CHAPTER II:
LITERATURE REVIEW

2.1 Defining Financial Literacy

Financial literacy, although widely researched, does not have an exact definition (Hung et al., 2009). As happens in many research areas, different researchers and organizations have defined financial literacy in many different ways. However, in other studies financial literacy is not conceptually defined at all and the reader is left to infer what the authors meant from how financial literacy was measured. Table 2.1 summarizes the extent of conceptual definitions as contained in a number of existing studies to illustrate the many different views of the term financial literacy.

Table 2.1
Conceptual Definitions of Financial Literacy

Source	Conceptual Definition
Hilgert et al. (2003)	Financial *knowledge*
FINRA (2003)	"The *understanding* ordinary investors have of market principles, instruments, organizations and regulations"
Moore (2003)	"Individuals are considered financially literate if they are competent and can demonstrate they *have used knowledge* they have learned. Financial literacy cannot be measured directly so proxies must be used. Literacy is obtained through practical *experience* and active *integration of knowledge*. As people become more literate they become increasingly more financially sophisticated and it is conjectured that this may also mean that an individual may be more competent"
Mandell (2007)	"The *ability* to evaluate the new and complex financial instruments and *make informed judgments* in both choice of instruments and extent of use that would be in their own best long-run interests"

Source	Conceptual Definition
Lusardi and Mitchell (2007c)	[*Familiarity*] with "the most basic economic concepts needed to make sensible saving and investment decisions"
Lusardi & Tufano (2008)	Focus on debt literacy, a component of financial literacy, defining it as "the *ability to make simple decisions* regarding debt contracts, in particular how one *applies basic knowledge* about interest compounding, measured in the context of everyday financial choices"
ANZ Bank (2008)	"The *ability* to *make informed judgements* and to take effective decisions regarding the use and management of money"
Lusardi (2008a, 2008b)	"*Knowledge* of basic financial concepts, such as the working of interest compounding, the difference between nominal and real values, and the basics of risk diversification"
Huston (2010)	"Measuring how well an individual can *understand* and *use* personal finance-related information"
Remund (2010)	"…conceptual definitions of financial literacy fall into five categories: (1) *knowledge* of financial concepts, (2) *ability* to communicate about financial concepts, (3) aptitude in managing personal finances, (4) *skill* in making appropriate financial decisions and (5) *confidence in planning* effectively for future financial needs"
Fornero & Monticone (2011)	"…the level of their financial *knowledge*, their *ability* to deal with financial decisions…"
Atkinson & Messy (2011, 2012) for the OECD	"Financial literacy is a combination of awareness, *knowledge*, *skill*, *attitude and behaviour* necessary to make sound financial decisions and ultimately achieve individual financial wellbeing"
Justine (2013)	"…*knowledge* of financial products, financial concepts, mathematical skills or numeracy necessary for effective *financial decision making*…"
Fernandes et al. (2014)	"…the *knowledge* of basic concepts of personal finance with respect to borrowing/debt, and saving/investments that lead to better lifetime financial decision making"

Source: Adapted from Hung et al. (2009)

While there is no standard or universal definition of financial literacy, one may identify some pattern among these various definitions. The most common basis for the definition of financial literacy is knowledge. One study even defines financial literacy simply as one's basic financial knowledge (Hilgert et al., 2003). Lusardi (2008a, 2008b) gets more detailed mentioning knowledge of basic principles, such as the interest compounding, inflation and risk diversification.

Still others, such as those provided by Lusardi & Mitchell (2007c) and Markow & Bagnaschi (2005) for the National Council on Economic Education (NCEE) merely defined financial literacy as having familiarity with a specific topic. Lusardi & Mitchell (2007c) mentioned about the familiarity with basic economic concepts, while Markow & Bagnaschi (2005) added knowledge about the U.S. economy and understanding of key economic terms to this definition.

A more inclusive definition describes financial literacy as not only the knowledge and understanding of financial concepts and risks but also the application of this knowledge (Moore, 2003). This more comprehensive definition is in line with the idea of Mandell (2007) whose definition includes the ability to use financial knowledge as well as making informed judgements with respect to different existing financial instruments. This is also similar to the conceptual definition as reported by ANZ Bank (2008) and Fornero & Monticone (2011).

More recent research has included factors such as skill, confidence, attitude and behaviour in the definition of financial literacy. Financial Service Authority (OJK, 2013) has concluded financial literacy as a combination of activities to improve knowledge, skill and confidence to better manage the finances. Buckland (2010)

focused upon knowledge, skills and attitude. When defining financial literacy, Atkinson & Messy (2012) for the OECD added behaviour to this definition. Remund (2010) proposed that the conceptual definition of financial literacy falls into five categories. These categories include knowledge, ability, skill, aptitude and confidence in planning effectively for future financial needs.

Although Remund (2010) proposed that five categories should be required in order to define financial literacy, not all later studies have made use of this definition. Some of the most recent studies have utilised a more simplified definition of financial literacy, this being simply a combination of knowledge of various financial topics that would ensure a better future financial wellbeing (Fernandes et al., 2014).

The terms financial literacy and financial knowledge often are used interchangeably in the literature and popular media. Some researchers considered financial literacy synonymous to financial knowledge (Hilgert et al., 2003; Lusardi & Mitchell, 2011; and Bucher-Koenen et al., 2016) even when this term is two different things. Huston (2010) analyse 71 individual studies drawn from 52 different data sets found that 47% of the studies analysed used the terms financial literacy and financial knowledge synonymously. When censoring the sample to only those studies that included both terms (62%), over three-quarters used these terms interchangeably. In this case, financial knowledge is an integral dimension of, but not equal to, financial literacy. Financial literacy has an additional application dimension which means that an individual must have the ability and confidence to use his/her financial knowledge to make financial decisions.

Research often fails to distinguish financial literacy from related concepts. Hung et al. (2009) noted that financial literacy is different from related concepts such as numeracy. To the extent that financial literacy involves skills, rather than just knowledge, these skills likely depend on the ability to work with numbers. However, numeracy involves much more broadly than to just financial matters and represents a much more basic skill set – one more closely aligned to more general cognitive abilities. Hence, it is necessary to keep general numeracy distinct from financial literacy, instead of treating it as a supporting construct.

2.2 Measuring Financial Literacy

A great deal of variation exists as to how past studies have defined financial literacy. As a consequence of the variety of definitions, the measurement of financial literacy varies substantially across studies (Hung et al., 2009). Hung et al. (2009) compared several studies based on the financial literacy measurement tool and content domain used in each study. In the present study, their findings have been updated to include more recent literature and these are presented in Table 2.2.

