is to focus on efforts on improving individual saving. One of the likely problems for plicymakers of countries in increasing individual saving is that they don't know how they can motivate their population to save more. One way could be through increasing individuals' knowledge about financial issues. In the other words governments can increase individual saving by implementing educational programs for people. This study aims to show how important these programs can be and what should be the focus of these programs.

1.3. Objectives of the Study:

The study examines the relationship between the level of financial literacy is and the level of individual saving. In the other words, how the level of financial literacy can affect on the level of saving amongst individuals. Individuals can be those who are currently unemployed, students, employed, households, and retired people. The dependent variable is level of saving, and independent variables are income level, education level, risk taking, saving motives, and risk taking propensity of the respondents. Moreover the effect of demographic characteristics, motivation and risk taking behavior of people on the level of saving will also be examined. The study measures two major things among Malaysian society, first is the level of financial literacy, and second is the level of saving.

One of the main objective of the study is to show the current level of basic and advanced financial literacy to policymakers, and also to show that how training programs can increase financial capability of individuals. The reason for this is because financial capability will likely result in many potential benefits for both individual and the nation.

The other objective is to show how financial literacy can lead to higher level of saving for individuals. Since saving gives the opportunity to invest and develop and also helps governments and individuals in case of facing any crisis, low level of saving brings many concern for them.

We also want to show how demographic characteristics such as gender and age, affect the saving level. Moreover we want to show how motivation and risk taking behavior of individual may boost saving amongst individuals.

1.4. Significance of Study

The goal of saving is to raise the available financial supports for the consumption in the future, which can be reached by both households and governments. Individual customers save part of their income to enable themselves to consume in future, such as education expenses, weddings, retirement, and so on. It also insures individuals against the loss of income, for example, when they are ill, or when they are out of job. Usually people save their money by putting it in bank accounts or unit trust or stocks or even in real estate. These saving can be used in the future, if the individual needs it for any other goods or services.

Individual saving is valuable for the whole nation. Saving of today, affects the consumption of future, because the saved money is invested in financial assets and goes through investments in industries, factories, properties, and other kinds of investment which is necessary for a country's growth. Also investments in stocks and unit trust eventually increase the productivity of goods and services. Moreover it can increase employees' income through stocks and unit trust gains, and hence their purchasing power in the future.

There are many concerns about the low personal saving rate which indicates the aging population and the burden that aging will put on the nation's retirement and healthcare systems. Many countries' have populations that are gradually in recent decades. Meeting these future constraints might require higher tax pressure on the future working-age part of society. If saving increases, it can help to reduce these burdens by increasing the local capital and increasing workers' efficiency. More productive workers would receive higher wages, making it easier for working-age groups to pay higher social insurance taxes if it is needed in future.

1.5. Scope of study

This study measures the financial literacy among the Malaysian population, as well as their saving motives, individual saving, saving behavior, and risk taking behavior.

This survey comprises different groups of people, like students, employees, retirees, households, and unemployed people who are seeking for job. Due to time and economic constrains we were able to sample respondents in Klang Valley area only, of which most consist of students taking the MBA course in University Malaya . Although most of MBA students are working, but since most of them had taken a course in finance or economics, it is not surprising that they had high level of financial literacy. So to avoid the distortion of data, we had to

distribute it among other working people as well, which was done through online forms as well as paper questionnaires.

Chapter 2: Literature Review

2.1 Literature on Financial Literacy

Financial literacy has different meanings for different academicians and people, and most literatures have addressed this issue. So first the different meanings that people have should be explained and then the aspect that is used in this paper should be clarified. Some people think that financial literacy includes the household knowledge about macro and micro economics and how it effects their financial decisions. Some others have much more specific definition of financial literacy and that is how people manage their money in terms of insuring, investing, saving and budgeting (Hogarth, 2002).

Financial capability or literacy can be determined by experience, expertise, and person's needs. And it also can be assessed for every customer with certain standards. So, the criterion for financial literacy can be different based on the level of consumers' personal involvement with financial markets and services.

In this paper, the focus is on normal personal level and not professionals such as accountants, financial advisors, auditors, bankers or fund managers, who need to know balance sheets, financial instruments and everyday Stock index fluctuation. (McDaniel Et al, 2002).

Another definition of financial literacy is "the ability to make informed judgments and to take effective decisions regarding the use and management of money" (Schagen, 1996). The stated meaning was used in many other research in more or less the same way. For instance, Morgan (1993, pp.16) defined

financial literacy as "being knowledgeable and assured in the areas of saving and spending, budgeting and it that the measures of financial literacy should show the individual circumstances. The knowledge should only to be tested against an individual's needs and circumstances rather against the entire array of financial products and services, some of which they will neither use nor need" (Morgan, 2003). Here in this study, Morgan's (1993) definition is used.

On the other hand, other researchers claimed that financially literate people should know how to manage their money, understand how the financial institutes work, and have a range of analytical skills. Also, they should know how they should handle their financial affairs, and being responsible for it (Beal and Delpachtra, 2003). In other studies financial capability or literacy has been defined as the understanding and knowledge of basic financial concepts, and the ability to use them to plan and manage their financial decisions (Hogarth, 2002).

There are two different streams of literature about financial capability or literacy. The first one tries to demonstrate different systems of financial capability within the US society (Jump$tart Coalition for Personal Financial Literacy, 2008). The second one tries to assess the effectiveness of personal financial capability plans (Chatzky, 2002). Although both types of research are usually differentiated from each other, one can argue that these are closely connected to each other because both are assessing how personal plans have increased financial capability. Furthermore, one has to consider the informal awareness and information that people have before formal learning plans start.

Different kinds of comprehensive surveys were done to measure degree and spread of financial literacy. In this study the questionnaire designed by Lusardi and Mitcell (2007) is used. Results of their study show that people with low level of education, females, African-Americans and Hispanics, demonstrate low levels of literacy, which affects financial decision-making. These groups of population fail to plan properly for their retirement period, have less participation in the stock market, and have poor borrowing behavior, possibly this can be because of lack of knowledge in basic financial concepts (Lusardi and Mitchell, 2007a).

Another popular survey in the US is Jump$tart Coalition to measure individual personal capability among high school students (Jumpstart Coalition Survey, 2008). There are four different types of questions (spending and credit, saving and spending, money management, income) and include many multiple choice questions about saving, spending, investment in stocks and bonds, and insurance. "The survey demonstrates that graduating high school seniors continue to struggle with financial literacy basics" (Mandell, 2003). Because the tests are conducted upon graduation of senior high school students, it shows the maximum degree of financial literacy among students (Hogarth, 2002). Moreover their survey is designed mostly for US population, which includes many US financial laws system, so it cannot be used outside the US easily.

It can be seen that the measured degree of financial literacy has been declining from the time of first survey which was done in 1998. Also, different

scores were not relying on the income of the family (Mandell, 2003). These surveys have also been studied by other academicians (Hogarth, 2002).

There are also some important surveys done, other than the US surveys. There is a study conducted on financial literacy for Natwest Group Charitable Trust in UK, which focuses on people renting governmental controlled houses, young generation, single parents and students. The target population answered the questions about money management, saving and buying attitudes and their confidence in facing with money issues. Moreover, they answered about financial decision making, financial instruments and markets (Schagen et al., 1996). This study showed that single parents have less confidence in dealing with their financial problems, but the majority had good confidence level. There is also a study done in Malaysia on financial literacy of Malaysian degree students (Dahila, Rabitah, and Zuraidah, 2009) that focused on the student's background, financial attitude and knowledge, and results show that most of students need more proper practice on money management skills.

Another important survey examined financial literacy amongst more than 900 students at in 14 universities in the US and linked the scores to individuals' socioeconomic and demographic attributes (Chen and Volpe, 1998). Their results showed that young females with non-business majors and little work experience have very low degrees of financial literacy. They also concluded that income and race were not important factors in determining financial literacy.

In an Australian regional university survey, most of the participating students scored fairly good for financial literacy and knowledge. Also, business

students scored better in comparison with other majors (Beal and Delpachtra, 2003).

2.2 Literature on Saving

Different people have different motives to save money, such as taking care of common payments and loans, making speculative gains, and precautionary thoughts. In addition, we need saving as an asset to finance expenses after retirement, or to leave bequests for next generation.

