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MANAGEMENT | RESEARCH ARTICLE

How do demographic and socioeconomic factors affect financial literacy and its variables?

Vera Intanie Dewi^{1*}

Abstract: The purpose of this study was to investigate various relationships between demographic and socioeconomic factors and financial literacy variables. Instead of using two or three variables as commonly adopted in the literature, this study employed multivariable analysis to investigate financial literacy. The sample of this research was 255 faculty members on Java Island, Indonesia. This study was a discrete moderator test; therefore, it employed a multigroup analysis (MGA) via the partial least squares of structural equations modeling (PLS-SEM) to determine which group of demographics and socioeconomic factors influencing the relationship of the financial literacy variables. This study revealed that demographic factors of sex, age, and specialization affected different relationship of financial skills, knowledge, capability, awareness, experience, goal, and financial decision. This study also provided empirical evidence that the socioeconomic factor of consumption spending affected the different relationships between financial awareness and skills. The results proved that demographic and socioeconomic factors enhanced financial literacy. Assessing financial literacy levels in different demographic and socioeconomic factors, as a key factor in accomplishing a successful national strategy for financial education, allows policymakers to identify gaps and design appropriate responses. This result emphasizes that strengthening awareness and

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PUBLIC INTEREST STATEMENT

Financial literacy is a crucial basis for financial well-being. Low-financially literate level has an impact on the risk of using financial products and the preferences for investing funds in inappropriate products, and factors trapping them in illegal investments. Financial literacy is compulsory to evaluate and decide the best financial choices for their prosperity. Assessing financial literacy levels in different demographic and socioeconomic factors, as a key factor in accomplishing a successful national strategy for designing an appropriate financial education program. Sex, Specialization, age, socioeconomic are affecting the inter-relationship between financial literacy and its variables. Improving financial literacy has important implications for welfare. This paper is a full academic article that suggested that empirical studies related of financial literacy in developing countries regarding Demographic and Socio-Economic Factors. The paper would be of interest to readers in the areas of financial institution, behavioral finance, personal finance, and managerial of finance

experience as future orientations could improve financial literacy levels in developing countries.

Subjects: Gender Studies - Soc Sci; Testing, Measurement and Assessment; Research Methods in Management

Keywords: demographic; multigroup analysis; financial literacy; financial behavior

Subject classification codes: G23; G40; G53

1. Introduction

Financial literacy has become a major issue worldwide and significantly developed in recent years. The financial market provides a diverse range of products in a digital and financial inclusion that has been increased. Amidst the rapidly growing financial innovation, the diverse choices of digital financial products require consumers to be careful about choosing financial products. Studies investigating developed and developing countries show that a low-financially literate level has an impact on the risk of using financial products and people's lives in the present and future. This includes the impacts on people's strategies to set their financial planning and goals, their preference for investing funds in inappropriate products, and factors trapping them in illegal investments. Financial literacy is compulsory to evaluate and decide the best financial choices for their prosperity.

Financial literacy is a crucial basis for financial well-being, but empirical gaps show significant differences caused by sex, age, socioeconomic, and other demographic factors in developed and developing countries. The age factor denotes that adults have low financial literacy (OECD, 2020). Men have greater financial knowledge and higher financial well-being scores than women. Meanwhile, the age factor shows that young people have lower financial literacy, financial attitude scores, and financial knowledge as well as show less prudent financial behavior than mature adults.

Several literature studies have examined demographic and socioeconomic factors affecting financial literacy levels (Bhushan & Medury, 2013; Garg & Singh, 2018; Cucinelli et al., 2019; Kadoya and Khan, 2020). Previous studies prove that sex affects financial literacy (Bhushan & Medury, 2013; Garg & Singh, 2018; Bawre & Kar, 2019; Klapper & Lusardi, 2020; Kadoya and Khan, 2020). More recent studies by Jeyaram and Mustapha (2015), Swiecka et al. (2020), and Klapper and Lusardi (2020); Kadoya and Khan (2020); Rink et al. (2021) show that women have lower financial literacy than men. Moreover, financial literacy levels less affect the knowledge of women than that of males. This sex gap is found in both economically developed and developing societies. A survey by the S&P Global Finlit Survey in 2015 discovered that 35% of men and 30% of women worldwide are financially literate. Women of various ages, countries, education levels, and incomes have lower financial skills than men (Klapper et al., 2015). However, Ibrahim et al. (2016) argue that sex does not affect financial literacy. They prove sex does not distinguish financial awareness because both sexes show equal understanding of the financial awareness concept. Furthermore, Kim and Mountain (2019) assert that the two sexes do not show different financial knowledge.