Table 2.2
Strategies for Measuring Financial Literacy

Publication	Measurement tool	Measurement strategy		Content domain		
		SA	PT	S	I	D
Chen et al. (1996)	Percent correct on 10 multiple-choice items		X		X	
Chen & Volpe (1998)	Percent correct on 36 multiple-choice items		X	X	X	X
Chen & Volpe (2002)	Correct responses on 10 multiple-choice items		X		X	
Hilgert et al. (2003)	Percent correct on a knowledge test		X	X	X	X

Publication	Measurement tool	Measurement strategy		Content domain		
		SA	PT	S	I	D
FINRA (2003)	Correct responses to 10 true/false items	X	X			
Moore (2003)	Financial knowledge: 12 items Financial experiences: 14 items Financial behavior: 15 items Debt confidence: 1 subjective question	X	X	X	X	X
Mandell (2004)	Percent correct on a 31-item knowledge test		X	X	X	X
Agnew & Szykman (2005)	Number of correct responses to 10 multiple choice and true/false items. Also, self-rated investment knowledge relative to others on 1-10 scale.	X	X		X	
Perry & Morris (2005)	Financial behaviour: 5 question Locus-of-control: 7 questions Financial knowledge: 5 questions	X		X	X	X
Markow & Bagnaschi (2005) for (NCEE)	Percent correct on 24-item knowledge test		X	X	X	X
Worthington (2006)	80 questions aimed at measuring adult financial literacy		X	X	X	X
Lusardi & Mitchell (2006, 2008)	Correct responses to 3 multiple-choice and true/false items		X	X	X	
Lusardi & Mitchell (2007a)	Correct responses to 3 computational items		X		X	
Lusardi & Mitchell (2007b)	A single weighted average of (a) 5 multiple-choice basic financial literacy items (b) 8 multiple-choice sophisticated financial literacy items	X	X	X	X	
Mandell (2007)	Percent correct on a knowledge test		X	X	X	X

Publication	Measurement tool	Measurement strategy		Content domain		
		SA	PT	S	I	D
Rooij et al. (2007)	Two weighted averages of (a) 5 multiple-choice basic financial literacy items (b) 11 multiple-choice sophisticated financial literacy items. Separately considered a 7-point item on perceived knowledge	X	X	X	X	
Rooij, Koll and Prast (2007)	Financial expertise and risk attitude: 9 questions Pension behaviour and preferences: 8 questions	X		X	X	
Lusardi & Tufano (2008)	Correct responses to 3 individual multiple-choice items (financial knowledge related to debt)	X	X			X
Widdowson & Hailwood for ANZ Bank (2008)	Mean score, based on target responses to 26 questions derived from an operational framework	X	X	X	X	X
Mandell & Klein (2009)	2004 Jump$tart questionnaire		X	X	X	X
Hung et al. (2009)	(a) 5 multi-choice on basic financial literacy (b) 8 multi-choice on sophisticated financial literacy (Lusardi & Mitchell, 2007b) (c) 9-10 are from FINRA Investor Survey (d) 11 from Agnew & Utkus et al., (2005) (e) 12 from Survey of Financial Literacy in WA State (f) 13-14 from Kimball and Willis	X	X	X	X	

Publication	Measurement tool	Measurement strategy		Content domain		
		SA	PT	S	I	D
Lusardi & Mitchell (2010)	A single weighted averages of (a) 5 multiple-choice basic financial literacy items (b) 11 multiple-choice sophisticated financial literacy items (Lusardi & Mitchell, 2007b)	X	X		X	
Mckenzie (2010)	31 item Jumpstart Survey (Mandell, 1998)		X	X	X	X
Lusardi et al. (2010)	Correct responses to 3 multiple-choice and true/false items (Lusardi & Mitchell, 2006)		X	X	X	
Lusardi & Mitchell (2011a)	Correct responses to 3 multiple-choice and true/false items (Lusardi & Mitchell, 2006)		X	X	X	
Fornero & Monticone (2011)	Compound interest & inflation (Lusardi & Mitchell, 2006) Additional question on stock versus mutual funds		X		X	
Shambare & Rugimbana (2012)	Correct responses to 3 computational items Compound interest, inflation & risk diversification (Lusardi & Mitchell, 2006) (adapted for South Africa)		X		X	
Brown & Graf (2013)	Correct responses to 3 multiple-choice and true/false items Compound interest, inflation & risk diversification (Lusardi & Mitchell, 2006)		X		X	
Agnew et al. (2013)	Correct responses to 3 multiple-choice and true/false items Compound interest, inflation & risk diversification (Lusardi & Mitchell, 2006)		X	X	X	

Publication	Measurement tool	Measurement strategy		Content domain		
		SA	PT	S	I	D
Oseifuah & Gyekye (2014)	Mean score, based upon target responses to 26 questions derived from an operational framework (Widdowson & Hailwood, 2007)	X	X	X	X	X
Fernandes et al. (2014)	13 item survey with questions taken from: (a) 1 and 2 (Lusardi & Mitchell, 2006) (b) 3, 4, 5, 10, 11, 12 (Alesie et al., 2007; Lusardi & Mitchell,2007b) (c) Agnew & Utkus (2005) (d) 7 and 8 (Hung et al., 2009) (e) Lusardi (2010) (f) Lusardi & Tufano (2008)		X		X	X
OJK (2016)	Percent correct to 47 questions		X	X	X	

Source: Adapted from Hung et al. (2009)

Across existing literature, financial literacy generally has been measured in three ways. Under the first approach respondents are asked to evaluate their literacy skills by self-assessment test to provide information about their attitudes towards financial decisions, knowledge and information. Particularly, participants are asked to evaluate their financial literacy themselves according to a scale ranging between particular values (e.g., five-point Likert scale).

The second approach of measuring financial literacy relies on the means of performance test, primarily knowledge-based regarding the conceptual definition in Table 2.1, to measure at which level people' financial literacy is. Accordingly, some basic and advanced financial questions are asked to the targeted population and then responses are evaluated according to their accuracy. The objective test has

been found to better assess the respondents financial literacy than self-assessment (OECD, 2005) which is why it is mostly been used across studies. As can be seen in Table 2.2, the work by Lusardi & Mitchell (2006, 2007b) is perhaps one of the most widely used in the field. They firstly designed a survey for the 2004 Health and Retirement Study (HRS) to study the effects of financial literacy on consumption and savings decision. They developed a three items questionnaire asking three fundamental concepts at the basis of most financial decision-making. The questions test for knowledge on the computation of interest rate, the effect of inflation and the concept of risk diversification.

Three basic questions (since dubbed the "Big Three") to measure financial literacy have been fielded in many surveys in the USA, including the National Financial Capability Study (NFCS) and the Survey of Consumer Finances (SCF), and in many national surveys around the world. They have also become the standard way to measure financial literacy in surveys used by the private sector. For example, the Aegon Center for Longevity and Retirement included the Big Three questions in the 2018 Aegon Retirement Readiness Survey, covering around 16,000 people in 15 countries. Both ING and Allianz, but also investment funds, and pension funds have used the Big Three to measure financial literacy (Lusardi, 2019).

Although this tool has been widely used, it is not sufficiently sophisticated to assess saving and investment decisions. Such an additional survey was designed to test for understanding of the risk-return relationship of how bonds, stocks and mutual funds and basic asset pricing function. These additional questions measure what is considered sophisticated financial literacy (Rooij, 2007; Lusardi &

Mitchell, 2007b; and Lusardi, 2008). The survey used by Lusardi & Mitchell (2007b) represents one of the most widely used and accepted measurement tools in terms of evaluating the financial literacy of students and adult populations. Their survey tests for basic and sophisticated financial literacy.

The third approach identify the financial literacy of respondents with both objective and also subjective measures. In all different approaches, there is a tendency to measure financial literacy through both objective tests of financial concepts and asking respondents to provide a self-assessment of their understanding of financial issues. This is because results show a disparity between what individuals believe they know and what they actually know, with the self-assessment often higher than the actual understanding (Lusardi & Mitchell, 2009; and OECD, 2005).

