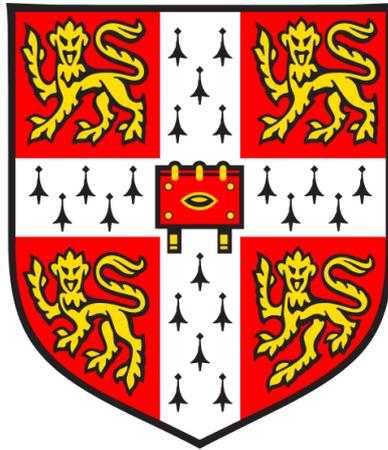


**EXPLORING THE IMPORTANCE OF  
FINANCIAL LITERACY WITHIN  
THE CAPABILITY APPROACH FRAMEWORK**



ARIEF WIBISONO LUBIS

Ph.D. 2018

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# **Exploring the importance of financial literacy within the Capability Approach framework**

*Arief Wibisono Lubis*

This dissertation aims to address the importance of financial literacy within the capability approach framework in the context of microfinance institutions' clients in Indonesia, by raising four main issues. The first touches on financial capability and specifically focuses on its conceptualisation, predictors, and relationship with quality of life. A participatory method was employed to understand whether financial literacy is viewed as an important element of financial capability. An index of financial capability was built to investigate factors predicting financial capability and the relationship between financial capability and quality of life. The results suggest that socio-demographic discrepancies in financial capability exist, and financial capability is relevant for the improvement of quality of life.

The remaining three issues centre on the instrumental value of financial literacy. In the second part, it is proposed that financial literacy is a relevant conversion factor. Within the capability approach literature itself, there is a lack of empirical discussion on conversion factors. It can be concluded that financial literacy is associated positively with conversion rate efficiency.

The third research topic examined is the role of financial literacy in household financial decision-making authority. Previous studies have used household decision-making authority as a reflection of agency, which is an important building block of the capability approach. This thesis focuses on financial decision making, which is often perceived as “difficult”, “boring”, and “full of uncertainties”. It is suggested that the relationship between financial literacy and household financial decision-making authority is complex and contingent upon various factors.

The role of financial literacy in the relationship between financial decision-making authority and subjective well-being is the last topic investigated in this dissertation. While decision-making authority has been argued as a reflection of human agency and source of power within households, it can also be perceived as a burden. These two interpretations of authority lead to an unclear relationship between household financial decision-making authority and subjective well-being. While a negative relationship between household financial decision-making authority and subjective well-being can be found among those with low levels of financial literacy, a similar correlation is absent among those who score high in financial literacy. This suggests that skills are important for people to value agency.

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## **PREFACE**

This dissertation is the result of my own work and includes nothing which is the outcome of work done in collaboration except as declared in the Preface and specified in the text.

It is not substantially the same as any that I have submitted, or, is being concurrently submitted for a degree or diploma or other qualification at the University of Cambridge or any other University or similar institution except as declared in the Preface and specified in the text. I further state that no substantial part of my dissertation has already been submitted, or, is being concurrently submitted for any such degree, diploma or other qualification at the University of Cambridge or any other University or similar institution except as declared in the Preface and specified in the text.

It does not exceed the prescribed word limit for the relevant Degree Committee.

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# TABLE OF CONTENTS

CHAPTER 1. INTRODUCTION.....	1
1.1. Research aims, questions, and contributions.....	1
1.2. Dissertation’s structure.....	7
CHAPTER 2. CONTEXTUAL SETTING.....	9
2.1. Introduction.....	9
2.2. General macroeconomic and development indicators.....	9
2.3. Financial sector’s indicators.....	11
2.4. MSMEs and microfinance in Indonesia.....	16
2.5. Concluding remarks.....	22
CHAPTER 3. CONCEPTUAL DEFINITIONS AND LITERATURE REVIEW.....	23
3.1. Introduction.....	23
3.2. The capability approach.....	24
3.2.1. An overview of the capability approach.....	24
3.2.2. Conversion factor and conversion rate.....	27
3.3. Subjective well-being.....	29
3.4. Household financial decision making.....	33
3.4.1. From unitary to collective hypothesis.....	33
3.4.1.1. Unitary model.....	33
3.4.1.2. Collective bargaining model.....	34
3.4.2. The importance of decision-making authority.....	37
3.4.2.1. Intrinsic value: Decision-making authority as a reflection of human’s agency and empowerment.....	37
3.4.2.2. Instrumental value: The impact of household decision-making authority.....	38
3.4.3. Typology of household decision making.....	42
3.4.3.1. Typology based on income combination and allocation.....	43
3.4.3.2. Typology based on decision makers within households.....	44
3.4.4. Factors predicting household financial decision making.....	46
3.4.4.1. Becker’s comparative advantage.....	46
3.4.4.2. Evolutionary, social constructionist, and biosocial theories of gender.....	47
3.4.4.3. Resources theory of family power.....	48
3.4.4.4. Factors affecting household decision-making authority: Empirical results.....	49
3.4.5. Skills for financial decision making.....	52
3.5. Financial literacy.....	54
3.5.1. A growing concern on financial literacy.....	54
3.5.2. The impact of financial literacy.....	55
3.6. Financial capability.....	57
3.6.1. From financial literacy to financial capability.....	57
3.6.2. Previous conceptualisations of financial capability.....	58
3.6.3. Financial capability within the capability approach.....	60
3.6.4. Factors predicting financial capability.....	62

3.6.5. Financial capability and the quality of life .....	64
3.7. Cognitive ability.....	65
3.8. Personality traits.....	65
3.9. Concluding remarks .....	67
CHAPTER 4. METHODOLOGY .....	69
4.1. Introduction.....	69
4.2. Data.....	70
4.2.1. Subject of study .....	70
4.2.2. In-depth-interviews and focus group discussions (FGDs) .....	72
4.2.3. Survey.....	74
4.2.4. Questionnaire design .....	75
4.2.4.1. Measurement of financial literacy .....	75
4.2.4.2. Measurement of financial capability .....	79
4.2.4.3. Measurement of cognitive ability .....	80
4.2.4.4. Measurement of personality traits .....	81
4.2.4.5. Measurement of subjective well-being.....	81
4.2.4.6. Measurement of household financial decision-making authority.....	82
4.2.4.7. Measurement of quality of life .....	84
4.2.4.8. Measurement of conversion rate efficiency.....	86
4.3. Conceptual framework and regression models .....	91
4.3.1. Predictors of financial capability and the relationship between financial capability and quality of life .....	91
4.3.2. Financial literacy and conversion rate efficiency.....	93
4.3.3. Financial literacy and household financial decision-making authority.....	96
4.3.4. Household financial decision-making authority and life satisfaction .....	98
4.3.5. Regressions using sub-sample.....	100
CHAPTER 5. RESULTS AND DISCUSSIONS: QUALITATIVE ASPECT.....	102
5.1. Introduction.....	102
5.2. Descriptive statistics of interviews and FGDs' participants .....	102
5.3. The elements of financial capability .....	103
5.3.1. Financial management.....	103
5.3.2. Financial planning .....	105
5.3.3. Financial literacy .....	105
5.3.4. The use of financial services .....	107
5.4. Discussions and concluding remarks .....	108
CHAPTER 6. CHARACTERISTICS OF THE SURVEY'S SAMPLE.....	111
6.1. Introduction.....	111
6.2. Socio-demographic characteristics .....	111
6.3. Financial literacy.....	113
6.4. Personality traits.....	116
6.5. Financial capability index .....	118
6.6. Cognitive ability.....	123
6.7. Household financial decision-making authority .....	124

6.8. Life satisfaction .....	126
6.9. Resources, functionings, and quality of life .....	127
6.10. Conversion rate efficiency .....	129
6.11. Concluding remarks.....	130
CHAPTER 7. RESULTS AND DISCUSSIONS: QUANTITATIVE ASPECT .....	132
7.1. Introduction .....	132
7.2. Financial capability and its predictors .....	132
7.2.1. Regressions' results .....	132
7.2.2. Discussions .....	134
7.3. Financial capability and quality of life .....	137
7.3.1. Regressions' results .....	137
7.3.2. Discussions .....	138
7.4. Financial literacy and conversion rate efficiency .....	139
7.4.1. Regressions' results .....	139
7.4.2. Discussions .....	142
7.5. Financial literacy and household financial decision-making authority .....	144
7.5.1. Regressions' results .....	144
7.5.2. Discussions .....	148
7.6. Household financial decision-making authority and life satisfaction .....	150
7.6.1. Regressions' results .....	150
7.6.2. Discussions .....	153
7.7 Concluding remarks.....	155
CHAPTER 8. CONCLUSION .....	157
8.1. The importance of financial literacy.....	157
8.2. Policy implications .....	160
APPENDICES .....	163
Appendix A. ANOVAs and crosstabulation analyses .....	163
Appendix B. Predictors of financial capability: Regressions' results using sub-samples.....	177
Appendix C. Financial capability and quality of life: Regressions results using sub-samples .....	182
Appendix D. Conversion rate efficiency: Regressions' results using sub-samples .....	185
Appendix E. Financial literacy and household financial decision-making authority.....	192
Appendix F. Financial decision-making authority and life satisfaction: Regressions' results using sub-samples.....	198
Appendix G. Informed consent for survey (English translation) .....	206
Appendix H. Information sheet for survey (English translation) .....	207
Appendix I. Questionnaire (English translation) .....	209
BIBLIOGRAPHY .....	215

## LIST OF FIGURES

Figure 2.1. Composition of Indonesia's financial sector based on total assets.....	11
Figure 2.2. Domestic credit by financial sector as a percentage of GDP .....	11
Figure 2.3. Domestic credit to private sector as a percentage of GDP .....	12
Figure 2.4. Number of ATM per 100,000 adults .....	13
Figure 2.5. Commercial banks' branches per 100,000 adults .....	13
Figure 2.6. MSMEs' financing providers .....	17
Figure 3.1. Summary of household decision making and resources allocation models .....	36
Figure 4.1. Survey locations .....	70
Figure 4.2. Summary of conceptual framework .....	91
Figure 5.1. Participants' characteristics .....	103
Figure 6.1. Financial capability index .....	118

## LIST OF TABLES

Table 1.1. Research questions .....	3
Table 2.1. Summary of Indonesia's MSMEs data .....	16
Table 2.2. Several credit schemes tailored for MSMEs .....	18
Table 2.3. MSMEs' bank financing .....	19
Table 2.4. Cooperatives in Indonesia (June 2014) .....	21
Table 3.1. List of theoretical framework and variables .....	23
Table 4.1. Number of in-depth interviews, FGDs, and questionnaires distributed in each province .....	72
Table 4.2. List of questions in interviews and FGDs.....	74
Table 4.3. Conceptualisations of financial literacy.....	78
Table 6.1. Socio-demographic characteristics: Frequencies .....	111
Table 6.2. Financial literacy: Frequencies .....	113
Table 6.3. Personality traits: Summary .....	116
Table 6.4. Financial management, financial planning, financial products' knowledge, and financial products' ownership: Frequencies .....	119
Table 6.5. Financial management, financial planning, financial products' knowledge, financial products' ownership, and financial capability: Summary .....	119
Table 6.6. Cognitive ability indicators: Frequencies .....	123
Table 6.7. Financial decision making: Frequencies .....	124
Table 6.8. Functionings: Frequencies .....	127
Table 7.1. Predictors of financial capability: Regressions' results using all sample .....	133
Table 7.2. Financial capability and quality of life: Regressions' results using all sample .....	137
Table 7.3. Financial literacy and conversion rate efficiency: Regressions' results using all sample .....	141

Table 7.4. Financial literacy and financial decision-making authority: Regressions' results using all sample .....	147
Table 7.5. Household financial decision-making authority and life satisfaction: Regressions' results using all sample.....	150
Table A1. Financial literacy and socio-demographic factors: ANOVA's results .....	163
Table A2. Financial self-efficacy and socio-demographic factors: ANOVA's results .....	163
Table A3. Self-control and socio-demographic factors: ANOVA's results.....	164
Table A4. General trust and socio-demographic factors: ANOVA's results .....	164
Table A5. Financial management and socio-demographic factors: ANOVA's results.....	165
Table A6. Perception of financial planning and socio-demographic factors: ANOVA's results .....	165
Table A7a. Financial planning for education and socio-demographic factors: ANOVA's results .....	166
Table A7b. Financial planning for housing and socio-demographic factors: ANOVA's results .....	167
Table A7c. Financial planning for hajj and umra and socio-demographic factors: ANOVA's results.....	167
Table A8. Financial planning ownership and socio-demographic factors: ANOVA's results .....	168
Table A9. Financial product knowledge and socio-demographic factors: ANOVA's results .....	168
Table A10. Financial product ownership and socio-demographic factors: ANOVA's results .....	169
Table A11a. Financial capability index (equal-weighted) and socio-demographic factors: ANOVA's results .....	169
Table A11b. Financial capability index (PCA) and socio-demographic factors: ANOVA's results.....	170
Table A12. Cognitive ability and socio-demographic factors: ANOVA's results.....	170
Table A13. Household financial decision-making authority and socio-demographic factors: Crosstabulation's results using all sample.....	171
Table A14a. Household financial decision-making authority and socio-demographic factors: Crosstabulation's results using male sub-sample .....	171
Table A14b. Household financial decision-making authority and socio-demographic factors: Crosstabulation's results using female sub-sample .....	172
Table A15. Decision-maker's gender: Crosstabulation's results .....	172
Table A16. Life satisfaction and socio-demographic factors: ANOVA's results .....	173
Table A17. Profit and socio-demographic factors: ANOVA's results .....	173
Table A18. Health and socio-demographic factors: ANOVA's results .....	174
Table A19. Nourishment and socio-demographic factors: ANOVA's results .....	174
Table A20. Housing and socio-demographic factors: ANOVA's results .....	175
Table A21a. Quality of life (equal-weighted) and socio-demographic factors: ANOVA's results .....	175
Table A21b. Quality of life (PCA) and socio-demographic factors: ANOVA's results .....	176
Table A22. Conversion rate efficiency, socio-demographic factors, and financial literacy: Crosstabulation's results .....	176
Table B1a. Predictors of financial capability: Regressions' results using male sub-sample .....	177

Table B1b. Predictors of financial capability: Regressions' results using female sub-sample .....	177
Table B2a. Predictors of financial capability: Regressions' results using DI Yogyakarta sub-sample .....	178
Table B2b. Predictors of financial capability: Regressions' results using West Nusa Tenggara sub-sample .....	178
Table B2c. Predictors of financial capability: Regressions' results using South Sulawesi sub-sample .....	179
Table B3a. Predictors of financial capability: Regressions' results using lower income sub-sample .....	179
Table B3b. Predictors of financial capability: Regressions' results using higher income sub-sample .....	180
Table B4a. Predictors of financial capability: Regressions' results using lower education sub-sample .....	180
Table B4b. Predictors of financial capability: Regressions' results using higher education sub-sample .....	181
Table C1a. Financial capability and quality of life: Regressions results using male sub-sample .....	182
Table C1b. Financial capability and quality of life: Regressions results using female sub-sample .....	182
Table C2a. Financial capability and quality of life: Regressions results using DI Yogyakarta sub-sample .....	182
Table C2b. Financial capability and quality of life: Regressions results using West Nusa Tenggara sub-sample .....	183
Table C2c. Financial capability and quality of life: Regressions results using West Nusa Tenggara sub-sample .....	183
Table C3a. Financial capability and quality of life: Regressions results using lower income sub-sample .....	183
Table C3b. Financial capability and quality of life: Regressions results using higher income sub-sample .....	184
Table C4a. Financial capability and quality of life: Regressions results using lower education sub-sample .....	184
Table C4b. Financial capability and quality of life: Regressions results using higher education sub-sample .....	184
Table D1a. Conversion rate efficiency: Regressions' results using male sub-sample.....	185
Table D1b. Conversion rate efficiency: Regressions' results using female sub-sample .....	186
Table D2a. Conversion rate efficiency: Regressions' results using DI Yogyakarta sub-sample .....	186
Table D2b. Conversion rate efficiency: Regressions' results using West Nusa Tenggara sub-sample .....	187
Table D2c. Conversion rate efficiency: Regressions' results using South Sulawesi sub-sample .....	187
Table D3a. Conversion rate efficiency: Regressions' results using lower profit sub-sample .....	188
Table D3b. Conversion rate efficiency: Regressions' results using higher profit sub-sample .....	189
Table D4a. Conversion rate efficiency: Regressions' results using age group 1.....	190

Table D4b. Conversion rate efficiency: Regressions' results using age group 2 .....	190
Table D4c. Conversion rate efficiency: Regressions' results using age group 3 .....	191
Table E1a. Financial literacy and household financial decision-making authority: Regressions' results using male sub-sample .....	192
Table E1b. Financial literacy and household financial decision-making authority: Regressions' results using female sub-sample .....	193
Table E2a. Financial literacy and household financial decision-making authority: Regressions' results using DI Yogyakarta sub-sample .....	193
Table E2b. Financial literacy and household financial decision-making authority: Regressions' results using West Nusa Tenggara sub-sample.....	194
Table E2c. Financial literacy and household financial decision-making authority: Regressions' results using South Sulawesi sub-sample .....	194
Table E3a. Financial literacy and household financial decision-making authority: Regressions' results using lower income group sub-sample .....	195
Table E3b. Financial literacy and household financial decision-making authority: Regressions' results using higher income group sub-sample.....	195
Table E4a. Financial literacy and household financial decision-making authority: Regressions' results using age group 1 sub-sample .....	196
Table E4b. Financial literacy and household financial decision-making authority: Regressions' results using age group 2 sub-sample .....	196
Table E4c. Financial literacy and household financial decision-making authority: Regressions' results using age group 3 sub-sample .....	197
Table F1a. Durbin-Wu-Hausman test for endogeneity: Result 1 .....	198
Table F1b. Durbin-Wu-Hausman test for endogeneity: Result 2 .....	198
Table F2a. Household financial decision-making authority and life satisfaction: Regressions' results using male sub-sample .....	199
Table F2b. Household financial decision-making authority and life satisfaction: Regressions' results using female sub-sample .....	199
Table F3a. Household financial decision-making authority and life satisfaction: Regressions' results using DI Yogyakarta sub-sample .....	200
Table F3b. Household financial decision-making authority and life satisfaction: Regressions' results using West Nusa Tenggara sub-sample .....	200
Table F3c. Household financial decision-making authority and life satisfaction: Regressions' results using South Sulawesi sub-sample .....	201
Table F4a. Household financial decision-making authority and life satisfaction: Regressions' results using lower income sub-sample .....	201
Table F4b. Household financial decision-making authority and life satisfaction: Regressions' results using higher income sub-sample.....	202
Table F5a. Household financial decision-making authority and life satisfaction: Regressions' results using lower education sub-sample .....	202
Table F5b. Household financial decision-making authority and life satisfaction: Regressions' results using higher education sub-sample .....	203
Table F6a. Household financial decision-making authority and life satisfaction: Regressions' results using lower cognitive ability sub-sample.....	203
Table F6b. Household financial decision-making authority and life satisfaction: Regressions' results using higher cognitive ability sub-sample .....	204

Table F7a. Household financial decision-making authority and life satisfaction: Regressions' results using lower financial literacy sub-sample .....204

Table F7b. Household financial decision-making authority and life satisfaction: Regressions' results using higher financial literacy sub-sample .....205

# CHAPTER 1

## INTRODUCTION

### 1.1. Research aims, questions, and contributions

The concern on people dealing with their financial matters can be traced back to as early as 1787 (Adams, 1853); however, it was not until the 21<sup>st</sup> century that the issue of financial literacy gained global prominence. In 2003, the OECD developed a common financial literacy standard as a part of its inter-governmental project to improve financial education and literacy globally. A 2010 survey of financial regulators in 142 countries revealed that 58 percent of these regulators have included aspects related to financial literacy in their mandates (Atkinson & Messy, 2013). In 2004, for example, the Government of Australia established the National Consumer and Financial Literacy Taskforce, which further recommended the creation of a Financial Literacy Foundation. Among developing countries, India - through its reserve bank - set up Financial Literacy and Credit Counselling Centres in order to assist people in household financial management.

This dissertation mainly aims to enrich the literature by addressing the importance of financial literacy within Sen's (1980; 1985a; 1985b; 1990a) capability approach, which emphasises the need to bring more informational space for evaluating the human condition. In contrast to the utilitarian tradition that heavily relies on opulence-related matters when examining a person's quality of life, the capability approach argues that resources by themselves are imperfect elements unless one can take advantage of them. More specifically, two people with similar levels of resources may end up having different capabilities and functionings, and to some extent the transformation of resources into functionings is influenced by conversion factors. The approach also highlights the importance of human agency, which can be defined as one's ability to exercise reasoned choices (Sen, 1985a). As an evaluative tool, the capability approach suggests that we should incorporate information on the ability of people to achieve beings and doings that they have reasons to value.

Departing from the capability approach framework, this dissertation examines four main issues in the context of microfinance institutions clients in Indonesia. The first touches on financial capability, and specifically focuses on its conceptualisation, predictors, and relationship with quality of life. There has been much critical scholarship on financial literacy as not providing a holistic picture of the dynamics of daily financial matters, especially

considering the relatively narrow method of measuring financial literacy. This is particularly the reason why some governments, including that of the United Kingdom, decided to transform their policy focus from financial literacy to financial capability in the early 2000s (Mason, 2000). There have been previous attempts to determine the elements of financial capability by Atkinson, McKay, Collard, & Kempson (2007), M. P. Taylor, Jenkins, & Sacker (2011), and Kempson, Perotti, & Scott (2013) in the United Kingdom and several developing countries. Their results suggest that in fact various contextual settings lead to different emphases on the elements of financial capability. It is important to note that what is considered important in developed countries is not necessarily perceived in the same way in developing economies. As such, it is crucial to identify the elements of financial capability given these differences between developed and developing countries, which aligns with the tenet of the capability approach that values contextual circumstances.

An index of financial capability is then built and used to identify factors that can predict an individual's level of financial capability. These factors are mainly socio-demographic characteristics, since understanding discrepancies of financial capability between different groups of the population is important for policymakers. Another use of the index in this dissertation is to examine the relationship between financial capability and quality of life. The basic premise is that financial capability is essential in achieving many aspects of quality of life, hence it is hypothesised that having a higher level of financial capability is associated with a superior quality of life.

The remaining three investigations focus on the importance of financial literacy. In the second investigation, given that the ability of managing financial resources is essential in achieving various functionings in life, it is proposed that the conceptual interpretation of financial literacy is a relevant conversion factor. Within the capability approach literature itself, there is a lack of empirical discussions on conversion factors. Indeed, Sen (1985a; 1985b) has provided several examples of what can be considered as relevant conversion factors, which are currently being extrapolated. This section of the dissertation follows the methodology adopted by Binder & Broekel (2011), in which the conversion rate efficiency of each individual is estimated using a technique widely used in studies related to the theories of production. The result is then regressed towards financial literacy as the main variable of concern. In addition to financial literacy, cognitive ability and self-efficacy are also included in the analyses given their importance in people's lives.

The third investigation centres on the roles of financial literacy, cognitive skills, and financial self-efficacy in household financial decision-making authority. Previous studies have used

household decision-making authority as a reflection of agency (see for example: Kabeer, 1999; Fernandez, Della Giusta, & Kambhampati, 2015), and human agency is an important building block of the capability approach. So far there are limited studies that discuss the roles of different skills in household decision-making authority (see D. W. Johnston, Kassenboehmer, & Shields, 2016). This dissertation focuses on financial decision making, which is often perceived as “difficult”, “boring”, and “full of uncertainties” (Watson, Maître, & Cantillon, 2013; World Bank, 2014). Therefore, skills are expected to play an important role in this case.

Following the third investigation of financial literacy raised in this dissertation, the last issue examined is the roles of financial literacy and cognitive ability in the relationship between household financial decision-making authority and subjective well-being (SWB). While decision-making authority has been argued as a reflection of human agency and perceived as a source of power within households, it can also be perceived as a burden, especially for difficult areas such as household finance (Waseem, 2004). There have been studies that have looked specifically at the role of household responsibility on SWB (see for example: Barnett & Shen, 1997; Fernandez et al., 2015; Álvarez & Miles-Touya, 2016). The results thus far have been inconclusive and are argued to be dependent on other factors, such as gender and the nature of households’ tasks. Meanwhile, there have been very limited studies that discuss the role of skills and their interactions with a task’s complexity. As such, this section attempts to address this specific literature gap by focusing on financial decision making. This is since financial decision making in itself is a good example of a relatively complex household task and therefore using it as the main variable provides new insights that the literature currently lacks.

All of these issues can be broken down specifically into several research questions summarised in Table 1.1.

Table 1.1. Research questions

No.	Research questions
1.	How do microfinance institutions’ clients in Indonesia conceptualise financial capability?
2.	What are the predictors of the level of financial capability?
3.	What is the nature of the relationship between financial capability and quality of life?
4.	Is financial literacy a relevant conversion factor?
5.	What is the nature of the relationship between financial literacy and household financial decision-making authority?
6.	What is the nature of the relationship between financial decision-making authority and life satisfaction? What is the role of financial literacy in this relationship?

Source: Author’s own work

Based on the aforementioned four strands of inquiry, the discussions aim to enrich the literature in several ways. Firstly, the most significant contribution lies on the use of the capability approach framework in evaluating the instrumental value of financial literacy. This is because most of the existing studies have focused on the importance of financial literacy for financial development, i.e. using the lense of macroeconomics. A developed financial system itself has been argued as an important factor to spur economic growth (Levine, 1997) and reduce both poverty and inequality (Akhter & Daly, 2009; Galor & Zeira, 1993; Banerjee & Newman, 1993) due to lower information and transaction costs in the credit market, especially for the poor (Levine, 2008; Rajan & Zingales, 2004). Unfortunately, financial development has often been hampered by limited access to formal financial systems. Statistics have shown that even by 2014, 38 percent of adults across the world do not have accounts in formal financial institutions (Demirgüç-Kunt, Klapper, Singer, & Van Oudheusden, 2015), and one contributing factor of this fact is a lack of financial literacy (Cole, Sampson, & Zia, 2011). Consumers who are empowered to make informed financial choices or those with high levels of financial literacy are essential for the effectiveness and efficiency of the market place (Hilgert, Hoggarth, & Beverly, 2003). It is therefore that most studies evaluating financial literacy have used financial behaviour and outcome as the main parameters (Behrman, Mitchell, Soo, & Bravo, 2012; Lusardi, 2008; van Rooij, Lusardi, & Alessie, 2012). Meanwhile, attention given to the importance of financial literacy for human development remains low. This is surprising given the current contexts where many countries shift welfare responsibilities to their citizens and a global financialisation intensifies the rapid development of financial systems and increases the supply of a wide range of financial products, in which both phenomena demand people's the ability to deal with financial matters (Willis, 2009; OECD/INFE, 2012). Financial literacy as envisioned recently by the OECD should go beyond this basic understanding and capture human advantage in a broader sense.

Secondly, this dissertation also contributes to the literature on household and family science. Household decision-making authority has undergone several examinations within the field using different theoretical underpinnings. On the one hand, gender theories, for instance, have adopted social constructionist and biosocial approaches to highlight gender as a salient factor in households' division of tasks (Rudman & Glick, 1999; March, van Dick, & Hernandez Bark, 2016; W. Wood & Eagly, 2002). On the other hand, the literature on household economics uses the collective bargaining approach to suggest that household decision-making authority depends on several factors, such as income (see among others: M. Browning, Bourguignon, Chiappori, & Lechene, 1994; Bernasek & Bajtelsmit, 2002; Carlsson, Martinsson, Qin, & Sutter, 2013) and education level (Bertocchi, Brunetti, & Torricelli, 2014;

Yusof, 2015b). What has not been widely discussed is the role of skills in household decision-making power. Therefore, by bringing financial literacy, cognitive skills, and personality traits as potential explanatory factors of household decision-making authority, this dissertation is able to bring to light the role of human capital. Since issues related to gender are incorporated, the results also contribute to the discussions of women's empowerment, since this stream of literature is closely related to household decision-making responsibility (Allendorf, 2007; Doss, 2011; B. Agarwal, 1997; Hou, 2016).

The third contribution lies on the fact that this dissertation is based on a study in a developing country. It is important to note that most existing studies centred on financial literacy and capability were conducted in the developed world, such as the United Kingdom, United States, and the Netherlands (see for example: Atkinson, McKay, Collard, & Kempson, 2007; Lusardi, 2008; Alessie, van Rooij, & Lusardi, 2011). Studies conducted in developing countries have hardly discussed such issues beyond the impact of financial education and or literacy on financial outcomes. There are indeed some studies that linked financial literacy with cognitive factors and social interactions, such as Cole et al. (2011) and Bönnte & Filipiak (2012), but these are very few in number.

Several characteristics distinguish the nature of financial literacy in developed countries from that of developing economies. In developed countries, financial literacy is often perceived as a complement to consumer protection in the financial sector with a concern on people's ability to manage a wide range of financial products and make appropriate decisions, while in emerging countries, a more pressing issue is the access to financial products and services due to the limited outreach of financial institutions (L. Xu & Zia, 2012). The types of available financial products and services in developing countries are also not similar to those in more developed economies (Bönnte & Filipiak, 2012).