Financial literacy levels differ in the age factor of economically developed and developing groups (Klapper et al., 2015). Young and old people have a low level of financial literacy (Bajo et al., 2015; Bawre & Kar, 2019). However, Garg and Singh (2018) found that youth worldwide have a low financial literacy level. In contrast, Bhushan and Medury (2013) as well as Kim and Mountain (2019) reveal that financial literacy is not affected by age.

Ibrahim et al. (2016) investigated the effects of specialization on financial awareness and discovered a significant mean difference of the specializations. Faculty members from the finance and marketing department are more financially aware than those from the office management department.

Previous studies have also examined the relationship between financial literacy and income. Bajo et al. (2015), Garg and Singh (2018), Bawre and Kar (2019), and Klapper et al. (2015), and Bhushan and Medury (2013) prove that socioeconomic status affects the financial literacy level. In contrast, Kim and Mountain (2019) found financial knowledge does not affect someone's income.

Studies examining financial literacy and its variables have developed dynamically. Financial literacy has been defined and measured by adopting a broad concept (Goyal & Kumar, 2021). Financial literacy focuses on the dimensions of financial behavior, attitude, and financial numeracy skills (Bawre & Kar, 2019). Meanwhile, Garg and Singh (2018), Cucinelli et al. (2019), and Dogra et al. (2021) focused on investigating the dimensions of financial attitude, financial knowledge, and financial behavior. Dewi et al. (2020) argue that financial literacy is measured using eight variables: financial awareness, experiences, skills, knowledge, capability, goal, decision, and behavior. Hendrawaty et al. (2020) examined the role of demographic variables, such as age, sex, income level, and marital status to moderate the influence of financial literacy levels on risk tolerance levels.

This research contributes to the understanding on the relationship of financial literacy and its variables with demographic factors i.e. sex, age, specialization, and socioeconomic status. Financial literacy variables focus on eight dimensions which are awareness, experience, knowledge, skill, capability, goals, behavior, and financial decision (Dewi et al., 2020). This study shows that sex differences influence the relationship between financial skills and financial capability, as well as the inter-relationship between knowledge and financial capability. Moreover, this research also emphasizes that age strengthens the inter-relationship between financial literacy variables. This research reveals that specialization differences influence the relationship of financial awareness, experience, and knowledge. This study also demonstrates that different consumption spending has an impact on the relationship between financial awareness and financial skills. The better an individual's financial situation, the better he manages his finances.

Our approach differed from the previous studies because we employed multiple variables of financial literacy to investigate the effects of demographic and socioeconomic factors on the relationship with financial literacy variables. This paper employed the financial literacy model by Dewi et al. (2020) and used eight variables to estimate the nexus of financial literacy variables as well as demographic and socioeconomic factors to moderate the variables. The difference in financial literacy level was influenced by demographic factors of sex, specialization, age, and outcome. This paper was conducted to develop a financial literacy model that estimates demographic and socioeconomic factors.

This study aimed to investigate the effects of financial literacy differences on the demographic and socioeconomic subgroups to recommend a suitable strategy for financial literacy for the population. Previous studies had proposed using two or three variables to measure a financial literacy level. However, we employed multivariable analysis to investigate financial literacy because demographic and socioeconomic factors strengthened the nexus in multi variables of financial literacy.

The paper is divided into five sections. The next section would identify the variables and describe the development of the conceptual model of eight essential factors of financial literacy as well as demographic and socioeconomic factors to moderate the variables with discrete data. Meanwhile, the third section would describe the method, sampling technique, and data collection. The fourth section would discuss the results of the proposed model, prove the hypotheses, and present the findings. Finally, the fifth section would present our conclusions, limitations of the current study, and directions for future research.