Yet also taking advantage of the subjective test, as previous studies suggest that perceived knowledge, or confidence, may have the predictive ability of its own, above and beyond actual knowledge. This may originate from the fact that individuals do not usually know the extent of their actual knowledge. They must decide on courses of action based on how much they think they know (Lusardi & Mitchell, 2007b). And given these findings, most studies often use both the actual and perceived testing.

2.3 Importance of Financial Literacy

Earlier studies have highlighted the importance of financial literacy, not just from an individual perspective, but also from a global and economic perspective (Williams, 2007; and Chardin, 2011). For instance, at an individual level, financial

literacy is linked to retirement planning, investment decisions and saving behaviour (Lusardi, 2008).

2.3.1 Pension Arrangement

With the rise in life expectancy and changes in pension arrangements, individuals will need to guarantee that they have enough savings for a longer period they can expect to spend in retirement. Nonetheless, people are lacking awareness of the significance of saving for retirement.

According to a recent survey by the Employee Benefit Research Institute, four out of ten American workers state that they are not putting any money aside for retirement (Helman & Paladino, 2004). While, a report in New Zealand reasons that many individuals in the country are either unwilling or not able to save enough for retirement, adding that about 30 percent of households spend more than they earn (Weir, 2004). An additional concern is that those who are saving are not saving enough. The Bank of Ireland Life has displayed concern that many individuals investing for their retirement are not saving enough, adding that only about 52 percent of workers aged 20 to 69 are investing in a pension (Business World, 2004). While other studies find that many families would like to save more but lack the willpower or are overwhelmed by too much choice.

In Indonesia, saving or planning for retirement, according to a survey done by HSBC in 2015, is not a priority for the majority of working-age people. Only 12 percent of individuals recognise the need to start retirement planning so early in life. While around a quarter of them which is 28 percent, are more

concern about saving for their children's education. This will become a problem taking into consideration the expected steady growth in life expectancy. According to the BPS-Statistics Indonesia, the life expectancy of Indonesia's population has increased from 66.0 years in 1995-2000 to 73.1 in 2018 and is expected to rise again in the 2020-2025 period.

As Indonesia's life expectancy increases, the number of expected retired citizens will also grow. The addition in the number of the ageing population in Indonesia will certainly cause problems, as the elderly do not get any income from work, have no pension plan and tend to depend on their offspring. As reported by the Life Insurance Marketing Research Association in 2009, Indonesian at the age of 65 years or at retirement: 49 percent of respondents relied on their children, nursing homes or government donations, 12 percent went bankrupt, 5 percent kept working, 4 percent were financially independent and 1 percent classified as rich (Purnamasari, 2014). These results indicate that only 1 percent of the elderly can live in prosperity and wealth in their old age.

This is also supported by a survey done by BPS-Statistics Indonesia (2014) which illustrates the lack of awareness of the Indonesian population to prepare for their old age thoroughly. It found that Indonesia's elderly dependency ratio is 12.71, which means that every 100 people of productive age population must bear around 13 elderly people. Another fact states that only 5.82 percent of retired households have a pension guarantee.

This phenomena is happening because Indonesian are lacking the skills needed to be able to plan and save for their retirement. This is supported with

finding of OJK (2016) as Indonesians are categorized as sufficient literate individual (75.69%). It means people know and believe in financial service institutions and financial products and services including features, benefits and risks, rights and obligations related to financial service products yet do not have the skills in using financial products and services.

A recent study done by Karisadini (2018) that survey both the civil and private servants in DKI Jakarta, shows that counselling or seeking information independently, improved financial literacy for both civil and private servants. Thus, increase the ownership of financial retirement plan. This is consistent with the result of a survey conducted in Indonesia and India by Cole et al. (2010) who found that the main reason for not having any pension fund is the lack of money, understanding of the products or ability to see any advantages.

It can be concluded that financial literacy is crucial especially in term of saving and planning for retirement. As research has shown that people with high financial literacy are more likely and able to plan for retirement (Lusardi & Mitchell, 2006, 2008; Rooij et al., 2009; Lusardi & Mitchell, 2011; and Bucher-Koenen et al., 2016), and that planners arrive at retirement with considerably more assets than non-planners (Lusardi & Mitchell, 2007).

2.3.2 Investment Decision

Financial literacy is also related with a broader range of financial decisions, such as equity market participation, diversification of portfolio and the ability to avoid extreme indebtedness (Kimball & Shumway, 2007; Guiso & Japelli, 2008; Lusardi & Tufano, 2008; and Rooij et al., 2011).

Given the complexity of current financial instruments and the financial decisions required in everyday life, such as comparing different financial instruments to invest, deciding how much to save, when and where to invest, when and where to get the financing, people need to know how to read and write their financials. Moreover, the needs for financial literacy have become increasingly significant with the deregulation of financial markets and the easier access to credit; the rapid growth in marketing financial products and the government's encouragement for its citizens to be more responsible with their investments and retirement incomes (Marcolin & Abraham, 2006; and Binswanger & Carman, 2012).

On these issues, individual with less financial literacy has a more negative opinion about finances and makes more incorrect financial decisions. There are studies which indicate that acquiring a low level of financial knowledge limits their ability to make informed decisions (Perry, 2008; and Braunstein & Welch, 2002). For example, individuals who lacked financial literacy have been hindered from embracing innovative financial products, making sound financial planning decisions as well as giving serious consideration and commitment to their financial plans and participation in the stock market and poor borrowing behaviour (Rooij et al., 2007, 2011; Klapper et al., 2012; and Bucher-Koenen et al., 2016). One of the implications from these is that the cost of poor financial decision-making and planning often gets shifted to other members of the community, state and nation through higher prices for financial products and diversion of economic resources.

In Indonesia, low financial literacy, among all classes of people, is the main factor behind the success of investment scams in the country. It is usually the local lower-middle-class people that is not equipped with financial literacy who become the victim of these scams as they promise huge returns on investment within a short period of time. This finding is supported by previous studies done separately in cities around Indonesia, showing that financial literacy significantly influences an individual's investment decision (Khairiyati & Krisnawati, 2019; and Tarora & Juwita, 2016).

2.3.3 Other Benefits

Lastly, day-to-day management of finances such as the ability to save money for the long-term is also impacted by financial literacy (Braunstein & Welch, 2002). For instance, financial literacy has been linked with positive financial behaviours such as having a checking account, paying bills on time, tracking expenses, having a savings account, and having an emergency fund (Hilgert et al., 2003). Overall these findings agree with those of others (Banks, O'Dea, & Oldfield, 2010; and Lusardi & Mitchell, 2005) that individuals with a higher level of financial literacy tend to be planners (Lusardi & Mitchell, 2005).

In the context of students, previous studies highlight the advantages of having financial literacy. According to Knapp (1991), increasing financial literacy is a way to enhance empowerment and improve the quality of life. Energy, thought, and time is spent pursuing money and limiting the unnecessary waste of money. Therefore, when students gain more knowledge and more

positive attitudes toward money, they make a better decision, which saves resources and improves their situation (Knapp, 1991).

Financial literacy also boosts self-confidence, control, and independence (Conger et al., 1999). This comes by feeling in control and knowing how to function in a complex marketplace. When individuals feel they are in control of their finances, they are more likely to participate in the marketplace (Knapp, 1991). According to Jappelli (2010), financial literacy is important not only at an individual level, influencing households decisions about investment and borrowing in financial markets but also from at a global level, having values for the stability of the overall economy.