This limited amount of research regarding financial literacy and financial capability is especially true in the case of Indonesia, in which only the topics of the urgency of financial literacy and the impact of financial literacy on demands for financial services have been reviewed (Amidjono, Brock, & Junaedi, 2016; Cole et al., 2011). This is surprising as Indonesia continues to lag in several financial indicators, such as the World Bank's Global Financial Inclusion Index, even when compared to the peer countries in Southeast Asia such as Malaysia, Thailand, Vietnam, and the Philippines. According to this index, more than 30 percent of Indonesians did not have access to the formal financial sector. A vast majority of these excluded people had low education skills, including 43.2 percent who had no formal education background and 37.5 percent who lived outside of Java, the country's most

populous island. As a lack of financial literacy has been offered as one of the explanations for this condition, more studies focusing on the case of Indonesia are important for policymakers to understand its nature, so that appropriate initiatives can be designed to improve the levels of financial literacy and lever its benefits for society in a broader sense.

Fourthly, focusing on microfinance institutions' clients also means that this dissertation contributes to the literature on microfinance. Topics related to microfinance have received much attention in the development literature due to the notion that microfinance serves as an alternative solution to poverty alleviation (Armendariz & Morduch, 2005; D. Johnston & Morduch, 2008; Hamada, 2010). It is part of the general ideology of "making market works for the poor", in which one of the agendas is to provide financial services to the poor. Such people often have limited access to mainstream formal financial services due to a lack of collateral, business certainty, reliable credit history, and other components that are typically required in order for a person to be granted formal credit (S. Johnson, 2013; Bauchet, Marshall, Starita, Thomas, & Yalouris, 2011).

Evidence on the impact of microfinance programmes is varied. Some studies that employed randomised controlled trials (RCTs) found limited support for the success of microfinance in healthcare, education, and or women empowerment (see among others: Banerjee, Duflo, Glennerster, & Kinnan, 2014). Moreover, although the initiation of microfinance mainly targets female entrepreneurs with limited resources, it has been revealed that the group mostly likely to benefit from microfinance programmes are actually men with a relatively high income (Bauchet et al., 2011). Different evaluation criteria, various contextual factors, and different microfinance programmes are only some of the reasons why the results are inconclusive.

Another potential explanation on the success or failure of microfinance programmes is whether the clients have the capability to use money wisely, both with regards to investments and credit (Bauchet et al., 2011). The interest on financial capability is particularly driven by the financial inclusion agenda (Storchi & Johnson, 2016). As mentioned above, microfinance is part of the operationalisation of this agenda. Surprisingly, the relationship between microfinance and financial capability has not yet been widely researched. A part of this dissertation tries to fill in the gap by examining financial capability among microfinance clients. However, this dissertation is not an evaluation of microfinance programmes, that is, it does not address specifically whether microfinance programmes enhance people's financial capability or not.

It should be noted that given this dissertation's focus on microfinance institutions clients, one should be cautious in generalising the results. Further discussions on the internal and external validity of this dissertation are provided in Chapter 4.

## **1.2. Dissertation's structure**

The dissertation is structured to highlight the four main issues that contribute to the expansion of scholarship thematically on financial literacy, and geographically with regard to Indonesia. Thus, it is important to firstly give in the second chapter a general overview of Indonesia as a country, including some key socio-demographic information, as well as several indicators of the country's financial sector. Some comparisons with the neighbouring peer countries are also presented in this section in order to draw attention to Indonesia's relatively low position in terms of financial indicators. An introduction to the landscape of microfinance in Indonesia is also provided to explain its significance for the country's financial sector.

Having set the contextual background, Chapter 3 aims to provide the theoretical background and literature review on the concepts used in this study. Some of these basic concepts include financial literacy, cognitive ability, personality traits, capability approach, SWB, and household financial decision making. This directly follows to Chapter 4 where there is a more detailed discussion on the methodology employed throughout this dissertation. A specific explanation details the nature of the method employed, the sample and participants in the data collection process, parts of the questionnaires, measurements of variables, and the statistical techniques involved.

The results and discussions are divided into three chapters. Chapter 5 presents the results of the qualitative works employed in this dissertation, which mainly discuss the conceptualisation of financial capability. We can see based on multiple in-depth interviews and focus group discussions (FGDs) whether financial literacy is perceived as important or not. Comparisons with previous conceptualisations of financial capability can also be found in this chapter. Chapters 6 and 7 are intended to present and discuss the results of the quantitative works. In the former, one can find descriptive statistics, which are enriched by crosstabulation analyses and analyses of variance (ANOVA) that explain variations in some important variables, such as the levels of financial literacy, cognitive skills, financial self-efficacy, subjective well-being, and conversion rate efficiency. Chapter 7 is dedicated to identifying the results of the regression models as explained previously. These results are

further expanded on so as to highlight the predictors and impact of financial capability, the relationship between financial literacy and conversion rate efficiency, the role of financial literacy in household financial decision-making authority, and the relationship between financial decision-making authority and life satisfaction.

Finally, the concluding Chapter 8 summarises the whole findings and thus provides a clear identification of policy implications, as well as further research that still needs to be done in order to enhance a nuanced understanding of the complexities of financial literacy and capability.

# CHAPTER 2

## CONTEXTUAL SETTING

### 2.1. Introduction

To understand the context of this dissertation, an explanation of the country where the study is conducted is essential. Each country is unique due to different cultural contexts and institutional settings. This chapter begins with an overview of Indonesia, with a particular emphasis on some indicators related to its financial sector. Whenever the data are available, comparisons of these indicators to those of Malaysia, the Philippines, Thailand, and Vietnam are shown. Regional and stage of economic development are the two main justifications in using them as peers. Indonesia and these peer countries, except Vietnam, are often classified into the Association of Southeast Asian Nation (ASEAN) 5. Another ASEAN 5 country is Singapore, but since its level of development is much more advanced than the other ones, it is excluded from the pool of comparison. Among these countries, Malaysia and Thailand are classified as upper middle-income countries according to the World Bank's definition, while Indonesia and Vietnam belong to the lower middle-income countries group<sup>1</sup>.

Since this dissertation focuses on the clients of microfinance institutions, who in most cases run their own micro, small, and medium enterprises (MSMEs), an overview of MSMEs and the landscape of microfinance services in Indonesia are also provided. These include the role that MSMEs play in Indonesia's economy, various types of microfinance products available, and a short history of sharia-based microfinance institutions.

### 2.2. General macroeconomic and development indicators

Indonesia is the world's fourth most populous country, after China, India, and the United States of America, respectively. In 2016, it was the home of 261,115,416 inhabitants. Since 2011, more than 50 percent of the population have been living in urban areas. Gross domestic product (GDP) per capita has followed an increasing trend in the past decade, but decreased

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<sup>1</sup> For fiscal year 2017, based on World Bank's classification, low income countries are those with Gross National Income (GNI) per capita of lower than USD 1,005; lower-middle income countries are those with GNI per capita between USD 1,006 and USD 3,955 (inclusive); upper-middle income countries are those with GNI per capita between USD 3,956 and USD 12,235 (inclusive); and high income countries are those with GNI per capita of higher than USD 12,235 (World Bank, 2017).

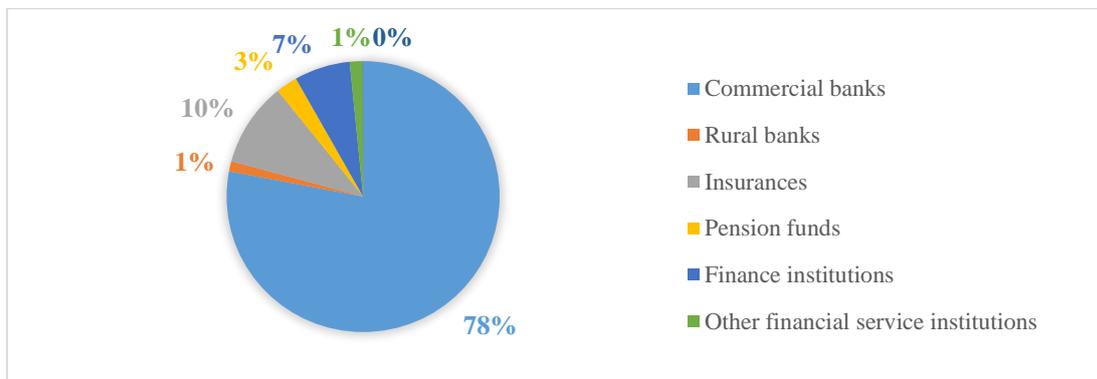
from 2012-2015. The GDP per capita in 2016 was USD 3,570.30, lower than that of Malaysia and Thailand. Inflation rates have been relatively high and fluctuating in comparison to the peer countries, and almost halved in 2016 to 3.53 percent. In the same year, the national unemployment rate was 5.6 percent, and the figures representing each gender reveal that the unemployment rate of women (6.34 percent) is higher than that of men (5.15 percent). The levels of deposit interest rate and interest rate spread in Indonesia are considered high. In 2016, the interest rate spread was almost 4.72 percent, the highest among the peer countries (World Bank, 2017).

Overall, the poverty rate of the country has been decreasing over this past decade. In 2006, the poverty head count rate was approximately 28 percent, which means that around 64 million of Indonesians were living below the national poverty line. Within 10 years, in 2016 the national poverty rate decreased to 6.8 percent. The urban poverty rate was lower compared to the rural poverty rate, as the former was recorded at 8.3 percent while the latter was at 14.2 percent in 2014 (World Bank, 2017). Nevertheless, the problem of poverty becomes more serious when we realise that a significant proportion of those living above the poverty line are vulnerable, i.e. those who are just slightly above the threshold. These people are prone to shocks in the form of food price increases and environmental hazards. The data suggest that there has been an increasing gap in Indonesia's society as reflected from the evolution of its Gini coefficient, from 0.35 in 2007 to 0.40 in March 2016 (Statistics Indonesia, 2017).

Since this dissertation concerns the idea of development beyond opulence measures, it is important to understand the position of Indonesia in terms of other important development indicators: Human Development Index (HDI) and Happiness Index. In 2015, the HDI of Indonesia was recorded at 0.689, which ranked the country at 113<sup>th</sup> among 188 countries assessed by the 2016 Human Development Report (Jahan, 2016). This puts Indonesia in the "medium human development" category, behind Malaysia (0.789; ranked 59<sup>th</sup>) and Thailand (0.740, ranked 87<sup>th</sup>), but ahead of the Philippines (0.682; ranked 116<sup>th</sup>) and Vietnam (0.683; ranked 115<sup>th</sup>). Based on the World Happiness Report 2017's data (Helliwell, Layard, & Sachs, 2017), Indonesia's index of happiness was 5.262, and ranked 81<sup>st</sup>. While we can see that the figure indicates that Indonesians in general have become less happy than they were in 2013, people in the other peer countries were generally happier according to this indicator.

## 2.3. Financial sector's indicators

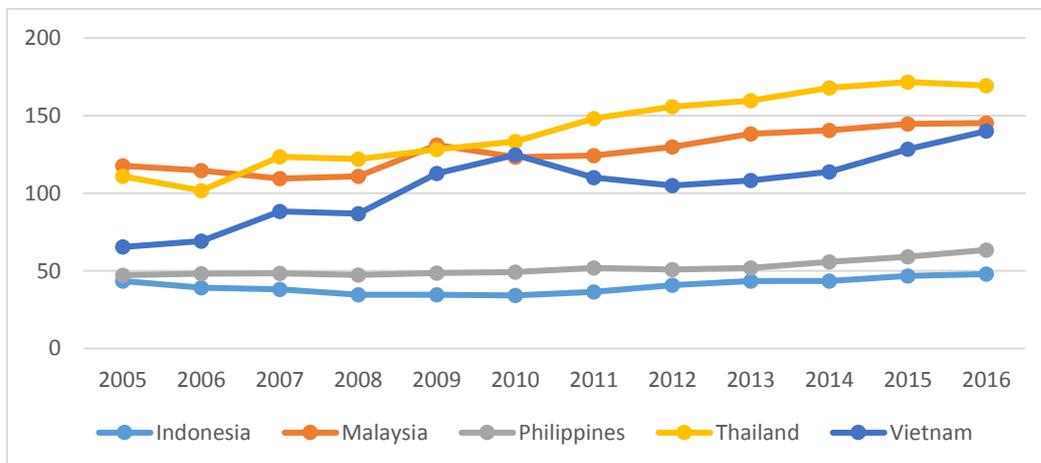
Figure 2.1. Composition of Indonesia's financial sector based on total assets



Source: Bank Indonesia (2017)

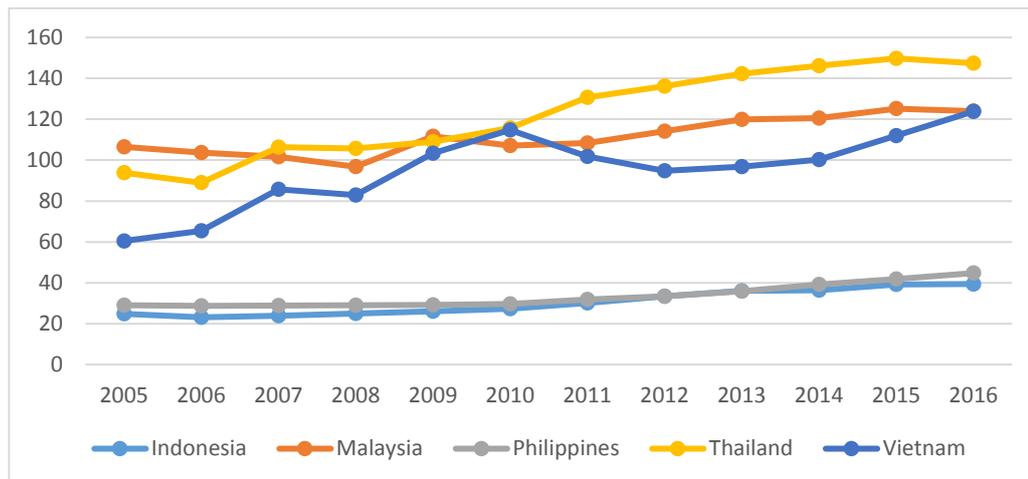
Indonesia's financial sector has so far been dominated by banks, as seen from the significant portion of assets concentrated in this industry. Data from 2013 show that the total amount of assets of Indonesia's banking industry reached 78 percent of the country's total financial sector (Bank Indonesia, 2017). The proportions of non-bank financial institutions were low; each had total assets of no more than 10 percent of the entire sector's assets. Banks in Indonesia can either be classified as commercial banks or credit rural banks (*bank perkreditan rakyat* / BPR). Previously conducted by the central bank, since 2013, the regulation and supervision authorities of banks in Indonesia have been moved to *Otoritas Jasa Keuangan* / OJK (Indonesia Financial Services Authority / IFSA).

Figure 2.2. Domestic credit by financial sector as a percentage of GDP



Source: World Bank (2017)

Figure 2.3. Domestic credit to private sector as a percentage of GDP

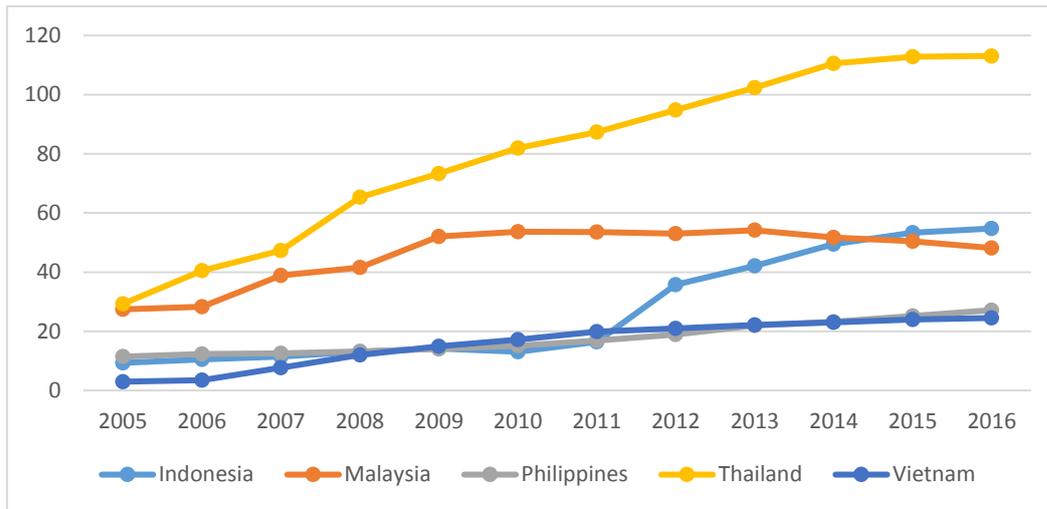


Source: World Bank (2017)

Looking at the Global Financial Index Database (Demirgüç-Kunt, Klapper, Singer, & Van Oudheusden, 2015), we can see that Indonesia was relatively lacking behind Malaysia, the Philippines, Thailand, and Vietnam in many categories: accounts at formal institutions, credit card usage, savings in general, loans from financial institutions, and private insurance penetration. However, if we compare the low level of loans provided by financial institutions and loans provided in general, a striking result can be seen since Indonesia was in the top position among these peer countries with regards to the latter indicator. This signals a high reliance among Indonesians on other sources of funds, and most likely informal ones. An example is savings clubs, which are common alternatives to formal financial institutions (Demirguc-Kunt & Klapper, 2012). Related to this indicator of borrowing behaviour, domestic credit by the financial sector as a proportion to GDP has been growing relatively since 2010, and the growth rate is considered as the lowest among the peer countries (Figure 2.2). Meanwhile, Indonesia's ratios of domestic credit to private sector to GDP were the lowest until 2010, but they did surpass those of the Philippines from 2011 to 2013 (Figure 2.3).

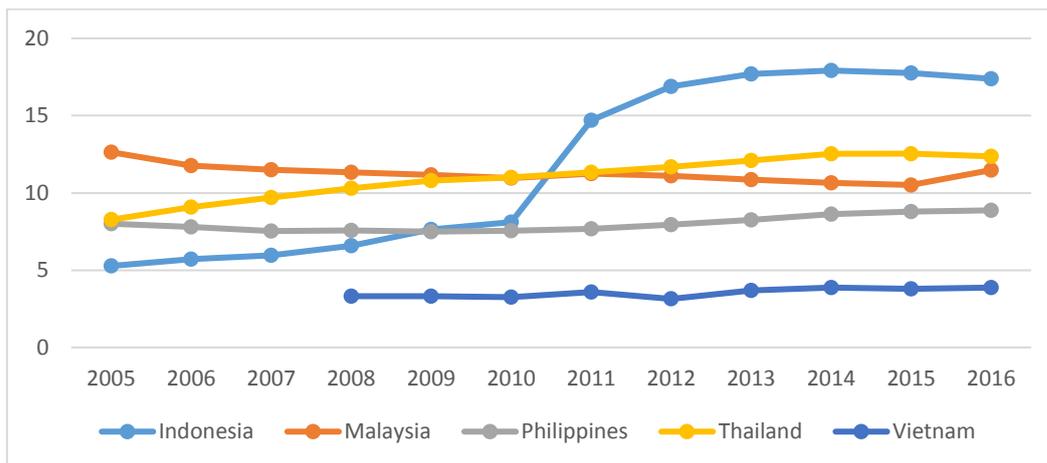
Indicators reflecting access to financial institutions have been improving. According to the World Bank's data (2017), the number of ATMs per 100,000 of adults has become almost sixfold and the number of bank branches increased by more than 200 percent within an 11-year period from 2005 to 2016.

Figure 2.4. Number of ATM per 100,000 adults



Source: World Bank (2017)

Figure 2.5. Commercial banks' branches per 100,000 adults



Source: World Bank (2017)

An illustration regarding saving behaviour among Indonesians can be found in a research by Kadence International (2013). They classified Indonesians into four different groups with regards to certain behaviours: deep pocket (save at least half of their monthly income), pragmatic (save 25-50 percent of their income), on edge (save nothing from their income), and broke (experience 35 percent deficit of income). More than 60 percent of the respondents in this survey belong to the last two groups of this classification, which is something that should be a serious concern.

Several reasons could explain why Indonesia was relatively underdeveloped in terms of formal financial sector indicators. For those who did not have a savings account at a bank,

Cole et al. (2011) showed that more than 90 percent list insufficient money to save as the primary reason. Meanwhile, a lack of understanding about how banks operate was cited by 32 percent of the respondents.

There have been at least two attempts to identify the levels of financial literacy of Indonesians, each with different conceptualisations of “financial literacy”. The first one by Cole et al. (2011) was conducted as part of the World Bank’s access to finance survey in the country. They collected data from a total of 3,360 households as their sample in 112 villages in Indonesia, using a stratified sampling technique. They used a measure that was modified from Lusardi & Mitchell's (2006) standard financial literacy set of four questions on inflation, interest rate, and diversification, which has been widely applied by many studies on financial literacy (see among others: Lusardi, 2008; van Rooij et al., 2012; Fernandes, Lynch, & Netemeyer, 2014). Less than 30 percent of the respondents answered three to four questions correctly, while 7 percent provided correct responses for all the questions. Their findings infer an overall low level of financial literacy among Indonesians.

Another survey was conducted by IFSA in 2013, covering 20 large provinces with a sample of 8,000 respondents (Indonesia Financial Services Authority, 2014). While Cole et al. (2011) used the standard measure of financial literacy, IFSA constructed an index of financial literacy based on people’s understanding, confidence, and use of financial products and services. In addition to an aggregated financial literacy index, IFSA also broke down the number into different types of financial products. The way this study conceptualised “financial literacy” is understandable since, as Cole et al. (2011) suggested, a lack of understanding on the way financial institutions work is one of the main reasons why people are reluctant to use the products and services of formal financial institutions. The survey showed that on aggregate, 21.84 percent of the respondents were financially well-literate (they admit that they had the knowledge, confidence, and experience with financial products and institutions), while the other 75.69 percent were sufficiently literate (they admit that they had the knowledge about and confidence in, but not experience with, financial products and institutions). Only 0.41 percent could be categorised as not literate. These general numbers might not raise any urgent attention. However, by scrutinising these numbers into different types of financial products, the levels of literacy on non-bank financial products were much lower. The percentages of people who were not literate on insurance, finance companies, pension funds, and capital market were remarkably high (39.80 percent, 72.10 percent, 81.03 percent, and 93.79 percent, respectively). People with higher levels of education on average were more financially literate, but the levels were still low. Only 20 percent of people with

universities degree were well literate in terms of capital market, and only 2 percent of people with high school education were well literate. Breaking down the number based on gender, we can see that the financial indicators of women are generally worse than those of men. As an illustration, the survey reveals that the level of women's financial literacy related to the banking sector was only 19 percent, which was lower than men's (25 percent).

The regulators have recognised the low levels of various financial indicators. Financial education was thus included as a fundamental component of the Indonesian Banking Architecture (*Arsitektur Perbankan Indonesia / API*) that envisioned the future of the banking industry. A working group with members from the central bank and industry was then established to develop a blueprint for educating the public about banking products and services.

Further, to strengthen the levels of financial inclusion in Indonesia, the government launched a national coordinated effort in 2012. Originally initiated by the central bank of Indonesia as the banking sector's regulator, the vice president's office through its Poverty Reduction Acceleration Team, and the Ministry of Finance, the strategy is comprised of six pillars: financial education, public financial facilities, financial information mapping, supporting policy and regulation, intermediation and distribution channel, and consumer protection. As part of the first pillar, the current financial services authority launched a national strategy for financial literacy in the third quarter of 2013, which attempts to target several groups, such as school children, college students, professionals, and migrant workers, and is linked to different phases of life cycle experienced by a typical person. There are three sub-pillars: education and national campaign, infrastructure strengthening, and financial products and the development of services. A regulation issued by IFSA in 2013 requires financial institutions to conduct education programmes in order to improve the community's financial literacy, and the result should be reported annually to the authorities.

Financial education, together with technical assistance related to liquidity and business risk management and feasibility study design, has also become one of the programmes in the blueprint of Micro, Small, and Medium Enterprises (MSMEs) and cooperatives. One aspect of financial literacy prioritised in this initiative is MSMEs and cooperatives' understanding of wider financing sources. The aim here is to improve their competitiveness and help them to become better debtors for banks and other financial institutions.

## 2.4. MSMEs and microfinance in Indonesia

Indonesia, like other developing economies in the world, has witnessed the importance of MSMEs in enhancing inclusive economic growth and social stability. Approximately 99.98 percent of the country's total enterprises can be classified as MSMEs. The number of MSMEs had been increasing from 2008 to 2014, with an annual average rate of 2.41 percent (Ministry of Cooperatives and SMEs, 2014). According to the same official data source, in 2013 there were 57.9 million MSMEs, in which slightly less than 57.2 million were microentrepreneurs. These MSMEs were mainly in the trade, hotel, and restaurant (69 percent) and processing industries (12 percent), and provide employment for 99 percent of the nation's workforce. Nevertheless, the contribution of MSMEs to the Gross Domestic Product (GDP) was 59 percent in 2012, which can be considered as relatively small.

Table 2.1. Summary of Indonesia's MSMEs data

Description	2010	2011	2012	2013 (estimated)
Number of MSMEs (unit)	54,114,821	55,206,444	56,534,592	57,901,000
Number of micro and small enterprises (unit and %)	54,072,813 (99%)	55,162,164 (99%)	56,485,594 (99%)	57,321,990 (99%)
Number of MSMEs bank account	8,417,673	8,797,888	9,078,322	9,958,436

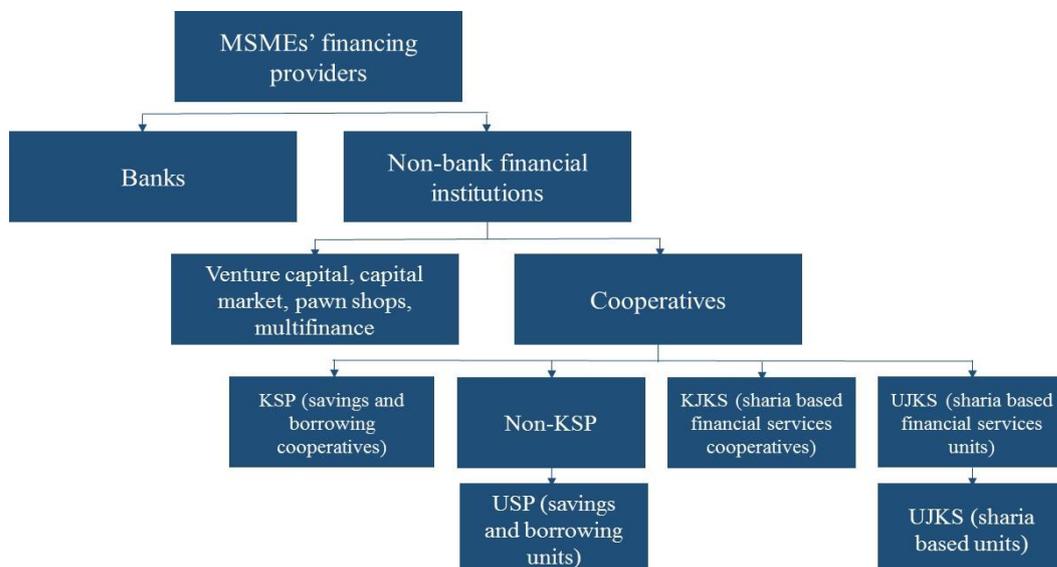
Source: Ministry of Cooperatives and SMEs (2014)

Many argue that one of the main factors that limit MSMEs' development is difficulties in financing (see among others: D. Johnston & Morduch, 2008; Armendariz & Morduch, 2005). The main products of formal financial institutions are mostly tailored to the needs of medium and large enterprises instead of those classified as micro and small. Limited access to financing is especially faced by companies in certain sectors due to reluctance from financial institutions to channel funding to these sectors. In most cases, micro businesses are regarded as unbankable, or those that do not fulfil the minimum requirements to be served by banks. In credit services, for example, they usually do not possess certified assets required as collaterals.

In Indonesia, one of the targets regarding national middle- and long-term planning is to increase the proportion of MSMEs that can access finance. The Law No. 20 Year 2008 obliges governments at the central and regional levels to design laws and policies that can help MSMEs to access financing from banks and non-bank financial institutions. This includes expanding the presence and networks of financial institutions and simplifying the financing application process to become faster, better-targeted, affordable, and non-discriminative.

Microfinance has emerged as a solution to the problems of MSMEs' access to finance. Before discussing microfinance development in Indonesia, it is useful to clarify the meaning of microfinance. The term usually refers to the provision of financial services to people with very low income and involves a small amount of money<sup>2</sup>. To compensate the high risk while realising the limitations of potential clients, certain microfinance providers rely on specific schemes such as group lending, dynamic incentives, collateral substitutions, and regular-repayment schedules (Armendariz & Morduch, 2005).

Figure 2.6. MSMEs' financing providers



Source: Author's own work

<sup>2</sup> Although microfinance entails a broad range of different financial services, the discussions and statistics explored in this section are mostly dealing with credits.

The provision of microfinance in Indonesia is not something new; it can be traced back to more than 100 years ago when *Badan Kredit Desa* (BKD) began to channel funding to small businesses (Ministry of Cooperatives and SMEs, 2014). Nowadays, different financial institutions cater for the needs of MSMEs by providing microfinance services. According to law, these are in general classified into two: banks and non-banks (Figure 2.6).