2. Literature review

2.1. Financial literacy and its determinants

Previous studies had employed a multidimensional approach to define and measure financial literacy as a combination of one, two, or three variables. The Organization for Economic Cooperation and Development (OECD) or the International Network on Financial Education (INFE) defines financial literacy as “a combination of awareness, knowledge, skill, attitude, and behavior to make financial decisions and ultimately achieve an individual’s financial wellbeing” (Hung et al., 2012). Hung et al. (2009) propose the conceptualization of financial literacy as mutual relationships of financial knowledge, skills, and behavior. Meanwhile, Atkinson and Messy (2012) propose financial literacy as a combination of financial knowledge, behavior, and attitude. OECD (2020) applied the elements of knowledge, behavior, and attitude to survey the financial literacy of adults in Asian, European, and Latin American countries. Zokaityte (2017) states that financial literacy measures several indicators of consumers’ financial knowledge, skills, and attitudes to money. Dewi et al. (2020) define financial literacy as an interrelationship of awareness, experience, knowledge, skills, capability, goal, and behavior to make financial decisions. Moreover, previous studies by Hung et al. (2009), Atkinson and Messy (2012), Frijns et al. (2014), Lusardi and Mitchell (2014), and Grohmann et al. (2018), and Mountain et al. (2020), and Dewi et al. (2020) investigated the relationship between each variable and financial literacy.

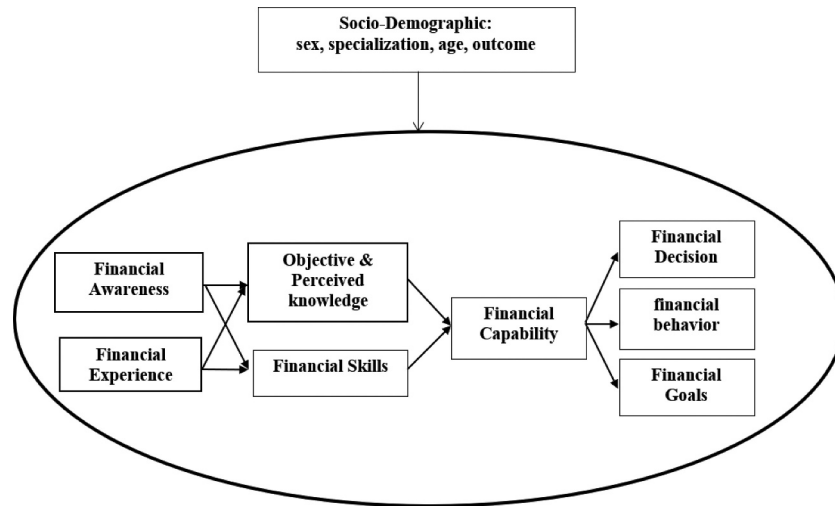
2.2. Demographic and socioeconomic factors

Yusuf et al. (2014) define a demographic factor as the population characteristics, comprising of sex, marital status, living arrangements and household composition, language, ethnic background, health and disability, education and training, employment status and occupation, income and household consumption, and population densities and urban and rural residence. Chaudhry et al. (2009) mention several socioeconomic characteristics, such as health, education, shelter, employment, income, spending, household property, and assets. Meanwhile, the demographic characteristics include household sizes and structures, age, and sex.

Although socioeconomic and demographic factors are frequently employed to describe the respondents’ profiles, several previous studies employed these variables to investigate the nexus between two or more variables. Nidar and Bestari (2012) revealed that financial literacy was affected by two main factors: external and internal factors. External factors refer to economic environment conditions, such as inflation and interest rates. Meanwhile, internal factors refer to demographic elements, such as age, sex, race, education, and socioeconomic factors (occupation and income). The effects of demographic factors on financial literacy have been investigated by numerous studies (Chen & Volpe, 1998, 2002; Klapper & Lusardi, 2020; Lusardi & Mitchell, 2008). Klapper et al. (2015) state that demographic characteristics, such as sex, education level, age, and socioeconomic income, show different financial literacy levels. This statement is consistent with Yakoboski et al. (2019) who found that demographic groups had various financial literacy levels; men and adults have high levels of financial literacy. Finally, Nanziri and Leibbrandt (2018) proved that the differences in financial literacy were correlated with demographic and economic characteristics.

Several previous studies revealed that sex has significantly affected different levels of financial literacy, and they proved that women were less financially literate than men (Bucher-Koenen et al., 2021; Hospido et al., 2021; Klapper & Lusardi, 2020; Kadoya and Khan, 2020; Minhas, 2017; Rink et al., 2021; Swiecka et al., 2020). Meanwhile, Lusardi and Mitchell (2014); Henager and Cude (2016), and Kadoya & Khan (2020) found that the demographic factor of age had a significant effect on financial literacy. Sarigül (2014); Dalkilic and Kirkbesoglu (2015), and Ibrahim et al. (2016) proved that specialization had a significant impact on financial literacy. Moreover Anbar and Melek (2010), Yıldırım et al. (2017), Nusron et al. (2018), and Garg and Singh (2018), and Cucinelli et al. (2019) proved that economic factors had a significant effect on financial literacy. Research on the perception of population homogeneity, in which the analyzed data were from a single population,

Figure 1. Conceptual model.



is considered no longer realistic because individuals tend to be heterogeneous in perceiving a latent construct (Sarstedt et al., 2011). Therefore, the researcher was interested in analyzing the groups' influence on the structural model relationship. According to Sarstedt et al. (2011), the effects of these groups are compared by considering categorical moderator variables. This model is called a moderator modeling framework (Sarstedt et al., 2011). Using the financial literacy model proposed by Dewi et al. (2020), this paper employed socio-demographic variables to moderate variables with discrete data. Based on the previous studies, the conceptual model of this research is presented in Figure 1.