OECD (2006) presents the argument that financial literacy can be an important contribution to economic growth, helping to reduce poverty in all economies and attenuating the volatility of financial markets. Cole et al. (2012) also refer to general equilibrium effects resulting from higher financial literacy: improve risk-sharing, reduce economic volatility, improve intermediation and speed overall development. This can lead to a higher financial services sector competition, resulting thus in a more efficient allocation of capital within society.

It is also explained that the improvement of financial literacy of the populations can be a kind of support to the financial regulators work, allowing to reduce the regulatory burden, the need for legislation and the degree of government involvement in financial markets (Williams & Satchell, 2011). That

is because more careful and prepared consumers are less vulnerable, needing less protection.

2.4 Factors Influencing Financial Literacy

While it is clear that financial literacy is important, there is a vast literature showing that many determinants can explain financial literacy. These factors include gender, age, education and parental influences. Each of these factors is addressed in more detail in the following section.

2.4.1 Gender

There is an on-going debate as to whether there is a gender bias in financial literacy (Chen & Volpe, 2002). There is some evidence showing that women are less financially literate than men. However, in some circumstances, there is no significant gender bias (Atkinson & Messy, 2012).

In line with other studies that make use of the Lusardi & Mitchell (2006) survey, in the Netherlands (Rooij et al., 2011), Japan (Sekita, 2011), United States (Lusardi & Mitchell, 2006), Romania (Beckmann, 2013) and Germany (Bucher-Koenen & Lusardi, 2011) it was found that women know less than men when it comes to basic financial literacy. That being said, women do not necessarily present greater numbers of incorrect answers than men; they do however state do not know more often (Beckmann, 2013; Bucher-Koenen & Lusardi, 2011; Klapper & Panos, 2011; and Sekita, 2011). In a related study, Zissimopoulous et al. (2008) note that middle-aged, college-educated women preformed 15 percent lower than their male counterparts when answering basic compound interest questions. Lack of financial literacy is not only a problem

affecting U.S. women showing lower levels of self-assessment of financial literacy than men, but also evidence from Xu & Zia (2012) indicates that this phenomena affects the overall population of women worldwide.

When finance professionals were surveyed, it was found that financial knowledge and behaviours of males tend to be higher for subjective and objective knowledge than that of females (Weber et al., 2002). This shows that men not only have a more solid knowledge base than women, but they also believe that they know more regarding the subject. Nevertheless, Goldsmith & Goldsmith (2006) find that although men are more confident in their financial knowledge, both men and women show low levels of overall financial literacy.

As indicated previously, variation exists in overall financial literacy scores by gender. Only in one case in Estonia, did men and women have exactly the same financial literacy score. Women also never scored higher than men in financial literacy tests in the countries considered (Atkinson & Messy, 2012).

Among university students in the USA, women tended to have lower levels of financial literacy than men (Chen & Volpe, 1998). In a later study, Chen & Volpe (2002) find evidence that women have less interest and confidence in personal finance, providing possible reasons as to why women tend to be less literate compared to men. Likewise, a study of American youth found that woman are less financially literate than men (Lusardi et al., 2010).

Furthermore, Power et al. (2011) found that regardless of the university course studied, women are generally less familiar with financial concepts, while in a developing nation such as Indonesia, it was found that there is a mixed of

findings among university students. Lantara & Kartini (2015) found that there is a gender bias among Indonesian university students. The mean score of correct answers by male respondents is significantly higher than the average score of the female participants. Whilst in a study done by Homan (2015) and Sakinah & Mudakir (2018) showed that student is categorized as quite literate and gender does not affect Indonesian student financial literacy at all.

Considering a diverse aspect of the studies discussed above, Danes & Hira (1987) discovered that women know more about overall financial management than do men. In contrast, men tend to know more about insurance and personal loans. In Texas and Malaysia, university students took part in a survey that concluded that both women and men have low, but not differing, levels of financial literacy (Avard et al., 2005; and Sabri et al., 2010). Similarly, Jorgensen & Savla (2010) found that gender is not a significant variable in explaining financial attitudes and behaviour of university students. Result of such studies use student populations, and may actually highlight the influence of other variables such as academic education levels on financial literacy.

In many instances, studies have shown that women are less financially literate than men. In some cases, this could be explained by other variables. For instance, research on some student population found men and women to have low but not differing financial literacy levels.

2.4.2 Age

Past research has found age to be a significant factor in explaining financial literacy. It is argued that with time, many people learn more about

financial instruments and money management. It was the case when comparing freshman and senior amongst university student. These findings are consistent with prior studies (Goldsmith & Goldsmith, 1997; Chen & Volpe, 1998, 2002; and Altintas, 2011) due to the fact that older students had more time to accumulate financial knowledge through courses, seminars and their own or others' experience (Chen & Volpe, 2002).

In Australia, it was found that younger individuals had lower financial literacy (Agnew et al., 2013). This was further supported by studies on American university students (Chen & Volpe, 1998) and high school students in New Zealand (Cameron et al., 2013). Similarly, Worthington (2006) found that people aged between 50 and 60 are most financially literate. In Russia, the relationship between financial literacy and age was found to be negative. When comparing younger with older respondents, it was found that those younger than 35 years of age were more likely to answer one or more of three financial literacy questions correctly (Klapper & Panos, 2011). These results were also found in a study done in Romania (Beckmann, 2013).

However, the correlation between age and financial literacy is not absolute. Rooij et al. (2011) for example, found that financial literacy levels among the Dutch population do not differ significantly with age and yet their study was conducted across a wide age group. Similar to the previous findings, among the Indonesian population, OJK (2013) revealed that the financial literacy rate is relatively equal across all age group. The age group is divided into four categories, with 26-35 years old as the group with the highest financial

literacy index among the others of 37.4 percent. Followed by 36 percent of 36-50 years old group and 35.5 percent of 18-25 years old are financially literate. While those older than 50 years old was rated 31.7 percent.

Other authors including Murphy (2005) and Oseifuah & Gyekye (2014) have also concluded that age is not significantly related to financial literacy. However, these researchers studied student populations, which usually consist of young adults. Therefore, these results might not be representative of all age group. Lusardi & Mitchell (2011c) found that people who are in the middle age group have the highest financial literacy. They hypothesized that financial literacy increases with experience and then declines with age (Lusardi & Mitchell, 2011c). Additionally, studies carried on the household in Italy (Fornero & Monticone, 2011) and Switzerland (Brown & Graf, 2013) supported these findings. Fornero & Monticone (2011), as well as Bucher-Koenen & Lusardi (2011), found that people aged 36 to 50 are most financially literate. Bucher-Koenen & Lusardi (2011) also found that people younger than 35 years of age were more likely to answer a question on interest calculation correctly than one considering inflation.

The results of a Japanese study partially supported this relationship, where financial literacy initially increases and then decreases with age. These researchers affirmed that there is a humped-shape relationship between age and financial literacy, but only when considering a question on interest and inflation. They further found that a question on risk diversification was more likely to be

answered correctly by older respondents, although this was with the exception of those over the age of 50 (Sekita, 2011).

There is clearly no absolute relationship between age and financial literacy. Some studies have found that age is positively related to financial literacy, while others have shown those in the middle age groups to be most financially literate. A few studies found no relationship between age and financial literacy, however, in some instances researchers made use of student populations, which could skew the data.

2.4.3 Education

In order to distinguish whether there is a relationship between education and financial literacy, it is important to define what is meant by education. There are three broad categories that are covered in this section, namely academic education, finance-specific education (finance education offered at school or university) and lastly finance-specific interventions.