In addition to these, from a national perspective there is a long-term development motive related to saving. Saving are needed for long-term investments and infrastructure development for every country which work as the base for rapid economic growth. It also can hedge countries against economic downturns and financial crisis.

Is high level of saving good or bad? Some may argue that high level of saving mean that the society is conservative about the future and people are not spending as they should to boost the country's GDP and economic growth. However, the research by Tang and Chuna (2009) on Malaysian economy proves that high level of saving shows that the economy is in good condition. Their results suggest that the policies which support saving should be performed because saving is a cause to economic development through its effect on capital

structure. Thus, high saving display the meaning of 'boosting economy', rather than 'freezing economy' (Tang and Chua, 2009).

Theoretical models of consumption/saving state that precautionary wealth can show a large share of total wealth accumulation. Skinner (1988), for instance, concludes that close to 50 percent of family wealth can be explained by precautionary saving due to the risk they foresee on their income. In overall, there are three series of research. The first series, which look across occupation groups to estimate the effect of occupation risk, finds no evidence that households in riskier occupations save more (e.g. Skinner, 1988). The second series of research, (e.g. Arrondel, 2002), uses measures of income risk and finds small values for precautionary wealth, from 2 to 8 percent of total household wealth. The final series of papers, find that precautionary saving can explain a fairly large proportion of wealth. For example, according to Carroll and Samwick (1998), up to half of the wealth of the median household comprise of precautionary saving.

Some of the studies that were done in the US show that financial behavior and level of saving is very different between male and female. Since women have lower earnings in general, they have lower level of saving and wealth, as opposed to men. Women also face more difficulty in their retirement period because they spend five years more in retirement due to longer life expectancies than men (Gottschalck, 2008).

Historically, in the U.S. women have been dependent on men for financial security (Schmidt and Sevak, 2006). Although this trend is changing, still, there are big differences in economic well-being that influence all women with different ages (Levine, Mitchell, and Moore, 2000). They found that there are large gender gaps in current and planned retirement income. In general, there is a sizeable gap between two genders in income resources like saving, pensions, and after-retirement earnings. Moreover, the poverty rates were significantly higher amongst women in most developed countries. (Burnes and Schultz, 2000).

Studies have shown that single women are more risk averse than single men and married couples (Bajtelsmit, Bernasek, and Jianakopolos, 1996). Men were found to be more keen to hold stocks and less likely to put money as deposits. It was also found that women receive more conservative advice.

Researchers have reported that women invest their earnings more conservatively, and are generallyl, more risk averse than men (Faff, Mulino, and Chai, 2008). They also have shown that women are more prone to live in poverty during their retirement period (Pearce, 1989). This is because women have longer life expectancy periods, lower income, and lower saving; and because they are more risk averse, they lose good investment opportunity (Embrey and Fox, 1997). There is insufficient research that show what factors affect their saving behavior.

Some studies have shown that the level of saving behaviors of different genders has a significant gap (Embrey and Fox, 1997; Yuh and Hanna, 1997). Few studies have examined the differences in saving behavior between men and

women. By saving we mean to spend less than income. Studies have shown that women are less likely to have a defined retirement saving plan (Sunden and Surrette, 1998), although some other have shown contradictory results (Agnew, 2005). So it is not really clear whether women are more likely to spend more than their income, or whether they save occasionally.

The literature in psychology have shown that women are more risk averse than men (Croson and Gneezy, 2004). In their study, they found that there is a significant difference in risk-taking between men and women. Especially males are more risk-taking when they want to attract their future partner, and females are more risk averse in their child-bearing periods (Croson and Gneezy, 2004). While, the psychology literature indicates a significant difference in risk tolerance between different genders, some of the business researchers have shown that there is no gender difference in investment behavior (Zhong and Xiao, 1995).

Lusardi and Mitchell (2007) showed that women were usually less financially informed than men, and financial literacy was found to influence the level of saving. Researchers have shown that male and female have different preferences, which influences the saving and spending decisions they make (Croson and Gneezy, 2004), but there is not much information about how saving behaviors differ between males and females.

The overall conclusion of this literature review is that financial literacy can increase level of saving and may change the investment decisions for individuals. The exact process that shows how learning changes the level of saving and investment decisions is not clear (Maki, 2004).

Chapter 3: Research Methodology

3.1. Development of Hypotheses

As mentioned in the previous chapter, this study aims to show how individuals' financial literacy affects saving. As is shown in figure 1, the dependent variable is individual saving and the main independent variable (focused on in this study) is the level of financial literacy. The measurements of financial literacy level are driven from the questionnaire designed to examine the financial literacy between US populations employed by Lusardi (2008). There are two sets of questions for financial literacy. The first one measures individual's basic literacy, such as working of interest rates, inflation, and risk diversification. The second part measures more advanced knowledge about stock markets, unit trusts, and bonds. Hence, the first hypothesis is stated as follows:

Hypothesis 1: *Individual's financial literacy level is positively related with individual saving.*

This hypothesis has been tested by Lusardi and Mitchell, (2007b) for the retired population in the US. They studied how financial literacy helps people prepare for their retirement period. They showed that people with higher knowledge of finance are more capable in preparing themselves for retirement through better saving and insurance plans. Other study showed that financial

knowledge and saving programs can be very effective in overcoming the decrease in saving (Clark and Madeleine, 2008).
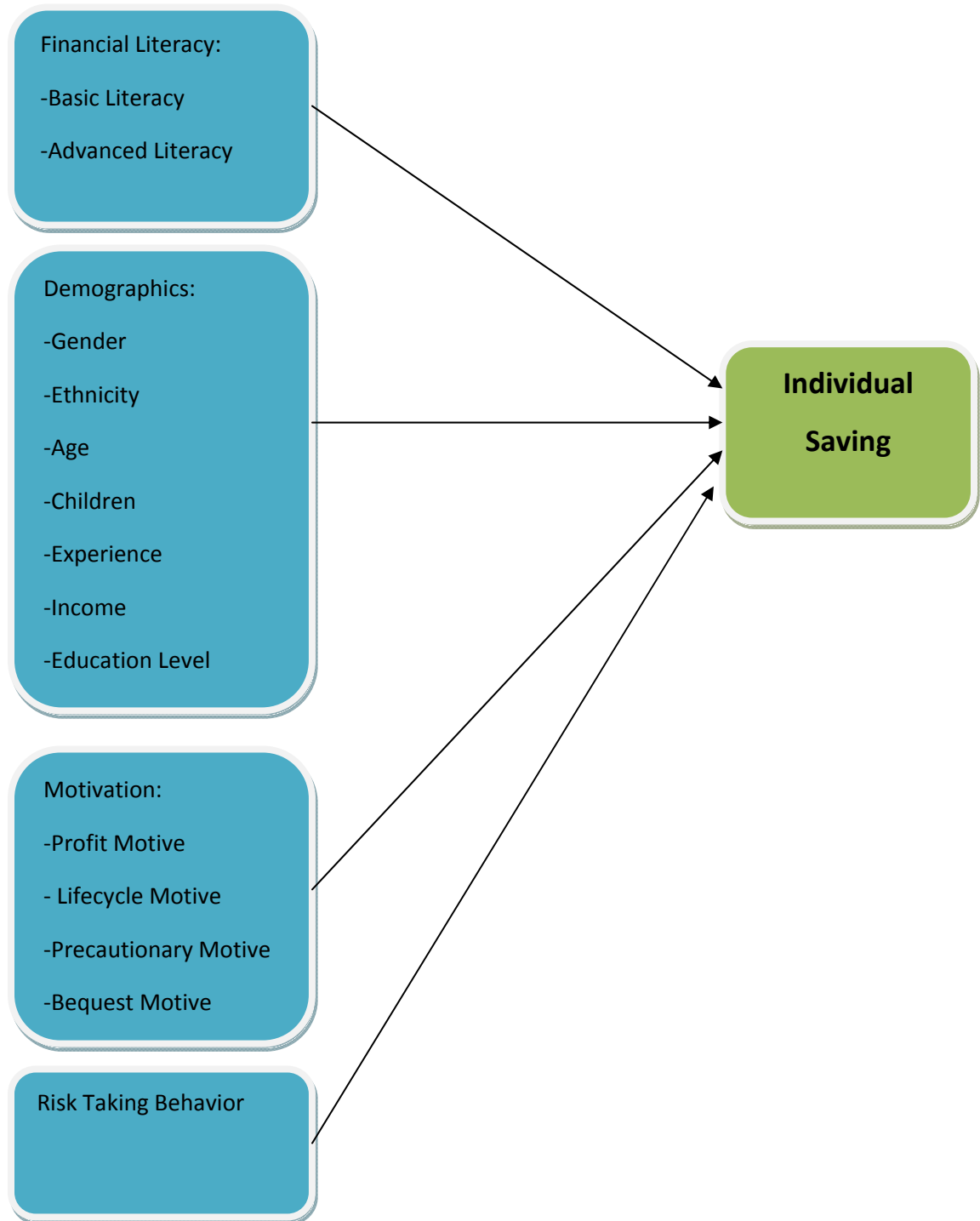
Financial Literacy:

-Basic Literacy

-Advanced Literacy

Demographics:

-Gender

-Ethnicity

-Age

-Children

-Experience

-Income

-Education Level

Individual Saving

Motivation:

-Profit Motive

- Lifecycle Motive

-Precautionary Motive

-Bequest Motive

Risk Taking Behavior

Figure 1 Research framework

The following formula shows the model in mathematical terms:

$$Individual\ Saving = \alpha + \beta 1 * (Total\ Overall\ Literacy) + \beta 2 * (Saving\ Regularity) +$$
$$\beta 3 * Gender + \ \beta 4 * Ethnicity + \beta 5 * Age + \ \beta 6 * Children + \beta 7 * Experience + \ \beta 8 *$$
$$Nationality + \beta 9 * (Risk\ Taking\ Behavior) + \beta 10 * Income \ + \beta 11 *$$
$$(Education\ Level) + \beta 12 * (Saving\ Motivations) + \varepsilon$$

Whereby, α is a constant term, β_n are the coefficients to be determined, and ε is the error term.

Hypothesis 2: *Demographic characteristics (e.g. age, gender, number of children) are significantly related to individual saving.*

This hypothesis can be broken into details as follow:

a. *Age is significantly related to individual saving (+)*

b. *Gender is significantly related to individual saving (+)*

c. *Saving do not differ significantly among different ethnic groups*

d. *Number of children is significantly related to individual saving (+)*

e. *Saving do not differ significantly between Malaysians and Non-Malaysians living in Malaysia*

f. *Length of work experience is significantly related to individual saving (+)*

g. *Income is significantly related to individual saving (+)*

h. *Education level is significantly related to individual saving (+)*

Age: It is expected that when age increases, people save more money, because first they are more concerned about their retirement period, and second they

24

have less chunk of expenses like education, wedding and house expenses, so they can save more.

Gender: Many studies were conducted to test if for example gender can affect individual saving, and overall, his or her financial decision making. Studies have shown that women historically, have been dependent on men for their financial security (Schmidt and Sevak, 2006). Although this trend is changing, but still there are big differences in economic well being that influence all women at different ages (Levine, Mitchell, and Moore, 2000). Based on previous studies, there is a sizeable gap between two genders in income resources such as saving, pensions, and after-retirement earnings. Moreover the poverty rates were significantly higher among women in most of the developed countries (Burnes and Schultz, 2000).

Lusardi and Mitchell (2007) showed that women were usually less financially informed than men, and financial literacy was found to influence the level of saving (spending less than income). Some studies have shown that women are less likely to have a defined retirement saving plan (Sunden and Surrette, 1998), although others have shown contradictory results (Agnew, 2005). But in general, studies suggest that men are more able to save. Hence it is hypothesized that gender is a significant predictor of individual saving.

Ethnicity: There are three different ethnic groups living in Malaysia, namely: Bumiputera, Chinese, Indian and other ethnicities. Since macroeconomic factors

are the same for this population, the perception is that these different groups will not behave differently in regards to their saving.

Nationality: Nationality should also not make a significant difference between Malaysians and non-Malaysians who are living in the same economic environment.

Work Experience: It is also expected that number of years in work experience is positively related to saving, because through their career people have to deal with different financial decisions, so they must have learnt the importance of saving. Moreover, they may get a raise in their income because of their experience, so they should be able to save more.

Number of Children: It is predicted that the number of children may be positively related to the level of saving, since the parents' responsibility towards children's future will also increase. They may start to save more money for children's expenses like their education and other expenses.

Income: It is predicted that income is positively related to individual saving, simply because people have or should have more money to save. So they may be able to save more, or at least have some saving.

Education Level: Being more educated can be a reason to save more, because people may have higher level of financial literacy, or higher income. Moreover, education can enable people to have a better understanding of the world around them so they will be better able to make financial decisions and have more ability to plan for their future. Some studies have shown that more educated people can

manage their money in terms of insuring, investing, saving and budgeting (Hogarth, 2002).

Hypothesis 3: *Saving motives (precautionary, lifecycle, bequest, and profit) significantly affect individual saving.*

People have different saving motives. Some may save for their retirement, others may save for emergency events; some other may save some amount to pay for large expenses in their life (such as: buying a house, car, paying for wedding or their children education). Some may save to earn more interest in future, and others may save to leave an inheritance for their children. According to Carroll and Samwick (1998), up to half of the wealth of the median household comprise of precautionary saving. This shows how motives can play an important role in saving behavior of people. This hypothesis examines whether different motives have influence on people saving decisions.

Hypothesis 4: *Risk aversion is positively related to individual saving.*

This hypothesis is supported both by literature and logic. In one of the previous works it was shown that when people are willing to take more risks, they are less willing to save for emergency purposes. Overall, risk-taking behavior of individuals can affect financial decision making and of course their saving level (Zhong and Xiao, 1995). This hypothesis intends to check whether risk-taking behavior influences individual saving.

3.2   Sampling Design

This survey comprises different groups of people, including students, employees, retirees, households, and unemployed people who are seeking for jobs. Due to time and economic constrains we were able to sample respondents in Klang Valley area only and the respondents were mostly MBA students studying in University Malaya. Although most of MBA students are working, but since most of them had taken a course in finance or economics, they had high level of financial literacy. Hence to minimize the distortion of data, the questionnaire was also distributed among other working people as well, through online forms as well as paper questionnaires.

Other respondents were among the English-speaking local and foreigners living in the Petaling Jaya area. The questionnaires were also given to some of the staff working in the University Malaya campus.

3.3   Data Collection Procedure

Data collection for this survey was conducted using electronic forms, as well as conventional paper questionnaires. The electronic form was created in the Google Documents website, and the link was sent to potential respondents by email. Two major groups of students were UM-MBA group and UM Perdanamail group which include all UM undergraduates and graduates students. There were some other emails sent to other working individuals as well. The positive point of using these e-forms is that people can easily fill it and submit it through the website. Moreover the respondents' answers go directly to a spreadsheet

provided. Hence data entry is more convenient and takes less time. 200 paper questionnaires were distributed and 148 respondents submitted but only 95 of them were complete and usable. Moreover the online questionnaire was distributed to about two thousand (200) potential respondents, and only 97 usable and complete forms were collected via online spreadsheet. So in total, 192 complete and useable questionnaires were collected. The questionnaires were distributed and collected in August 2010, for three weeks.

Since the target population of this survey includes not only students and working people, but also encompasses housewives, retirees, and unemployed individuals, the questionnaire was printed and distributed physically to the respondents. Their responses were then entered in the electronic form so the answers were all gathered in the spreadsheet.

3.4   Measurement of Variables

3.4.1 Financial Literacy

The questionnaire used in this survey (as shown in the appendix), was different form normal questionnaires that measures people's satisfaction or attitudes. The first part of the questionnaire was actually a test to measure individuals' knowledge about finance. Correct responses were coded 1, and incorrect answers were coded 0. This provided a measure for 'total overall score' form 0 to 13. Zero means low level of financial literacy, and 13 means highest financial literacy level. This score comprises of subgroups, one is the 'total basic' financial literacy which is scored from 0 to 4, which measures basic knowledge about interest rates, inflation, and risk diversification. The second subgroup is

'total advanced' financial literacy score which is scored 0 to 9. The summation of these two subgroups gives the overall financial literacy score. This score is used in testing hypothesis number 1, which figures out the relation between the financial literacy and level of saving.