Table 2.2. Several credit schemes tailored for MSMEs

Credit scheme	Maximum amount of loan	Interest rate	Additional characteristics
People's business credit ( <i>Kredit Usaha Rakyat / KUR</i> )	Micro KUR: IDR 20 million (approximately USD 1,520) Retail KUR: IDR 20 million – IDR 500 million (approximately USD 1,520 – USD 38,000)	Micro KUR: maximum 22 percent p.a. Retail KUR: maximum 14 percent p.a.	A maximum of 80 percent of the maximum loan amount for farming, fisheries, forestry, and small industries, and 70 percent for other types of businesses, is insured by a credit guarantee institution
Food and energy security credit ( <i>Kredit Ketahanan Pangan dan Energi / KKPE</i> )	IDR 500 million (approximately USD 38,000)	Cane: Indonesian Deposit Insurance Corporation rate + 5 percent p.a. Other commodities: Indonesian Deposit Insurance Corporation rate + 6 percent p.a.	Channelled to support energy and food security program through farmers' groups and or cooperatives
Cattle breeding business credit ( <i>Kredit Usaha Pembibitan Sapi / KUPS</i> )	IDR 66.31 billion (Approximately USD 5,039,560)	Indonesian Deposit Insurance Corporation rate + 6 percent p.a.	Financing for cattle breeding business
Phyto-energy development and plantation revitalisation credit ( <i>Kredit Pengembangan Energi Nabati dan Revitalisasi Perkebunan / KPEN-RP</i> )	Depends on the approval of Director General of Plantation	Palm oil and cocoa: 7 percent Rubber: 6 percent	Financing for the development of crops' plantations that serve as the basics for phyto-energy and revitalisation of several plantations.

Source: Ministry of Cooperatives and SMEs, Bank Indonesia (2014)

In terms of the amount of financing channelled, banks have been consistently dominating the microfinance services. This should not be surprising since Indonesia can be categorised as a bank-based economy, as highlighted in the previous section. The regulation classifies a loan that is less than IDR 50 million (approximately USD 3,800) as microcredit. Aside from the commercial credits, the government instructed stated-owned and certain private banks in Indonesia to channel several credit schemes that are specifically tailored for MSMEs, such as people's business credit (*Kredit Usaha Rakyat / KUR*), food and energy security credit

(*Kredit Ketahanan Pangan dan Energi / KKPE*), cattle breeding business credit (*Kredit Usaha Pembibitan Sapi / KUPS*), and phyto-energy development and plantation revitalisation credit (*Kredit Pengembangan Energi Nabati dan Revitalisasi Perkebunan / KPEN-RP*). Some key characteristics of these credit schemes are presented in Table 2.2. As can be seen, each credit is specific for different types of businesses, and the government plays a role through interest subsidies and credit guarantees. Moreover, in 2012, the central bank issued regulation number 14/122/PBI/2012 that requires all banks, both conventional and sharia-based, to channel a minimum of 20 percent of their credit to MSMEs.

Table 2.3 summarises some statistics regarding banks' services to MSMEs. Although the amount of bank credit towards MSMEs has experienced an increasing trend with an average annual growth rate of 15.3 percent, its proportion relative to the total credit by Indonesia's banking industry has decreased from 2010 to 2012. Of this MSMEs' credit, in 2014, microcredit comprised only 21.55 percent. In 2012, there were 9,078,322 MSMEs' bank accounts, while the total number of MSMEs was more than 56 million at that time. Without taking into account the possibility that an MSME had multiple bank accounts, this means that only about 16 percent of MSMEs in Indonesia utilised banking services. The 2013 data reveal that most credit funding goes to the trade (53 percent), processing (10 percent), and agriculture (8.3 percent) sectors (Ministry of Cooperatives and SMEs, 2014). The overall non-performing loan (NPL) of MSMEs credit is indeed higher than that of non-MSMEs, but that the rate has been relatively stable. With regards to sectoral NPLs, those of the trade and agriculture sectors tend to increase. Around 53 percent of financing or credit to MSMEs and cooperatives was concentrated in Java, in which less than 47 percent was distributed among other islands: Sumatera, Kalimantan, Bali, Sulawesi, Nusa Tenggara, Maluku, and Papua. Of the commercial banks operating in Indonesia, Bank Rakyat Indonesia (BRI) is the one that has a focus on serving MSMEs. It was estimated that BRI served approximately 40 percent of the total loan value in the microfinance sector, and two-thirds of micro-savings.

Table 2.3. MSMEs' bank financing

Description	2010	2011	2012	2013 (estimated)
Banks credit to micro and small enterprises	IDR 221.93tn (USD 16.87bn)	IDR 234.55tn (USD 17.83bn)	IDR 261.45tn (USD 19.87bn)	IDR 305.27tn (USD 23.20bn)
Percentage of SMEs credit to total credit in the banking sector	12.25%	10.38%	9.41%	9.40%
Percentage of MSMEs credit to total credit in the banking sector	21.77%	21.24%	19.87%	19.09%

Source: Ministry of Cooperatives and SMEs (2014)

Non-bank microfinance providers are comprised of non-bank financial institutions (i.e. insurance and pawn shops), which are also regulated and supervised by IFSA, and cooperatives, which are under the authority of the Ministry of Cooperatives and SMEs. The role of venture capitalists and the capital market might be significant in terms of the amount of funding, although this has not been optimised yet. In 2014, there were only 26 venture capitalists, with assets around 7 percent of the total financial industry. With regards to the capital market, the regulation allows MSMEs to issue instruments such as stocks and bonds, but in reality this financial sector is underutilised. Only small and medium (and not micro) enterprises have been exposed directly to financing through the capital market. The IFSA's data show that between 2003 and 2007, only seven SMEs conducted IPOs with the total issue of IDR 265 billion (approximately USD 20 million), or 0.14 percent of the entire IPO issuance. Until 2013, there were no underwriting activities from companies that can be categorised as SMEs. This limited use of the capital market is due to the unfamiliarity of these companies with the nature of the financial sector, the low value of the initial public offering (IPO), the high costs associated with the capital market both during and after the underwriting process, the mostly informal legal business status, and the lack of readiness for more transparent corporate governance among businesses.

Cooperatives play an essential role in Indonesia's microfinance landscape, especially in rural and remote areas. The data show that there were 188,181 cooperatives in 2012, in which 133,666 were active. Only 58,004 of them, or 30.82 percent, held annual members' meetings, an event that is required for every cooperative. On aggregate, the total capital of Indonesia's cooperatives was IDR 115,174,190.15 million (USD 8,753 million). Realising the significance of cooperatives, Indonesia's government through its ministries and several institutions have allocated funds through the Revolving Fund Management Agency (*Lembaga Pengelola Dana Bergulir / LPDB*). Between 2008 and 2013, more than 2,000 cooperatives received financing from this agency.

Cooperatives with financing and savings services can take two forms that basically depend on whether they are operating according to the conventional (savings and borrowing cooperative/*Koperasi Simpan Pinjam / KSP*) or sharia-based system (sharia-based financial services cooperative / *Koperasi Jasa Keuangan Syariah / KJKS*). Table 2.4 presents some key data regarding both types of cooperatives.

Table 2.4. Cooperatives in Indonesia (June 2014)

No.	Description	Number (unit)	Members	Assets	Savings	Capital	Loans channelled
1	KSP	10,838	3,052,641	IDR 24.20tn (USD 1.84bn)	IDR 10.65tn (USD 0.81bn)	IDR 3.47tn (USD 0.26bn)	IDR 17.23tn (USD 1.31bn)
2	USP* Cooperative	95,881	15,409,283	IDR 57.63tn (USD 4.38bn)	IDR 8.48tn (USD 0.64bn)	IDR 17.39tn (USD 1.32bn)	IDR 44.84tn (USD 3.41bn)
3	KJKS	1,197	136,710	IDR 4.28tn (USD 0.33bn)	IDR 2.37tn (USD 0.18bn)	IDR 0.40tn (USD 0.03bn)	IDR 3.15tn (USD 0.24bn)
4	UJKS** Cooperative	2,163	333,282	IDR 1.16tn (USD 0.09bn)	IDR 0.63tn (USD 0.05bn)	IDR 0.27tn (USD 0.02bn)	IDR 0.91tn (USD 0.07)
	Total	110,079	18,931,916	IDR 87.27tn (USD 6.63bn)	IDR 22.13tn (USD 1.68bn)	IDR 21.53tn (USD 1.64bn)	IDR 66.13tn (USD 5.03bn)

Source: Ministry of Cooperatives and SMEs (2014)

\*USP: *Unit Simpan Pinjam* (savings and borrowing unit), can be found among cooperatives that are not legally registered as savings and borrowing cooperatives (KSP)

\*\*UJKS: *Unit Jasa Keuangan Syariah* (sharia-based financial services unit), can be found among cooperatives that are not legally registered as sharia-based financial services cooperative (KJKS)

Since this study focuses on clients of KJKS, a short overview of its evolution is worth providing. The emergence of this type of cooperative can be dated back to 1905, marked by the establishment of the Islamic Trade Union (*Sarikat Dagang Islam / SDI*). Later in 1918, Traders' Resurgence Movement (*Nadhlatul Tujjar*) was set up in East Java. Both organisations later turned into political establishments and abandoned their initial visions as trade organisations. In the 1980s, sharia-based cooperative re-emerged. The government then supported the development of these cooperatives by issuing a regulation that serves as guidance on the legality of such an institution. Since then, KJKSs have proliferated into many areas of Indonesia. They have a special ability in reaching clients that have not yet been served by other financial institutions such as banks. As many as 72 percent of KJKSs revealed that their institutions had clients that had never borrowed from other financing providers, and 71 percent of their borrowing contracts could be classified as micro productive loans (Ministry of Cooperatives and SMEs, 2014).

## 2.5. Concluding remarks

This chapter sets the contextual background of this dissertation. Several well-being and human development indicators of Indonesia have been presented. Indonesia has performed relatively well among low-income developing countries in terms of certain macroeconomic general indicators such as economic growth, unemployment rate, and income poverty rate. Ironically, the country is not very well-positioned with regards to HDI.

Some financial indicators also show that Indonesia tends to lag behind its peer neighbouring countries, such as Malaysia, the Philippines, Thailand, and Vietnam. These unfavourable financial indicators have driven the government to launch a strategy of financial inclusion, which was a national effort involving several agencies, including Indonesia's Financial Services Authority (IFSA) and the central bank. Financial literacy thus became an important issue in this strategy. There have been at least two attempts to identify the levels of financial literacy. One such by the IFSA defined financial literacy as the knowledge and use of formal financial products, while another, which was conducted by Cole et al. (2011) incorporated a measure of financial literacy that has been implemented worldwide. Both arrived at a similar conclusion: the level of financial literacy of Indonesians in general is low.

Since the attention of this dissertation is on microfinance institutions, the third section of this chapter provides an overview of the microfinance landscape. Government agencies, such as the central bank, have been actively devising policies to help microentrepreneurs have greater access to finance. It can be seen that there are several players in the microfinance market: banks and non-bank financial institutions. Although in terms of assets, cooperatives are much smaller than banks or other financial institutions, they play an important role in microfinance provision in Indonesia. This is one particular reason why this dissertation focuses on the clients of sharia-based cooperatives.

# CHAPTER 3

## CONCEPTUAL DEFINITIONS AND LITERATURE REVIEW

### 3.1. Introduction

The main purpose of this chapter is to provide conceptual definitions and reviews of the existing literature regarding the main theoretical frameworks and variables examined in this dissertation (Table 3.1). This dissertation uses two theoretical frameworks in analysing the importance of financial literacy: the capability approach and subjective well-being (SWB) approach. Interest in these frameworks emerged due to the limitations of the opulence approach in evaluating people's quality of life. Discussions regarding these two frameworks are focused on their features, justifications in using them, a number of examples of studies that have used them as theoretical underpinnings, and some of their limitations, both philosophically and empirically.

Table 3.1. List of theoretical frameworks and variables

No.	Theoretical framework / variables	Research topic involving the framework / variable*
1.	Capability approach	1, 2, 3, 4
2.	Subjective well-being	4
3.	Household financial decision-making authority	3, 4
4.	Financial literacy	1, 2, 3, 4
5.	Financial capability	1
6.	Cognitive ability	2, 3, 4
7.	Personality traits	1, 2, 3

Source: Author's own work

\**Research topic:*

1. *The conceptualisation, predictors, and impact of financial capability*
2. *Financial literacy as a conversion factor*
3. *The relationship between financial literacy and household financial decision-making authority*
4. *Household financial decision-making authority and SWB: The role of financial literacy*

As addressed by the general introduction in Chapter 1, this dissertation focuses on five key variables: household financial decision-making authority, financial literacy, financial capability, cognitive ability, and personality traits. The literature on decision-making authority (not specifically regarding financial decision making) is particularly extensive, considering that the issue has gained wide attention in various disciplines, such as economics, sociology,

and anthropology. Some of the most important and relevant theories are reviewed, together with empirical studies that explore factors affecting household decision-making authority. Meanwhile, financial literacy is a relatively new term and no fixed conceptualisation is associated with it, hence a discussion on the conceptualisation of financial literacy is provided. Emerging interest in the impact of financial literacy can be found in the literature, which is also discussed in this chapter. Due to the limitation of the concept of financial literacy in explaining the complexities of people dealing with financial matters, in some countries, attention has been directed to financial capability. There have been limited studies on financial capability. Most of the literature on this topic deal with the conceptualisations of financial capability, and a review on these can be found in this chapter. The last two sections discuss cognitive ability and personality traits. Since both terms are broad, these sections focus on explaining certain aspects covered by these concepts.

## **3.2. The capability approach**

### **3.2.1. An overview of the capability approach**

When we are evaluating people's condition, one basic question is how can we say that a person has a better living? What metrics should be taken into account? In his book *Commodities and Capabilities*, Sen (1985a) explained two possible ways in judging a person's interest: well-being and agency. It is not an exaggeration to claim that the majority of academic works, especially in the field of economics, have focused on the former. In the well-being sphere, traditionally, opulence-related measures such as Gross Domestic Product (GDP) and income are used in the evaluation process. Most of the time, these measures are the only that matter<sup>3</sup>. However, over-emphasis on opulence indicators received many criticisms because it can be toxic (Kesebir & Diener, 2008) and its incomprehensiveness does not capture real opportunities that people have. The capability approach, with its interdisciplinary nature, brings additional spectrums of information and addresses these concerns.

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<sup>3</sup> Economists' focus on opulence measures such as GDP stems from their strong emphasis on logic, precision of arguments, and evidence quantification (Rabbin, 1998), in addition to scarcity of reliable data (Ramos & Silber, 2005). Consequently, one can see that standard economics seems to oversimplify the complex nature of humans' lives.

Two people are well-associated with the capability approach: Amartya Sen and Martha Nussbaum<sup>4</sup>. Using the capability approach framework, we can judge a person's condition by the capability of doing things that he or she has reasons to value (Sen, 2009). A person's capability set comprises different achieved functionings, and purely rational motives do not solely drive the choice of these functionings. Instead, the influence of various preference mechanisms that to some extent depend on social construction is embodied within the approach (Robeyns, 2008). In this multidimensional framework, commodities are perceived as means to achieve various functionings. Sen (1985a) argued that it is inadequate to analyse exclusively the characteristics of commodities held by individuals in judging their well-being. According to his view, "economic prosperity is no more than one of the means to enriching lives of people" (Sen, 1985a, p. 42).

The ability to convert these commodities into human functionings depends on various conversion factors. In other words, with a same bundle of commodities, two people can achieve different levels of functionings. One can have a high quality of life with relatively limited resources, and vice versa. Empirically, Deutsch et al. (2003) documented low correlations between resources and functionings, which imply the significance of focusing on people's achieved functionings rather than the commodities they possess. However, there is an inherent shortcoming in doing so, because people's achieved functionings depend on the choice and utilisation function (Sen, 1985a). Sen further provided an argument against focusing on functionings: "even an exact 'tie' between two persons in achieved functionings may still hide significant differences between the advantages of respective persons which could make us understand that one person may be really much more 'disadvantaged' than the other (Sen, 2009, p. 236)."

This is why attention should be directed not only at what people end up doing or achieving, but also at what they are able to do, or their capabilities. Focusing on capabilities means that we shift our attention from well-being, which is captured by functionings, to advantage. This is important because there are aspects other than well-being that people care of, even if we define well-being in a very broad term (Sen, 1985a). In this sense, the capability approach values people's agency, which can be perceived as people's competence in deciding what opportunities they will pursue in their lives. As Sen argued, "the conception of 'persons' in moral analysis cannot be so reduced as to attach no intrinsic importance to this agency role, seeing them ultimately only in terms of their well-being" (Sen, 1985b, p. 186). In this regard,

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<sup>4</sup> However, there are fundamental differences between Sen's and Nussbaum's approaches, and one of these differences is the logic used in developing the concept. Sen uses a more economic reasoning, while Nussbaum employs moral, legal, political, and philosophical related way of thinking (Robeyns, 2005).

the capability approach also attaches the importance of process in people's lives, rather than merely ends or achieved functionings. Nevertheless, it should be noted that Sen does not endorse evaluating human's condition of capability alone. Rather, it should complement other measures by bringing additional information space (Sen, 2009).

Evaluative exercises concerning human's condition have benefited much from the capability approach. Its framework has allowed scholars to analyse various social problems in different ways. Poverty is a topic in which one can find wide applications of the capability approach. Within this theme, Dubois & Rousseau (2008) argued that preventive policy measures should aim at increasing people's capability. Those with higher capability tend to be less vulnerable, i.e. less probable to be trapped in poverty because they are more equipped when encountered with possible difficulties. Further, these interventions in people's capability, as suggested by Yaqub (2008), need to be strategic with regards to the timing in order to be more effective. For example, attempts to improve literacy should ideally be done since early ages. The capability approach is also useful to understand people's behavioural response towards social policies aiming for poverty reduction. In the case of the food relief programme in the Democratic Republic of Congo, De Herdt (2008) showed that capability-oriented reasoning, specifically the one related to "the ability to appear in public without shame", helps to explain the complex response mechanism to the social policy intervention in the ground.

We can find many versions of quality-of-life indicators that were built on, or inspired by, the capability approach. One measure that is often claimed as a manifest of the approach is the Human Development Index (HDI) (Chiappero-Martinetti, 2008), which was launched by the United Nations Development Programme (UNDP) in 1990 and developed under the lead of Amartya Sen and Mahbub Ul-Haq. The indicator, which according to Bérenger and Verdier-Chouchane (2007) is considered as the second most discussed after GDP per capita, is a composite index of three attributes: life expectancy, years of schooling, and income. This index is valuable since it incorporates aspects that cannot be directly captured by GDP per se, and it has been shown that there are large discrepancies of countries' ranking based on HDI and GDP alone. Direct methods of poverty measurement that intend to reflect functionings, such as the multi-dimensional index developed by Alkire & Santos (2014), are also claimed to be in line with the spirit of the capability approach. Mauro, Biggeri, & Maggino (2016) developed a procedure for synthesising and analysing multidimensional indicators based on the capability approach and sustainable human paradigm. This procedure allows a flexibility in substituting well-being dimensions through public reasonings.

Even though praised by many for its concern about people's ability to live well across different life aspects and its accommodation of substantive freedom, the capability approach has some caveats, especially when one attempts to operationalise the framework. An important limitation is the unavailability of a fixed list of the capabilities that are deemed necessary and constitute people's welfare. This is very problematic for those who intend to operationalise the approach as an evaluative framework. Sen himself does not have any prescription for this, whilst Nussbaum has a sort of a basic capabilities' list that is always open for revision (Robeyns, 2005). Whereas the absence of the list could provide opportunities for scholars to explore the set of capabilities necessary by different societies in different contexts, this makes the operationalisation of the capability approach easy to get criticised for having weak theoretical justifications, especially regarding the choice of capabilities' dimensions. The development of a capability index also faces scrutiny on its weighting system of different sub-indicators and potential redundancy among them (Bérenger & Verdier-Chouchane, 2007). Nevertheless, as shown by Qizilbash (2002), we can see considerable similarities among various lists by different social scientists.

Another operational limitation of the capability approach is that most of the studies end up with measuring functionings rather than measuring the capabilities of a person (Bérenger & Verdier-Chouchane, 2007). Like other measures of people's interest, indicators believed to measure capabilities also do not say much about making judgement on distribution. There is also a lack of discussion on how internal capabilities are developed, remaining the approach as static rather than dynamic (Heckman & Corbin, 2016).

In summary, the capability approach has been offered as an alternative framework in evaluating a person's quality of life. Although it has been criticised particularly on the feasibility of its operationalisation, further empirical studies are encouraged. The operationalisation of the capability approach can take many forms, and is a theme that this dissertation aims to explore.

### **3.2.2. Conversion factor and conversion rate**

As a framework, the capability approach emphasises the need for incorporating broader informational spaces, to reflect the conversion factors and rates, in human development's analysis. Nonetheless, discussions on conversion factors and rates in the capability literature tend to be limited, and this is particularly due to the difficulties in capturing the abilities of individuals to convert resources into functionings (Brandolini & D'Alessio, 1998; Chiappero-

Martinetti & Salardi, 2008). The operationalisations of the capability approach using various statistical techniques such as factor analysis and structural equation modelling have incorporated the idea of conversion factors and rate, but more in an implicit way.

Within the capability literature, well-being generating process as an equivalent to production function has been addressed by Sen (1985a) and Kuklys (2005). Similarly, Chiappero-Martinetti & Salardi (2008) and Binder & Broekel (2011) treated the interaction among conversion factors as the “technology efficiency” needed in a production function that transforms certain inputs into outputs. This conceptualisation sheds light on the significance of conversion function, factors, and rates in evaluative exercises. Within the field of household economics, the importance of conversion rate efficiency is not something new. The seminal work of Becker (1991) viewed households as units of production that are motivated by the achievement of joint utility function, which to some extent relies on their ability to convert resources (inputs) into functionings (outputs)<sup>5</sup>.

Empirical studies that directly measure conversion rates are limited, and the work by Chiappero-Martinetti & Salardi (2008) is one of the notable ones. They employed a set of regressions using public resources and socio-demographic characteristics as independent variables and interpret the parameters of the regression as the conversion rates, in the context of an Italian sample. Using this method, however, one can retrieve at best the conversion rate of a group within the population, allowing the identification of discrepancies between conversion rates of different groups. Despite its usefulness, it is still limited given that the capability approach emphasises the importance of and diversity among each individual in converting resources into functionings (Sen, 1985a; 1985b; Binder & Broekel, 2011). Therefore, there is a need to use other methodological approaches that can capture individuals’ variations of conversion factors and rates.

A number of studies that examine individual conversion factors and rates used the non-parametric envelopment techniques (e.g.: Deutsch et al., 2003; Binder & Broekel, 2011). These techniques depart from the basic notion that resources are needed to achieve higher levels of functionings. The main idea is first to find the most efficient decision-making units (DMUs) within a sample (i.e. the one that can achieve the most output given a similar level of input, or use the least input to achieve a similar level of output), to use them as the benchmark, and then to calculate other DMUs’ efficiency levels by comparing their abilities

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<sup>5</sup> The idea of “Pareto Efficiency” in intra-household resources’ allocation can also be found in the household economics’ literature (see for example: Bobonis, 2009; Bernasek & Bajtelsmit, 2002). This is conceptually different from the “conversion rate efficiency” examined in the present study.

in converting resources with the one of the benchmarks. The way this technique determines the benchmark is in line with Sen's idea of comparativism instead of transcendentalism (Sen, 2009) since there is no pre-determined, theoretically ideal benchmark before looking into the characteristics of the sample.

What can be considered as the relevant conversion factors? From Sen's (1985a, 1985b) discussion, we can see that command over resources depends on both internal and external factors. Even though one can find a consensus in the literature about the importance of these internal and external factors, interactions among them and the mechanisms involved are not very widely discussed. Kuklys (2005) further distinguished conversion factors into individual, social, and environmental. Characteristics such as age, employment status, marital status, health condition, and area of living have been considered as relevant conversion factors, as addressed empirically by Binder & Broekel (2011). If the functionings are broken down into several dimensions, one can see that conversion factors that affect different dimensions are distinct. The empirical results of Chiappero-Martinetti & Salardi (2008), for example, show that while gender is a relevant conversion factor for health functionings, it does not explain the variation of the functioning "being educated".

As mentioned in the previous sub-section, there is no single way in operationalising the capability approach, while an empirical investigation on relevant conversion factors might be considered for future research since it has not been widely performed. This is one topic examined in this dissertation, using a technique that values methodological individualism, as is explained further in Chapter 4.

### **3.3. Subjective well-being**

Subjective well-being (SWB) is often considered as an important indicator of people's well-being in social sciences. The founding fathers of the United States prioritised the "right to pursue happiness", while Bhutan has been using Gross National Happiness (GNH)<sup>6</sup> instead of income or other opulence-related measures as the country's main barometer of progress (Sachs, 2012). Using this type of measure, well-being is perceived in terms of people's perception of their own lives (Diener, Suh, Lucas, & Smith, 1999). There is of course an

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<sup>6</sup> Using this index, happiness does not solely depend on people's subjective assessment and does not only focus on oneself. There are different weights for distinct variables, with lighter weights applied for relatively subjective variables (Karma Ura, 2012).

assumption that people are the best judge of their own conditions. A formal definition of SWB is provided by the OECD: “good mental states, including all of the various evaluations, positive and negative, that people make of their lives and the affective reactions of people to their experiences” (Durand & Smith, 2013, p. 113).

The importance of SWB has attracted considerable attention from scholars across the world since the work of Easterlin (1974). In this study, he documented an interesting insight in which income, which is a typical measure used in evaluating well-being, does not always positively relate to happiness. In addition to happiness, there are two other measures of SWB widely used in the literature (Durand & Smith, 2013): Cantrill Ladder of Life and Life Satisfaction<sup>7</sup>. Using the first measure, people are asked to locate themselves on a certain vertical ladder that consists of several steps after considering their overall life conditions. Meanwhile, the second measure asks people how satisfied they are with their lives.

An important question that can be asked is what aspect do we want to capture using the three measures of SWB mentioned above? The answer to this can be illustrated using a spectrum in which on one side there is life evaluation and on the other is affective or emotion. They are based on different philosophical roots. The measurement of emotion has a strong hedonic and utilitarian tradition of pleasure and pain and is often used by people as an important guide to decision making, while life evaluation has a deeper meaning that constitutes a good life and incorporates material as well as non-material rewards (Bruni, Comim, & Pugno, 2008). The latter is often referred to as the eudemonic sense of well-being.

The three measurements of SWB mentioned above can be located in this spectrum, and each has a different tendency in measuring people’s emotions or in evaluating one’s own life in general. It is argued that people are able to distinguish between these two aspects, and that this depends greatly on the questions asked. This means that a person can be emotionally very happy, but at the same time not satisfied with his or her life. Different forms of SWB measures are also empirically separate (Lucas, Diener, & Suh, 1996). Life satisfaction tends to put more weight on life evaluation rather than affective emotion, and is more influenced by the income variable (Diener, Kahneman, Tov, & Arora, 2010).

Kesebir & Diener (2008) provided two main justifications as to why SWB measures such as happiness are important indicators. Firstly, studies have shown that people care about

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<sup>7</sup> Other measures of well-being include the Meaning in Life Scale (Steger, Frazier, Oishi, & Kaler, 2006), the Vitality Scale (Ryan & Frederick, 1997), and the Psychological Well-Being Scale, which consists of the environmental mastery, autonomy, self-acceptance, purpose in life, personal growth, and positive relationships subscales (Ryff, 1989).

happiness more than they care about other aspects. One example is a study by King and Napa (1998), who found that people in the United States prioritise happiness over wealth, moral goodness, and the likelihood to go to heaven. Secondly, this type of SWB measure is praised to be democratic by giving people the authority to examine their own conditions.

Despite the abovementioned arguments on the importance of using SWB to evaluate people's well-being, the measure also receives severe criticism (Hirai, Comim, & Ikemoto, 2016), especially from those in the field of economics. One major issue with evaluation exercises using SWB is the adaptive preference phenomenon. At the core of this problem is people's unconscious and unintended adjustment of their perceptions according to what is available to them and what they have experienced. Indeed, Kahneman (1999) showed that memories of past events can bias the decision-making process. Sen suggested that an evaluation based on happiness "can be deeply unfair to those who are persistently deprived, since our mental make-up and desires tend to adjust to circumstances, particularly to make life bearable in adverse situations" (Sen, 2009, p. 283). Furthermore, people "lack the courage to desire any radical change and often tend to adjust their desires and expectations to what little they see as feasible" (Sen, 2009, p. 284). Bias in respondents' answers about their happiness might not lead to a serious problem if it is systematic. However, there is a possibility that distinct groups of respondents take different directions of bias, for example the rich tend to have an upward bias while the poor have a downward bias (Easterlin, 1974). This is something that we must be aware of if we want to employ the happiness measure.

Since SWB has strong utilitarianism roots, it also subjects another critique to this philosophical basis, which is non-commensurability. Robbins (1938) argued that interpersonal utility does not have a scientific basis because "no common denominator of feelings is possible (p. 636)". Similarly, Sen (1996, p. 55) referred to Arrow's work, and showed that "Arrow ruled out not only interpersonal comparison of utilities, but also the use of the so-called 'cardinal' measures of utility or happiness, which would permit us to go beyond people's utility rankings to comparisons of such things as utility differences".

An objection to the sole use of the SWB measure as a policy consideration can also be detected. Stewart (2014) argued that happiness is an unsatisfactory indicator of societal progress and provides a weak basis of distributional judgement. Although it has a strong democratic value, the measure tends to be self-centred and does not match the concerns of society that includes public goods (Bruni et al., 2008).