Some studies have sought to determine whether academic education levels are significant in improving financial literacy (Agnew et al., 2013; and Lusardi & Mitchell, 2007a). Academic education levels are usually described as high school, undergraduate university and postgraduate university education. Nonetheless, other researches have considered more specifically the impact of financial education offered at various life stage (school, university and workplace) on one's financial literacy (Power et al., 2011; and Volpe et al., 1996). The last category of education is that of financial interventions. These include specific courses aimed at improving financial literacy (Clark et al.,

2003; and Fernandes et al., 2014). Each of these categories of education is discussed in detail in the following sections.

2.4.3.1 Academic Education

Studies have shown that education levels (high school, undergraduate university and postgraduate university) are directly correlated with financial literacy. The higher the levels of education of an individual the better their financial literacy (Chen & Volpe, 1998, 2002; Hung et al., 2009; Lusardi et al., 2010; and Mckenzie, 2010). To measure the financial literacy of the young American adults, Mandell (2008) and the Jump$tart Coalition conducted a survey among high school seniors and college students. The result proved that college students are more financially literate than high school student and that literacy increases with each year of college. A similar result was also discovered that being a university graduate was found to be significantly associated with better financial literacy (Chen & Volpe, 2002; and Mandell & Klein, 2009).

Considering specific countries, New Zealanders and Americans with higher levels of education have better financial literacy (Widdowson & Hailwood, 2007; and Lusardi & Mitchell, 2006). This was also found to be the case in Indonesia, where financial literacy was lowest among those with less than high school education (DEFINIT-SEADI-OJK, 2013). Those with higher education tend to have a higher level of basic financial literacy, and vice versa. As for the case of advanced financial literacy, most respondents tend to have low advanced financial literacy, even those with a high level of education.

In South Africa, a study showed that being a matriculant or having tertiary education was positively related to financial literacy (Struwig et al., 2013). Similar results emerged from a study conducted in Russia by Klapper & Panos (2011), who also observed that educated people were more financially literate. In the Netherlands, as many as 70 percent of the respondents with a university degree were able to answer all questions on a financial literacy survey correctly (Rooij et al., 2011).

Using the measurement tool of Lusardi & Mitchell (2006), 62 percent of people in Japan with a master degree or higher were able to answer all the questions correctly (Sekita, 2011). A study conducted in Romania found that people with postgraduate education were the most financially literate. However, their findings showed high school scholars to have slightly higher scores than college graduates. These researchers were unable to explain this result (Beckmann, 2013).

In conclusion, most studies have shown that academic education level is related to financial literacy. Financial literacy is lowest among people with less than high school education, while those with a graduate or post-graduate degree were determined to be more financially literate.

2.4.3.2 Financial Education

Some studies relating to financial literacy assess education as that of financial education. In this context, financial education refers to any subject or program that aims to improve the knowledge, attitudes, and behaviours of individuals in relation to their finances (Fox et al., 2005). Financial education

usually takes place in schools, university, and workplace settings and across a range of population groups (Walstad et al., 2017). The purposes of financial education courses vary widely. In general, financial education aims to (1) improve personal finances and budgeting, (2) improve retirement planning and saving, and (3) prepare for home buying and homeownership (Fox et al., 2005). The following section discusses the findings of the studies that have focused on financial education and its association with financial literacy. Studies based upon students found that studying finance both at high school (Walstad et al., 2010) and university level (Beal & Delpachitra, 2003; and Chen & Volpe, 1998, 2002) improved their financial literacy. Supporting research showed that when comparing finance student to non-finance students, the former group were more financially literate than those in the latter group.

In contrast to the above findings, Kalin & Schnusenberg (2011) noted that university students were not educated in financial matters, and this was even true for those students who were finance majors. Research conducted at a Texas university found that studying business, as opposed to economics, did not have a significant impact on students' knowledge of financial concepts (Avard et al., 2005). This suggests that being a finance or business student might help, but does not ensure financial literacy (Avard et al., 2005).

A study conducted among Indonesian students shows constant result that those with business majors have a better score compared to non-business majors (Lantara & Kartini, 2015). This finding is also supported by studies done in other nations, where students who took a greater number of finance,

economics and business classes in college tended to achieve higher financial literacy scores (Shim et al., 2009, 2010; and Akben-Selcuk & Altiok-Yilmaz, 2014). In addition, there are differences in the financial literacy of freshmen compared to seniors (Homan, 2015). This finding is expected because the curriculum content of business majors gives the students more opportunities to strengthen their knowledge of financial and other related courses. As is seemingly the case in many other developing countries, the education system in Indonesia outside the dedicated business, finance and economics courses at school and university appears to put little emphasis on financial education. Therefore, it can be expected that financial education given is going to boost the financial literacy of student preparing them for future financial decisions in life.

To conclude, most of the existing research has shown that finance students are more financially literate than those who are not finance students. A limited number of studies have, however, suggested that being a finance student is not a guarantee of being financially literate (Avard et al., 2005). Some researchers, such as Kezar & Yang (2010), have suggested that more effective means of teaching are needed to ensure financial literacy among individuals. It may be that financial education intervention is necessary to effectively improve the financial literacy of students. This is discussed in detail in the following section.

2.4.3.3 Financial Education Intervention

There is a difference between providing information and providing specific education. Financial education is not only about providing knowledge but also providing financial information and skills so as to change behaviour regarding financial choices (Hilgert et al., 2003).

Thus the importance of financial literacy programs should not be left unmentioned. In some countries, including South Africa (Cole et al., 2010), Tanzania (Honohan & King, 2009), India and Indonesia (Cole et al., 2011) respondents believe they would benefit from interventions in financial education. An educational event such as a seminar on financial matters was found to alter financial behaviour or goals (Clark et al., 2003; and Lusardi, 2004). Similarly, Lusardi & Mitchell (2007b) found that those people who had participated in company-based financial education programs were more financially literate. For these reasons, improving financial education intervention has become an important goal of policymakers and businesses alike. Governments fund dozens of financial literacy training programs, aimed at the general population, as well as specific target.

Indonesia's government through the Financial Service Authority (OJK) continue to improve financial literacy by collaborating with various parties. The intended community has been grouped so that the program can run well. Given that community groups based on social strata turned out to have different levels of financial literacy (OJK, 2016). One of the most targeted community groups is the millennials through the launch of Investment Galleries in universities. The

gallery is expected to be an effective educational facility that the public can use to learn everything about investing in the capital market. The facility also offers the public opportunities to conduct simulations of trading shares online and participate in seminars on the theme of the capital market. The effort made by OJK, Indonesian Stock Exchange (IDX), securities companies and university seeks to improve student's financial literacy which going to increase their participation in the stock market.

One of the more extensive studies on high school student education intervention is that by Bruhn et al. (2013). These researchers found that finance-specific education has a positive effect on student financial knowledge and attitude, as well as saving and spending behaviour. At a university in Venda, research showed that a finance-specific course improved financial literacy levels (Oseifuah & Gyekye, 2014). These researchers found that students who had previously taken a money management course had higher financial literacy scores than those who had no past money management exposure. These studies highlight the importance of starting financial education early by introducing this topic as part of the regular education curriculum.