Meanwhile, the hypothesis of this research is as follows.

H1: Demographic factors of age, sex, outcome, and specialization differentially influenced financial literacy and its variables.

3. Method

3.1. Respondents

This study involved 255 faculty members of a university on Java Island, Indonesia. The minimum sample size to meet the research criteria is 5–8 times of the number of indicators (Hair et al., 2017). Therefore, 38 indicators required the minimum sample size of 190–304 respondents. Since this study employed 255 samples, it met the minimum sample requirement. The data of this research were collected using a questionnaire, which was collected by a face-to-face interview and self-administrative online survey.

The sample distribution showed that the respondents' sex was 46% of males and 54% of females. The distribution of specialization was 53% of economics and business studies and 47% of non-economics and business studies. Most respondents' spending ranged from IDR5.01 million to IDR10 million (39%). Meanwhile, most respondents were categorized in the non-millennial generation (68%).

3.2. Data analysis

This study was a discrete moderator test; therefore, a multigroup analysis (MGA) via partial least squares structural equations modeling (PLS-SEM) as moderation across multiple relationships was

employed to estimate the relationship between demographic factors and socioeconomic factors as moderation variables and explore the structural relationship of financial literacy variables. Cheah et al. (2020) state that “*The multigroup Analysis (MGA) uses partial least squares path modeling (PLSPM) as an efficient approach to evaluate moderation across multiple relationships in a research model.*” Meanwhile, Matthews (2017) argues that the MGA via PLS-SEM is an effective way to evaluate moderation across multiple relationships.

Each constructed latent variable employed relevant indicators as shown in Appendix 1. The Confirmatory Factor Analysis (CFA)-Kaiser-Meyer Olkin (KMO), the Bartlett Test, and the Communalities and Rotated Component Matrix were employed to test the significance of the measured variables to represent the latent variables. The measured variables represented the latent variables quite well, as shown in Appendix 2–4. Regarding the measures for financial literacy, Dewi et al. (2020) proposed eight variables of financial literacy: financial experience, awareness, skills, knowledge, capability, goals, decision, and behavior. Meanwhile, the demographic factors were measured by three indicators: sex, age, and specialization. Socioeconomic status in this research referred to the estimated consumption spending. The true or false questions were used to assess financial knowledge. The correct answers were calculated as the mean percentage of correct scores and then classified into several categories, from a relatively high level of knowledge to a relatively low level of knowledge (Danes & Hira, 1987; Volpe et al., 1996). Meanwhile, the scores range from 1 as very low and 5 as very high. The other latent variables of financial awareness, financial experience, financial skills, financial capability, financial behavior, financial goals, and financial decision have six indicators, five indicators, five indicators, four indicators, four indicators, three indicators, and five indicators, respectively. The variable measurement used a Likert scale of 1 (strongly disagree) to 5 (strongly agree). The discrete moderator variables constituted sex, age, specialization, and consumption spending and had a nominal scale of using a dummy coding with two values: zero and one. The variable moderator of sex was categorized into man = 1 and women = 0. The variable of age was categorized into millennial = 1 and non-millennial = 0. Specialization was categorized into economic and business = 1 and non-economic and business = 0. Finally, consumption spending was categorized into middle = 1 and upper-middle = 0. The definition of age category refers to Lee et al. (2019) and Ng et al. (2010). Meanwhile, the categorized consumption spending referred to the Asia Development Bank (ADB) in Tamara et al. (2019). ADB defines the middle class based on daily per-capita expenditure, which is between \$2—\$20 and divides the class into three groups: (1) a lower-middle class with \$2–\$4 expenditure, (2) a middle class with \$4—\$10 expenditure, and (3) an upper-middle class with the expenditure of \$11—\$20. Based on these definitions, this research categorized the consumption spending into two groups: middle and upper-middle classes.