3.4.2 Demographics

Demographic variables were coded as follows. Gender was coded 0 for female and 1 for male; marital status was coded 1 for single, 2 for married, 3 for divorced, and 4 for widowed. For nationality, Malaysian was coded 1, and non-Malaysian was coded 0. Ethnicity was coded 1 for Bumiputera, 2 for Chinese, 3 for Indian, and 4 for other ethnic groups. For income level, the income above RM36,000 per year was coded 1, and below that was coded 0. Education level was coded one for those with master and PhD, and 0 for bachelor, diploma, secondary school and professional degrees. Other demographic variables like age and number of children were measured as continuous variables as the actual vale reported.

3.4.3 Individual Saving

Respondents were asked about their income and spending over the past year. Individual saving was measured as a binary variable. If spending exceeded or equaled income, Individual Saving was coded 0, which means they had no saving. If spending was less that income, Individual Saving was coded 1, which means they had positive saving. So the dependent variable (Individual Saving) is coded simply to 1 for those spend less than their income and 0 for those who spend equal or more than their income thus have nothing to save.

3.4.4 Saving Motives

Motivation was coded 1 to 4, respectively for lifecycle motive, emergency motive, bequest motive, and profit motive.

3.4.5 Risk-Taking Behavior

Risk-taking behavior also was coded from 1 to 4 from the person who was willing not to take any financial risk to the person who is willing to take substantial financial risk.

Equation below shows the mathematical model:

$$
\begin{aligned}
Individual\ Saving = \\
\alpha + \beta1 * (Total\ Overall\ Literacy) + \beta2 * (Saving\ Regularity) + \beta3 * Gender + \\
\beta4 * Ethnicity + \beta5 * Age + \ \beta6 * Children + \beta7 * Experience + \ \beta8 * Nationality + \\
\beta9 * (Risk\ Taking\ Behavior) + \beta10 * Income\ + \beta11 * (Education\ Level) + \beta12 * \\
(Saving\ Motivations) + \varepsilon
\end{aligned}
$$

Whereby, α is a constant term, β_n are the coefficients to be determined, and ε is the error term.

In the equation above: 'Total Overall Literacy' is the sum of 'Basic Literacy' score and 'Advanced Literacy' score, which ranges from 0 to 13. This variable indicates the level of financial literacy for each respondent. Saving regularity shows the frequency that people save money; in the other words it shows how often they save. Some people may never save, some may save very rarely, some save occasionally, some very frequently and some tend to save always.

The variable 'Children' in the equation above shows the numbers of children each of respondents have, which ranges from 0 to 6. 'Experience' shows the years of working each respondent has. 'Nationality' is either Malaysian or non-Malaysian. 'Risk Taking Behavior' is 1 for those are not willing to take any financial risk, is 2 for those who take average financial risk, is 3 for those who take above average risk and is 4 for those who take substantial financial risks. Also 'Saving Motivation' itself has 4 levels of motivation which is shown in the following equation:

$$Saving\ Motivations = \alpha + \beta 1 * (Profit\ Motive) + \beta 2 * (LifeCycle\ Motive) + \beta 3 * (Precautionary\ Motive) + \beta 4 * (Bequest\ Motive) + \varepsilon$$

Whereby, α is a constant term, β_n are the coefficients to be determined, and ε is the error term.

In this equation, 'Profit Motive' shows the motivation to earn more interest; 'Life Cycle Motive' indicates the motive to save for retirement or to buy a house/ car/ education/ children education. 'Precautionary Motive' shows the motive to save for emergencies, and (Bequest Motive) shows the motivation to save to leave an inheritance for the next generation.

To analyze this model, three steps will be taken. First is to show and analyze the descriptive data, second is to check the correlation between total financial literacy and saving, and third is to run Probit Regression to model the equation above.

Chapter 4: Research Results

4.1. Summary Statistics

4.1.1. Demographics

As mentioned earlier, the questionnaire comprises three different parts. There are a total of 245 respondents who participated in this survey, but only 192 of them were complete and usable, with 54% of male respondents and 46% of female respondents. The first two figures show some characteristics and demographics of respondents. Figure 2 shows that different ethnic groups have participated in this survey. Bumiputera ethnicity forms almost half of the respondents, followed by about 30% of Chinese ethnicity, and about 10% of Indians. This various ethnic groups help to examine if ethnicity is a significant factor in determining individual saving. In the other words, if the saving behavior vary significantly among different ethnic groups. Ethnicity statistics almost mirror the Malaysian population, with Malay 53.3%, Chinese 26.0%, indigenous 11.8%, Indian 7.7%, and others 1.2% (Bureau of East Asian and Pacific Affairs, 2010). The only difference is relatively large percentage of other ethnicities, which is due to large number of foreign students which participated in this survey.
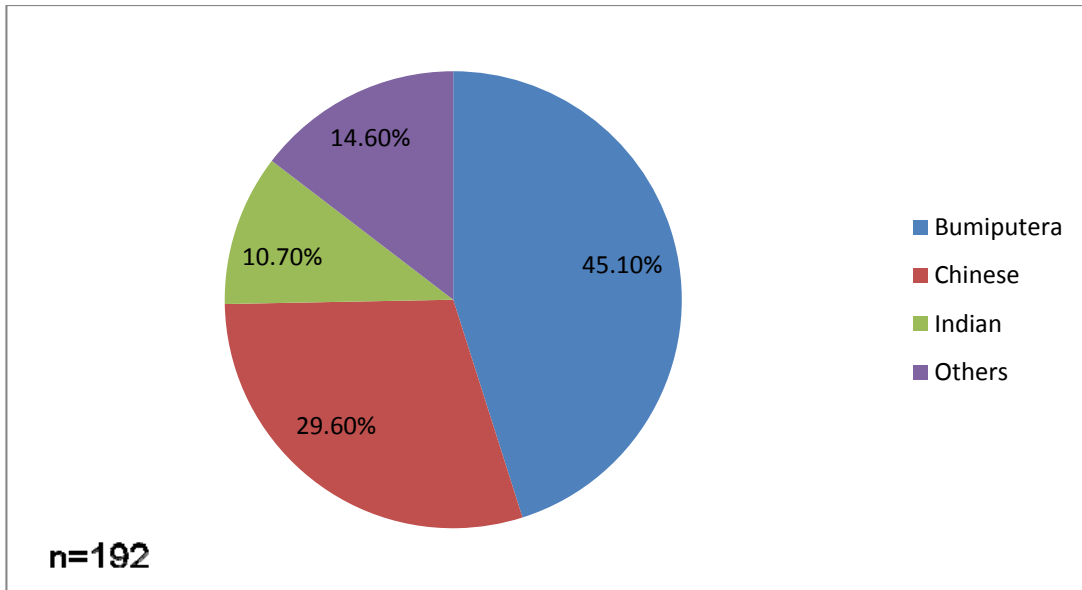
Figure 2 Respondents' Ethnic Groups