The case for interventions in financial education resulting in improved financial literacy is widely debated. Some researchers have found that financial education does not help improve financial literacy. For example, an extensive study by Fernandes et al. (2014) showed that education intervention explains as little as 0.1 percent of the variance in downstream financial behaviours studied. These researchers also noted that, although financial education may improve

financial literacy in the short term, over time it could be difficult to retrieve and thus make use of this knowledge to aid in financial decisions. Research such as that conducted by Willis (2008) has shown that enhanced education intervention programs are needed to truly improve financial literacy for the consumer.

It can be seen from many studies that financial education intervention improves financial literacy. However, recent research has also shown that over the course of time, financial literacy declines and financial education intervention does not effectively improve financial literacy. In addition, research suggests that enhanced financial education is required to truly improve financial literacy.

2.4.4 Parental Influences

In the case of students, it is relevant to note the role that parents have on the upbringing of their offspring. In particular, parental education, occupation and income impact on students' financial literacy. Other influences include parental teaching, which covers whether students discuss financial issues with their parents. These variables, namely parental education, occupation, income and teaching are discussed in detail below.

2.4.4.1 Parental Education

Parental education level was found to be correlated to financial literacy among students in America (Murphy, 2005). University students who had parents with higher levels of education were found to be more financially literate. Similarly, Tennyson & Nguyen (2001) determined that students' financial literacy scores were positively related to their parents' education level.

More precisely, they found that students whose parents had not completed high school scored significantly more poorly in a financial literacy test.

Some researchers partially support the preceding findings in that respondents were more likely to answer financial literacy questions correctly if their mother had a higher academic level of education (Lusardi et al., 2010). These researchers collected data on education level, but they relied on the mother's education as a proxy of parental education, due to missing observations from father's education level (Lusardi et al., 2010). In Japan, researchers also found mother's academic education level to be associated with financial literacy. However, they did not find the same to be true for father's academic education level (Sekita, 2011).

There is clearly no absolute relationship between parental education and financial literacy. In the case of Indonesia, some studies have found that parent educational background is positively related to financial literacy among Diponegoro University student, while others such as Trisakti University and Padjajaran University student have not shown any correlation for their financial literacy level (Margaretha & Pambudhi, 2015; and Sakinah & Mudakir, 2018).

2.4.4.2 Parental Occupation

Limited studies have been conducted to measure parental occupation on financial literacy of their dependents. Yet existing studies have shown that full-time employment of the father was found to have a positive effect on students' financial literacy. This relationship might be due to the fact that fathers who work full-time have more experience to share with their children. Additionally,

as implied by Dincer & Uysal (2010) within the context of mathematical literacy, it might be the case that fathers who are employed have an opportunity to observe the returns of education in the labour market more closely, and hence place greater emphasis on the financial education of their children.

2.4.4.3 Parental Income

Among the Canadians, Keown (2011) clarifies the relationship between parental income and financial literacy of student. This phenomena is also found among studies in Indonesia (Nidar & Bestari, 2012; and Margaretha & Pambudhi, 2015). The reason behind this is because parents with higher household incomes tend to have higher levels of financial literacy, which allow them to use financial instruments and services more often.

Li (2009) found that people's likelihood of entering the stock market within five years was 30 percent higher if their parents had entered the market in the prior five years. Interestingly, the finding that children are more likely to invest in stocks if the family of origin invested in stocks holds true even among minorities (Chiteji & Stafford, 1999).

Contrary to the previous studies, family income did not turn out to be a significant predictor of financial literacy (Mandell, 2009; and Altintas, 2011). Intuitively, this variable might be expected to affect students' scores because wealthier families equipped their children with more educational resources and may have more interaction with them on investment and saving issues (Jorgensen & Savla, 2010). However, there is also evidence that wealthier

parents have a tendency to shield their children from financial realities so that these students have lower financial literacy (Murphy, 2005; Mandell, 2009).

2.4.4.4 Parental Teaching

Another factor found to be significantly related to financial literacy is that of parental financial discussion (Jorgensen & Savla, 2010). These researchers found that students who discuss financial issues with their parents are more financially literate. Chen & Volpe (2002) revealed that young adults learn as much as 70 percent of their financial literacy knowledge from their parents. Similar results were reported from a study on young adults in Ghana (Chowa & Despard, 2013). Research that supports this view suggests that parents could help increase their children's financial literacy levels by guiding them on financial matters (Lusardi et al., 2010). A study of parental influence on financial literacy of university students found that general education influences only financial knowledge of students (Shim et al., 2010). These researchers found that parental influence on financial attitude and behaviour is greater than the effect of education on financial attitude and behaviour.

Most of the available research appears to support, or at least partially support, the fact that parental socialization is a significant factor in the financial literacy of students. However, there is evidence from a study conducted in Japan that there is no significant difference in the financial literacy score of those who discussed finances with their parents as opposed to those who did not (Sekita, 2011).

2.5 Financial Literacy and Stock Market Participation

There is considerable evidence that financial literacy correlates with stock market participation both at cross-country and individual levels. For example, Guiso & Jappelli (2005) finds that lack of awareness of stocks among Italian households, is primary reason for the limited participation; Kimball & Shumway (2006), using 2005 survey of consumer attitudes administered by University of Michigan, United States find that higher investors' sophistication is associated with higher participation in stocks and with higher percentage of wealth invested in stocks.

The idea is stocks are complex assets, and many households may not know or understand stocks and the working of the stock market (Rooij et al., 2007). Empirical findings showed that financial literacy in the form of knowledge about the stock market is positively correlated with the participation to the stock market (Bertaut & Haliassos, 1995; Basak & Cuoco, 1998; Guiso & Jappelli, 2005; Christiansen et al., 2007; and Rooij et al., 2011).

Bernheim (1995, 1998) and Moore (2003) report that most respondents do not understand financial economics concepts, particularly those relating to bonds, stocks, mutual funds, and the working of compound interest; in focus groups, they also confirmed that people often say they fail to understand loans and interest rates. Thomas & Spataro (2015) analyse data for the European countries and find that financial literacy has a positive and significant effect on stock market participation. It also shows that higher financial literacy is associated with a higher probability to participate in the stock market.

On the individual level most empirical studies are done for developed countries such as the United States, Japan, Sweden and the Netherlands. It has been shown by Lusardi & Mitchell (2007) that there is a positive relationship between financial literacy measures and stock market participation. This argument was supported by Rooij et al. (2007), whose study goes further to develop a sophisticated measure of financial literacy. They used the Dutch DNB Household Survey (DHS) and find a significant positive relationship between advanced financial literacy and participation. They suggested that stocks are too complicated to grasp and that financial literacy people could understand the operating of stock market. The research by Calvet et al. (2007) further strengthened the notion that financial decisions in stock market are highly correlated with financial literacy.

In Sweden, Almenberg & Widmark (2011) show that both numeracy and financial literacy are positively correlated with participation in two important asset markets: stocks and housing. Concerning the east and the west, Shimizutani & Yamada (2018) observe the financial literacy of middle and older generation in Japan and the United States. They found that individuals with higher literacy are more likely to invest in stocks separate from their savings. Concerning the developing countries such as Indonesia, prior studies have investigate the influence of financial literacy on stock market participation. They find that there is a significant influence of financial literacy on stock market participation (Wiwin, 2006; and Hamonangan, 2007).