3.3. Results and discussion

This study found that sex, age, specialization, and outcome significantly affected multiple relationships of financial literacy variables. Sex differences significantly influenced the relationship between financial skills and financial capability as well as the inter-relationship between knowledge and financial capability. The influence of financial skills on financial capability was more robust in the sub-group of females (path coefficients = 0.460) than in the sub-group of males (path coefficients = 0.186). The result denoted that the males were less capable of managing money than women. Women were more skilled in keeping bills and receipts in an easily found place, evaluating debts, and regularly saving money than men. The previous studies stated that men and women had different psychological conditions, emotional terms, and financial management. This study proved that demographics affected financial literacy. Women were proven to be good financial managers and were considered more reliable in managing finances. One of the reasons for women’s better money management than men’s was because women more regularly and carefully saved their money as well as carefully and thoroughly managed finances. These four things were important skills in preparing budgets and managing money. Conversely, when it comes to the relationship between knowledge and financial capability, the sub-group of males (path coefficients = 0.625) had a more decisive influence on the relationship between these two

Table 1. The multigroup demographic moderation effect analysis of sex

<i>Path Diagram</i>	<i>Path Coef.</i>		<i>Path Coef-diff.</i>	<i>P-Values</i>	<i>Significance Test</i>
	M	W	(M-W)	(M-W)	
<i>Financial Skill -> Financial Capability</i>	0.186	0.460	0.274	0.987	Yes
<i>Objective and Perceived Knowledge -> Financial Capability</i>	0.625	0.366	0.258	0.012	Yes

Source: MGA SEM-PLS Outputs

Rules of thumb: p-value < 0.05 and p-value > 0.95 = significance

Note: M = Men; W = Women

construct variables than the sub-group of females (path coefficients = 0.366) (see, Table 1). Moreover, this study discovered that men had a higher financial knowledge score than women. The results proved that males were more knowledgeable than females, but females were more skillful than men. Sex significantly strengthened the relationship between financial skills and knowledge. This result agrees with the research by Minhas (2017), Swiecka et al. (2020), and Klapper and Lusardi (2020); Kadoya and Khan (2020); Hospido et al. (2021); Bucher-Koenen et al. (2021); Rink et al. (2021).

This study revealed that the expertise background in the field of economics and non-economics significantly affected the relationship of financial literacy variables. Specialization differences significantly influenced the relationship of financial awareness, experience, and knowledge. The financial awareness of knowledge was more significantly influenced by the non-economics and business subgroup (path coefficients = 0.642) than the economics and business sub-group (path coefficients = 0.336). Conversely, the relationship between financial experience and knowledge of

Table 2. The multigroup demographic moderation effect analysis of specialization

<i>Path Diagram</i>	<i>Path Coef</i>		<i>Path Coef-diff</i>	<i>p-value</i>	<i>Significance Test</i>
	FEB	Non- FEB	(FEB-Non-FEB)	(FEB-Non-FEB)	
Financial Awareness -> Objectives and Perceived Knowledge	0.336	0.642	0.307	0.999	Yes
Financial Capability -> Financial Behavior	0.655	0.792	0.137	0.968	Yes
Financial Experience -> Objectives and Perceived Knowledge	0.492	0.287	0.205	0.022	Yes

Source: MGA SEM-PLS Outputs

Rules of thumb: p-value < 0.05 and the p-value > 0.9 = significant

Note: FEB = Members of the Faculty of Economics and Business; Non-FEB = Members of the Faculty of Non-Economics and Business Faculty

Table 3. The multigroup demographic moderation effect analysis of age

<i>Path Diagram</i>	Path Coef.	Path Coef.	Path Coef-diff.	P-Values	Significance Test
	(Mil)	(Non-Mil)	(Mil-Non)	(Mil-Non)	
<i>Financial Capability -> Financial Decision</i>	0.752	0.526	0.226	0.008	Yes
<i>Financial Capability -> Financial Goal</i>	0.714	0.434	0.281	0.006	Yes

Source: MGA SEM-PLS Output

Rule of thumb: p-value < 0.05 and p-value > 0.95 = significant

Note: Mil = Millennial (Y Generation); Non-Mil = Non-Millennial (X and Z Generation)

the economics and business subgroup (path coefficients = 0.492) more substantially influenced the relationship of these variables than that of the non-economics and business subgroup (path coefficients = 0.287) (see, Table 2). This result is consistent with the research by Kirkbeşoğlu et al. (2015) and Ibrahim et al. (2016). This study proved that the demographic factor of economics and business specialization has strongly moderated the relationship between financial experience, objectives, and perceived knowledge; and vice versa. The category of specialization in the non-economics and business subgroup strongly mediated the relationship between financial awareness and knowledge.