However, such critical voices against happiness should not be used as a basis to claim that SWB has no value. As Kahneman & Krueger (2006, p. 7) argued: “Considerations of the effects of context, mood and duration neglect indicate certain limits on the reliability of the standard life satisfaction and happiness questions, but they are not necessarily grounds for dismissing the method altogether”. Indeed, although influential scholars such as Sen have pointed out the limited use of such a measure, especially when it is interpreted in a hedonic way, it is actually the exclusive reliance on such a measure that is problematic (Robeyns, 2005). In Sen’s own words: “Happiness cannot be the only thing that we have reason to value, nor the only metric or measuring other things that we value, but on its own, happiness is an important human functioning” (Sen, 2008, p. 26). Measures related to SWB should not replace other measures that are considered as more objective, such as capability and human rights (Stewart, 2014). Subjective data, with careful analysis, interpretation, and contextualisation, can enrich the overall understanding of the human being (Camfield & Esposito, 2014) and complement traditional forms of welfare analysis (Kahneman & Krueger, 2006).

In addition, those who have used SWB measures justify them by pointing to strong correlations between SWB and other indicators. As opposed to the criticisms on the subjectivity of SWB measures, several studies from different fields have shown that SWB measures like happiness can be objectively measured, are correlated with observable brain functions, and can be related to the characteristics of individuals and or of society (Sachs, 2012).

Due to the reasons mentioned above, SWB measures are still commonly used in the academic literature, and the life satisfaction questionnaire has been used for more than three decades (Ferrer-i-Carbonell, 2005). There were more than 100 papers related to SWB from 2001-2005, which was a significant increase from four papers within the period between 1991 and 1995 (Kahneman & Krueger, 2006). Topics related to the nexus between different types of income (absolute income, relative income, and income aspirations) and SWB continue to receive attention (Clark & Oswald, 1996; Blanchflower & Oswald, 2004; Stutzer, 2004; Feeny, McDonald, & Posso, 2014). As summarised by Hirai et al. (2016), subjective information have also been used by scholars in the field of human development (see among others: Alkire, 2005; Anand et al., 2009; Comim & Amaral, 2013).

In the policy-making arena, the significance of SWB can be seen when in 2011 the UN General Assembly invited countries to measure happiness and suggested that they use it as a public policy guide, followed by a UN high-level meeting in 2012 to discuss happiness and

well-being. The World Happiness Report has also been published since 2012 by the UN's Sustainable Development Solutions Network (SDSN). The OECD has also published guidelines for measuring SWB.

In conclusion, we can see that SWB is an important spectrum of information; however, there are some fundamental problems related to its measures which thus limit its utilisation. Consequently, one should refrain from using it to completely replace other well-being indicators. It seems that there is a Chinese Wall between studies using SWB and those using other frameworks, such as the capability approach (Comim, 2008a). This should not be the case, and one of the aims of this dissertation is to determine a way of using the SWB measure in conjunction with the capability approach by focusing on the issue of human autonomy, as suggested by Hirai et al. (2016).

### **3.4. Household financial decision making**

This section elaborates upon the available literature on household decision making, starting with the evolution of household economics theory. The rejection of the unitary hypothesis, as later explained, points to the importance of decision-makers within households. Additional reasons for considering this issue are also presented. Several typologies of households can be revealed by the dynamics of financial management and decision-making responsibility in the previous literature, and these are explained further in one of the sub-sections. Several theories that help to explain a household's division of labour and these typologies are then presented. Lastly, empirical discussions on some factors that can affect decision-making authority are included.

#### **3.4.1. From unitary to collective hypothesis**

##### **3.4.1.1. Unitary model**

Initially, people belonging to a household were treated as a single entity with congruent interests and preferences, who pool all of their income together and make decisions ultimately aimed at joint-utility maximisation. The distinction between an individual's and a household's preferences then becomes irrelevant (Vermeulen, 2002). However, when the utility preferences of household members are not similar, the assumptions of aggregation and maximisation of a single joint utility seem unrealistic (Manser & Brown, 1980). Early works

on household economics tried to resolve this issue. Samuelson (1956) assumed each member as having sub-utility functions, and the aggregation of these individual utilities is achieved through a consensus among these members. Becker (1991) addressed this issue of different utility preference by assuming that within a household there is a benevolent decision-maker in resources allocation who takes into account these differences between members. The decision taken then leads to the condition of Pareto efficiency for the household, partly supported by the specialisation of different household members in particular activities in which they have comparative advantages. These models explain what is later referred as the unitary model of households (M. Browning et al., 1994; M. Browning, 2000; Carlsson et al., 2013).

However, the unitary model is often criticised for its restrictive assumptions and lack of discussion on the possibility of different household members having different preferences that might need to be settled through a bargaining process (Carlsson et al., 2013). This perspective is in line with the value of individualism in microeconomics theory, in which all individuals have different preferences (M. Browning et al., 1994). Moreover, the root of intramarital conflict is sometimes related to money management (Pahl, 1980), and this might be due to couples' contrasting priorities in households' spending between husbands and wives (Pahl, 2000). In such cases, treating a household as a decision-making unit might be misleading.

#### **3.4.1.2. Collective bargaining model**

Several approaches can explain the intrahousehold bargaining process, as summarised by Vermeulen (2002) and M. Browning et al. (2014). One fundamental difference between these approaches is whether they are based on a non-cooperative or cooperative framework.

Approaches that can be categorised as using a non-cooperative framework include those of Leuthold (1968), Kanbur & Haddad (1994), and M. Browning (2000). Individual members maximise their utility by taking other members' behaviour for granted. The allocation of resources is not guaranteed to be Pareto efficient, although in some restrictive situations this might be achieved. Other assumptions that are relaxed in the non-cooperative model include income pooling and enforceable and binding contracts (B. Agarwal, 1997).

Those working with an assumption of cooperative behaviour include Manser & Brown (1980), McElroy & Horney (1981), and Lundberg & Pollak (1993). Individual members come together to agree on how to gain benefits from cooperation. The achievement of Pareto efficiency here depends on the bargaining power of household members, and this bargaining

power depends on their utility if they do not belong to their households (Bernasek & Bajtelsmit, 2002).

There has been an emerging interest in the academic literature to examine which model (unitary versus collective bargaining) best explains how households work. There are four properties that ideally should hold when the unitary model persists: income pooling; the symmetry of the Slutsky matrix; the negativity of price responses; and non-inclusion of income variables from demand equations conditioned on total expenditure (M. Browning et al., 1994). In general, we can see that support towards the unitary model is fragile. The income pooling condition has been rejected in the case of two-person households (M. Browning & Chiappori, 1998). Many studies have also failed to prove the symmetry of the Slutsky matrix (see for example: M. Browning & Meghir, 1991; Blundell, Pashardes, & Weber, 1993).

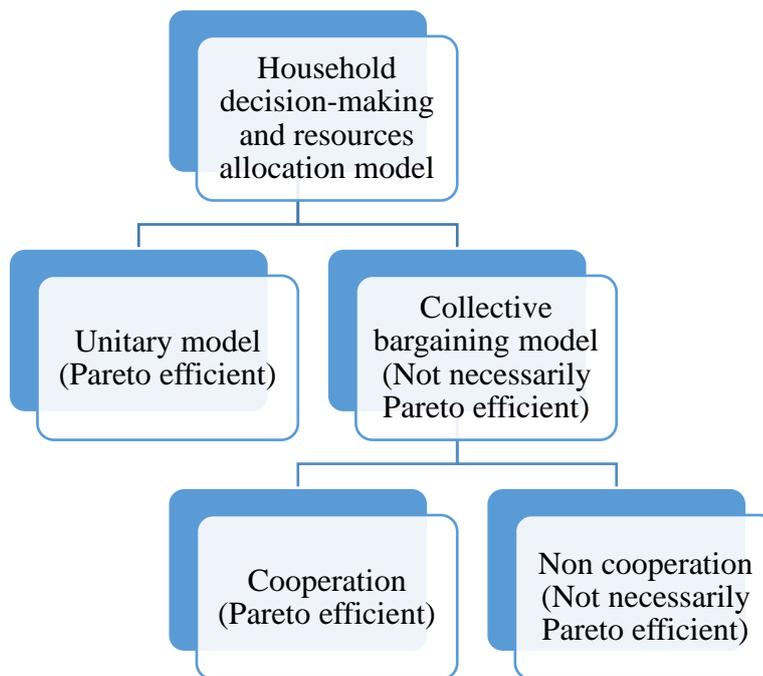
Various studies have tried to test the unitary hypothesis by looking at the impact of the income variable on household decision-making dynamics. One consequence of the unitary model is the irrelevance of income, whereby the distribution of income sources should not affect the decision-making process. Meanwhile, according to the collective model, income earners possess a right to the household's money, and thus the issue of who receives income in the family does matter (Burgoyne, 1990). Some studies have shown weak evidence of the impact of resources on household decision-making authority (see for example: Commuri & Gentry, 2005; Tichenor, 1999), while many others have failed to support the unitary hypothesis by showing the significant impact of income (see among others: M. Browning et al., 1994; Bernasek & Bajtelsmit, 2002, Lee & Beatty, 2002; Carlsson et al., 2013).

Another important topic is whether household members follow cooperative rather than non-cooperative behaviour. One way to check this is by looking at the extent to which Pareto efficiency has been achieved. Bobonis (2009) conducted an empirical test on this issue and the result supports the collective model with cooperation, in which there is efficient family resources allocation within the household irrespective of who earns the income. The result of this study is consistent with previous studies in several developed countries (M. Browning et al., 1994; M. Browning & Chiappori, 1998; Chiappori, Fortin, & Lacroix, 2002). However, a similar assessment in West Africa was not able to confirm that such efficiency persists among households. One possible explanation is that household members are highly independent from each other in terms of budget, resources control, and consumption (Udry, 1996).

A complexity that one should bear in mind is that unitary, cooperative, and non-cooperative models might exist simultaneously in the same households due to the variety of decision-making areas (Katz, 1996). Moreover, in reality, the ideology of resources allocation and the bargaining process involved are usually subtle (Papanek & Schwede, 1988; Waseem, 2004).

Figure 3.1 provides a summary of different household decision-making and resources allocation models discussed in this section. The rejection of the unitary hypothesis, coinciding with some empirical evidence supporting the collective bargaining model of households (M. Browning et al., 1994; Bernasek & Bajtelsmit, 2002, Lee & Beatty, 2002; Carlsson et al., 2013), raises several important issues in household decision making. One stream of literature highlights the importance of decision-making authority, and this is elaborated in the next section.

Figure 3.1. Summary of household decision making and resources allocation models



Source: Author's own work from various sources

### **3.4.2. The importance of decision-making authority**

#### **3.4.2.1. Intrinsic value: Decision-making authority as a reflection of human's agency and empowerment**

Decision-making authority can be viewed as a reflection and operationalisation of the concept of agency (Kabeer, 1999; Sen, 1985b). As previously described, human agency is an essential element in Sen's capability approach framework that can be used to evaluate people's conditions (Sen, 1985b). Exercising choice requires three related dimensions: resources, agency, and achievement. He has criticised the traditional mainstream economics framework that often exclusively focuses on the first dimension, which is further narrowed into income and opulence related measures. Agency itself can be interpreted as the ability of people to pursue beings and doings they have reasons to value (Sen, 1985b), and human development can be reflected from the maturation of human agency (Welzel & Inglehart, 2010). Bringing additional informational space such as agency might be helpful in addressing many social issues, such as the well-being of females and children.

A discourse in the literature views household decision-making authority as a source of empowerment, especially female empowerment (Allendorf, 2007; Yusof, 2015b; Hou, 2016). Nevertheless, participation in household decision-making is not always associated with empowerment. Indeed, as Waseem (2004) suggested, there is a view that financial decision-making is a burden rather than a source of empowerment. In the case of women, emphasising their role in the household decision-making (including financial decision-making) will instead reinforce gender norms and stereotypes within society (Molyneux, 2006).

Potential divisions of labour also need to be considered when seeking to claim that decision-making power is a good proxy for empowerment. There are various activities that need to be performed within a household (see for example: Herbst, 1952), and each member will attempt to specialise in some of these activities. Such specialisation means that he or she will direct his or her attention less on other activities. When a woman is excessively focused on household responsibilities, she might not be involved in activities beyond the household. As emphasised by Doss (2011), to get a better understanding of the position of women, we should not only narrow our attention towards the bargaining process that occurs within households, but also the ones in the community or nation as a whole. From the perspective of Engels (1972), participation in public economic activities rather than domestic tasks enhances one's individual economic status. Perceptions about girls and women are also more

favourable among societies where women contribute significantly to the food-based economy (Schlegel & Barry III, 1986).

#### **3.4.2.2. Instrumental value: The impact of household decision-making authority**

Decision-making authority has not only intrinsic value, but also instrumental value. The identities of households' decision-makers have been shown to be relevant on many occasions because of different consequences. Discussions about this topic usually focus on male versus female decision-makers, since households' spending is considered to be highly gendered (Pahl, 2000). Some aspects of financial decision-making, like savings, investments, and retirement preparations, which are the main subject of this study, are perceived differently by each member of a household (A. Wood, Downer, Lees, & Toberman, 2012; Yusof, 2015a). Sub-section 3.4.1.2 argues that household members of opposing sex have differing preferences, and thus potentially lead to distinct outcome. This can be further extended to other differences between men and women that are closely related to preferences such as decision-making styles and decision-making outcomes.

Men and women have been shown to have different decision-making styles. In this regard, personality traits to some extent play a role. Women are associated with having lower levels of perceived confidence in financial decision-making, as empirically assessed by Estes & Hosseini (1988), Stinerock (1991), and Zinkhan & Karande (1991). More importantly, among several potential socio-demographic factors, gender is shown to be the most crucial factor predicting the level of perceived confidence in financial decision-making (Estes & Hosseini, 1988).

Women in general also have a lower level of risk tolerance compared to men (Jianakoplos & Bernasek, 1998; Schubert, Brown, Gysler, & Brachinger, 1999; Powell & Ansic, 1997; Yusof, 2015a). There is a question on whether differences in risk preferences are context specific, and the results are mixed. Powell & Ansic (1997) conducted an experiment to test these. In their study, participants were required to make financial decisions in two areas with different levels of ambiguity, framing, and familiarity: insurance choice and currency market. Their experiment revealed that financial decision-making strategies of men and women are indeed not similar, and they are not sensitive to these characteristics. In contrast, a study by Schubert et al. (1999) suggested that contextual settings matter. Using two experiments, one regarding investment and insurance decisions while the other dealt with gambling decisions, they demonstrated that differences between men and women's decision-making styles are

subject to framing. Further, they argued that men and women differ because the opportunity sets faced by each gender are distinctive.

Household decision-making authority can also have a profound impact on the material well-being of each family member. It is argued that those with decision-making authority have more control over financial resources, and are therefore expected to have more wealth compared to those not making decisions (Grabka, Marcus, & Sierminska, 2015). Intuitively, this is predictable as the outcomes of decision-making tend to be closer to the preferences of the decision-maker (Carlsson et al., 2013). Studies measuring poverty deprivation are often made at household level, partly due to the assumption that there is an equitable distribution of resources among family members. This long-standing assumption in economics is however coming under serious scrutiny in reality. Intuitively, looking at the differences in utility preference of each household member and the bargaining process that serves as a mechanism in resources allocation management, there is a reason to believe that in some cases one's utility preference is not entirely fulfilled because the limited resources are used to fulfil the utility preferences of other members. The figures of poverty or inequality that are often reported might change drastically when we take into account welfare distribution within households (Haddad & Kanbur, 1990). Frick, Grabka, & Sierminska (2007) empirically attempted to assess the actual degree of inequality by comparing Gini coefficients calculated based on individual wealth data to those based on households' per capita data. Indeed, their results showed that the per capita data's Gini coefficient was lower, indicating an underestimation of inequality if the assessment is made at the household level. Even when decisions are claimed to be made jointly, there is a tendency that the outcome is closer to the man's preference (de Palma, Picard, & Ziegelmeyer, 2011; Carlsson et al., 2013). An absence of cooperation among family members can in part explain this, whereby Pareto efficiency is not achieved due to the enforceability of the marital contract (Lundberg & Pollak, 1993) and asymmetric information (Ashraf, 2009).

Children's welfare, mostly assessed through indicators of nourishment and education, is one spectrum of information that is often examined with regard to a household's well-being. There are strong empirical supports for the notion that well-being is better protected when a woman controls the income and participates in household decision making, either as a sole decision maker or one of multiple decision makers but with superior authority. In Pakistan, the school enrolment of children, especially rural girls, is more likely when women have more decision-making authority in the household (Hou, 2016). In the United Kingdom, Lundberg, Pollak, & Wales (1997) noted that the allocation for children's clothing is higher when the

child benefit transfer is made to the mother rather than to the father. Another study by Pahl (2000) compared expenditure allocation by men and women. It was found that men tend to spend more on tertiary items such as alcohol, motor vehicles, house repairs, holidays, and gambling, while women allocated more for food, clothing, education, and childcare. When households are faced with financial difficulties and expenditure needs to be cut to cope with the situation, women are more likely than men to reduce their expenditure (Pahl, 1995)<sup>8</sup>.

This empirical finding can be explained by the prevailing social norms in many societies that expect women to set aside their individual needs and prioritise collective interests with less or no similar expectation of men (Boserup, 1989; Bobonis, 2009). In Mexico, the norm among poor households is that women should prioritise collective consumption needs rather than their own (Blundell, Chiappori, & Meghir, 2005). Similarly, in Indonesia, there is an attitude among Javanese (one of the major ethnicities) that women ought to prioritise the family's interests, especially those of the children (Jay, 1969). Moreover, women and men tend to have different views regarding distributive justice, in which men are more likely to believe that rewards should be proportional to contribution (equity norm), while women believe that the outcome should be equal and independent from contribution made (equality norm) (Burgoyne, Reibstein, Edmunds, & Dolman, 2007).

Several studies have also shown how household decision-making authority and or responsibility affect SWB, particularly life satisfaction. The nature of the relationship between these two variables is complex and less conclusive compared to the previous relationship between decision-making authority and more objective welfare measures. On the one hand, the finding by Álvarez & Miles-Touya (2016) demonstrated that working women who have more share in household responsibility tend to be less satisfied with their lives. In line with this finding, household responsibility that hinders participation in the labour market leads to a decline in life satisfaction (E. M. Berger, 2013). On the other hand, Weigel & Weigel (1990) showed that an involvement in decision making can increase life satisfaction among younger generations in farming families.

The literature has provided several potential explanations on the variations of the relationships between decision-making authority or responsibility and life satisfaction: the amount of

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<sup>8</sup> All of these notions that the outcome of a household decision making tends to favour the well-being of the decision makers relies on the assumption that individuals are self-interested. When this assumption is not fulfilled, i.e. when a person puts less emphasis on his or her own well-being relative to the well-being of others within the bargaining sphere, the outcome will be less favourable to the respective person (Sen, 1990b). Some findings also suggest the irrelevance of decision making with regard to an individual's deprivation within households (see among others: Cantillon, Maître, & Watson, 2016).

households' resources, the value of agency within the society, gender role prescription within the society, and the nature of households' responsibility.

Different levels of resources might lead to different perceptions on decision-making authority that involves these resources. When the monetary resources in a household are limited, decision-making authority tends to be viewed as a burden since resources allocation becomes harder and decision maker needs to be more strategic. In the case of women in poorer households, greater decision-making responsibility makes them more stressed, especially when they have children (Snape, Kumar, & Molloy, 1999), and this might lead to lower levels of life satisfaction. On the other hand, for wealthier households, decision-making authority tends to be associated with a source of power, which potentially can have a positive effect on life satisfaction.

As explained previously, decision-making authority is often perceived as a reflection of human's agency (Kabeer, 1999). It has been shown by Welzel & Inglehart (2010) that agency is the second strongest influence factor on life satisfaction after monetary saturation.

Nevertheless, the extent to which a higher agency leads to a more satisfied life is contextual. They further argued that the value of agency is very closely related to the value of self-expression, and this is determined by the cognitive mobilisation within a society. The way the society is developing follows an evolutionary process: when there is a wider life opportunity, the value of agency increases, and consequently, higher agency leads to a higher level of life satisfaction. Using a different point of view, the "post-materialist happiness" explanation (Delhey, 2010) leads to a similar conclusion on the importance of agency for life satisfaction.

Further studies argued that the types and natures of households' responsibilities should be incorporated in explaining the complexities of the relationships between decision-making authority or responsibility and SWB. Households' tasks are gendered, both in terms of the proportion of responsibility and types of work. Some tasks are identified as the domain of women, while some are strongly associated with men's responsibility. Women in many societies are also expected to have more household responsibility, hence they are expected to allocate more time within the households. People incorporate their senses of identity unconsciously in forming their preferences, and the former is often socially constructed (Akerlof & Kranton, 2000). Thus, the way decision-making authority affects SWB to some extent depends on the coherence between the society's prescription and people's perception on the fulfilment of these prescribed roles, as empirically shown by Chang (2011) in the case of Taiwan. SWB will be positively affected when a person believes that he or she fulfils the gender role as expected in the society. Thus, there might be a case in which a wife who has

significantly higher household responsibilities than the husband still maintains a high level of life satisfaction because she believes that it should be the case due to the norm in the society.

Other studies argued that there are other tasks' features masked behind gender difference. The level of control over the schedule to perform the tasks is one characteristic that has been suggested by Barnett & Shen (1997) to be matter in explaining the relationship between household responsibility and SWB. Meal preparation is an example of routine and repetitive tasks that one has less flexibility in terms of timing, and the social norms in most societies expect this to be the responsibility of the wives. It can be seen from their finding that the responsibility on this low-schedule-control tasks can negatively affect SWB, while the same relationship is not found with regard to high-schedule-control tasks.

Interesting discussions on decision-making authority are not limited to the issue of gender (men versus women) but also the issue of individual versus collective decision-making. There is evidence to suggest that couples' choices depart from the expected utility theory. In terms of risk aversion, choices made together tend to be more risk-averse compared to choices made individually (Bateman & Munro, 2005). When decisions regarding the level of saving are made together, the percentage of income set aside is higher (Hempel & Tucker, 1980). Co-decision-making is also shown to be more beneficial for the improvement of living standards of couples (Cantillon et al., 2016), with less of an intra-household gender gap than when the decision-maker is solely the man (Vogler & Pahl, 1994; Pahl, 1995; Grabka et al., 2015). However, it has still also been found that shared decision making does not bring a positive significant impact on individual deprivation, especially for women (Vogler & Pahl, 1993).

Overall, household decision-making authority can be perceived as a reflection of agency, and can be instrumentally valuable for various aspects in one's life, including SWB. Nevertheless, it should be noted that at the same time people might not enjoy this authority because they may view it as a burden. The tension between these two different interpretations can lead to an unclear relationship between decision-making authority and SWB. Some explanations of this have been offered by the literature, but further investigations will enrich the discussions.

### **3.4.3. Typology of household decision making**

Since financial arrangement has been shown to possess significant impact on the well-being of households and households' members, a stream of literature attempts to explain various ways of how households manage their financial matters (see among others: Pahl, 1980; Waseem, 2004). Income and money management within households to some extent are

determined by households' members' views about marriage (Vogler & Pahl, 1993), and these depend on various socio-demographic, economic, and cultural contexts (Boserup, 1989; Pahl, 1995). When there are multiple members earning income in the households, there are at least two issues that need to be solved: (1) how they combine and allocate income from different sources; and (2) who has the responsibility of financial decision making. These are the two bases that have been used in developing typologies of households, as are explained below.

#### **3.4.3.1. Typology based on income combination and allocation**

Pahl (1980) is one of the scholars who developed a typology according to income combination and allocation systems. According to her, in general, there are three types of allocation system: the whole wage system, the allowance system, and the pooling system. Households belonging to the first group are characterised by one breadwinner (typically the husband) who hands over the whole income to the partner (in most of the cases, the wife) who is responsible for the financial affair. The breadwinner him or herself will then receive a sort of pocket money from the household's financial manager. Under the allowance system, which is another type of financial arrangement in families with one main income earner, the breadwinner provides the partner with an allowance. The amount of this allowance partly is determined by the society's norm of what is considered appropriate. One can find several modifications in this second type of households, in which the breadwinner takes charge on some items relevant to the entire members of the households. Waseem (2004) argued that households characterised by the allowance system as those might reinforce gender inequality, in which financial arrangement is a way to conceal within-households' power relations.

Different from the first two groups of households, the pooling system can be found among households in which there is more than one income earner. Income pooling itself is prone to multi-interpretation, especially with regards to whether we perceive the phenomenon from sociology or economics' perspective (Waseem, 2004). In sociology, pooling is loosely defined as a condition where simply couples put their income together. The definition of pooling in economics is rather more restrictive, in which it is defined as a condition where there is no different way of spending additional income that comes from different sources, i.e. whether the source of additional income is the wife or the husband.

Empirical investigations regarding income management emerged. As explained in the previous section, M. Browning & Chiappori (1998) found no support for income pooling when they examined whether unitary hypothesis persists. Another study was conducted by

Phipps & Burton (1998), who tested 14 classifications of households' consumption by estimating each of these items' Engel curve. They examined whether a similar change in an absolute number of each couple's income is spent equally for these different expenditure groups. When this is the case, income pooling system is implemented. For items like restaurant food, household food, clothing, child care, and transportation allowance, there is no sufficient evidence to suggest that a change in income of male is spent in the same way with a similar change in female's income. On the other hand, they failed to reject income-pooling hypothesis in the case of housing.

### **3.4.3.2. Typology based on decision makers within households**

While several scholars like Pahl (1980) focused on the first dimension, which is on who earns money and how income is combined, there are others who built typologies based on households' decision makers. Wide discussions can be found on this aspect, which generally agree that men and women have different responsibilities. The typology by Edwards (1982) classified households in a straightforward way as those in which the financial arrangements are controlled by the husband, wife, or both. Referring to the predominant economic model in household behaviour, Bernasek & Bajtelsmit (2002) argued that financial decision making is often regarded as the role of the men in households. However, other evidence showed that this issue is highly contextual. In Indonesia, Papanek & Schwede (1988) argued that women are responsible for household financial decisions and play a considerable role in household budgeting and expenditure. Ferber (1973) reviewed several studies and suggested that the most typical case is when women handle money and bills. Niffenegger, Taylor, & Taylor (2015) reported that decisions on savings and investment are mostly made through joint involvement by both the husband and wife.

A more structured typology was provided by A. Wood et al. (2012). Based on a qualitative work in Australia, they identified that household financial decisions are generally not made wholly independently. Rather, a household typically consists of a partner who is more active in financial decision making and another who tends to be less active. The former is regarded as the alpha partner, while the latter is known as the beta partner. According to their arrangement and attitude towards financial matters, as well as the existence of these alpha and beta partners, A. Wood et al. (2012) further divided households into three groups: unbalanced responsibility, cautious and content, and organised aspirational. Each household that can be classified into the first group consists of an alpha partner, who is often a woman, and

commonly in their 20s or 30s. The cautious and content group comprise households that are in general careful with money and realistic in terms of their ambitions according to what they think they can afford. Compared to those belonging to the unbalanced responsibility group, couples in this group are typically older and more settled, as indicated by their house ownership. Couples in the last group, the organised aspiration group, tend to have a less unequal role in financial decision making and are more confident with money. One can still find an alpha partner, whose role is more closely related to doing research with regards to financial matters. Although the beta partners tend to be more relaxed and have less awareness of financial matters, this does not make them fully reliant on the alpha partner. Households in this group come from different age and income groups. A. Wood et al. (2012) also found a gender pattern, in which women tend to be the alpha partner, while men act as the beta partner.

Several points should be made on the different typologies listed above. They are not exhaustive, and as Pahl (1983) argued, an infinite variety might exist in terms of the various allocative systems. These common typologies are prone to critics arguing that household relations are fluid in nature (Waseem, 2004). We should also bear in mind that a certain typology might evolve from time to time as changes in a society's values, trends, and traditions take place. A household might also change the ways in which it manages its financial matters, both due to more pragmatic and ideological reasons (Burgoyne et al., 2007). Increased participation for women that provides them with the opportunity to earn income outside the household makes the dynamics of financial decision making within the household more attractive. Simply saying that households are either pooling their income or not and asking who is responsible for household decision making is no longer sufficient since many other aspects need to be taken into account.

Discussions on households' typologies based on decision-making authority are not straightforward because decision making itself might involve the control and management or implementation function. Pahl (1980) showed how these two functions are performed by different household members. In terms of financial matters, while there is a relatively high percentage of women who conduct daily financial management, the percentage of those who have the final say is small.

### **3.4.4. Factors predicting household financial decision making**

The literature provides us with a list of factors that can be used to predict who makes decisions in a household, specifically with regards to financial matters. As the previous section demonstrates, a salient factor is gender, and this has been the focus of many studies in sociology, psychology, and household economics. Papanek & Schwede (1988, p. 82) even argued that “gender differences constitute one of the great fault lines' of social groups - the lines of division along which resources, power, and authority are allocated to group members”. Meanwhile, Rosen & Granbois (1983) suggested that sex-role attitude is one of the most important things determining the role structure of a task's implementation. There is no single conclusion on this issue since various studies reveal different roles of men and women, partly due to differences in the areas of decision making and cultural contexts.

This sub-section provides theoretical explanations for the dynamics of household decision making. Some theories focus on the mechanism of the relationship between gender and decision making, while others explain the nature of power relations within households that affect decision-making power. Afterwards, some of the potential variables that have been demonstrated to affect household decision-making power are reviewed.