2.6 Previous Research

The pioneering attempts at measuring financial literacy were done during the early 1990s in the United States. In one of the first studies to examine financial literacy among college students, Danes & Hira (1987) surveyed 323 college students from Iowa State University. The study used a questionnaire of 32 items to measure student knowledge on insurance, credit card and overall general financial management. The mean percentages of correct scores in these areas were 49%, 66%, and 57% respectively. To analyse the factors affecting the scores, they used the linear regression model and group the variable into three models. The first model, which explained the general financial management scores, showed that male students and married students were more financially literate. The second model analysed the correlates of insurance knowledge and showed that male students had higher knowledge than female students and that students with higher income were more knowledgeable. The third model explained the credit card knowledge scores and showed that students who were employed and had higher class ranks scored better.

Another study by Chen & Volpe (1998) examined the personal financial literacy of 924 college students from 13 public and private campuses located in the USA. In addition, they investigated the relationship between the financial literacy level and gender, age, nationality, race, income, work experience, academic discipline, and class rank. The overall mean percentage of correct scores is 52.87%, indicating on average the participants answered only about half of the questions correctly. The results of the logistic regression model indicated that subgroups of academic

discipline, class rank, and years of work experience were significantly different in terms of financial literacy level. Non-business majors, students in the lower class ranks, and those with little work experience had lower levels of financial literacy. Moreover, women were far less literate than men, and foreign students were less knowledgeable than US citizens.

A study of 789 students at University of Southern Queensland which used methodology very similar to that of Chen & Volpe (1998) showed that students in Australia are not skilled, nor knowledgeable, in financial matters (Beal & Delpachitra, 2003). They found that most respondents scored reasonably well for basic financial literacy concepts. Out of the five topics, decision-making skills and knowledge of insurance appeared to be the least developed with weighted average score of 47% and 46%, respectively. Implementing the logistic regression modelling, financial literacy was found to vary with work experience and income, and business students generally outperformed those in other disciplines, irrespective of age.

Following the previous research, Worthington (2006) used logit regression models to predict financial literacy of Australian adults. Results of the study suggest that financial literacy is found to be highest for persons aged between 50 and 60 years, professionals, business and farm owners. On the other hand, financial literacy is lowest for unemployed, females and those from the non-English speaking background.

Lusardi & Mitchell (2006) devised and fielded a module on planning and financial literacy for the 2004 Health and Retirement Study (HRS). This module

measures how individuals make their saving decisions, how they collect the information for making these decisions, and whether they have the financial literacy needed to make such decisions. The results reveal that financial illiteracy is prevalent among older Americans: only 50 percent of the age 50+ respondents could correctly answer two simple questions concerning interest compounding and inflation, and only 33 percent correctly answered these two questions along with the third question about risk diversification. Using the multivariate analysis, the study also concludes that women, minorities, and those without a college degree were mainly at risk of having low financial knowledge. Furthermore, those who present higher financial literacy are more likely to save and invest in complex assets, such as stocks and bonds.

Rooij et al. (2007) sought to find the relationship between financial literacy and stock market participation in the Netherlands. The researchers used data from the 2005 De Nederlandsche Bank (DNB) Household Survey (DHS), containing over 2,000 households. The questionnaire consists of 16 questions which was divided into two parts; basic and advanced financial literacy section was used to collect data from respondents. Using the ordinary least squares method, the study reported evidence of an independent effect of financial literacy on stock market participation: Those who display higher literacy are more likely to participate in the stock market. They find that those who score high on basic literacy are disproportionately more likely to participate in the stock market. The relationship becomes much more stronger when consider the index of advance financial literacy.

Al-Tamimi & Kalli (2009) administered a survey study to assess the financial literacy of 290 individual investors in the UAE, who invested in the local financial markets in the UAE. It revealed that the financial literacy rate for UAE investors was still far from the required level, on average respondents answered 40.7 percent of questions accurately. It was also noticed that their financial literacy level was determined by their income level, education level and workplace activity. The results indicate that there is a significant relationship between financial literacy and investment decision.

Using the module developed for the 2004 HRS, Lusardi et al. (2009) specifically studied the factors affecting financial literacy among young people (23 to 28 years old) using data from the National Longitudinal Survey of Youth Women. The question measured the knowledge of interest rates, inflation, and risk diversification. The mean percentage of correct responses to these questions were 79 percent, 54 percent, and 47 percent respectively. Through a probit model, the authors proved that men were more likely to give a correct response to the question. In addition, results showed that financial literacy among the young is strongly influenced by family background. Interestingly, young adults whose mothers had a college education were more likely to understand inflation. Moreover, those whose parents had stock or retirement savings when they were teenagers were more likely to know about risk diversification. Thus, financial literacy can be said to be passed on from parents to children.

Almenberg & Dreber (2012) explored the link between the gender gap in stock market participation and financial literacy using a probit regression framework.

They obtained data from the 2010 consumer survey conducted by the Swedish Financial Supervisory Authority. The participants comprised a random sample of 1,300 adults in Sweden aged 18-79, approximately representative of the Swedish population. The research attested that controlling for basic financial literacy, a measure of numeracy that does not require knowledge about the stock market, may explain a large part of the gender gap in stock market participation. They also observed that women reported being less risk-taking than men.

Xia et al. (2014) examined the association between financial literacy overconfidence and stock market participation. Financial literacy overconfidence was measured by the difference between an individual's subjective and objective financial literacy scores. Data were from the 2012 China Center for Financial Research gathered from a nationwide online household consumption and finance survey. The researchers divided China into seven geographical regions and chosen cities from each of these regions. In total, 24 cities across China were selected to be included in the survey. In the end, 3,122 valid samples were obtained. Using the probit regression, the results showed that financial literacy overconfidence is positively correlated with stock market participation. On the other hand, under-confidence is negatively correlated to stock market participation.

Thomas & Spataro (2015) analysed the financial literacy, human capital and stock market participation in Europe by conducting a survey of 9 countries categorized into Continental Europe, Scandinavian countries and Southern European countries based on geographical proximity. Implementing both an OLS and a probit model, they found out that higher financial literacy is associated with

a higher probability to participate in the stock market. Additionally, human capital (schooling years) and the effectiveness of education (student-teacher ratio) are positively associated with stock market participation.

Lantara & Kartini (2015) are among the first to investigate the financial literacy among Indonesian university student. They examined 348 respondents from Gajah Mada University using the questionnaire of Chen & Volpe (1998) focusing mainly on personal finance. The results indicate that the financial literacy level in Indonesia tends to be lower compared to that found in the USA, on average 45.39 percent of the respondents answered the questions correctly. It was also found that male students, students with economics and business majors, those with a higher income, and longer working experience had a higher financial literacy rate. Using the probit and tobit regression tests, the study found that education levels and academic disciplines are positively related with the financial literacy rate.

More recently, a study was carried out by Hamidah et al. (2019) that analyse the level of financial literacy and capital market literacy among 394 bachelor degree student in the capital city of Indonesia. The study was adopted from the previous study done by Rooij et al. (2007). In this study, the descriptive statistical research method and the analysis of variance test were used to describe the level of financial literacy. The findings show that on average, the financial literacy level of the student is at medium level. The student scores 61% and 53% for basic and advanced literacy questions, respectively.

2.7 Hypothesis Development

Findings from the 2014 S&P Global FinLit Survey, which includes data from 143 countries, showed that only 33% of adults worldwide are financially literate. National Survey on Financial Literacy and Inclusion (SNLIK) of Indonesia indicated that only 29 out of 100 Indonesian is financially literate. Considering the student population, existing studies concluded that college student has low level of financial literacy (Bakken, 1967; Langreher, 1979; Chen & Volpe, 1996, 1998; Beal & Delpachitra, 2003; Anthens, 2004; Murphy, 2005; and Godfrey, 2006), no exception also including Indonesian college student (Lantara & Kartini, 2015; Ulfatun et al., 2016; and Hamidah et al., 2019).