The age maturity level was proven to affect the relationship of financial literacy aspects. This study found that the age level affected the samples' ability to make decisions and financial goals. The age significantly strengthened the relationship between financial capability and financial decision-making followed by the relationship between financial capability and financial goals. The effects of financial capability on financial decisions were stronger in the sub-group of millennials (path coefficients = 0.753) than in the sub-group of non-millennials (path coefficients = 0.526). Likewise, the relationship between financial capability and financial goals in the millennial subgroup (path coefficients = 0.714) was stronger than in the sub-group of non-millennials (path coefficients = 0.434) (see, Table 3). This result is not consistent with that of Kadoya and Khan (2020). The Indonesian Central Bureau of Statistics (2021) reported that millennials contribute approximately 25% of Indonesia's productive population. This makes millennials a motor of Indonesia's economic growth. However, in terms of spending habits, millennials represented a large proportion of the overall consumer market. They preferred spending money on lifestyle rather than saving in banks. Therefore, their attitudes toward money and investment differ from previous generations. The lesson learned from the pandemic crisis of Covid-19 is that we must face the most uncertain economic future. Therefore, millennials should prepare their financial capability to set goals and make decisions.

Table 4. The multigroup demographic moderation effect analysis of socioeconomic factors

<i>Path Diagram</i>	Path Coef.	Path Coef.	Path Coef-diff,	P-Values	Significance Test
	MM	UM	(MM-UP)	(MM-UP)	
<i>Financial Awareness -> Financial Skill</i>	0.399	0.579	0.180	0.953	Yes

Source: MGA SEM-PLS Output

Rule of thumb: p-value < 0.05 and p-value > 0.95 = significant

Note: MM = Middle-Middle; UP = Upper-Middle

The socioeconomic level affected the interrelationships of financial literacy aspects. This study found that the better an individual's economic condition, the more skilled he was in managing his finances. Different consumption spending significantly influenced the relationship between financial awareness and financial skills. The middle and upper sub-groups received more significant effects of financial awareness (path coefficients = 0.579) than the middle sub-group (path coefficients = 0.399) (see, Table 4.). Referring to the World Bank (2019), Indonesia's population consists of a more middle class than an upper class. The consumption of the middle class represents nearly half of all household consumption of Indonesians and is mostly spent on entertainment. Despite being economically secure, members of the middle class were not that wealthy. It is important to notice that the majority population in Indonesia is the middle class whose financial knowledge and skills must be improved through education, such as seminars as well as social and digital media to create financial awareness of products and services and manage their money.

This paper proved that the demographic factors, such as age, sex, outcome, and specialization, differently influenced financial literacy and its variables. Therefore, the hypothesis was accepted.

4. Conclusion

This study emphasized the influence of demographic and socioeconomic factors, such as sex, age, specialization, and consumption spending, on financial literacy. Four major points can be withdrawn from this study.

Sex differences demonstrably affect the relationship between skills and knowledge as well as financial capability. Skills and knowledge are important to gather trusted information used to decide whether or not to buy financial products and services. Moreover, the capability of solving financial issues is essential because it is influenced by knowledge and skills. This capability can be improved through education, practices, and exercises. These studies found that men achieved lower scores of financial skills than females, but males were more knowledgeable than females.

Different specialization significantly affects the relationship of awareness, financial experience, and financial knowledge. Experiencing using financial products and services significantly enriched the knowledge of respondents majoring in economics and business because their knowledge was influenced by their experience. On the other hand, the financial knowledge of respondents not majoring in economics and business was influenced by their financial awareness.

Different ages significantly influence the relationship between the capability of achieving goals and making decisions. The financial capability of the millennial generation strengthens their financial goals and helps them make proper financial decisions. Different consumption spending significantly influences the relationship between financial awareness and skills. The results prove that different sex, age, specialization, and consumption spending affect the interrelationship of financial literacy variables. The financial literacy assessment was affected by different sex, age, specialization, and consumption spending; thus, policymakers could identify gaps and design appropriate responses. Meanwhile, strengthening the population's awareness and experience with knowledge and skills as a future orientation can improve financial literacy levels in developing countries. This study used the convenience random sampling method or the non-probability sampling method to obtain the easily accessible research subjects. Therefore, the results and conclusions of this study only apply to the sample studied. Further research should involve more heterogeneous samples.

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