Another feature of this survey is that it covers respondents with different occupations, which includes Students, Employees, housewives, unemployed individuals and retirees. The proportion of each group is shown in figure 3:
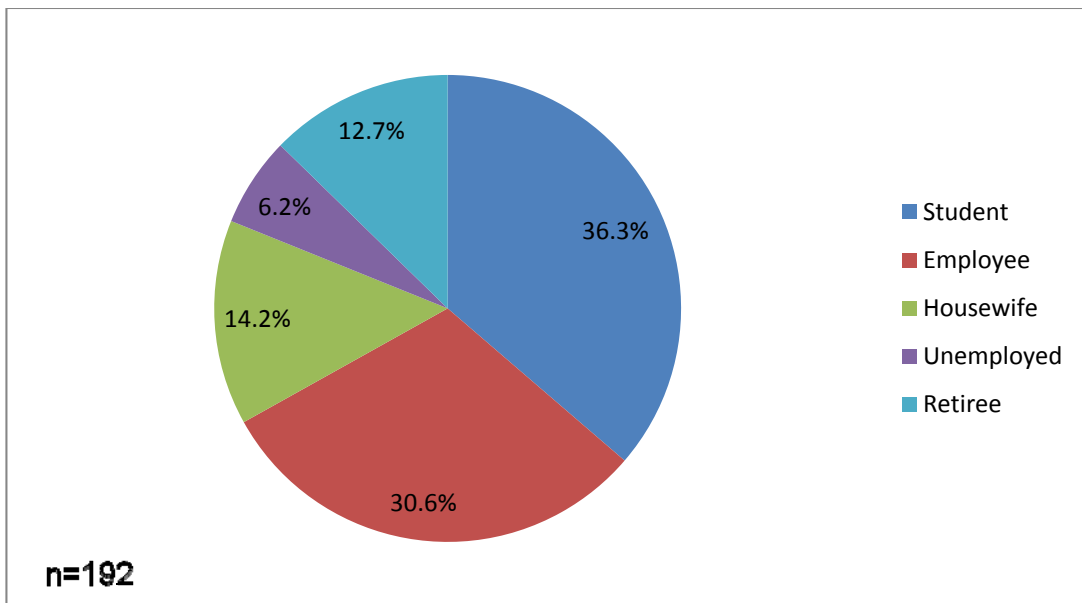

Figure 3 Respondents Occupation Percentages

At first it may seem that in this survey, the percentage of unemployed individuals is relatively low hence not proportionate with society population. But actually it is more that the rate of unemployment in Malaysia, which was on average 3.7% in first half of 2010, according to Malaysian department of statistics. This may be due to unemployed Non-Malaysians participants in this survey, which are not considered in national statistics. 84% of respondents are Malaysian and the rest 16% are Non-Malaysian.

Figure 4 demonstrates the gross annual income level of respondents. There are about 75 people with income less than RM24,000 per year. This mainly shows the income level unemployed people or students an even some housewives. The rest mainly shows employees or self-employed people and those in their retirement.
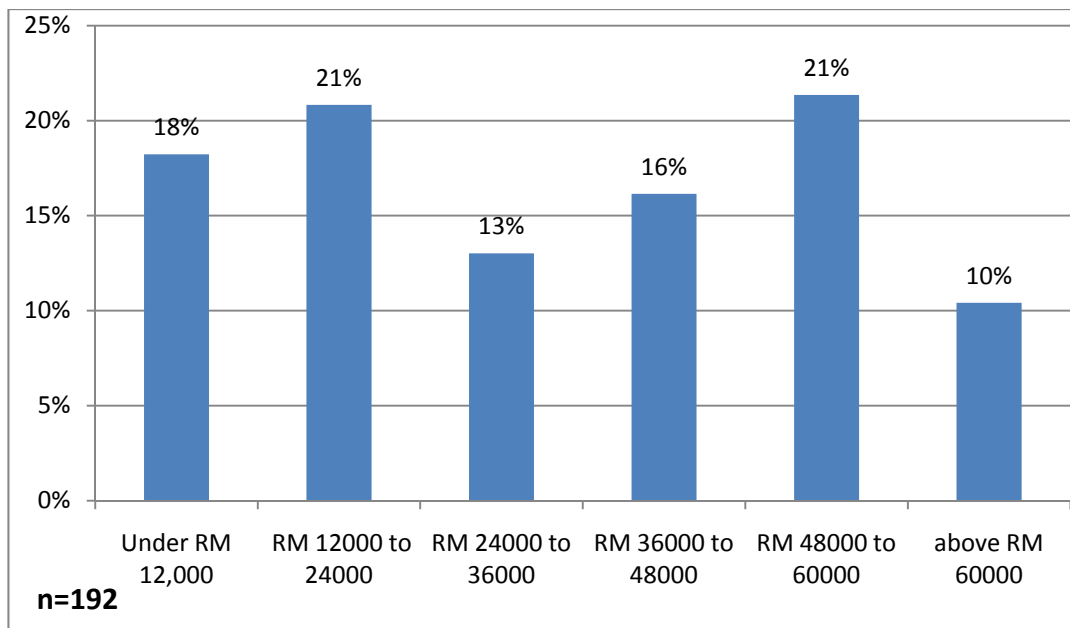

Figure 4 Respondents'' Gross Annual Income

Another data this study has gathered is the level of education of respondents. Figure 5 shows the percentage of participants by their last earned degree.
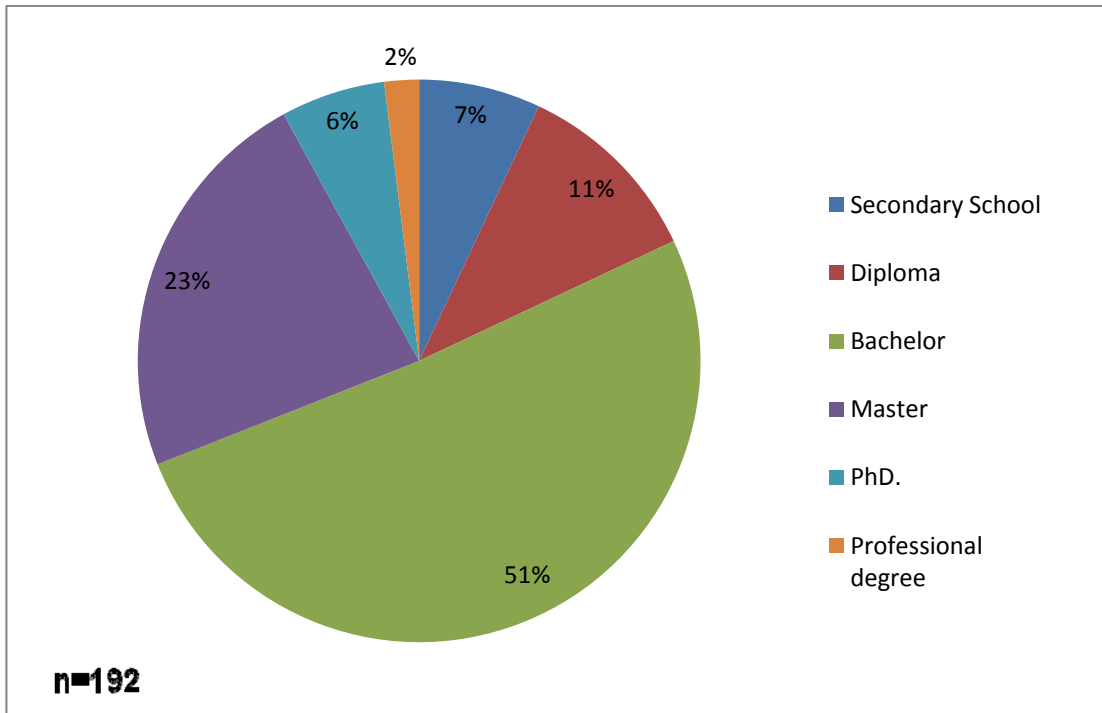
Figure 5 Percentage of Education Level among Respondents

As is shown in the figure, more than 50% of respondents had bachelor degrees, which is related to those master students, majority of working people, some of the unemployed individuals and retirees. The percentages for secondary school and diploma are mainly for unemployed individuals, housewives, and degree students. This statistics may be biased since the questionnaire was mainly distributed among UM students.

4.1.2. Financial Literacy:

The first part of this survey, measures the financial literacy level. The financial literacy part measures respondents' basic financial knowledge and their

advanced knowledge in finance. The basic knowledge is mainly about their understanding of inflation, interest and percentage calculation. Table 1 shows the summary of their answers.

Question	Correct (%) n=192	Incorrect (%) n=192
Percentage Calculation: If the chance of getting a disease is 10 percent, how many people out of 1,000 would be expected to get the disease?	86.5%	13.5%
Inflation Rate: Imagine that the interest rate on your saving account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account?	79.7%	20.3%
Interest Rate: Suppose you had $100 in a saving account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?	86.5%	13.54%

Table 1 Basic Financial Literacy Answers

As the table shows, it can be seen that general knowledge of respondents is high about basic financial topics. Although these topics may seem very easy, but it should be taken into account that some participant of this survey are housewives and retirees, some with low level of education. But overall, around 80% correct answer in each category is relatively high.