H_1: The financial literacy of UAJY and STIE YKPN student is low.

When talking about the relationship between financial literacy and gender, researchers discovered that female population, among professional or student, are less financially literate (Chen & Volpe, 2002; Al-Tamimi and Kalli, 2009; Almenberg & Säve-Söderbergh, 2011; and Lusardi & Mitchell, 2011a, 2011b). Numerous studies argue that men are more likely to perform better on various literacy tests (Mandell, 2008; Cole et al., 2008; Worthington, 2004; Chen & Volpe, 1998; Lusardi & Mitchell, 2006, 2008; Almenberg &Säve-Söderbergh, 2011), Monticone, 2009; Chen et. al., 1996; and Goldsmith & Goldsmith, 1997).

H_2: There is a difference between the levels of financial literacy of college student based on their gender.

It is argued that with time, many people learn more about financial concepts. It was the case when comparing the young and the old. It was found that younger individuals had lower financial literacy (Goldsmith & Goldsmith, 1997; Chen & Volpe, 1998, 2002; and Altintas, 2011) as older individuals had more time to accumulate financial knowledge through courses and their own or other's experience (Chen & Volpe, 2002).

H_3: There is a difference between the levels of financial literacy of college student based on their age.

Chen & Volpe (1998) showed that student from a different year of study has different level of financial literacy. Generally, junior and senior students are more financially literate than those from the lower ranks as they are taking more advanced courses and have been exposed to the concept long enough. Thus, student who is more senior in class rank has earned higher scores in surveys. These findings are consistent with the following studies (Goldsmith & Goldsmith, 1997; Chen & Volpe, 2002; and Altintas, 2011).

H_4: There is a difference between the levels of financial literacy of college student based on their academic year.

There is considerable evidence that people who studied business are more likely to be financially literate than non-business majors. This argument was supported by the research of Goldsmith et al. (1997), Lusardi & Mitchell (2007), Almenberg & Säve-Söderbergh (2011), Beal & Delpachitra (2003), Chen & Volpe (2002) and

Rooij et al. (2008). Whereas, Amadeu (2009) points out that students majoring in Economics and Accounting had higher financial literacy level.

H_5: There is a difference between the levels of financial literacy of college student based on their major of study.

Barboza et al. (2014) tested the effect of academic ability (as measured by GPA) on college students using a set of three questions. Empirical evidence from the sample indicated that those holding a high GPA demonstrate a significantly much higher level of financial literacy than otherwise. As echoed in Smith & Barboza (2013), the high relationship observed between financial literacy and GPA conforms, where students with a higher GPA have had more opportunities to be academically prepared.

H_6: There is a difference between the levels of financial literacy of college student based on their GPA.

Previous literature showed a correlation between financial literacy scores and parents education. A university student who had parent with higher levels of education were found to be more financially literate (Tennyson & Nguyen, 2001; Murphy, 2005; Lusardi et al., 2010). Murphy (2005) found that the average financial literacy score if neither parent completed high school, was 13% lower than the average score for those who had at least one parent who was a high school graduate.

H_7: There is a difference between the levels of financial literacy of college student based on their parent education.

Dincer & Uysal (2010) pointed out that the full-time employment of the father was found to have a positive effect on students' financial literacy. This relationship might be due to the fact that fathers who work full-time have more experience to share with their children. Meanwhile, student whose parent who are a professionals or working in a senior occupation are significantly more financially literate at a sophisticated level (Wingfield, 2016).

H_8: There is a difference between the levels of financial literacy of college student based on their parent occupation.

Empirical findings showed that there is a relationship between parental income and financial literacy of student (Keown, 2011; Nidar & Bestari, 2012; Margaretha & Pambudhi, 2015). It is said that parents with higher household income are able to use financial instruments and services more often. Thus, wealthier families are able to provide their children with more education resources (Jorgensen & Savla, 2010).

H_9: There is a difference between the levels of financial literacy of college student based on their parent income.

Lusardi et al. (2010) indicated that parents could help increase their children's financial literacy levels by guiding them on financial matters. Shim et al. (2009)

analyse the impact of financial socialisation and find that among the three major financial socialisation channels such as parents, school and work, parental teaching has the largest influence on financial literacy. This is also supported by Jorgensen & Savla (2010) and Hanson & Olson (2018) who explore the relationship among student and find that those who discuss financial issues with their parents are more financially literate. Yet Clarke et al. (2005) highlight that many parents do not communicate basic financial knowledge and skills for their children.

H_{10}: There is a difference between the levels of financial literacy of college student based on where students learn their money management skills.

2.8 Conceptual Framework

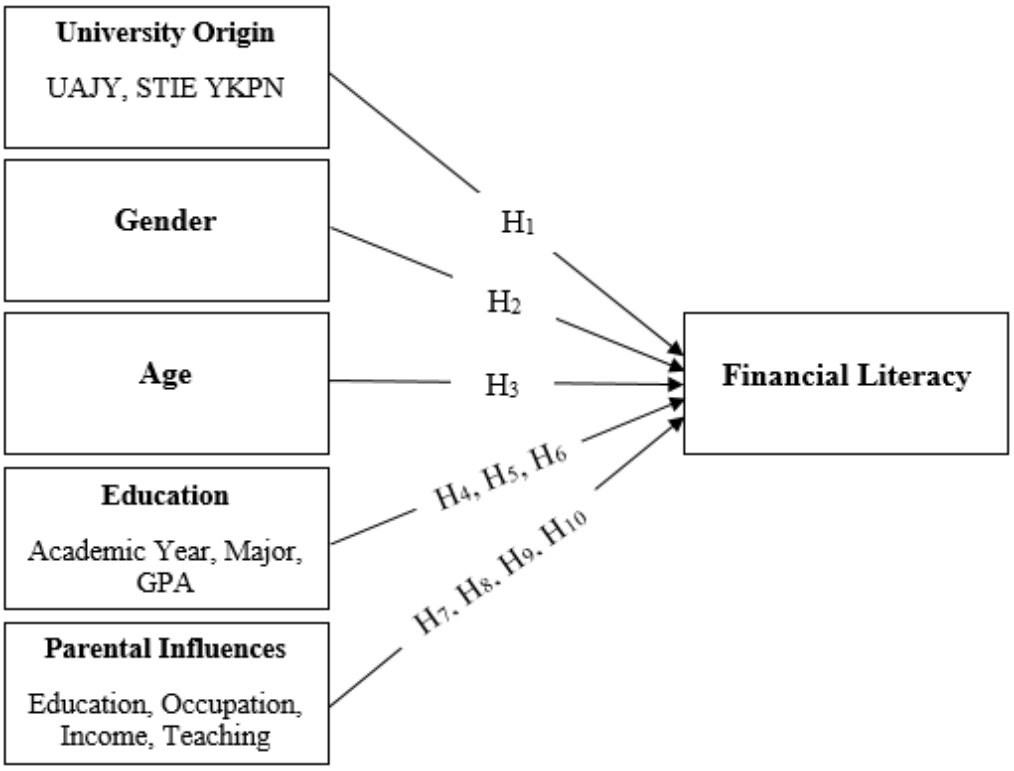

Figure 2.1
Conceptual Framework