#### **3.4.4.1. Becker's comparative advantage**

In economics, Becker (1991), with his seminal work, used the comparative advantage of each sex in carrying certain tasks as the main explanatory factor, whereby couples attempt to maximise efficiency by exploiting this comparative advantage. Marriage, he argued, offers several efficiency advantages due to specialised human capital, shared public goods, and economies of scale. Most of Becker's discussions about the division of labour deal with responsibility within households versus responsibility for market activities. Each person's decision on investment in human capital also depends on this comparative advantage. Becker largely attributes the idea of this comparative advantage to biological differences between men and women. However, even when there are no biological or physical differences involved, a division of labour still prevails due to the advantage of specialisation. Based on this logic, we can expect that there will be a member that will specialise in financial decision making, as it is relatively complicated compared to other decision-making areas. Despite its appealing features, Becker's approach has been criticised for ignoring many other factors in

real life that actually put constraints on the choices made by couples (Burgoyne et al., 2007), such as historical implications, ideology, and culture (Mencarini & Sironi, 2012).

#### **3.4.4.2. Evolutionary, social constructionist, and biosocial theories of gender**

Since the 1960s, the division of labour according to gender has been an important discourse among feminists (Fennell, 2008). There is a debate in the sociology and psychology literature regarding whether the evolutionary theory or social constructionist theory can best explain gender division of labour (W. Wood & Eagly, 2002). Those who support evolutionary psychology believe that differences in social behaviour between men and women, including specific tasks that are attributed to them, emerge from an evolved psychological disposition embedded in the human's evolutionary process (Kenrick, Ackerman, & Ledlow, 2003). To some extent, the idea is similar to the notion of comparative advantage proposed by Becker (1991).

On the other hand, the proponents of social constructionist theory argue that gender division of labour is a result of social construction. Gender roles are not only descriptive, but also prescriptive (March et al., 2016). Many personality traits, classed as masculine or feminine, are mostly assigned by society at certain places and times, similar to the way expected clothing and manners are determined for men and women (Mead, 1935). These standards are socialised to men and women through reinforcement, observational learning, and role modelling (W. Wood & Eagly, 2002). Agency-instrumental traits (such as active and decisive) are associated with masculinity, while communal expressive traits (such as caring and emotional) are considered feminine (Abele, 2003). These characteristics then become social norms and a basis for stereotyping (Prentice & Carranza, 2002; Eagly & Karau, 2002), which according to B. Agarwal (1997) define division of labour between men and women both inside and outside households, including who can participate in certain areas of household decision making. The sex-role orientation measure developed by Brogan & Kutner (1976) explicitly includes items related to the role of husband and wife in a household, such as the husband taking responsibility for major family decisions, and women with school-aged children staying at home unless economically necessary to not do so. Institutional settings, such as the design of family policies, welfare regime, employment regime, tax and benefit system, to some extent also determine gender roles in various ways (Anxo et al., 2011). In addition, under this measure, the husband and wife should share economic responsibility to support the family, and the husband should act as the main breadwinner with wife as

household manager. Previous studies suggest that some expectations of women's behaviour are more prescriptive than those of men's and, therefore, a social backlash, violating one of these standards, is more common among women (Rudman & Glick, 1999).

As norms and values change in society, including those related to gender roles (March et al., 2016), the nature of household decision-making processes is dynamic rather than static. An example would be Qualls's (1982) study that tried to identify the modern versus the traditional couple. Modern husbands aspire to make decisions jointly but with the husband still holding a slight upper hand, while more traditional husbands believe that decision making is very much the husband's domain. Evidence suggested that the involvement of women in household financial decision making has increased (Bernasek & Bajtelsmit, 2002). In addition, the perceptions of the role of women tend to change more frequently and quickly over time (Lopez-Zafra & Garcia-Retamero, 2012).

One view that mediates these two main arguments is the biosocial perspective, proposed by W. Wood & Eagly (2002). A division of labour between different sexes, as the perspective suggests, is a result of interactions between social, environmental, and physical differences (i.e. size, muscle to fat ratio, upper body strength, etc.). Interactions among these factors are not unidirectional, but rather more complex. The validity of this theory can be seen from some findings across different societies that there are consistencies in the performance and division of tasks that are enabled or constrained by certain sex-linked physical attributes, as W. Wood & Eagly (2002) showed.

#### **3.4.4.3. Resources theory of family power**

The resources theory of family power that was developed by Blood & Wolfe (1960), and then refined by Heer (1963), can help to explain how various factors influence decision-making authority within households. The basic argument of this theory is that the relative power of each household member (in this case, husband and wife) depends on his or her participation in activities outside households. Some issues relevant to the role of resources in decision making are the amount of relative resources possessed by each member, the relevance of the resources towards the role of the decision maker, and the ability of the member to use or withhold resources in a decision-making area (Wilkening, 1968).

These variables affect decision making in different ways. M. Browning et al. (2014) provided a framework on how various factors affect decision making. They argue that some factors

matter because they affect preferences and budget constraints, while others only influence the importance of certain household members. The latter are known as distribution factors (M. Browning et al., 2014) and can be analysed within the collective bargaining framework explained in the previous section. As previously discussed, the framework proposed that there are negotiation processes that occur within a household, and an increase in each household member's power means an improvement in his or her gain. Any change in the relative distribution power among household members typically leads to different outcomes with no change in the efficiency allocation. Since distribution factors only affect the weight of the individual, looking at these factors is useful when attempting to understand the dynamic of the decision making process within households and how they affect outcomes. Assessing the ultimate impact of other factors such as price and total income that also influence the shape of the Pareto set is more difficult. While distribution factors reflect the power of each household member, financial decision making by itself can either be seen as a source of power or a burden (Snape et al., 1999; Watson et al., 2013). When it is not perceived as a burden, the more powerful member of the family will usually be in charge of financial decisions.

#### **3.4.4.4. Factors affecting household decision-making authority: Empirical results**

Scholars have tried to explore factors that can affect one's decision-making authority. In many cases, the characteristics of each gender in terms of these variables are distinct, and therefore the effects of these variables are masked. Indeed, the role of gender in an individual's functioning is critical, but looking at these other variables can enrich our understanding of the dynamics of household financial decision making. In this sub-section, the most important factors that have been widely discussed in the literature are presented: income, education, and age.

##### *3.4.4.4.1. Income*

Income is an important source of authority in household decision making. It is not only simply the total absolute income brought in, but also the relative income of a member to the total income, and other household members' income. The higher the contribution of a household member towards the total household income, the higher his or her authority will be in decision making (see, among others, for empirical evidence: M. Browning et al., 1994; Bernasek & Bajtelsmit, 2002, Lee & Beatty, 2002; Carlsson et al., 2013). This partly explains

why men tend to have greater decision-making authority in the household since they often make a larger contribution towards income. In addition to increasing bargaining power, another effect of income on decision-making authority is due to the similarity of risk attitude between the husband and wife, in which it is more similar among richer households (Carlsson et al., 2013).

Although it seems straightforward that, according to resources theory, income increases one's decision-making authority, there is a number of evidence showing that this is not necessarily the case (Pahl, 1980; Edwards, 1982; Wilson, 1987; Glezer, 1995; Dobbelsteen & Koreman, 1997; Grabka et al., 2015; Yusof, 2015b). The exact nature of this relationship is much more complex and context dependent. As previously mentioned, decision-making authority is not always a synonym for power. Some view decision-making authority as a burden, especially in certain areas considered boring and/or difficult, such as financial decision making (Watson et al., 2013; World Bank, 2014). The level of income of the family has something pivotal here, as demonstrated by several studies. Decision making tends to be viewed as a burden for families with limited resources, and in most cases for such families it is women (wives) who hold responsibility in money management. On the other hand, for high-income families, men (husbands) prevalently have the primary responsibility in money management (Pahl, 1980; Edwards, 1982; Dobbelsteen & Koreman, 1997; Grabka et al., 2015).

The impact of a wife's income contribution towards her decision-making authority also depends on the significance and the source of her contribution. When the proportion of her income compared to her husband's income is 30 percent or less, there is no significant impact of income on decision-making authority (Glezer, 1995). Wilson (1987) compared the effect of income from employment and income from entitlement benefit, and concluded that only the former has a significant and positive impact on household decision-making authority.

The impact of income on decision-making authority is contingent upon socio-demographic factors. One example of these factors is ethnicity, as demonstrated by Yusof (2015b). In the Malaysian context, she showed that the positive relationship between income and decision-making authority is generally rather weak among Chinese households, compared to that among their Malay counterparts.

It is crucial to understand the underlying dynamics within the households that lead to the insignificant relationship between income and decision-making authority. There is a possibility that the main female breadwinners choose to hold back and surrender more responsibility to their husbands in financial management as compensation for their husband's

loss of his breadwinner status (Stamp, 1985). If we believe that decision-making authority also entails the right to determine where to allocate one's own portion of income, in some cases women are actually not empowered since their earnings are then used for family collective expenditure, while the men keep their shares for personal consumptions (Jephcott, Seear, & Smith, 1962). This is in contrast to what can be found among women, where they feel guilty about using family money when they have not made a monetary contribution (Burgoyne, 2004).

#### *3.4.4.4.2. Education*

Another factor that receives attention in the academic literature is the level of education. Since education brings a woman more knowledge and prestige (Wilkening, 1968), women will have wider options and thus higher bargaining power when they have higher levels of formal education (Doss, 2011). Empirical evidence found by Bertocchi et al. (2014) and Yusof (2015b) confirmed that the wife's relative education has a positive impact on her involvement in decision making. When a wife's year of schooling is longer than her husband's, joint decision making is less likely to align with the husband's preference (Carlsson et al., 2013). A more or less similar conclusion can also be found in Dobbelsteen & Koreman's (1997) study, in which men's share in household financial management is associated positively with their own education level and is negatively associated with the wife's education.

#### *3.4.4.4.3. Age*

Age can also explain differences in household financial arrangements. It is closely related to the life-cycle stage of households, and many studies attribute age to variations in household financial decision-making authority (Pahl, 1980; A. Wood et al., 2012). People of different life-cycle stages (and ages) have different aspirations in their lives that can be achieved through appropriate financial decision making, and therefore they have different needs when it comes to financial products (Hempel and Tucker, 1980). The previous section discusses how A. Wood et al.'s (2012) typology of decision making is characterised by the age of the couples. The unbalanced responsibility group can be found among younger couples in their 20s and 30s, while the cautious and content group comprises relatively older couples. Empirical findings on the impact of age on decision-making authority (and financial-decision making authority) have a less conclusive pattern. Yusof (2015a) found that older people tend

to make their own financial investment decisions. Similarly, couples in the early stages of marriage tend to have a joint decision-making system (Ferber, 1973). Meanwhile, the findings of Bertocchi et al. (2014) suggested that the influence of age is not linear. Wives of intermediate age (around 37 years old) are in the position of power.

#### *3.4.4.4. Other factors*

Two other factors that have been put forward as predictors of financial decision-making authority are employment status and ethnicity. The cooperative bargaining model suggests that women with jobs outside of the house have more power in the family. An empirical finding of Boateng et al. (2014) indeed confirmed this hypothesis, in which women's employment status has a significant impact on decision-making authority. With regards to ethnicity in Malaysian households, Yusof (2015b) found a pattern in which the husband and wife more or less share influence on decision making in Malay households while the husband dominates decisions on financial matters in Chinese households. These patterns still hold even after controlling for other variables. In the case of Indonesia, Rammohan & Johar (2009) showed that different ethnicities have different kinship systems, and married women who live in communities with patrilocal systems tend to have lower household decision-making authorities.

As this sub-section explains, there are various factors that can predict decision-making authority, most of which are salient socio-demographic variables. Although in many cases there are specific predictions on the role of these variables on decision-making authority, the exact nature of these relationships are more complex. There are still some topics that have not been widely researched, one of which is the role of skills on decision-making authority. This is surprising, considering that expertise has been long advanced as one source of power (French & Raven, 1959). The central aim of the following sub-section is to highlight the importance of skills, and how they can potentially influence decision-making authority.

### **3.4.5. Skills for financial decision making**

Aside from the discussions on the importance of skills to enhance labours' contribution to economic growth (Fennell, 2008), several behavioural theories in the psychology literature also highlight its importance from different perspectives. The theory of planned behaviour by

Ajzen (1991; 2002), for example, suggested that the possession of skills and knowledge can increase one's confidence in performing a certain task. R. Wood & Bandura (1989) argued that the mastery of skills is important for one's effective self-regulation. Skills have been confined as the capacities to act and are multi-dimensional in nature. They include cognitive ability, personality, preference parameters, and even health (Heckman & Mosso, 2014).

It can be argued that skills are particularly important in financial decision making considering its characteristics. The words "difficult", "uncertain", "stressful", and "boring" are often associated with financial matters (World Bank, 2014; A. Wood et al., 2012). These negative connotations of financial decision making are also partly influenced by different inertias, including material inertia (restriction on the amount of disposable income) and emotional inertia (a sense of intimidation due to its complexity) (A. Wood et al., 2012). Uncertainties and difficulties surrounding financial decision making make it unique, and people often make sub-optimal decisions regarding it.

The problem related to financial decision making is even more serious since consumers are prone to some misconducts of financial products and services providers, in which they might provide incomplete information or even misinform the consumers regarding certain products or services as part of their marketing strategies. The 2008-2009 global financial crisis was partly triggered by the over-aggressiveness of financial institutions in offering high-risk products to consumers who are not fully aware of these excessive risks. Indeed, to solve these types of problems and maintain consumers' trust, financial services authorities in several countries have developed dispute resolution mechanisms. However, in many countries, especially the developing ones, such mechanisms are not effective or even absent. This pushes consumers in these countries to be more careful and attentive since the risk that a problem with financial services is not resolved is higher (Mullainathan & Shafir, 2009). Otherwise, consumers will be discouraged from using financial products and services and their levels of trust in the financial sector will be depleted, leading to voluntary exclusion from the formal financial sector.

Empirically, studies that directly address the role of skills on financial decision making can barely be found. One of the few is D. W. Johnston et al. (2016), who showed the importance of cognitive skills and personality traits, especially conscientiousness and agreeableness, for decision-making responsibility. Cognitive skill and conscientiousness are positively associated with the probability of having the responsibility in financial decision making, while agreeableness has a negative relationship. More explanations on these skills are provided in Sections 3.7 and 3.8.

## 3.5. Financial literacy

### 3.5.1. A growing concern on financial literacy

The literature of financial literacy is relatively young (Lusardi & Mitchell, 2014). One of the reasons is that in standard economic models of human behaviour, individuals are automatically assumed to be rational and fully informed<sup>9</sup> (Jappelli & Padula, 2013). Applying this concept to the conventional approach to saving and consumption, we can see that rational and well-informed people consume less than what they earn during periods of high income to support consumption during periods of low or no income (Lusardi & Mitchell, 2014).

However, the concern on people's understanding on financial matters has been addressed as early as the late 18<sup>th</sup> century, when John Adams, the first vice president and second president of the United States, mentioned in his letter to Thomas Jefferson in 1787 that “all the perplexities, confusions, and distresses in America arise, not from defects in their constitution or confederation, not from a want of honor or virtue, so much as from downright ignorance of the nature of coin, credit, and circulation” (Adams, 1853, p. 447). Financial skill was further recognised as one essential expertise needed in household, farm, and community under the Smith-Lever Act 1914. The “ability to deal with money” continued to gain attraction, especially in the developed world, and has been translated into many terms, one of which is “financial literacy”.

In the mid of 1990s, financial literacy became an important policy topic as the Jump\$tart Coalition was launched in the United States. One important contribution of this initiative was the financial literacy survey among young American adults in 1997-1998. Following the financial sector's rapid development, other countries such as Japan and the United Kingdom also began to consider the importance of financial literacy among their citizens. However, it was not until 2005 that we saw an effort to put financial literacy into the global spotlight, when the Organisation for Economic Cooperation and Development (OECD) issued the Principles and Good Practices for Financial Education Awareness. Since then, attention towards financial literacy surged in the policy making arena. The inclusion of financial literacy in Programme for International Student Assessment (PISA) for 15-year old students

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<sup>9</sup> Altman (2012) provided a summary of some characteristics of conventional rational actors in standard economic models: (1) have stable set of preferences, wants, or desires; (2) understand perfectly all the available alternatives when making a decision; (3) possess the ability to forecast the expected consequence for the present and the future; (4) have the ability to implement this knowledge to maximise personal well-being or happiness; (5) have the ability to incorporate new information in decision making; (6) are consistent in making choices; (7) involve minimum emotion and intuition when making decisions.

for the first time in 2012 signals the vital role that financial literacy plays in a person's life. Lack of financial literacy, as well as the inability of people to cope with economic downturn, is blamed as one of the causes of the 2008 world's financial crisis.

### **3.5.2. The impact of financial literacy**

To understand the impact of financial literacy, it is crucial to see the literature examining the success of programmes intended to improve financial literacy. These programmes can be referred as financial education, which is formally defined by OECD (2005, p.4) as “the process by which financial consumers/investors improve their understanding of financial products, concepts and risks and, through information, instruction and/or objective advice, develop the skills and confidence to become more aware of financial risks and opportunities, to make informed choices, to know where to go for help, and to take other effective actions to improve their financial well-being”<sup>10</sup>.

Conceptually, whether financial education can improve financial outcome depends on different views on human behaviour (Altman, 2012). From the perspective of mainstream economics, financial education will not bring any significant changes due to the assumption that people by default are behaving rationally and influenced by market forces. Alternatively, a model explained in Lusardi & Mitchell (2014) shows that the acquisition of financial knowledge depends on the cost and benefit comparison of such an education. It implies that we should not expect that financial education programmes lead to behavioural changes among those who feel that the cost of acquisition outweighs the potential benefits. Another view is based on the behavioural economics, which suggests that financial education might work but depend on the availability and access to information as well as how information and options are framed.

There is a number of empirical studies looking at whether financial education has positive impacts. Financial education programmes evaluated in these studies are often targeted at specific groups, such as students, women, new families, and workers. Reasons for targeting these groups are varied, but mostly because they are often in the vulnerable situation, or because the intervention at their life stages is believed to make significant impact for the

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<sup>10</sup> Although some authors use financial education and financial literacy interchangeably, it should be emphasised that the two concepts are essentially different. Treating these two constructs similarly might cause problems (Potrich, Vieira, Coronel, and Bender Filho, 2015). However, since both concepts are closely related to each other, literature on financial education is included in this review.

future. For new families, for instance, financial education is regarded as important to the extent that having children can change their current and future financial situation (Personal Finance Research Centre, 2008).

In terms of savings and wealth accumulation, Bernheim & Garrett (2003) found a positive correlation between financial knowledge and savings, although they did not make an obvious explanation on the direction of this correlation. Similarly, examining the ability of the respondents to calculate interest rates of a stream of payments, which is indeed used as one component of financial literacy measurement in some studies, Stango & Zinman (2007) documented a positive correlation between this ability and the amount of wealth.

Furthermore, Behrman et al. (2012) and Lusardi (2008) examined the impact of financial literacy by households' wealth accumulation for various purposes, such as retirement planning, which involves more risky assets and more efficient investments. Other studies found that highly financially sophisticated individuals tend to invest more in the stock market (van Rooij et al., 2012; Kimball & Shumway, 2006), have better risk diversification (Guiso & Jappelli, 2008; Jappelli, 2010), borrow at lower cost (Couchrane & Zorn, 2005; Gathergood & Weber, 2014), and have better budgeting and money management (Hilgert et al., 2003).

Recently, Cole, Shapiro, & Shastry (2012) investigated the impact of financial education among migrant mineworkers in South Africa and confirmed a positive result, which comes to the conclusion that the education programme can potentially improve financial behaviour.

In contrast, some studies documented limited positive effects of financial education. This is particularly based on the belief that one time financial education programme will not cure financial illiteracy problem due to the dynamic nature of skill formation (Heckman, 2000). One time direct and objective experience does not lead to immediate change of financial behaviour, but rather is mentally construed, interpreted, and understood (Bertrand, Mullainathan, & Shafir, 2006). In the context of high school education in the United States, Cole & Shastry (2010) found that financial literacy course did not influence the propensity to save, while mathematic course improved female students' financial behaviour. Also in a high school setting, Mandell & Klein (2009) examined the impact of personal financial management course and arrived at the conclusion that there is no significant difference in financial literacy between students who did and did not participate in the course. Reviewing 168 empirical studies, Fernandes et al. (2014) concluded that the typical financial education programmes do not improve financial behaviours. Even if a study documents positive correlations between financial literacy and financial behaviour, there is no guarantee that a

causality relationship exists, and there is a possibility of reverse causality phenomenon (Karlan, Ratan, & Zinman, 2014).

Overall, the studies on the impact of financial literacy have been highly focused on the direct financial outcome. A further question then emerges: how financial literacy can improve people's lives beyond financial outcome? According to OECD, individuals with better financial literacy are expected to become engaged members of the society who can support and be critical to the economic world (OECD, 2012, p. 34). It has been also argued that financial literacy is important for prosperous, healthy, and happy life (Marcolin & Abraham, 2006). Nevertheless, empirical studies addressing the impact of financial literacy beyond financial outcome can be hardly found.

## **3.6. Financial capability**

### **3.6.1. From financial literacy to financial capability**

Despite the growing interest in financial literacy, both in developed and developing economies, the concept has received criticism for being too narrow. The primary driver of this concern is the inadequacy of financial literacy in reflecting the complexities of people's mechanisms when dealing with financial matters (Kempson et al., 2013; S. Johnson, Li, Storchi, & Vujic, 2015). In addition, Johnson & Sherraden (2006) argued that financial literacy is a necessary but not sufficient concept since simply having theoretical knowledge does not enable people to apply it if there are barriers such as a lack of physical access to financial institutions.

Some theories in psychology, including animal learning (Hull, 1943), aspiration (Lewin, Dembo, Festinger, & Sears, 1944), perception and attribution (Heider, 1944; N. H. Anderson, 1974), and planned behaviour (Ajzen, 1991) can be referred to when trying to explain why attempts to improve financial literacy have a limited impact on enhancing financial behaviour (see for example: Cole & Shastry, 2010; Mandell & Klein, 2009; Fernandes et al., 2014). Fundamentally, they aimed to demonstrate that there is a more complex relationship between knowledge and behaviour, and that good financial behaviour is not only the result of ability, but also other factors such as motivation. The force of each factor in affecting one's behaviour varies in different situations and behaviours (Ajzen, 1991).

When considering the limited scope of financial literacy, the term 'financial capability' emerged. Studies have acknowledged explicitly that financial literacy and financial capability

are two different concepts (Personal Finance Research Centre, 2005; E. Johnson & Sherraden, 2006); however, the point of difference has no such consensus. The Personal Finance Research Centre (2005) conceptualised financial capability as being more related to a person's behaviour rather than his or her knowledge and ability to use financial products. Meanwhile, E. Johnson & Sherraden (2006) argued that the main difference between financial literacy and capability is the dimension of access to financial products and or financial institutions, which provides opportunities for people to exercise their financial literacy to achieve their objectives. Huang, Nam, & Lee (2014), whose concept of financial capability is based on E. Johnson & Sherraden's (2006) work, unravelled financial capability into aspects of literacy, access, and functioning. Functioning itself is interpreted as people's financial behaviour, such as budgeting, savings, and daily financial management.

### **3.6.2. Previous conceptualisations of financial capability**

To accommodate the contextual variations among different societies, different conceptualisations of financial capability exist. In the United Kingdom, a study by the Personal Finance Research Centre (2005) used a participatory approach in conceptualising financial capability. Financial capability according to this study has both horizontal and vertical dimensions. In determining the horizontal dimension, they asked the participants in their focus group to discuss important aspects that should be included in the concept of financial capability. The response revealed four discrete components: managing money, planning ahead, making choices, and getting help. When saying that a person has the ability to manage money, it is expected that he or she is able to live within his or her means. This means that the person has a strategy to meet his or her needs and is able to resist temptations to borrow and spend an excessive amount. A person is also required to have the ability to plan for the future, in which he or she makes provisions for the long term and is able to cope during unfavourable events. As mentioned previously, during such times there is a broad range of financial products available, some of which have very sophisticated features that need proper understanding. Therefore, a consumer must have adequate knowledge of these products and be able to make choices based on his or her own requirements and preferences. The ability to compare the returns, costs, and risks of different asset products is particularly important in this respect. The last aspect, getting help, requires consumers' ability to gather information by themselves and ask for advice from third parties when needed.

The vertical dimension of financial capability means that different people might have varying levels of such capability: having basic understanding and developing confidence, developing competence and confidence, and extending competence and confidence (Personal Finance Research Centre, 2005). Here we can interpret that the core level of financial capability to some extent represents financial literacy. An individual might vertically move to the upper level of financial capability through a process of learning and experience, while a fully financially capable person can extend his or her competence or confidence. From this vertical perspective, financial capability is a relative concept. This means that within a society, there is a certain basic level of financial capability that should be possessed by everyone, but beyond that, the degree, nature, and complexity of financial capability needed are contingent upon the situation (Personal Finance Research Centre, 2005; M. Taylor, Jenkins, & Sacker, 2011).

In the context of low income countries, a study by Kempson et al. (2013) pinpointed that there are ten domains that contribute to financial capability: budgeting, living within means, monitoring expenses, using information, not overspending, covering unexpected expenses, saving, attitude towards the future, not being impulsive, and achievement orientation. They argue that summarising these dimensions into one single measure is problematic due to weak correlations among them. Moreover, since it is a multi-country study, the operationalisation should be adjusted to the local contexts. In addition to these domains, participants in this research also identified personal characteristics including altruism, control, time orientation, and action orientation in distinguishing between people with sound financial capability and those with low or inadequate financial capability.

Another study by Microfinance Opportunities (2015) in Costa Rica, India, Malawi, and Pakistan suggested three dimensions of financial capability: money management, personal characteristics, and relationships around money. These dimensions are comprised of savings, spending, planning, borrowing, and attitudes in managing money, which means that their conceptualisation of financial capability shares significant similarities with the one by Kempson et al. (2013).

There are some reasons why those living in the developed world and those in developing countries conceptualise financial capability differently. In the context of the latter, we owe the literature in anthropology for the more in-depth discussion on how people deal with financial matters given their circumstances. The informal financial sector seems to play a crucial role here, in which financial matters are strongly intertwined with social relationships (Callier, 1991; Germidis, Kessler, & Meghir, 1991). Although there are some serious problems with these informal sources in terms of reliability, security, and affordability (Banerjee & Duflo,

2007; Bauchet et al., 2011), reliance on them are relatively high. The mainstream idea of examining the success of financial literacy training often looks at the take-up of formal financial products without acknowledging that social interactions can also influence the decision-making process.

Analysing social structures can help to explain the nature of informal financial sectors. Social networks in rural areas in developing countries tend to be closer. On the one hand, these close ties serve as the underlying mechanism for financial exchanges, substituting the need for formal contracts (Ambrus, Mobius, & Szeidl, 2014). An example is the use of extended family as an important institution for insurance (Rosenzweig & Stark, 1989; Fafchamps & Lund, 2003) through gift exchanges and services to those in need (Ambrus et al., 2014). On the other hand, there are often cases in which people feel pressured to share their money with friends, family, and relatives. This is especially true among those with close social proximity, who can identify with the poverty status of one and another (Alatas, Banerjee, Chandrasekhar, Hanna, & Olken, 2012). To avoid this pressure without being accused of being individualistic, people look for financial products that require commitments, so they can use this requirement as an excuse not to share their money (Brune, Giné, Goldberg, & Yang, 2011). Similar problems also occur within the household, in which spousal control over resources can affect the decision in which product to invest (Anderson & Baland, 2002; Ashraf, 2009). Informal devices such as rotating savings and credit agreement (ROSCA) serve this function (Gugerty, 2007).

### **3.6.3. Financial capability within the capability approach**

The use of the word “capability” in the term financial capability by previous scholars leads us to a question: does the concept of financial capability fit within Amartya Sen’s (1985a; 1985b, 2001; 2009) and Nussbaum’s (2000; 2003) capability approach? There are limited studies on financial capability that address the direct linkage of this concept with Sen’s and Nussbaum’s capability approach. However, it does not necessarily mean that the studies that did not refer to Sen and or Nussbaum are incompatible with the approach.

There are at least two perspectives that can be used in locating financial capability within the capability approach. The first concerns a basic question on the relevance of financial capability as an element of a wider human capability. It has been argued earlier that many aspects of people’s live nowadays depend on their ability to take advantage of the financial system. S. Johnson et al. (2015) pointed out that financial capability can be viewed as a set of

skills that is expected to expand other capabilities and thus help people to attain a particular functioning that they choose. For example, in many cases, parents need to devise appropriate financial plans to send their children to university. These financial plans typically cover some decisions regarding the targeted amount of money needed in the future, the selection of financial products and services, and the portion of income that should be allocated to achieve such goals given inflation and interest rates. As such, all of these require certain levels of skills and behaviour regarding financial matters.

The second issue is whether the previous concepts of financial capability have explicitly incorporated the building blocks of the capability approach in their conceptualisations. When highlighting the distinction between financial literacy and financial capability, E. Johnson & Sherraden (2006) pointed out the dimension of “access”, and argued that financial literacy is useless unless there are facilities, such as banks and other financial institutions, to support people in using financial services. Thus, “access” provides individuals with the “opportunity” to exercise their financial literacy to achieve their objectives.

The use of public discussions and democratic deliberation is an important step in the operationalisation of the capability approach (Sen, 2001; Comim, 2008b; Buchardt, 2005). As explained above, several previous studies on the conceptualisation financial capability have implemented this, in which elements of financial capability were determined through the participatory approach (Kempson et al., 2013; Personal Finance Research Centre, 2005).