The second part measures the advance financial knowledge of respondents, in regards to stocks, unit trusts, and bond. Table 2, summarizes how participants answered these questions. It can be seen that the least score is about the relation of bond price and inflation rate (29.7%). The second less correct answer is the knowledge on unit trust's functions (31.3%). It means that less than half of respondent know about unit trusts and bond prices. More than 60% of respondent have an understanding of risk diversification. Interestingly, more than 70% of respondents could calculate the compound interest over two

year period. This may be because large number of participants, either working, unemployed, and retired have education level of bachelor degree or higher.

	Correct n= 192	Incorrect n=192
1) Which statement describes the main function of the stock market?	58.3%	41.7%
2) Function of unit trust.	31.3%	68.8%
3) If the interest rate falls/rises, what should happen to bond prices: rise/fall/stay the same/none of the above?	29.7%	70.3%
4) Buying a company fund/stock unit trust usually provides a safer return than a stock unit trust/a company fund. True or false?	59.9%	40.1%
5) Stocks/Bonds are normally riskier than bonds/stocks. True or false?	55.7%	44.3%
6) Considering a long time period (for example 10 or 20 years), which asset normally gives the highest return: saving accounts, bonds or stocks?	39.1%	60.9%
7) Normally, which asset displays the highest fluctuations over time: saving accounts, bonds, stocks?	68.8%	31.3%
8) When an investor spreads his money among different assets, does the risk of losing money increase, decrease or stay the same?	61.98%	38.02%
9) Let's say you have 200 dollars in a saving account. The account earns 10 percent interest per year. How much would you have in the account at the end of two years?	72.9%	27.1%

Table 2 Advanced Financial Literacy Answers

Hence, if each respondent gets 1 score for each correct answer, and 0 for incorrect answer. There is a score from 0 to 13 for combined basic and advanced questions. Table 3 summarizes the average and standard deviation of participants' answers:

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Basic Literacy	192	4	1	4	3.16	0.761
Advanced Literacy	192	9	1	9	4.95	1.541
Total Financial Literacy	192	11	2	13	8.11	2.786

Table 3 Respondents' Score Summary

As the table 3 shows, the average of basic financial literacy is relatively high, 3.16 out of 4 which indicates that the overall basic knowledge about finance is high among respondents. So they have a good understanding about interest and inflation rate, and percentage calculation. Table 3 also shows that the average of advanced financial knowledge is about the 50% (4.95 out of 9), which indicates that the respondents have average level of advanced financial knowledge. So the high average of 8.11 for total financial literacy is partly due to high average of basic literacy scores.

4.1.3. Saving Behavior

Participants were asked about their most important motivation towards saving, in other words what is their main reason behind putting aside some money. Respondents had to pick only one choice among four different motives.

a) Life-cycle Motive: saving either for retirement for some major expense like buying a house/ car/ wedding/ education/ children's education

b) Precautionary Motive: saving for an emergency

c) Bequest Motive: saving to leave an inheritance for the next generation

d) Profit Motive: saving to earn more interest

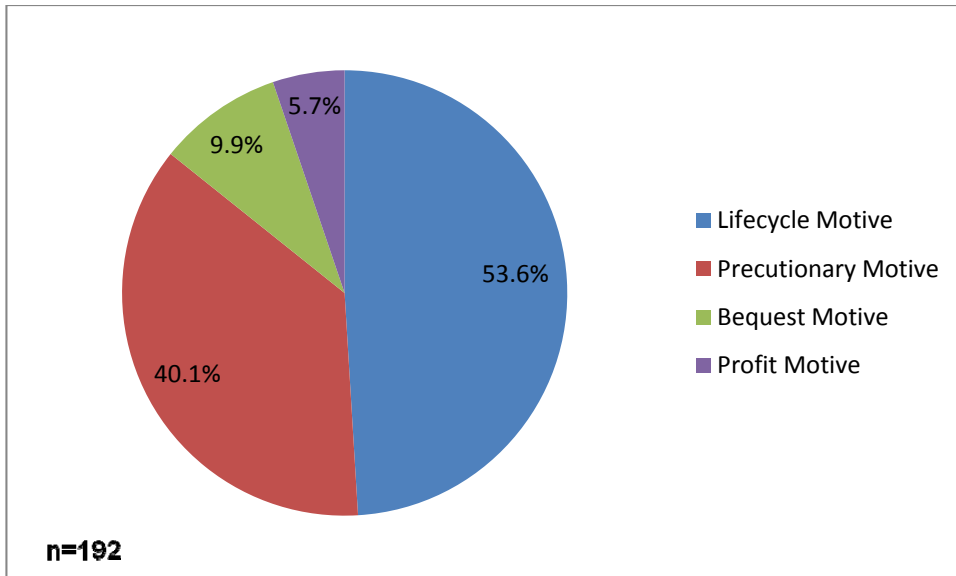Figure 6 summarizes the respondents' motives in a pie chart:

Figure 6 Percentage of Different Motives among Respondents

As it can be seen, more than 50% of respondents want to save either for retirement or for big chunk of expenses they will face in future. This is called lifecycle motive because it depends where people stand in their lifetime journey. If they are young and single they have think about wedding and education expenses, and if they are married they worry about buying a house and their children education. If they have passed those cycles they should save for their retirement period.

The next important motive among respondents, which comprises about 40% of total motives, is saving for emergency and unforeseen events (such as natural disaster, disease, and losing job).

The third most important, which comprises about 10%, is saving to leave an inheritance.

The last popular motive is to save now, so one can earn more profit out of it for future use. For example, people who had cash available during the financial crisis, have made lots of profits by buying undervalued assets during that period.

Another important factor was about how regularly do the respondents save money, because this can show the saving behavior of participants. Figure 7 shows the saving regularity among respondents. There are four levels of regularity: Always, very frequently, occasionally, very rarely and never.
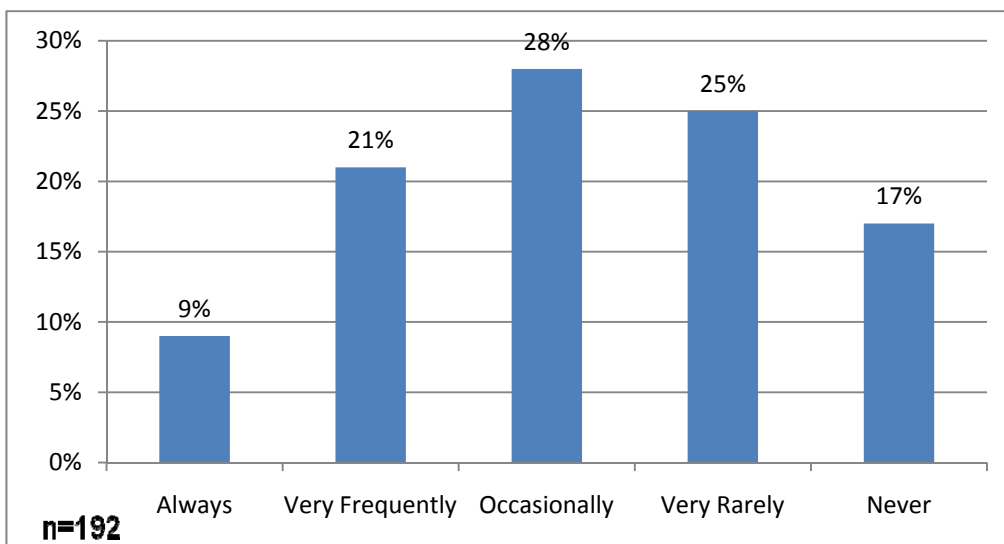
Figure 7 Saving Regularity of Respondents

As shown in figure 7, the percentage of those who never save is almost twice than those who always save some money, and less than one third save occasionally. The regularity of saving may depend on people's income level, their level of financial literacy and their saving motives. The figure on saving regularity has a distribution similar to the normal distribution, which may be due to differences in education level, income level, age and ethnicity amongst the respondents.

4.2. Testing Hypotheses

4.2.1. Bivariate Correlation test

To test the first hypothesis, which is '*Individual's financial literacy level is significantly related to individual saving'.* The correlation between financial literacy and Level of saving is first measured. As mentioned before, respondents answer are scored in two parts, the first part is their basic financial knowledge shown as Total Basic Literacy (TBL), the second shows the scores on Advanced Financial Literacy (AFL), and the summation of these two score indicates the Total Overall Literacy(TOL).

In the other words:

Total Overall Literacy= (Total Basic Literacy) + (Total Advanced Literacy)

Tables 4, 5, and 6 show the correlation of each of these scores with the dependent variable (DV) which is individual saving, respectively.

Correlations		TOL	Saving
TOL	Pearson Correlation	1	.334(**)
	Sig. (2-tailed)		.000
	N	192	192
Saving	Pearson Correlation	.334(**)	1
	Sig. (2-tailed)	.000	
	N	192	192

** Correlation is significant at the 0.01 level (2-tailed).
Table 4 Correlation between Overall Literacy and Saving

Correlations		Saving	TBL
Saving	Pearson Correlation	1	.313(**)
	Sig. (2-tailed)		.000
	N	192	192
TBL	Pearson Correlation	.313(**)	1
	Sig. (2-tailed)	.000	
	N	192	192

** Correlation is significant at the 0.01 level (2-tailed).
Table 5 Correlation between Basic Literacy and Saving

Correlations		Saving	TAL
Saving	Pearson Correlation	1	.294(**)
	Sig. (2-tailed)		.000
	N	192	192
TAL	Pearson Correlation	.294(**)	1
	Sig. (2-tailed)	.000	
	N	192	192

** Correlation is significant at the 0.01 level (2-tailed).
Table 6 Correlation between Advanced Literacy and Saving

All three correlation results are consistent with the first hypothesis, which suggests that the level of financial literacy is correlated with individual saving. All correlations are significant at the 1% level and the Pearson correlation factor is equal to 1.

These findings show that the higher level of financial literacy, (either basic or advanced knowledge,) the higher is the probability of having positive saving among individuals.

4.2.2 Multivariate Analysis: Probit Regression

Since the model has many independent variables (IVs) and is complex to some extent, the model is analyzed in two parts. The first part analyzes the

model including all IVs except saving motivation. Then in the second part, the effect of different motivations on saving is analyzed.

4.2.2.1 Model without considering saving motives.

The dependent variable takes on a value of 0, for those who spend more or equal than their income, hence they have no money to save, and takes the value of 1 for those who spend less than their income, hence have positive individual saving.

Since the dependent variable is either 0 or 1, Probit analysis is used in this paper. Probit Analysis is a type of regression used with binomial response variables. It is also called a probit model, and is used to model dichotomous or binary outcome variables. In the probit model, the inverse standard normal distribution of the probability is modeled as a linear combination of the predictors. (SPSS Survival Manual, 2005, p. 109)

Equation 1: Model 1

$$
\begin{aligned}
Individual\ Saving \\
= \alpha + \beta 1 * (Total\ Overall\ Literacy) + \beta 2 * (Saving\ Regularity) \\
+ \beta 3 * Gender + \beta 4 * Ethnicity + \beta 5 * Age + \beta 6 * Children + \beta 7 \\
* Experience + \beta 8 * Nationality + \beta 9 * (Risk\ Taking\ Behavior) \\
+ \beta 10 * Income + \beta 11 * (Education\ Level) + \varepsilon
\end{aligned}
$$

Whereby, α is a constant term, β_n are the coefficients to be determined, and ε is the error term.

Table 7 shows the result by running the regression between the dependent variable (Individual Saving) and independent variables, overall financial literacy, age, number of children, years of work experience, nationality, risk taking behavior, and saving regularity.

Parameter		Estimate	Std. Error	Z	Sig.	95% Confidence Interval	
						Lower-Bound	Upper Bound
PROBIT(a)	Total Overall Literacy	.024	.005	4.572	.000	.012	.029
	Saving Regularity	.071	.012	4.435	.000	.035	.090
	Gender	.151	.021	6.773	.000	.105	.191
	Ethnicity	.026	.017	1.681	.102	-.004	.046
	Age	.005	.003	4.689	.000	.005	.011
	Children	.029	.010	2.789	.006	.010	.056
	Experience	.000	.001	4.532	.989	-.004	.004
	Nationality	.130	.036	3.782	.125	.063	.091
	Income	.154	.008	5.374	.000	.010	.041
	Education Level	.043	.005	2.483	.002	.021	.084
	Risk Taking Behavior	-.010	.013	-.905	.351	-.034	.012
	Intercept(b) 0	-1.368	.085	-16.142	.000	-1.459	-1.289
	1	-1.316	.092	-14.978	.000	-1.464	-1.280

a PROBIT model: PROBIT(p) = Intercept + BX
b Corresponds to the grouping variable Saving.
Table 7 Probit Regression on Individual Saving [Model 1]

As table 7 shows, the relationship between total overall literacy and the probability of having positive saving is significant at 0.01 level, which supports the first hypothesis. This means that people with high financial literacy level, are more likely to save compared to those with low level of financial literacy (holding other variables constant). This finding is the most important finding in this study, which links the likelihood of having positive saving with the level of financial

knowledge among people. This finding is also consistent with previous studies which were done in the US. Past studies showed how financial literacy helps people to become ready for their retirement period (Lusardi and Mitchell, 2007b). They also showed that people with higher knowledge of finance are more capable to prepare themselves for their retirement period through better saving and insurance plans. Other studies showed that financial knowledge and saving programs can be very effective to overcome the decrease in saving (Clark and Madeleine, 2008).

Table 7 also shows that saving regularity is a significant factor in saving. Although this variable was not in mentioned in the hypotheses, the results make sense that saving regularity increases the probability of having positive saving as well.

Holding other variables constant, the relationship between individual saving and the gender variable is significant at 0.01 significance level which means that men have a higher probability of saving than women. This finding supports the second hypothesis which predicted that there is a significant difference among men and women in terms of their saving behavior. The reason behind it may be the difference between income levels of the two gender groups. It may also be because of lower financial literacy among women which leads to lower saving. This reason is consistent with findings of other research. Lusardi and Mitchell (2007) showed that women were usually less financially informed

than men, and financial literacy was found to influence the probability of having positive saving. This is consistent with studies that have shown that women are less likely to have a defined retirement saving plan (Sunden and Surrette, 1998). Studies have shown that historically women, have been dependent on men for their financial security (Schmidt and Sevak, 2006). Furthurmore, there is a sizeable gap between the two genders in terms of financial resources such as saving, pensions, and after-retirement earnings. Moreover the poverty rates were significantly higher among women in all the developed countries (Burnes and Schultz, 2000). However finding the appropriate reason for this finding needs more research on this subject in Malaysia.

The relationship between ethnicity and the probability of saving was found to be insignificant, which supports the second hypothesis. The reason may be that there are no significant differences among different ethnic groups in Malaysia in terms of income and expenses. Moreover they all face same macroeconomic factors such as interest rates and inflation rate.

The link between number of children and the probability of saving is significant at 0.01 significance level, holding other variables equal. This means that as the number of children increase; the more likely that people will save. This finding supports hypothesis 2d. The reason that the increase in number of children increases the probability of saving may be that as people have more children, they feel more responsible towards their children's future, so they have to develop sound financial plans and they may start to save for children's

education expenses or perhaps to save more in order to leave an inheritance for each of the children.

As table 7 shows, years of working experience, does not significantly predict the probability of saving. This finding does not support hypothesis 2f. The reason may be that people's income does not increase consistently with their working experience. So people may have to keep the same saving behavior as they had before. Another reason could be that people do not earn much financial knowledge through their working period. Again to clarify the reasons behind this finding, further research is needed.

Results show that individual saving and nationality are not significantly related. This finding supports hypothesis 2e which is also consistent with the reasons given in the hypothesis section. Since all respondents including both Malaysians and non-Malaysians are living in the same country, the face the same interest rate, inflation rate and other macro economic factors. Hence, there should be no significant difference between different nationalities living in Malaysia.