Sen (2009) stressed the importance of situational factors and did not endorse a specific fixed list of capabilities that an individual must possess. In the past few years, the importance of social construction in the capability approach, in which the environment is said to influence people in deciding what is considered good or bad, has been emphasised by scholars such as Deneulin & McGregor (2010). What is viewed as necessary in certain communities is not automatically considered as such in others due to their distinct circumstances. The majority of studies on financial capability explicitly employed a participatory approach in understanding what people consider as critical dimensions of financial capability in different contexts. The results confirmed that although there are similarities in some important dimensions across countries, there are other aspects that are ignored by people in certain countries. For example, the ability to seek out financial advice, which is considered essential in the majority of developed countries, was mentioned significantly less by people in the developing world (Kempson et al., 2013).

In sum, not all studies regarding financial capability explicitly noted that they followed Sen's and or Nussbaum's reasonings regarding the capability approach; nevertheless, the dimensions contained in these, the procedures taken in coming up with the relevant dimensions, and their contextual natures are all in line with the tenets of the capability approach.

#### **3.6.4. Factors predicting financial capability**

Different conceptualisations of financial capability in various contexts have been discussed, and previous studies have pointed out that within a same community, there are varying levels of financial capability. The importance of socio-demographic identities, due to their explanatory power, has been considered in the field of sociology, psychology, political science, and anthropology. Several variables that have been shown as significant predictors of financial literacy and or financial capability are age, ethnicity, gender, education level, income level, marital status, occupation, region, wealth, residential area, housing, the number of children and health. With regards to some variables, there is a similar conclusion on how they relate to financial literacy. As an illustration, people with lower levels of financial literacy generally tend to be women (see for example: Lusardi & Mitchell, 2006; M. Taylor, Jenkins, & Sacker, 2009; L. Xu & Zia, 2012), those with low levels of formal education (Lusardi & Mitchell, 2006; Kharchenko, 2011; L. Xu & Zia, 2012), and those from a lower caste (Bönte & Filipiak, 2012) and income group (L. Xu & Zia, 2012). On the other hand, correlations with some of the variables are less straightforward and subject to further debate. Age, for example, has an inverted U-shape relationship with financial literacy (L. Xu & Zia, 2012; Lusardi & Mitchell, 2014).

Several theories can be used to support the explanatory power of socio-demographic indicators. Social learning theory, for example, suggests that children learn by observing and imitating (Bandura & Walters, 1965), and that the objects of observation and imitation are not identical among different demographic groups. In economics, the focus of identity in analysing people's behaviour is relatively new. Akerlof & Kranton (2000) included the psychology and sociology of identity in their game theory model to explain behaviour and preference. In this regard, a person associates his or her identity to a particular group, either consciously or not, and there seems a consensus on what is the appropriate or "normal" behaviour within that group. Four primary mechanisms can explain "normal" behaviour among people within the same group: sanctions on deviants, positive payoff externalities,

conformity preference, and communication (Bikhchandani, Hirshleifer, & Welch, 1992). The first three mechanisms serve as barriers, in which small shocks barely dent the rigid conformity of a particular type of behaviour. Behaviour conformance is even stronger in rural areas of developing countries due to their tight and relatively-closed communities and the absence of cross-group social effects (Fletschner & Carter, 2008).

Word-of-mouth communication is another channel through which social interaction can influence a person (Hong, Kubik, & Stein, 2004). As explained by Bönte & Filipiak (2012), interaction among individuals from a similar social group is more likely rather than that among people from different social groups. We can refer to this phenomenon, whereby people rely on information from others before they make decisions regardless of the accuracy of the information, as an informational cascade (see for example: Bikhchandani et al., 1992). The importance of this spill-over effect is especially significant with regard to complicated issues such as savings, retirement decisions, and other financial-related matters (Duflo & Saez, 2003).

Cognitive ability is another factor that might predict variations in financial capabilities, especially through its effect on financial literacy. By definition, as a type of consumer expertise, financial literacy involves the cognitive component (Alba & Hutchinson, 1987) as people are expected to be knowledgeable, educated, and informed about financial issues (Willis, 2009). One explanation as to why cognitive ability can impact financial literacy is that the former might influence the cost of acquiring the knowledge (Delavande, Rohwedder, & Willis, 2008).

Direct links between cognitive ability and financial behaviour have also been established. Empirical studies showed the impact of cognitive skills measured by various indicators such as IQ and aptitude on financial decision making. A study by Christelis, Jappelli, & Padula (2010) is one such example. Financial decision making in their study is seen from stock ownership, while the cognitive ability's proxy covers numeracy, verbal fluency, and memory. They concluded that cognitive abilities affect consumers' stock holding. Another study by Korniotis & Kumar (2011) showed that as investors' cognitive abilities deteriorate with ageing, the perceived transaction costs increase as do the barriers to participate in the market. One study in which we can see the quality of financial decision making is that by S. Agarwal & Mazumder (2013). Their study suggested that financial mistakes are less likely to be made among respondents with higher scores, especially the math component of the cognitive test. An explanation for this is that people with higher levels of math ability are more capable of

performing financial calculations and generally more patient and less likely to make a mistake when a time trade-off is involved in the financial decision.

### **3.6.5. Financial capability and the quality of life**

Since the concept of financial capability is relatively new, most studies attempt to investigate what is considered necessary by people in terms of financial matters given their contextual factors (see for example: Personal Finance Research Centre, 2005; Kempson et al., 2013). As an illustration, financial planning is considered as one essential element of financial capability (Kempson et al., 2013). But beyond that, financial planning is also valuable because it can help people to achieve other things that have intrinsic value, like better housing conditions and higher education. The literature on economic anthropology in some developing countries pointed out that not only the ability to manage economic and financial resources is viewed as valuable, but that it is also crucial to the achievement of other life goals such as health and education (Storchi & Johnson, 2016).

The empirical literature exploring the link between financial capability and aspects of well-being is limited. Previous studies mostly focused on the relationship between financial literacy as one element of financial capability and various indicators of financial outcome such as stock market participation and level of savings (see among others: Bernheim & Garrett, 2003; Stango & Zinman, 2007; van Rooij et al., 2012; Kimball & Shumway, 2006). Nevertheless, they focused only on one element of financial capability and often failed to capture the complexity of financial capability as a whole that can influence other spectrums of well-being. An example of such a study is by Taylor et al. (2009), which provided an interesting insight into the role of financial capability in psychological well-being. They argued that financial management skills are valuable in terms of psychological well-being due to the former's effect on minimising the negative impact of sudden negative events in one's life. There are two possible explanations for this. Firstly, financial capability is correlated with other observable characteristics, such as income, that might influence psychological well-being. Secondly, people with higher levels of financial capability have better income management, and thus end up with higher disposable income when holding other characteristics constant. It is even claimed that this impact is more significant than changes in a household's income. The positive relationship between financial capability and well-being is supported by empirical evidence, especially in the case of male respondents. We can see that in general, this result is in line with studies that examine the relationship between

financial distress and some psychological indicators. For instance, financial problems have been identified as a casual factor for divorce, mental illness, and other negative experiences (Kinnunen & Pulkkinen, 1998; Yeung & Hofferth, 1998; Cleek & Pearson, 1985).

### **3.7. Cognitive ability**

Cognitive ability is defined by the American Psychological Association as “the ability to understand complex ideas, to adapt effectively to the environment, to learn from experience, to engage in various forms of reasoning, to overcome obstacles by taking thought” (Neisser et al., 1996, p. 77). For a long time, it has been equated with human capital (Heckman & Corbin, 2016) and linked with various important outcomes. Rindermann & Thompson (2011) summarised the impact of cognitive ability on various aspects, including rationality, quality of work, and individuals’ and nations’ wealth. They argued that there is no diminishing returns effect in the case of cognitive abilities. In economic models, cognitive ability, together with preferences, is one important determinant in decision making (Dohmen, Falk, Huffman, & Sunde, 2010). Numerous studies suggested the importance of cognitive ability in explaining decision making process, including financial decision making (Christelis et al., 2010); Korniotis & Kumar, 2011; S. Agarwal & Mazumder, 2013; C. Browning & Finke, 2015).

### **3.8. Personality traits**

Personality traits<sup>11</sup>, on the other hand, refer to “patterns of thought, feelings, and behaviour” (Borghans, Duckworth, Heckman, & ter Weel, 2008, p. 3). The inclusion of these factors in economic models explaining human’s behaviour is relatively new, but the psychology literature has documented important evidence that highlight the role of these traits in predicting various socio-economic outcomes, such as job performance and academic achievement (see among others: Barrick & Mount, 1991; Robbins, Allen, Casillas, Peterson, & Le, 2006). Similar to the recent consideration on the role of financial literacy, one of the reasons of the limited investigation on personality traits is the traditional assumption of

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<sup>11</sup> Previous studies used the term “non-cognitive traits” instead of “personality traits”, and juxtaposed the former with cognitive abilities. However, several aspects of human behaviour that have been argued to be non-cognitive in nature are actually influenced by cognitive processes. Similarly, these traits have been suggested to affect cognitive measures (Heckman, Stixrud, & Urzua, 2006). In order not to mislead the readers, following Borghans, Duckworth, Heckman, & ter Weel (2008), the psychological traits discussed in this current study are labeled as personality traits.

rational economic actors that posits human as free from motivations other than economic issues in making decisions. In addition, most economists object the usual way these traits are measured, i.e. through self-reported questions. Responses towards these questions are highly prone to manipulations, and therefore concerns on the validity and reliability of this measurement technique have been raised (Borghans et al., 2008).

There are multiple dimensions of personality traits, and the framework used in this study focuses on self-efficacy, self-control, and general trust. Self-efficacy is one psychological dimension that has been addressed widely in the literature regarding decision making (see for example: Bandura, 1977). This trait concerns with “the conviction that one can successfully execute the behaviour required to produce the outcomes” (Bandura, 1977; p. 193), and for human agency, “none is more central or pervasive than belief of personal efficacy” (Bandura, 2006, p. 170). Self-efficacy, together with controllability, is an essential element of the concept of perceived control behaviour in Ajzen's (1991) theory of planned behaviour. Perceived control behaviour is not the only construct associated with self-efficacy. For instance, confidence as noted by Bandura (1997), has been treated as similar to self-efficacy by previous literature, although he asserted that the latter is more specific since its precise definition includes beliefs on the ability to achieve certain tasks. A meta-analysis by Judge, Jackson, Shaw, Scott, & Rich (2007) on the role of self-efficacy on work-related performance can be referred to understand the value of this psychological trait. Their result shows that the impact of self-efficacy is context dependent to various factors, such as the level of task's complexity.

Variables related to “control” have become the focus of several studies. Some theories characterise self-control as the ability to direct oneself to take an ideal action and resist temptations. Bernheim, Ray, & Yeltekin (2015), for example, developed a model that shows how a lack of self-control can lead to a low-asset trap. Following psychological empowerment theory, Angulo-Ruiz & Pergelova (2015) included locus of control in their model explaining youth financial behaviour. Those with a high internal locus of control believe that their life events are the results of their own actions, while those with a high external locus of control put more emphasis on uncontrollable forces as factors affecting their lives. The empirical results indicate that the external locus of control has the most influence on behaviour. When people believe that outcomes are strongly determined by external forces, they will be less likely to engage in goal-directed behaviour. In the same research, there is an indication that when couples tend to score high in internal locus of control, joint decision-making implementation is more likely.

Trust can be defined as “the subjective probability with which an agent assesses that another agent or group of agents will perform a particular action” (Gambetta, 2000, p. 217). This trait plays a crucial role in theories explaining interactions between two or more individuals, as can be seen in the principal-agent theory, due to the problem of asymmetric information. The tendency of task delegation is more likely when the level of trust is high, and the effect of trust on delegation increases as the task is more complex (Gur & Bjørnskov, 2017).

It has been shown that trust is important for long run growth and development through various mechanisms, including financial development. The role of trust in financial transactions is a topic that began to receive attention in the past years. Empirically, it has been shown that higher levels of trust can induce people to invest in stock market (Guiso, Sapienza, & Zingales, 2008) and purchase insurance products (Delis & Mylonidis, 2015).

### **3.9. Concluding remarks**

This chapter explores the existent literature related to the theoretical frameworks and variables used in this dissertation: the capability approach, SWB, household decision-making authority, financial literacy, cognitive ability, and personality traits. With regards to the capability approach, this dissertation affords special attention to two of the main features of this approach: conversion factor and human agency. Although there are some examples and classifications of conversion factors available in the literature, more systematic empirical investigations are required.

There are many variables that have been used as proxies of agency in various studies, one of which is household decision-making authority. In literature not directly related to the capability approach, studies on this topic are abundant, many of which focused on factors affecting decision-making authority. Nevertheless, although skills and expertise have been long advanced as a source of power, empirical investigations on the role of skills on decision-making authority are surprisingly limited.

Decision-making authority can also be seen as a burden rather than a manifest of agency. There is a stream of literature that has investigated the impact of decision-making authority or responsibility on SWB. The results are inconclusive, and several explanations have been offered, ranging from cultural contexts to institutional settings. One topic that has not been widely discussed is the role of skills in this relationship.

In the literature on financial literacy, we can find studies that have investigated the direct impact of financial literacy on financial outcome. The use of other spectrum of well-being is a strategy that has not been widely implemented in studies evaluating the instrumental value of financial literacy. Combining this gap with those found in the capability approach literature, an examination of the importance of financial literacy using the capability approach framework can be done. Incorporating psychological factors such as cognitive ability and personality traits can potentially make the discussions more comprehensive, since the behavioural economics literature highlights the importance of these two human features on various aspects of life.

# CHAPTER 4

## METHODOLOGY

### 4.1. Introduction

This dissertation applies the Q-squared method, as conceptualised by Kanbur (2001), which is a combination of qualitative and quantitative approaches, in answering the research questions. The qualitative aspect is necessary for conceptualising financial capability, which is one of the main aims of this dissertation. The use of a bottom-up approach in conceptualising capability in general has been suggested by Comim (2008b). Previous studies have shown that people in different contextual settings have different conceptualisations and domains of financial capability (e.g. Kempson et al., 2013; Personal Finance Research Centre, 2005). The literature on economic anthropology and sociology suggests that to understand this issue better in a certain context, we should take into account the values and meanings of financial practices given the social constructions and culture of the respective environment (S. Johnson, 2015).

The quantitative aspect is essential in examining the four main topics in this study: factors predicting financial capability, the relationship between financial capability and quality of life, the relationship between financial literacy and conversion rate efficiency, and the relationship between financial literacy and household financial decision making. To do so, this dissertation relies on statistical techniques that are explained later in this chapter.

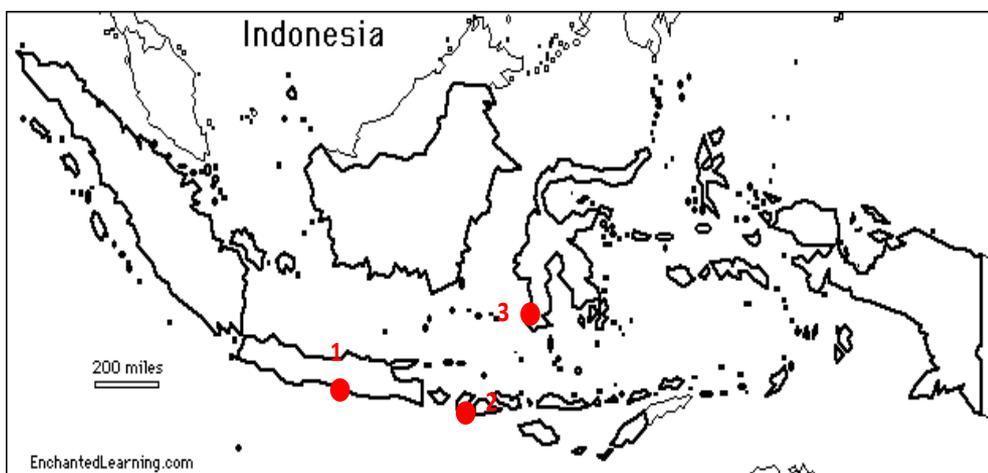
The following section focuses on the data used in this study, which are collected through a survey, in-depth interviews, and focus group discussions (FGDs). The procedures used in each are elaborated upon below. A section is dedicated to explain the construction of the questionnaire for the survey, especially with regards to the measurement strategies of the main variables examined in this dissertation. As the variables are abstract by nature and can be interpreted in several ways, clarifying the strategies chosen becomes imperative. Having explained the data, the section afterwards outlines the statistical models used to examine the relationships proposed in this dissertation.

## 4.2. Data

### 4.2.1. Subject of study

This dissertation focuses on microfinance institutions' clients aged 17-70 years old in Indonesia. The fieldwork was conducted in four provinces: DKI Jakarta, DI Yogyakarta, South Sulawesi, and West Nusa Tenggara (Figure 4.1). Some primary considerations in choosing these provinces included access, costs, and representativeness. The survey was conducted in collaboration with the association of sharia-based microfinance institutions (*baitul maal wat tamwil* / BMT / house of borrowing and financing). These provinces are included in order to represent Indonesia's population in its western, middle, and eastern areas, as has been done by previous large-scale surveys. For instance, the Indonesia Family Life Survey (IFLS) incorporated DI Yogyakarta, West Nusa Tenggara, and South Sulawesi. IFLS itself is claimed to be representative of approximately 83 percent of Indonesia's population and to have captured the country's cultural and socio-economic diversity while maintaining cost-effectiveness.

Figure 4.1. Survey locations



Source: <http://www.enchantedlearning.com/asia/indonesia/outlinemap/1.shtml>

Note: 1 = DI Yogyakarta

2 = West Nusa Tenggara

3 = South Sulawesi

The fieldwork was conducted from April 2015 to December 2015. In each of the previously selected provinces, the associations of sharia-based microfinance institutions (*Pusat Koperasi*

*Syariah / Puskopsyah*) helped in developing connections with the microfinance institutions. These institutions are vital gatekeepers in each province since usually it is not easy to get in touch with microfinance institutions and their clients. However, by the time the fieldwork was conducted, West Nusa Tenggara had no such institution. As a result, each microfinance institution was directly contacted according to the database provided by the central association of sharia-based microfinance institution (*Induk Koperasi Syariah / Inkopsyah*) based in Jakarta.

It should be noted that given the sample only consists of clients of sharia-based microfinance institutions in certain provinces, this dissertation might suffer from the problem of sample selection bias (Wooldridge, 2013). In relation to this, there might be some doubt regarding the external validity of this dissertation because some of the research topics deal with causality relationships. The question of external validity refers to whether the results of a study are applicable outside of the designed setting or not (Banerjee & Duflo, 2009). Therefore, in the case of this dissertation, the results might have limited generalisation to Indonesia's entire population of clients of microfinance institutions. In addition, the lack of randomisation in selecting the provinces challenges this study's internal validity, or whether changes in the dependent variable are indeed caused by variations in the independent variables (Banerjee & Duflo, 2009).

Despite these limitations, especially concerning external validity, conducting a study on microfinance institutions' clients is still valuable. Many of these clients run their own informal businesses as microentrepreneurs, and they comprise a substantial proportion of the poor in many countries (Banerjee & Duflo, 2007). This is also the case in Indonesia, as explained in the second chapter of this dissertation. For some people, especially those with limited skills and capital, being microentrepreneurs is the only way to survive, since finding a job offer elsewhere is highly challenging. Some women fit such characteristics highlighting a lack of suitable qualifications, and therefore most microenterprises in Indonesia are women (Hani, Rachmania, Setyaningsih, & Putri, 2012). Those in the informal sector also tend to be more vulnerable due to the lack of social protection (Mehrotra & Biggeri, 2005). Addressing the problem among vulnerable groups of the population might be of special interest of the policymakers due to the potential policy implications.

#### 4.2.2. In-depth-interviews and focus group discussions (FGDs)

Table 4.1. Number of in-depth interviews, FGDs, and questionnaires distributed in each province

Province	Number of in-depth-interviews	Number of FGDs	Number of questionnaires distributed
DKI Jakarta	5	0	N/A
South Sulawesi	18	2	1,000
DI Yogyakarta	9	0	1,189
West Nusa Tenggara	6	0	501

Source: Author's own work

Interviews and focus group discussions (FGDs) with clients and management of microfinance institutions were conducted in each of the selected provinces, as well as with representatives from sharia-based microfinance institutions based in Jakarta. Table 4.1 provides a summary of statistics of the interviews and FGDs. It might be noticed that there are variations in the number of interviews and FGDs in each province. This is due to the characteristics and availability of clients and managements of microfinance institutions in these provinces.

In South Sulawesi, for example, with the help of the *Puskopsyah*, 18 interviews were conducted, of which 12 were with microfinance institutions' clients, and the remaining were with management team members of microfinance institutions of varying positions. In addition to the interviews, there were two FGDs in the offices of microfinance institutions. Although it was recommended by Gibbs (1997), Morgan (1997), and Finch & Lewis (2003) to have six to ten participants in a full FGD, due to the clients' availability, only five participated in the first FGDs, and four in the second. However, these numbers are still within the range recommended by Kitzinger (1994) and Morgan (1997) for small FGDs.

The coordination and communication processes in the other two provinces were not as efficient as the processes in South Sulawesi, and thus there were fewer interviews and no FGDs. Nevertheless, these figures are sufficient considering that the responses provided in the interviews converge at the same conclusions, as will be elaborated in the following chapter.

Setting up an FGD with clients of microfinance institutions can pose particular challenges. The process required the clients to be present at a specific place (usually the office of the microfinance institution) at a specific time, and to spend around 30 – 60 minutes to have a discussion. This does not include the time required for the person to travel to and from the

venue. Considering that almost all the clients are microentrepreneurs who operate their small stores/kiosks by themselves, leaving their businesses for 60 – 90 minutes can result in significant costs. One might suggest that FGDs could have been conducted at the market, so the clients' time spent on participating in the research is reduced. However, the situation in a traditional market, especially in terms of space, is not conducive for FGDs. This is the primary reason why this study involves more interviews than FGDs, even though data collection through FGDs has its own merits. Thus, most of the interviews were conducted in the clients' stores in the market.

Some of the results of these interviews and FGDs were used to develop the questionnaire on financial capability that was later distributed to the clients of microfinance institutions. Although a questionnaire using questions from previous studies was drafted, interviews and FGDs with local people help to ensure the appropriateness of using such questions in different contexts. Despite having a base questionnaire to examine financial capability in several emerging countries, Kempson et al. (2013) also conducted FGDs and interviews to get a sense of the local contexts, especially as it was based on a similar study in more developed economies.

The interview and FGD processes follow the protocol explained in Legard, Keegan, & Ward (2003) and Finch & Lewis (2003). Prior to the interviews and FGDs, the objectives of the study and the type of participation required were explained to the participants. Afterwards, the participants were allowed to ask further questions about the topics and were then requested to sign informed consent sheets, which is a cornerstone of the principle of ethics (Benatar, 2002). In the case where the participants were illiterate, fingerprints substituted signatures. Participants were also offered more information about the study through a short summary of the research's aims, although almost none of the participants showed any interest in this. Table 4.2 provides the list of questions in the interviews and FGDs. As the participants provided their responses to the probing questions, they were further asked to elaborate using follow-up enquiries. For example, if they argue that aspect A is an essential part of financial capability, there was a follow-up question on what kind of aspect A is expected from a person with sound financial capability. The participants were also asked to include any aspect that they thought necessary but had not been included in the discussion about financial capability.

Table 4.2. List of questions in interviews and FGDs

No.	Question
1.	What constitutes financial capability?
2.	What character(s) set people with sound financial capability different from those with low or no financial capability?
3.	Do you think that these aspects are important elements of financial capability*: <ul style="list-style-type: none"> <li>- Financial management</li> <li>- Financial planning</li> <li>- Financial literacy</li> <li>- Financial consultation</li> </ul>
4.	Is there any other important element of financial capability?

Source: Author's own work

\*Questions of the importance of some potential elements of financial capability were asked only when a participant did not mention these elements as essential in question (1).

### 4.2.3. Survey

The second part of the fieldwork involved the distribution of questionnaires in DI Yogyakarta, West Nusa Tenggara, and South Sulawesi. A pre-test was conducted with 25 people, including with the clients and management of microfinance institutions, to ensure that the instruction is clear, the questions are easy to understand, the participants know how to respond to the questions, mutually exclusive answers and non-mutually exclusive answers are phrased accordingly and easy to comprehend, and the cognitive burden in responding to the questionnaire is not too heavy.

The association of microfinance institutions provided assistance for the distribution of questionnaires. The fourth column of Table 4.1 provides details on the numbers of questionnaires distributed in each province. Similar to the case of interviews and FGDs, variation in the number of questionnaires distributed was due to the availability of *Puskopsyahs* and microfinance institutions in each province. The microfinance institutions in DI Yogyakarta tend to be larger in terms of total assets and number of clients in comparison to those operating in South Sulawesi and West Nusa Tenggara, and therefore the survey in these regions were able to reach more respondents.

Since the data were collected from thousands of respondents, it was almost impossible to distribute the questionnaire without assistance from enumerators. Therefore, for the sake of time and cost efficiency, the survey relied on the assistance of microfinance institutions' marketing and account officers and local university students to distribute the questionnaires to the clients of microfinance institutions.

Prior to the data collection process, the enumerators were briefed about the aims of the survey and the contents of the questionnaire. Enumerators were also equipped with the guideline for filling the questionnaire. Similar to the interview and FGD procedures, respondents were asked to sign or provide their fingerprints on the informed-consent sheets. In addition to time and cost efficiency, having local enumerators interview the clients using the questionnaire provided another benefit: better communication with the respondents.

#### **4.2.4. Questionnaire design**

Questionnaire is the main data collection tool in the second phase of the fieldwork. The first part of the questionnaire collects basic socio-economic and demographic information of the respondents, including gender, age, place of living, income, expenditure, education, and family members. The measurements of the main variables examined in this dissertation are provided in the following sub-sections. Since these variables are abstract by nature and while there are different strategies of measurement offered by the literature, further justifications on the use of the measures in this dissertation are explained. It should be noted that the measurement of variables in social science often involve a simplification that can neglect underlying complexities (Comim, 2008b), and this dissertation is not immune to such a problem.

##### **4.2.4.1. Measurement of financial literacy**

The measurement of financial literacy is not a straightforward task because there is no uniform definition of the term. Huston (2010) conducted a systematic review on studies regarding financial literacy and pointed out that less than 15 percent provided formal definitions of the concept. Even among those with a definition, one can see varying conceptual and operational strategies (Remund, 2010). As summarised by L. Xu & Zia (2012 p. 2), financial literacy "...can encompass concepts ranging from financial awareness and knowledge, including of financial products, institutions, and concepts; financial skills, such as

the ability to calculate compound interest payments; and financial capability more generally, in terms of money management and financial planning”. We can see that in the literature specifically addressing the issue of financial literacy, differences in its conceptualisation can be seen both vertically, that is, from the expected depth of the capacity that a literate person can perform, and horizontally, that is the range of issue covered in the term “finance”.

To understand the vertical variation of the concept of financial literacy, it is crucial to first understand the different interpretations of the term “literacy” over time. Historically conceived as covering reading, writing, and calculating skills, the term “literacy” has evolved into a broader sense (Bennett, Boyle, James, & Bennett, 2012). This can be seen from the definition provided by the United Nations Educational, Scientific, and Cultural Organization (UNESCO), in which literacy is envisioned as “the ability to identify, understand, interpret, create, communicate and compute, using printed and written materials associated with varying contexts. Literacy involves a continuum of learning in enabling individuals to achieve their goals, to develop their knowledge and potential, and to participate fully in their community and wider society” (UNESCO, 2004; p. 13).

The use of the term has expanded and does not specifically concern the knowledge and use of printed and written materials. A definition by OECD’s Programme for International Students Assessment (PISA) is a good example of a broader understanding of literacy, which is “the capacity of students to apply knowledge and skills in key subject areas and to analyse, reason, and communicate effectively as they pose, solve and interpret problems in a variety of situations” (OECD, 2004, p. 20). We can now see terms such as technology literacy, computer literacy (e.g. Winter, Chudoba, & Gutek, 1997), health literacy (e.g. Frisch, Camerini, Diviani, & Schulz, 2012), and financial literacy.

Although it is quite clear that the term “literacy” covers both aspects of “knowledge” and “use”, some scholars put more emphasis on the former and do not explicitly address the latter.<sup>12</sup> For example, Mandell (2006) defined financial literacy as “what people must know in order to make important financial decisions in their own best interest” (Mandell, 2006, p. 2), while Bowen (2002) and Couchrane & Zorn (2005) equated financial literacy to financial knowledge. Similarly, in the popular media, the terms financial knowledge and financial literacy tend to be used interchangeably (Huston, 2010).

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<sup>12</sup> The conceptualisation of knowledge itself is not very straightforward. Originally conceived as a unidimensional construct of familiarity, some scholars such as Alba & Hutchinson (1987) proposed that knowledge also incorporates expertise. They argued that both components are related to each other.

In contrast, some scholars realise that financial knowledge and financial literacy are fundamentally different by recognising the former as an essential and integral dimension of the latter (Mason, 2000; E. Johnson & Sherraden, 2006; Huston, 2010). Similar to the definition of “literacy” in other contexts, in addition to knowledge, the concept of financial literacy is believed to cover the “use” dimension, in which people who are financially literate have the ability to use financial products to make decisions (Noctor, Stoney, & Stradling, 1992; Beal & Delpachitra, 2003; ANZ, 2008).