As the results of regression in table 7 show, income plays an important role in saving behavior of people. Because higher incomes enable people to save more, hypothesis 2g is supported. Moreover it can be seen that people with higher education levels (Master and PhD) have higher saving than people with low education levels (Bachelor, Diploma, Secondary School, and professional

degrees). This finding supports hypothesis 2h, and is also consistent with previous literature.

As is shown in table 7, risk-taking behavior does not have a significant influence on saving, hence hypothesis 4 is not supported. The result needs further investigation, but the reason may be that those who are willing to take above average or substantial financial risk do not have enough money to save. They may have spent their money by risking too much so they have less resource available to save. Also those who take average financial risk or no risk at all, may have been too conservative to find a job with enough salary that makes saving possible for them.

Table 8 shows the goodness of fit for this regression model. Since the Chi-square is very high, the model has a very good fitness.

Chi-Square Tests

		Chi-Square	df(a)	Sig.
PROBIT	Pearson Goodness-of-Fit Test	1518.619	180	.000

a Statistics based on individual cases differ from statistics based on aggregated cases.
Table 8 Goodness of fit for Model 1

4.2.2.2 Model analyzing the effect of different motives on individual saving

In this section we revise the model in a way to assess the effect of different saving motives on individual saving.

Equation 2: Model 2

$$Saving = \alpha + \beta 1 * (Profit\ Motive) + \beta 2 * (LifeCycle\ Motive) + \beta 3 * (Precautionary\ Motive) + \beta 4 * (Bequest\ Motive) + \varepsilon$$

Whereby, α is a constant term, β_n are the coefficients to be determined, and ε is the error term.

In this equation, Life cycle motive comprises retirement motive and future expense motive.

Parameter		Estimate	Std. Error	Z	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
PROBIT(a)	Profit Motive	.058	.010	5.703	.000	.038	.078
	Life-Cycle Motive	.356	.054	6.645	.000	.251	.461
	Precautionary Motive	.113	.028	4.094	.000	.059	.167
	Bequest Motive	.108	.020	5.485	.000	.069	.147
	Intercept(b) 0	-.856	.054	-15.932	.000	-.910	-.803
	1	-.809	.052	-15.655	.000	-.861	-.757

a PROBIT model: PROBIT(p) = Intercept + BX
b Corresponds to the grouping variable Saving.
Table 9 Probit Regression on Individual Saving [Model 2]

As table 9 shows, all four motives are significant at 1% significance level, and all have positive coefficients, which mean increase in each of the mentioned motivation can increase saving among individuals, holding other variables constant. Interestingly, Life cycle motive has the coefficient of 0.356 which is about three time greater than precautionary and Bequest motive with coefficient of 0.113 and 0.108 respectively. This means that Life Cycle motive which consists of Expense and Retirement motives plays an important role in increasing saving. On the other hand, profit motive although has a significant role

in increasing saving, it plays a less important role among the other motivations because the coefficient is 0.058 which is much less than the others.

Table 10 shows the goodness of fit for this model. Again the chi-square value is very large, which means this model has a good fitness.

Chi-Square Tests

		Chi-Square	df(a)	Sig.
PROBIT	Pearson Goodness-of-Fit Test	1778.773	187	.000

a Statistics based on individual cases differ from statistics based on aggregated cases.
Table 10 Goodness of fit for Model 2

These results indicate that the role of motivations is significant in predicting the likelihood of saving. All four motivations play an important role in determining individual saving, with the lifecycle motive being the most important motive and precautionary and bequest motive as the second and third most important motives, respectively.

4.3. Summary of Research Results

As shown in previous section, nine hypotheses out of a total of eleven hypotheses were supported by the research. The most important focus of this research was the first hypothesis which examines the effects of financial literacy level on saving was completely supported. Table 11 shows a summary of research results. In summary, increase in the level of financial literacy, age, number of children, and motivations leads to more saving. Among the

motivations, the life cycle motives, play the most important role, with precautionary and bequest motives being the second and third most important, and profit motive being the least important, in influencing saving. Ethnicity, nationality, and risk taking behavior were found insignificant in influencing saving.

Hypothesis	Description	Result
1. Financial Literacy	*Individual's financial literacy level is positively related with individual saving.*	**Supported**
2. Demographics		
a) Age	*Age is significantly related to individual saving (+)*	**Supported**
b) Gender	*Gender is significantly related to individual saving (+)*	**Supported**
c) Ethnicity	*Saving do not differ significantly among different ethnic groups*	**Supported**

d) No. of Children	*Number of children is significantly related to individual saving (+)*	**Supported**
e) Nationality	*Saving do not differ significantly between Malaysians and Non-Malaysians living in Malaysia*	**Supported**
f) Work experience	*Length of work experience is significantly related to individual saving (+)*	**Not** **Supported**
g) Income	*Income is significantly related to individual saving (+)*	**Supported**
h) Education Level	*Education level is significantly related to individual saving (+)*	**Supported**
3. Motivations	*Saving Motives impact individual saving*	**Supported**
4. Risk Taking behavior	*The more the individual is risk averse the more the level of saving*	**Not** **Supported**

Table 11 Summary of Results

Chapter 5: Conclusion and Recommendations

5.1 Summary and Conclusion:

Saving is needed for long-term investments and infrastructure development for every country, which work as the base for rapid economic growth. It also can hedge individuals and countries against economic downturns and financial crisis. Moreover high saving displays the meaning of 'boosting economy', rather than 'freezing economy'. In this study we examined the factors that are important in determining individual saving.

The main objective of this study was to examine the relation between saving and financial literacy (i.e. individuals' knowledge about basic and advanced financial topics, such as interest rate, inflation rate, percentage calculation, stocks, and unit trusts). The main finding of this study shows that financial literacy is positively related to the probability of having positive saving amongst individuals. In the other words, an increase in financial literacy can increase the probability of saving significantly. So if the government wants to increase saving, it can increase financial literacy through educational programs on various financial assets. As shown in Table 2, people have the least knowledge about the function of unit trust, bonds, and risk-return issues. Hence, these areas can be the focus of educational programs.

Effects of demographic factors were also analyzed and the results show that older people have a higher probability to save, holding other factors constant. Also, people with more children tend to have higher probability of

saving, *ceteris paribus*. The results also indicate that when other variables in the model are held constant, men have a higher probability of saving compared to women. On the other hand, the study found that saving does not differ significantly amongst different ethnic groups and nationalities living in Malaysia. It was also found that years of work experience is not significantly related to saving. Moreover, the results show that higher level of income, and higher education levels, can significantly increase the probability of saving, *ceteris paribus*.

5.2 Limitations of the Study:

There are two limitations that need to be acknowledged and addressed regarding the present study. The first limitation concerns the questionnaire's language. The target population of this study was different individuals, with different ethnicity, education and income level. They also had different occupation status, such as students, housewives and retirees, employed and unemployed individuals. The questionnaire however was provided only in English language. A questionnaire in Bahasa Malaysia could be helpful to include more respondents especially among housewives and retirees and people with low level of education.

The second limitation has to do with the extent to which the findings can be biased towards more knowledgeable people. Non-respondents may comprise

people who were afraid of financial issues, and hence, refused to fill the questionnaire. It is possible that non-respondents to the survey may have had different outcomes to those that did participate. This limitation is, however, common among most survey-based studies.

5.3 Suggestions for future research:

This topic is relatively a new topic in Malaysia, so, further research can be conducted in this area. For example, how financial literacy can increase people's involvement in buying stocks and unit trusts, how standard of living affects saving among individuals, or how long-term inflation expectation affects personal saving rate.

Also researchers are suggested to not only focus on college or degree students but also on other strata of the population, because most of the studies that were conducted in this area were about students, perhaps due to easy data collection procedures.

Moreover, there are three types of saving; one is individual saving which was the focus of this study. The other two are governmental and organizational saving, which can comprise a large percentage of county's total saving. Further research can be done to examine important factors that increase these kinds of saving.

This study can be considered a preliminary study which can be adopted at larger scales. For example, World Bank has done and is continuously conducting research in other countries on the relation between country's growth and saving

rates, which shows that saving rates and levels of per capita income exhibit a strong positive correlation. Studies have shown that saving rates are negatively correlated with future income growth (Kraay, 1997). Also, cross-sectional analysis between urban and rural areas in Malaysia is suggested.