The idea of financial literacy further proliferates and incorporates some dimensions that are usually not covered by the term “literacy”. For example, a definition provided by Hilgert et al. (2003) and Lyons, Scherpf, & Roberts (2006) covers behavioural aspect in addition to knowledge and use. As can be seen from the definition provided by L. Xu & Zia (2012), financial literacy might also cover financial capability. The inclusion of financial capability within financial literacy makes things even more complex, since financial capability is conceptualised as something broader, as was explained in Chapter 3. Incorporating behaviour and capabilities in the definition of financial literacy is in contrast to the idea put forth by E. Johnson & Sherraden (2006), who explicitly made a clear distinction between financial literacy and capability. Another notable definition of financial literacy is given by the OECD’s (2012) PISA, which includes non-cognitive aspects such as motivation and confidence as intrinsic components. They define financial literacy as: “knowledge and understanding of financial concepts and risks, and the skills, motivation and confidence to apply such knowledge and understanding in order to make effective decisions across a range of financial contexts, to improve the financial well-being of individuals and society, and to enable participation in economic life” (OECD, 2012, p. 33).

The horizontal differences of the conceptualisations of financial literacy are rooted in deciding what sphere constitutes financial literacy. Different scholars included different abilities in their definitions of financial literacy. Lusardi & Mitchell (2006) included overall knowledge of compound interest, inflation, and stock risk in their measure of financial literacy. Despite its narrowness, this measure has been widely adopted in later studies (see for example: Cole et al., 2011; Fernandes et al., 2014). The content areas of financial literacy by the OECD (2012) are classified more functionally into money and transactions, planning and managing finances, risk and reward, and financial landscape. Others are adjusted to contextual factors of the communities studied (see Behrman et al., 2012, who included skills and knowledge in the retirement planning system in Chile). Despite this variety, we can see significant overlap between the abilities proposed by different authors. Huston (2010)

provided a summary of this and identified four content areas: money basics (time value of money, purchasing power, and personal finance), borrowing, investing, and protecting resources (insurance and other risk management techniques).

Table 4.3. Conceptualisations of financial literacy

Type of differences	Dimension / aspect included	Potential problem / limitation
Vertical difference	Knowledge	Overlap with “financial knowledge”
	Knowledge + use	
	Knowledge + use + behaviour	Overlap with “financial capability”
Horizontal difference	Knowledge + use + behaviour + non-cognitive aspect	Overlap with “financial capability”, “financial self-efficacy”, “financial confidence”
	General	Not contextually specific
	Context specific (thematically and geographically)	Lack of comparability with other studies

Source: Author’s own work from various sources

Table 4.3 summarises the discussions in this sub-section. In terms of vertical differences, it seems that there have been attempts to include as many capacities as possible under the umbrella of “financial literacy”. Some capacities are not commonly associated with the word “literacy”. Horizontally, the main tension is in deciding whether financial literacy should cover only general topics (such as time value of money, inflation, and interest rate) or whether it should be tailored contextually (specific for certain areas of finance or countries). There is no fixed or straightforward procedure to determine which conceptualisation is best, and this decision should be weighed accordingly with the aim and scope of the research.

This dissertation uses a similar strategy that was employed by Behrman et al. (2012) in measuring financial literacy due to several justifications. Firstly, the measure covers both aspects of “knowledge” and “use”. It is tempting to include questions that reflect other dimensions, but doing so may lead to confusion as to what is actually being measured. Including the “behavioural” aspect in the measure, for example, might be interpreted as an

attempt to measure financial capability instead of financial literacy. Secondly, the strategy of including both general questions that have been used by other scholars (see for example: Lusardi & Mitchell, 2006; Cole et al., 2011; Behrman et al., 2012; Fernandes et al., 2014) and context-specific questions addresses at the same time comparability and context specificity. Additional questions on Indonesia's social security system are included to capture respondents' context-specific understanding. This system, widely known as BPJS (*Badan Penyelenggara Jaminan Sosial*), was first introduced in 2014. The responses from these enquiries are used to construct a score of financial literacy as the proportion of the total questions answered correctly to total questions. Thus, if a certain respondent only has three questions answered correctly out of the total five questions, their score is 0.6.

Some modifications were made as suggested by the results of the pre-test. The literal Indonesian translation of the word "interest" in the financial literacy measurement section, for example, was perceived as having a negative connotation by some of the clients of sharia-based microfinance institutions. Hence, the word "margin" was used as a substitute to "interest". This alteration did not cause any change in the substance since the primary objective is to identify whether respondents have the ability to compare the return that they receive from savings or investments and general price increase (inflation).

#### **4.2.4.2. Measurement of financial capability**

As will be discussed in Chapter 6, financial capability comprises of financial management, financial planning, and the knowledge and ownership of financial products. Most questions used to measure these variables were derived from previous studies by Kempson et al. (2013) and Personal Finance Research Centre (2005), with some adjustments to capture the local context as inferred from the qualitative phase. The section on financial management contains two main questions - to what extent respondent employs daily financial management and whether he or she adheres to such short-term planning and strategies.

Financial planning is measured through the use of six questions. The first three ask the respondent's attitude towards financial planning for three different goals: education, housing, and hajj (pilgrimage). Based on the qualitative fieldwork conducted earlier, these were the three most mentioned goals related to financial planning. A five-point Likert scale was provided, where 1 denotes "not very important" and 5 "very important". The next three questions in this part investigate whether the respondent already has a formal financial plan in

place for each of these goals. The response is coded as 1 when the respondent has prepared a financial plan for the specific purpose, and 0 otherwise.

Knowledge and ownership of financial products cover 10 different products, devices, and or services, ranging from relatively simple and traditional ones such as ROSCA to more sophisticated products such as bonds, mutual funds, and stocks. The responses towards these questions are treated as a binary variable, in which 1 indicates that a respondent knows or owns the respective product, and 0 otherwise. Therefore, when a respondent does not know or own a single product, he or she will have a score of 0, and if he or she knows or owns all of the products, the score for the component will be 10.

Using the responses to these inquiries, an index of financial capability was constructed using the simple average of the score of each component (equal-weighted). Since there are questions with binary and interval responses, several adjustments were made. The index itself was then rescaled to a 0-1 scale, in which 0 is the lowest and 1 is the highest. It should be noted that an index is often very sensitive to the methodology used in its construction. For example, changing the weight of one element potentially can lead to a different conclusion. To account for this possibility, a similar financial capability index is also constructed using principal component analysis (PCA). PCA is a data-summarising technique that is often used in index-building, and its application can be found in the capability literature (see for example: Chiappero-Martinetti & Salardi, 2008). By using PCA, one aims to reduce a number of variables without losing information from the original ones. It should be noted that constructing the index using this method is relatively more complex. Therefore, when there is no significant difference between the equal-weighted index and the PCA index, further analysis will be conducted based on the former.

#### **4.2.4.3. Measurement of cognitive ability**

Despite the general agreement on what constitutes cognitive ability, different scholars used different sets of items in measuring this factor. Kim, Hanna, Chatterjee, & Lindamood (2012) adopted a relatively short measure that was previously used by McGuire, Ford, & Ajani (2006), and this indicator is constructed from a set of 10 questions on general knowledge, such as the name of the president and vice president, definitions of things, and the ability to count backwards. A more comprehensive measure can be found in McFall's (2013) work, in which cognitive factors were captured using six general items divided into more detailed

questions. The general items' classification includes perceived self-rated memory, objective memory, serial 7 subtraction (numeracy), number series (fluid reasoning), and verbal fluency. There is a tension on whether to use a comprehensive measure of cognitive ability or one that focuses on certain aspects that directly relate to financial matters. Having a long and comprehensive measure might provide a bigger picture on the effects of different aspects of cognitive ability, but the use of this kind of measure might burden both the enumerators and the respondents (Durand & Smith, 2013). Considering the nature of this dissertation and the respondents involved, it was decided that questions regarding cognitive ability were limited to three: knowledge about the date, concept of percentage, and concept of ratios. The first one is a representative of a general indicator of cognitive ability, and the other two can be argued as important for financial matters (Christelis et al., 2010). In the context of surveys in Indonesia, IFLS (2007) also used the same questions in measuring cognitive abilities. A correct answer is coded as 1, and 0 otherwise. The total cognitive score is a rescaled value (0-1) of the total correct responses.

#### **4.2.4.4. Measurement of personality traits**

The main personality traits included in this study are financial self-efficacy, self-control, and general level of trust. In measuring self-efficacy, respondents were asked about their ability in identifying good investments and making a good investment. Similar questions were used by Fernandes et al. (2014). There are three questions used to measure self-control: whether the respondents consider the impact of their actions, attempt to spend money wisely, and can be trusted with money. Some questions from the IFLS 2007 survey are borrowed in order to measure trust: the need to be aware in the neighbourhood, respondents' willingness to let the neighbours watch their houses while they are away, and the belief that someone will return respondents' lost purses. For all these questions, respondents can answer using a five-Likert scale option, where 1 reflects a strong disagreement and 5 a strong agreement with the statement. Equal-weighted averages of responses in each category of personality trait were calculated, and these were then rescaled into 0-1.

#### **4.2.4.5. Measurement of subjective well-being**

In choosing what question about SWB to be asked, one must be very careful since different questions might capture different aspects (Durand & Smith, 2013). According to Dolan &

White (2007), there are two basic types of questions: one that asks people's current or recent moods and emotions, without asking them to reflect on their lives, and one that asks people to judge their life satisfaction after considering various aspects in their lives. This study focuses on the latter concept, or the eudemonic sense of well-being.

There are two questions that are often used to measure life satisfaction (Durand & Smith, 2013). The first one asks the respondent the following: "Overall, how satisfied are you with life as a whole these days?". People need to answer this question using a Likert scale from 1 to 5, in which 1 is "very unhappy" and 5 "very happy". An alternative to this inquiry is the Cantrill Ladder of Life. Using this, people are asked to locate themselves on a certain vertical ladder consisting of several steps, after considering their overall life conditions. This dissertation uses the first strategy as it is more straightforward and easier to understand.

Although this method of inquiry is typical in large-sample studies, it must be noted that many scholars, particularly economists, refrain from using it due to concerns about validity and reliability. There are at least two problems with regards to these concerns: the responses are prone to manipulations (Borghans et al., 2008), and even if the respondents are honest, their answers might be affected by the classic problem of adaptive preferences. At the core of the latter problem is people's unconscious and unintended adjustment of their perception according to what is available to them and what they have experienced (Sen, 2009).

Despite these limitations, subjective measures are still used due to the few alternative measurements available for large-sample studies (see for example: Clark & Oswald, 1996; Blanchflower & Oswald, 2004; Stutzer, 2004; Feeny et al., 2014). One technical justification to use this measure is provided by Fordyce (1988) who showed that the measure has remarkable reliability, internal consistency, and stability.

#### **4.2.4.6. Measurement of household financial decision-making authority**

An investigation of financial decision-making authority is a relatively challenging task. For instance, the negotiation and bargaining process among household members is more often subtle and not directly observable by outsiders (Papanek & Schwede, 1988). In general, the literature has provided us with two general instruments in collecting data regarding household decision-making authority: experiment and survey.

The experiment method has been used by Carlsson et al. (2013) in determining whether husbands or wives are more influential in household decision making, with a focus on their

risk preferences. In their experiment, each couple makes a risky decision two times: one individually and another one jointly with the spouse. Afterwards, the outcome of each decision is compared in terms of risk characteristics. From these results, we can see whether the risk preference of joint decision making is closer to the husband or wife, or equally distant.

However, there are some major problems with such experimentation. The use of an experiment often demands significant resources and can therefore be very expensive (Wooldridge, 2013). Another major drawback of the experimental method is that the sample might behave differently from the way they normally do in a real setting (Powell & Ansic, 1997). Some decisions are highly context dependent, and might not represent most day-to-day situations. There is also a question on whether conducting a particular experiment, particularly related to economic issues, is morally acceptable or not (Wooldridge, 2013).

Another method is to use the questionnaire, in which a straightforward question on who mostly makes financial decisions is included. This has been widely used in studies related to households (see for example: Bernasek & Bajtelsmit, 2002; Dobbelsteen & Koreman, 1997; Rosen & Granbois, 1983). Respondents were provided with choices of answers that typically include himself or herself, the spouse, or joint decision making. The response is then coded as 1 if the respondent himself or herself has the highest authority in the household in making financial decisions. This is the method used in this dissertation.

Some concerns over asking a direct question on who the decision maker is in the family can be identified. There might be a certain level of subjectivity in answering the question which leads to the possibility that different responses might be given by different household members. A solution to this problem is by getting responses from multiple family members, typically from both the husband and the wife in each household. When there are costs and time constraints, following this procedure might be compensated by reducing the number of observation cases, which consequently lowers the ability to generalise the result (Scanzoni, 1965). One study that addresses this issue empirically is by Davis (1970), who concluded that there is no statistically significant difference between the responses of husbands and those of wives in questions regarding 12 decision areas. Similarly, Wolgast (1958) and Heer (1963) also did not find such a difference.

The use of a closed-end question in investigating household decision making has its own limitations. One criticism is that this reductionist approach might capture very little of the complexity of the bargaining process that occurs. Indeed, Doss (2011) suggested that in

reality, having a perfect measure of women's bargaining power is impossible, and at best we can only rely on some proxies.

Moreover, only asking a single question on financial decision-making authority in general has been argued to be an over simplification. There are multiple facets of financial decision making that have different ambiguities and complexities (Powell & Ansic, 1997), and entail various issues, products, time frames, and goals. Certain financial decisions potentially have an impact on the family as a whole (or at least on both spouses), but others only have personal consequences. Thus, the role of the structure of financial decision making among these different areas can be varied. As A. Wood et al. (2012) suggested, in the case of Australia, financial decisions were typically made jointly. They further suggested that the household member who is responsible for the financial decision making regarding matters that are short-term in nature might be different from the one who is responsible for more long-term matters.

Vogler & Pahl (1994) differentiated between executive management and strategic control function. In a more or less similar way, Dobbelsteen & Koreman (1997) asked questions regarding the person(s) who is responsible for a household's financial allocative system, who has the final say in significant financial decisions, who is in charge for paying regular bills in the household, who handles daily spending, and whether a spouse needs permission for spending between GBP 10 and GBP 20. They further argued that some tasks, such as having the final say in big decisions, have a strategic meaning, while others like handling daily spending can be seen rather as a burden. The amount of money involved and the seriousness of the consequences can also characterise different financial decision-making mechanisms (Cantillon et al., 2016). However, Wilkening (1968) argued that the "executing" and "influencing" authorities are often held by the same person in the household. Therefore, when one is responsible for executing financial decision making, he or she is likely to have more influence over it.

#### **4.2.4.7. Measurement of quality of life**

The process of measuring quality of life at least involves three phases: selecting the relevant dimensions of functionings, determining the weight of each functioning, and combining the information. When it comes to choosing the relevant functionings that reflect the quality of life, one is faced with various dimensions and ways of measurement. Strictly speaking, the capability approach values individualism in the sense that each person has his or her own

preference of beings and doings in what they want to achieve (Sen, 1985b). Ideally, this should be done through a participatory process (Buchardt, 2005). Nevertheless, for the sake of comparison and analysis, this dissertation needs some basic dimensions of quality of life that are determined *a priori*.

Scholars have focused on measures of different functionings, and to some extent, arbitrariness cannot be avoided in choosing these dimensions (Mauro et al., 2016). Chiappero-Martinetti & Salardi (2008) looked at health, education, and the environment in their study regarding conversion factor, whilst Binder & Broekel (2011) included happiness, health, shelter, and nourishment as relevant dimensions to analyse one's quality of life. These multi-dimensional measures are not immune to criticism, and even the well-known Human Development Index (HDI) has been accused of not incorporating other aspects such as human rights (Bérenger & Verdier-Chouchane, 2007). Despite debates on which capabilities matter and the relative importance of different sub-indicators, as Qizilbash (2002) argued, we can see substantial similarities between lists by different social scientists.

This study focuses on three dimensions of quality of life: health, nourishment, and housing. These dimensions have been used by Anand, Hunter, & Smith (2005), Anand et al. (2009), and Binder & Broekel (2011) for several reasons. First, these dimensions can be considered as inescapable needs of most people in almost every context. Second, and most importantly, the achievements of these functionings are closely related to how good people are in managing their financial resources, which has been argued to depend on the level of financial literacy and investment confidence (Hilgert et al., 2003; S. Johnson et al., 2015). Nourishment concerns nutrition, so it can be considered as a reflection of the success of relatively short-term, daily financial management. Quality of housing is more about longer-term financial management since achieving the desired housing quality involves major expenditures.

Health is measured by three questions on whether a respondent has the knowledge to get medical action, had a comprehensive medical check-up in the past one year, and whether they have their own health conditions limit daily activities. To measure nourishment, respondents were asked about how often they eat meat on a weekly basis. The selection of answers available has tried to incorporate the element of choice and not just the end functioning by including reasons for not eating meat. A combination of objective and subjective measures is used to shed more light on the housing quality of the respondents. Respondents were asked first about the status of the house in which they currently live (owned by themselves, owned by family, or rented). This question is important since the participants in the qualitative interviews and FGDs prior to the survey often mentioned that house ownership matters.

Following other living standard measurement surveys (such as IFLS and the National Social and Economic Survey / *Susen*) that have a particular concern for the types of toilets respondents use, the questionnaire also collects this information. The last question on housing covers respondents' subjective perception of their houses' conditions.

Similar to the case of building a financial capability index, the next challenge is how the information about these relevant functionings are combined into a measure of the quality of life (Comim, 2008b; Mauro et al., 2016). It is not a very straightforward process because people might assign unequal weights on the different elements. One can use a participatory approach in which people are given the opportunity to determine priorities to different dimensions or rely on statistical methods such as factor analysis (Lelli, 2001), structural equation modelling Krishnakumar (2007), and fuzzy set approach (Lelli, 2001; Chiappero-Martinetti, 2000). In this dissertation, this information will be combined into an equal rescaled weighted index (0-1), similar to the procedure that has been performed by Comim & Amaral (2013). Nevertheless, an alternative index is also built using PCA, the technique that has been elaborated in subsection 4.2.4.2 with regards to financial capability index.

#### **4.2.4.8. Measurement of conversion rate efficiency**

One of the main variables of concern in this study is the conversion rate efficiency in transforming resources (input) into functionings (output). As mentioned in the previous chapter, the literature provided several methods for calculating conversion rate (see for example: Deutsch et al., 2003; Chiappero-Martinetti & Salardi, 2008; Binder & Broekel, 2011). The efficiency measurement technique as applied by Deutsch et al. (2003) and Binder & Broekel (2011) is used in this study and elaborated further in this sub-section.

##### *4.2.4.8.1. An overview of efficiency measurement*

The method of efficiency measurement can be dated back to the work of Koopmans (1951) and Debreu (1951). When one intends to examine whether an individual, a firm, or any type of unit of analysis (or Decision Making Unit / DMU) is efficient, they can rely on a benchmark that is determined theoretically (i.e. how much maximum output should be generated given a set of input, or how much input is needed to produce a given level of output), or compare that respective unit's performance to that of its peers (i.e. what is practically achievable). The logic of efficiency measurement they use relies on the latter

(Bonaccorsi, Daraio, & Simar, 2006) since, in most production activities, the production set is unknown (Tulkens, 1993). Fundamentally, given a group of DMUs, a benchmark production frontier is built. Once an estimated frontier is constructed, the efficiency of each DMU is then calculated as a distance function relative to the efficient ones, i.e. those lying on the frontier. We can see that philosophically, this process of efficiency determination is in line with Sen's argument for comparativeness rather than transcendentalism (Sen, 2009). Making this comparative approach might be desirable from a management point of view since the manager can identify real-life examples of efficient units (Tulkens, 1993).

One can use either the parametric or non-parametric approach in estimating the frontier. Stochastic Frontier Analysis (SFA) (Aigner, Lovell, & Schmidt, 1977) is probably one of the most well-known techniques among the parametric approaches. To capture production inefficiency, a classical regression model with a non-positive error term is augmented. The seminal work of Farrell (1957) has triggered the emergence of several popular non-parametric techniques. Data Envelopment Analysis (DEA) (Charnes, Cooper, & Rhodes, 1978) and Free Disposal Hull (FDH) (Deprins, Simar, & Tulkens, 2006) are often used by those who prefer this latter approach. The literature does not provide straightforward and strict criteria that can be used by efficiency analysts to decide which technique should be utilised (Tulkens, 1993; Murillo-Zamorano, 2004). Those who employ the non-parametric approach usually focus more on technological optimisation rather than economic optimisation (A. N. Berger & Mester, 1997). A literature review by A. N. Berger & Humphrey (1997) found that by then the number of studies on the efficiency of financial institutions employing each parametric and non-parametric approach are close, in which 69 used the non-parametric estimation whilst 60 followed the parametric approach. The superiority of FDH has been shown in a study by Tulkens (1993), in which the estimated frontier using this method fits the data better compared to those constructed by other techniques.

Both parametric and non-parametric approaches have their own limitations, as summarised by Tauchmann (2012). The parametric approach is often criticised for its strict assumption on the functional form and distribution of random errors, the treatment of inputs as explanatory, and the accommodation of only single-output technologies. On the other hand, econometricians criticise the non-parametric approach because it is deterministic and lacks a well-defined data-generating process (Tauchmann, 2012; Cazals, Florens, & Simar, 2002), although this technique relies on relatively few assumptions. The non-parametric approach has also often been accused of being highly sensitive to outliers due to the possible measurement error.

Sensitivity, in this case, refers to how the efficiency scores of a subset of data are affected by the existence of the outliers (Tulkens, 1993).

The high vulnerability of the non-parametric approach towards outlier and measurement error is one drawback that has received significant attention from statisticians. Although outliers might not be significant in terms of the number of observations, they can play a major role in shaping the estimated production possibility frontier. To overcome this problem, the robust non-parametric frontier technique by Daraio & Simar (2007) can be employed, in which it considers the transformation process of inputs into outputs as probabilistic (Binder & Broekel, 2011). This then leads to the emergence of partial frontier approaches, such as order- $m$  (Cazals et al., 2002) and order- $\alpha$  (Aragon, Daouia, & Thomas-Agnan, 2005). With these extensions, the outliers are treated as super-efficient observations and located beyond the estimated frontier (Tauchmann, 2012).

One can find a wide application of these methods in the analyses of firms' efficiency (Seiford, 1996; Thomas et al., 1998; Keh & Chu, 2003; Halkos & Tzeremes, 2007). In these studies, the production function is defined as a profit-generating process using labour and capital as factors of production. The application of this approach can also be found extensively in studies regarding the efficiency of financial institutions (see among others: Ariff & Can, 2008; Park & Weber, 2006; Maudos & de Guevara, 2007; Havrylchyk, 2006; Sturm & Williams, 2004; Mamatzakis, Staikouras, & Koutsomanoli-Filippaki, 2008). Only a few studies related to human or household well-being have employed these efficiency techniques (see for example: Lovell, Travers, Richardson, & Wood, 1994; Deutsch et al., 2003; Ramos & Silber, 2005; Binder & Broekel, 2011; S. Johnson et al., 2015), despite their potential use for inquiries in the context of human or household.

#### *4.2.4.8.2. Free Disposal Hull*

This research uses the FDH model with order- $m$  specification as operationalised by Binder & Broekel (2011) in the case of the conversion rate efficiency measurement using the British Household Panel Survey (BHPS) database. The technique differs from DEA since the latter has a strict assumption of convexity of the estimated frontier (Tauchmann, 2012), which is problematic in our input-output analysis. Assuming convexity implies that we can treat linear combinations of two observations as benchmarks and inputs and that outputs are arbitrarily divisible (Binder & Broekel, 2011).

In specifying the estimated frontier using FDH, each  $DMU_i, i=1, \dots, N$  is compared with other  $DMU_j, j=1, \dots, N$  that at least has the same level of output ( $Y$ ). These  $DMUs$  used for comparison are then denoted as  $B_i$ . The one that uses a minimum level of input is then set as the benchmark for  $i$ , and FDH efficiency is calculated as:

$$\hat{\theta}_i^{FDH} = \max_{i \in B_i} \left\{ \min_{j=1, \dots, q} \left( \frac{Y_i^j}{Y_0^j} \right) \right\} \dots \dots \dots (1)$$

Unlike the standard procedure in which the benchmark is selected from the best performing peer in the whole sample, order- $m$  specification sets the benchmark for an expected best performance among certain  $m$  peers. This technique allows one to estimate the pseudo-efficiency score for  $D$  times, and the final efficiency score is the average of these scores (Daraio and Simar, 2007).

Mathematically:

$$\hat{\theta}_i^{FDH} = \frac{1}{D} \sum_{d=1}^D \hat{\theta}_i^d(x_0, y_0) \dots \dots \dots (2)$$

As addressed earlier, order- $m$  is helpful in ensuring robustness of the specification when there are outliers and noise in the data. This approach also avoids problems of dimensionality and sample size bias which often limit the use of standard non-parametric approaches such as DEA and FDH (Bonaccorsi et al., 2006).

The efficiency measure generated using this method is output-oriented. This means that efficiency is perceived as a necessary increase in output (quality of life / functioning) of a DMU to become efficient (Binder & Broekel, 2011). A score equal to 1 indicates that the respective DMU is parametrically efficient, while an upward deviation (efficiency score is more than 1) is a sign of inefficiency and a downward deviation (efficiency score is less than 1) means the DMU is super-efficient (Tauchmann, 2012).

#### 4.2.4.8.3. *The choice of resource and functioning*

Choosing the relevant resources (inputs) and functionings (outputs) to determine conversion rate efficiency is a crucial step. Unfortunately, as addressed by previous studies, this process is not very straightforward. A spectrum of information that is regarded as an achieved functioning in one context can serve as a resource or conversion factor in another (Anand et

al., 2005; Binder & Broekel, 2011). In most cases, the choice of inputs and outputs is arbitrary (A. N. Berger & Humphrey, 1997). The outcome or functionings' dimension is similar to the ones used when the quality of life is measured in this dissertation: health, housing, and nourishment.

The choice of resources needs a further explanation. Traditionally, income has been treated identically with resources, including by those who examine well-being in the framework of the capability approach (Binder & Broekel, 2011). However, thinking that only income matters as resources has been criticised. Other non-monetary resources, such as education and time, have been argued to be relevant and thus should be incorporated (see among others: S. Johnson et al., 2015). Deutsch et al. (2003) derived the resources needed to achieve a desired standard of living and came up with four elements in addition to income: durable goods for leisure, durable goods for housework, other types of property, and the quality of dwelling.

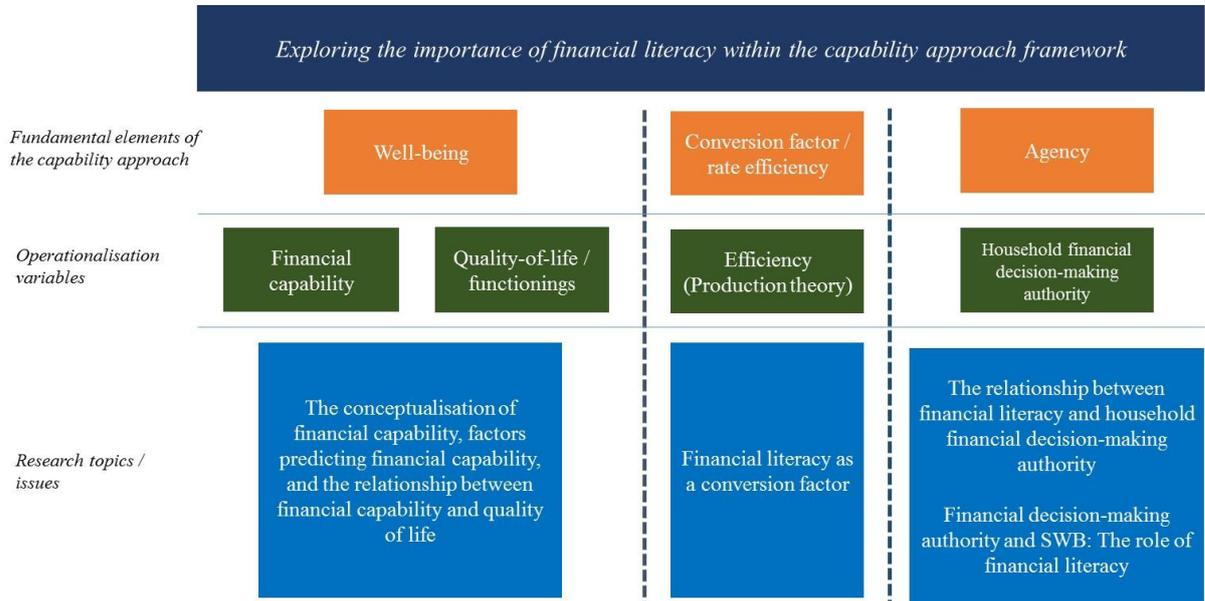
For the purpose of this study, only the total profit earning reported is used as the resources (input). There is no intention to disregard the importance of non-monetary resources such as education and attitude. However, this study focuses on financial literacy, which has been argued as an essential element in command over monetary resources (i.e. money).

Considering that the focus of this study is directed towards clients of microfinance institutions in Indonesia who run micro and small enterprises, looking at the conversion of profit earnings into functionings is highly relevant.

One important caveat with regards to the use of total profit should be noted. The survey did not collect information regarding the number of people in the households to which the respondents belong or the number of individuals who depend on the profit. Thus, a per capita figure, which has been used by prior research (see among others: Binder & Broekel, 2011), could not be derived. However, it can be argued that a per capita number should not be treated as the gold standard. The use of per capita figure relies on the assumption that income/profit is equally distributed among household members, while most often this is not the case. There are a number of studies that attempt to analyse this issue, with the majority looking at how income is allocated between men and women in the family (see among others: Pahl, 1980, 1995; M. Browning, Bourguignon, Chiappori, & Lechene, 1994; Ashby & Burgoyne, 2008; Cantillon et al., 2016). A full discussion on the income allocation within a household is beyond the scope of this study, but in brief it can be explained by power relations due to discrepancies in income contribution, education, and other factors among household members.

### 4.3. Conceptual framework and regression models

Figure 4.2. Summary of conceptual framework



Source: Author's own work

This section elaborates the conceptual framework and technical strategy to answer the research questions. It is explained in Chapter 1 that this dissertation aims to highlight the importance of financial literacy within Sen's capability approach by raising four main topics. In the first one, using a financial capability index, this dissertation investigates factors that can predict the levels of financial capability and the nature of the relationship between financial capability and quality of life. Financial literacy is then proposed to influence conversion rate. The measure of conversion rate itself is constructed using FDH explained in the previous section. The third and fourth sections focus on the nexus between agency, which is reflected from household financial decision-making authority, and financial literacy. Figure 4.2 summarises the conceptual framework developed in this dissertation.

#### 4.3.1. Predictors of financial capability and the relationship between financial capability and quality of life

The following models are used to investigate the factors that can predict the levels of financial capability:

$$FC_i = a + S_i'b + e_i \dots \dots \dots (3)$$

$$FC_i = a + S_i'b + C_i'c + e_i \dots \dots \dots (4)$$

in which  $FC_i$  is a measure of the financial capability of person  $i$ ,  $S_i$  is a vector of socio-demographic indicators of person  $i$ ,  $C_i$  is an index of the cognitive factor, and  $e_i$  is the error term. Note that financial capability is the dependent variable in all the two specifications above. In (3), only socio-demographic indicators that have been suggested to predict variation in financial literacy and capability are included, while in (4), cognitive ability is added to the model.

The following models are run to examine the relationship between financial capability and quality of life:

$$QL_i = a + FC_i'b + e_i \dots \dots \dots (5)$$

$$QL_i = a + FC_i'b + S_i'c + e_i \dots \dots \dots (6)$$

$$QL_i = a + FC_i'b + S_i'c + C_i'd e_i \dots \dots \dots (7)$$

where  $QL_i$  represents the quality-of-life indicator of the individual  $i$ . The above equations are estimated using Ordinary Least Square (OLS) with robust standard error to anticipate the heteroskedasticity problem that is commonly found in cross-sectional regression. One of the main assumptions in standard OLS is the same error variance for any value of independent variable. When the error variance is conditional upon the value of independent variable, it can be said that the problem of heteroskedasticity persists (Wooldridge, 2013). Applying the standard OLS technique under this condition can lead to the estimator no longer having the minimum variance property, while the unbiasedness and linearity are still maintained. This potential heteroskedasticity problem can be detected using the Breusch-Pagan test.

Another potential problem is multicollinearity, which can consequently inflate the standard error and widen the confidence interval. One method to detect multicollinearity is by calculating the Variance Inflation Factor (VIF). A smaller VIF is desirable, and there is no clear threshold to decide when multicollinearity is a problem (Wooldridge, 2013).

Following several previous studies, socio-demographic indicators are hypothesised to be significant predictors of financial capability. In some indicators, there are specific predictions on the signs of the coefficients, whilst in others, there is no clear supporting argument to predict how these indicators affect financial capability. Women and those living outside of Java are predicted to have lower levels of financial capability compared to men and those living in Java, respectively. These predictions are based on previous literature by Lusardi & Mitchell (2006), M. Taylor et al. (2009), and L. Xu & Zia (2012) that show variations of

financial literacy levels among people from different gender and regions. Meanwhile, we can expect that being clients with a higher level of education and expenditure is associated with better financial capability. With regards to age, since the previous literature acknowledges that the nature of the relationship between the two is not clear, our prediction does not include the sign.

Cognitive ability is hypothesised to be positive and a significant predictor of the level of financial capability. As found previously by Christelis et al. (2010), S. Agarwal & Mazumder (2013), and Fernandes et al. (2014), cognitive ability is positively associated with financial behaviour. Financial capability is predicted to have an instrumental value in expanding people's quality of life, therefore the coefficients' signs in the regression should be positive.

#### **4.3.2. Financial literacy and conversion rate efficiency**

Similar to the case of human capabilities, in which Sen does not endorse a fixed list of capabilities, there appears no specific list of conversion factors relevant to an individual's life. In this part of the dissertation, financial literacy is proposed as one conversion factor's component, and thus it affects conversion rate efficiency. Given the importance of financial matters today, the ability to manage household finances becomes crucial. Several decisions that affect long-term well-being depend on the ability to use both formal and informal financial services. Considering the dynamic nature of the financial sector, in terms of product mix, price, contract specification, and many others, the ability to respond to these changes is crucial. This is especially important if one perceives households as production units that minimise costs and maximise utility (Michael & Becker, 1973). Moreover, there are potential cases where financial institutions deliberately do not provide full closure regarding contracts in the absence of critical consumers (World Bank, 2014). Meanwhile, Michael & Becker (1973) acknowledged the importance of consumer knowledge in consumption efficiency within their household production framework. Financial literacy has a knowledge component needed to make sound financial decisions, which further can lead to improvements in efficiency.

In addition to examining the role of financial literacy, this part of the dissertation also regards psychological factors as relevant for financial decision making, which might affect conversion rates. One reason to hypothesise the significance of these factors is their roles in imposing constraints on agents' behaviour and affecting the productivity of certain activities (Borghans

et al., 2008). In line with the emergence of behavioural economics and the realisation regarding differences between cognitive ability and personality traits, the framework considers both aspects in explaining the conversion rate.

Empirical studies that incorporate cognitive ability in the examination of conversion factors and rate within the capability approach literature are rare. Indeed, level of education has been included in the model by Chiappero-Martinetti & Salardi (2008), as a proxy for cognitive ability. However, as the literature on the economics of human development grows, the distinction between cognitive skills and education becomes clearer, and it is argued that success in education is not merely the result of a superior cognitive ability, but also other factors such as “soft skills” (Heckman & Corbin, 2016).

The inclusion of cognitive ability in the model is also important because variations in this might cause differences in financial literacy. Delavande et al. (2008) and Cole et al. (2011) found that the score on number series as part of the cognitive measure is strongly correlated with the results of the financial knowledge test.

Economics literature has started to include personality traits in explaining people’s behaviour, especially when related to financial matters (see for example: Borghans et al., 2008; Gathergood, 2012). However, there is little on the role of personality traits such as self-efficacy on conversion rate efficiency. This is one gap in particular on which this dissertation tries to focus, based on the previous emphasis on the significant role of self-efficacy in human behaviour (Bandura, 1977; Ajzen, 2002).

Lastly, socio-demographic indicators such as gender, age, and place of living are included due to findings in previous studies that suggest that these factors might predict conversion rates (Chiappero-Martinetti & Salardi, 2008; Binder & Broekel, 2011). Differences in financial decision making have also been attributed to these factors, so their inclusion as control variables strengthens the model’s robustness. For example, men and women have been argued as having different confidence levels in financial decision making (Barber & Odean, 2001).

Departing from the explanations above, this study uses the following regression models that are in general similar to the one employed by Binder & Broekel (2011) when investigating factors affecting conversion efficiency:

$$CE_i = a + bFL_i + e_i \dots\dots\dots(8)$$

$$CE_i = a + bFL_i + cSE_i + e_i \dots\dots\dots(9)$$

$$CE_i = a + bFL_i + cSE_i + dCV_i + e_i \dots\dots\dots(10)$$

where  $CE_i$  is the conversion efficiency of respondent  $i$ ;  $FL_i$  reflects financial literacy of respondent  $i$ ;  $SE_i$  is financial self-efficacy of respondent  $i$ ; and  $CV_i$  is the vector of control variables. Similar to the previous application of OLS in sub-section 4.3.1, whenever the Breusch-Pagan test found a heteroskedasticity problem, OLS with robust standard error specification was then employed.

It should be noted that there are several inherent limitations to the framework proposed above. First and foremost, there is an implicit assumption that the respondents are responsible for, or at least participate in, transforming resources into functionings, and do not depend entirely on the role of other parties in the mechanism. Second, this study faces a problem in isolating skills/psychological factors examined from other factors. Indeed, there are attempts to overcome this problem, such as the use of randomised experimental methods and previous characteristics to estimate future behaviours, but these are not perfect solutions (Kautz, Heckman, Diris, ter Weel, & Borghans, 2014). Interactions among variables are something that ideally should not be downplayed. The actual relationships among different traits might be more complicated than what have been proposed in this dissertation. For example, a higher level of skill has been associated with a higher level of confidence (see for example: Ajzen, 2002). Therefore, one can expect that higher financial literacy leads to higher self-efficacy in financial decision making. Previous studies showed that cognitive ability interferes with various non-cognitive traits, such as risk aversion (Dohmen et al., 2010) and patience (Shamosh & Gray, 2008; Dohmen et al., 2010). The literature on behavioural economics, such as theories about skills formation (Heckman, Stixrud, & Urzua, 2006; Heckman & Mosso, 2014) and choice bracketing (Tversky & Kahneman, 1981) can help, but this is beyond the scope of this study's research question.

A note on the methodological limitation in the two-step procedure employed in this study should also be made. As explained above, the conversion efficiency measure was first estimated using the FDH order- $m$  specification. Then, a regression using this efficiency measure as the independent variable was performed. A. N. Berger & Mester (1997) raised an issue that the standard error of the conversion efficiency estimation is not accounted for in the following regression analysis. Consequently, the result should be taken as suggestive rather than conclusive.

### **4.3.3. Financial literacy and household financial decision-making authority**

The third part of this dissertation mainly aims to answer the following main question: does having a higher level of financial literacy increase one's decision-making authority? There are several ways to see this relationship. Following the seminal work on resources theory of family power by Blood & Wolfe (1960), command over financial resources can increase decision-making power (Bernasek & Bajtelsmit, 2002). It can be argued that command over resources to some extent depends on one's level of financial literacy. Following the proposition of Becker (1991), the skills of different household members must be taken into account in achieving an optimal decision. The collective bargaining model implies that having a high level of financial literacy can increase bargaining power since the one with the skill can argue that the outcome should be optimal and superior if he or she makes the decision (although this is not necessarily the case when it comes to the realisation). Thus, better skills make multiple ways of negotiation among family members more possible rather than relying merely on a unilateral action (Papanek & Schwede, 1988).

As explained in the previous chapter, it is implied by the theory of planned behaviour (Ajzen, 1991) that financial literacy as a skill increases perceived control behaviour, and thus one's participation in financial decision making. Another channel through which financial literacy impacts financial decision-making authority within a household is the understanding of how variables such as inflation and interest rates work in an economy and affect environmental uncertainty. A higher perceived environmental uncertainty, according to Hempel & Tucker (1980), demands the involvement of both partners in making long-term financial decisions, and lessens the husband's role in short-term financial management.

According to the theories discussed above, financial literacy is expected to have a positive sign towards one's authority in household financial decision making. However, empirical evidence on this issue is limited, and the results are inconclusive. There was an attempt to see the impact of financial education, which is partly aimed at improving financial literacy, on the authority in decision making (Bernasek & Bajtelsmit, 2002). The results confirmed that formal financial education has a positive and significant impact on a person's authority in household decision making. Elder & Rudolph (2003) showed a tendency that decisions are made by those with more financial knowledge, irrespective of gender. On the other hand, A. Wood et al. (2012) showed that the decision maker (i.e. the alpha partner) is not necessarily the one who is savvier in financial matters, suggesting that other variables (including those discussed in the previous chapter) are useful as predictive factors.

It is also not very clear whether financial literacy will increase one's authority in financial decision making because the skill might also be relevant for activities outside of the households. Becker (1991) himself acknowledged the possibility that certain skills might be multi-purpose although the original assumption in his model is that each type of human capital is only relevant for a single activity. Considering the notion of the division of labour within the household, when financial literacy turns out to be more relevant for activities other than financial decision making, it might be the case that those possessing high financial literacy do not participate in financial decision making because their energy, skills, and time have been allocated to other activities. Given this explanation, there is no specific hypothesis on the relationship between financial literacy and household financial decision-making authority.

There is relatively little discussion on emotional and other personal barriers that might be relevant to financial behaviour (Angulo-Ruiz & Pergelova, 2015), although theoretically, more economists incorporate psychological forces in modelling investors' behaviour (Frydman & Camerer, 2016). Self-efficacy is an example of a psychological trait that is often discussed in the literature. In many cases, when a person does not believe that he or she can produce the desired effect, there is less incentive to act (Bandura, 2006). A. Wood et al. (2012) argued that how each person in a household feels about household financial management affects to what extent he or she is involved in the decision. In their research, the alpha partners (those who are more active in financial decision making) tend to have a higher degree of confidence in decision making. In the psychological empowerment framework, self-confidence in one's own ability is one part of the intrapersonal component that is needed for one's empowerment (Rappaport, 1981; Zimmerman, 1990). Closely related, Bandura (1977) perceived self-efficacy as the main focus in analysing someone's persistence when conducting certain tasks.

As elaborated in Section 3.8, financial behaviour and outcome can also be predicted using self-control. An individual that exhibits a high level of self-control has the ability to resist temptations, and tends to achieve more superior financial outcomes. Gathergood (2012), for example, showed that a lack of self-control outweighs a low level of financial literacy in predicting over-indebtedness.

General trust is another personality trait that has been analysed by some scholars. A lack of trust can hinder someone from using particular financial products or services since it implies that there are additional costs of a potential moral hazard (Karlan et al., 2014). More specifically, Guiso, Sapienza, & Zingales (2008), Georgarakos & Pasini (2011), and Delis &

Mylonidis (2015) provided empirical evidence showing that a lack of trust can make people reluctant to buy insurance policies and participate in the stock market. Since the dynamics of household financial decision making entail relationships and interactions among family members, trust is expected to play a crucial role since it can affect the decision of one member to allow other members to have the authority in the household (Gur & Bjørnskov, 2017).

The multiple logistic regression technique was used in examining the relationship between financial literacy and household financial decision-making authority. The technique allows the use of a binary dependent variable (1 = main financial decision maker, either solely or co-decision maker; 0 = not the main financial decision maker), assuming this dependent variable has a Bernoulli distribution (Agresti & Finlay, 2009). Similar strategies have been employed in studies by Bernasek & Bajtelsmit (2002), Yusof (2015a), and Yusof (2015b). Specifically, the general empirical model is stated as below:

$$\log \left[ \frac{P(D_i=1)}{1-P(D_i=1)} \right] = \alpha + \beta_1 FL_i + \varepsilon_i \dots \dots \dots (11)$$

$$\log \left[ \frac{P(D_i=1)}{1-P(D_i=1)} \right] = \alpha + \beta_1 FL_i + \beta_2 PT_i + \varepsilon_i \dots \dots \dots (12)$$

$$\log \left[ \frac{P(D_i=1)}{1-P(D_i=1)} \right] = \alpha + \beta_1 FL_i + \beta_2 PT_i + \beta_3 CA_i + \varepsilon_i \dots \dots \dots (13)$$

$$\log \left[ \frac{P(D_i=1)}{1-P(D_i=1)} \right] = \alpha + \beta_1 FL_i + \beta_2 PT_i + \beta_3 CA_i + \beta_4 X_i + \varepsilon_i \dots \dots \dots (14)$$

where  $D_i$  is the binary variable for participation of individual  $i$  as the main financial decision maker;  $FL_i$  is the level of financial literacy of individual  $i$ ;  $PT_i$  is the personality traits of individual  $i$  (financial self-efficacy, self-control, and general level of trust);  $CA_i$  is the total cognitive score of individual  $i$ ;  $X_i$  is a vector of socio-demographic indicators that serve as control variables; while  $\varepsilon_i$  is the error term. Gender and the level of education are the two main socio-demographic indicators included, following previous studies that show the significance of these variables (Carlsson et al., 2013; Bertocchi et al., 2014; Yusof, 2015b).

#### 4.3.4. Household financial decision-making authority and life satisfaction

The relationship between decision-making authority or responsibility and life satisfaction is complex and context dependent, which include factors such as the value of agency (Welzel &

Inglehart, 2010), gender role prescription (E. M. Berger, 2013; Álvarez & Miles-Touya, 2016), and the nature of tasks (Barnett & Shen, 1997). A part of this dissertation tries to fill in the gap by focusing on financial decision making. There is no specific prediction on the nature of the relationship since financial decision making is unique in some ways. On the one hand, people often do not enjoy having the responsibility of financial decision making because it is perceived as “difficult”, “boring”, and “full of uncertainties” (World Bank, 2014). In this case, authority in financial decision making is seen more as a burden and might negatively influence life satisfaction. On the other hand, financial decision making deals with strategic issues in life that people highly value, such as children’s education and housing improvement. Therefore, having more control over financial decision making might lead to a sense of security in life that can positively affect life satisfaction.

The role of skills is examined in the relationship between financial decision-making authority and life satisfaction. It is predicted that the nature of this relationship is different between those who score high in financial literacy and cognitive ability, and those who have relatively weak scores on these aspects. People with better financial literacy and cognitive ability are expected to be well-equipped to make sound financial decisions and have fewer reasons to view financial decision-making authority as a burden.

Differences in socio-demographic indicators are incorporated in the analysis since previous studies have shown evidence of the importance of these factors in explaining the relationship between financial decision-making authority and life satisfaction. For example, a large number of studies have shown that the views on household responsibility of men and women are not similar and might affect SWB differently (see among others: E. M. Berger, 2013; Álvarez & Miles-Touya, 2016). The levels of resources involved also lead to different views on decision-making authority (Snape et al., 1999), thus the analysis will also be conducted separately for those with high levels of income and those who belong to the low income group. Other socio-demographic indicators that are taken into account in this study are place of living and age.

To investigate the relationship between financial decision-making authority and life satisfaction, this dissertation uses an ordered probit model, following Álvarez & Miles-Touya (2016), with the following specification:

$$LS_i = \alpha + \beta_1 D_i + \varepsilon_i \dots \dots \dots (15)$$

$$LS_i = \alpha + \beta_1 D_i + \beta_2 X_i + \varepsilon_i \dots \dots \dots (16)$$

where  $LS_i$  denotes life satisfaction of individual  $i$ ,  $D_i$  is the binary variable for participation of individual  $i$  as the main financial decision maker,  $X_i$  is a vector of socio-demographic indicators that serve as control variables, similar to those used in the previous equations; while  $\varepsilon_i$  is the error term. The main reason for using the ordered probit technique is that strictly speaking, the Likert scale that is used to measure life satisfaction is an ordinal measure<sup>13</sup>. In an ordinal variable, the ordering value of the variable is meaningful (for example, the value of 3 is considered larger than that of 2), but the magnitude differences between values are not (Wooldridge, 2013). The way the results are interpreted using an ordered probit technique is different from that in OLS, that is, when the Likert scale is treated as cardinal.

#### **4.3.5. Regressions using sub-sample**

Running the regression models above using the entire sample does not inform us much about differences in how the independent variables predict the dependent variables among people with distinct socio-demographic backgrounds. One strategy to understand these differences is by running the regression models using different subsets of the sample, which allows the intercepts and coefficients (slopes) to be different across groups. The use of this method can be found in Chiappero-Martinetti & Salardi (2008), who aimed to understand how sub-groups of the Italian population differ in converting resources into functionings, and Yusof (2015b), who intended to see whether different ethnicities in the Malaysian population have different household decision-making arrangements.

Some variables have been used in previous studies to separate their samples into different groups for further analyses, including gender (Frisco & Williams, 2003; Chiappero-Martinetti & Salardi, 2008; Fernandez et al., 2015), age (Chiappero-Martinetti & Salardi, 2008), and ethnicity (Yusof, 2015b). It should be noted that the choice of variables to some extent depends on the objective of the study.

In this dissertation, the regression models specified above are implemented using different subsets of the sample based on gender, age, regions, income level, and formal education background. Dividing the sample based on gender is interesting due to the different roles men and women play in households and societies. Tichenor (1999) noted that gender has more

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<sup>13</sup> There are others who treat Likert scale as cardinal, but as Ferrer-i-Carbonell & Frijters (2004) showed, doing so does not lead to a significant difference in the results of analyses when we assume that the scale is ordinal in nature.

explanatory power on money management and control compared to income or status. Within-gender disparities have been shown by OECD/INFE (2013), in which they identified groups of women whom policymakers should focus on due to their lower levels of financial literacy. These groups include those who are less educated and receive lower income.

Age is used as a basis for dividing the sample because the literature suggested that the arrangement of household financial matters of people from different age groups is not similar (see for example: Rosen & Granbois, 1983; Waseem, 2004; A. Wood et al., 2012).

There are reasons to analyse the relationships between the variables according to the place of living, since culture, supporting infrastructure, and other spatial / environment dimensions in each province are not similar. Specifically, environmental factors could interfere with the conversion process of input into output (Sen, 1985a; Sen, 2001; Kuklys, 2005; Chiappero-Martinetti & Salardi, 2008).

Previous studies highlighted differences in the patterns of household financial decision making between those in the high-income group and those in the low-income group due to the different attitudes towards household responsibility. In general, people belonging to the low-income group associate decision-making authority with a burden, while those in the high-income group view it as a source of authority (see among others: Snape et al., 1999; Watson et al., 2013).

The sample will also be divided according to the levels of financial literacy and cognitive ability for models (10) and (11), since one of the main concerns is to see how differences in skills explain the relationship between household financial decision-making authority and life satisfaction.

## **CHAPTER 5**

### **RESULTS AND DISCUSSIONS: QUALITATIVE ASPECT**

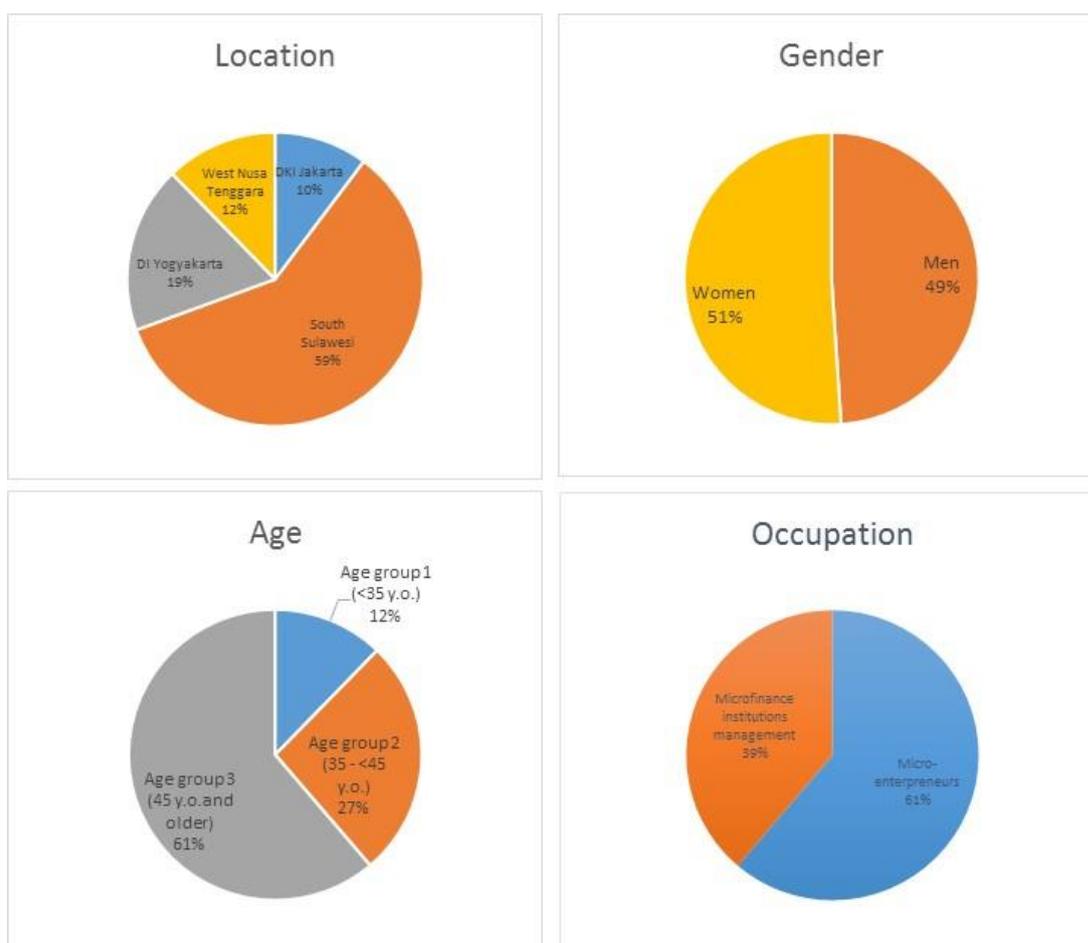
#### **5.1. Introduction**

The results of the qualitative analysis, which focuses on the conceptualisation of financial capability, can be found in this chapter. Explanations on the backgrounds of interviews and FGDs' participants can be found in the following section. Some comparisons with previous studies that attempted to conceptualise financial capability are provided afterwards. In conceptualising financial capability, this dissertation relies heavily on the results of interviews and FGDs with microfinance institutions' clients, management, and associations. The framework analysis, as explained by Ritchie & Lewis (2003), is used to process this qualitative data. Due to the semi-structured nature of the interviews and FGDs, it should be noted that different themes were emphasised in each of them. Those conducted with clients tend to identify which aspect(s) of financial capability is important, while interviews with the management team and associations of microfinance institutions focused on whether clients have the necessary financial capability. Several additional discussions within the scope of this study emerged during the interviews and FGDs, and are discussed in this chapter.

#### **5.2. Descriptive statistics of interviews and FGDs' participants**

Figure 5.1 provides a summary of the backgrounds of the interviews' and FGDs' participants. The interviews and FGDs themselves were conducted in four provinces in Indonesia: DKI Jakarta, DI Yogyakarta, West Nusa Tenggara, and South Sulawesi. One can note that there are significantly more participants from South Sulawesi. This is due to the fact that there were two FGDs conducted in this province, each with five to six participants. Both men and women are well-represented, as the proportions are almost equal. Approximately 60 percent of the participants belong to the oldest age category (45 year or older), while the proportion of those who are microentrepreneurs is larger than that of microfinance institutions' management.

Figure 5.1. Participants' characteristics



Source: Author's own work

## 5.3. The elements of financial capability

### 5.3.1. Financial management

All interviews and FGDs began with questions such as: what constitutes financial capability? What set people with sound financial capability apart from those with low or no financial capability? Responses to these questions typically started with an emphasis on financial management, with a significant majority of the responses addressing this issue. Overall, it was found that responses on the importance of financial management are not affected by the variation in socio-demographic backgrounds of the participants.

The issue of financial management was considered crucial by the participants because most of them are self-employed and have to rely on themselves for the management of their finances. Also, self-employment meant that incomes fluctuated, with certain periods generating high sales leading to high profits and some periods facing downturns. Micro-entrepreneurs also have more flexibility to determine when they want to work and when they do not. In West

Nusa Tenggara, for example, some microentrepreneurs are reluctant to work during Ramadhan (Muslim's fasting month), which means that they have to manage their financial matters accordingly to survive during the month. Ramadhan is then followed by Eid al-Fitr, probably the most important holiday in predominantly Muslim countries such as Indonesia, which is traditionally celebrated in festivity. The large expenditure usually associated with this celebration escalates the need for appropriate financial management amongst the clients of microfinance institutions.

When participants were asked to elaborate more about financial management, emphasis was given to the financial spending, although further explanation revealed the need to consider the income side. According to most of the respondents, there are three essential dimensions that sound financial management must incorporate: amount, allocation, and time. Understanding how much money they need for their daily lives is crucial, and there are cases in which clients underestimate the amount of money they require.

With regards to allocation, ideally, a person needs to determine in advance the amount of money for daily needs, and he or she should utilise the money based on these pre-determined purposes. Adherence to this short-term plan is valued by the participants, although they acknowledge that given their situations, full adherence is difficult. There are times when they use allocated money for different purposes than pre-determined, depending on the urgency and priority of a particular need, especially those related to health. Appropriate allocations of finances require the ability to set priorities on the basis of importance and urgency. Time is an important aspect of daily financial management and clients need to understand not just what purpose the money is for but also when the money is needed. To support these three aspects of financial management, some clients suggested that a proper bookkeeping might be needed, and business and personal financial issues should be treated separately.

Although some of the clients of microfinance institutions value the aforementioned aspects of financial management, when it comes to implementation in daily life, we can see that a majority of them still rely on a rather traditional and integrated financial management system. As an illustration, a marketing officer reveals that he found that the majority of clients do not separate business and personal financial management.

The size of wealth/assets might affect the sophistication of financial management. One of our interviewees suggested that managing a small amount of wealth tends to be simpler and does not need any specific rules or techniques. This might be in contrast to what Thaler (1999) suggested that when the budget is small, budgeting rules among households and organisations

must be stricter with more explicit rules. Households with limited resources also tend to define their budgets within shorter periods, like weekly or monthly.

### **5.3.2. Financial planning**

Financial planning is another aspect of financial capability that emerged from the interviews and FGDs. However, it was not the first issue raised by any of the participants. For micro-entrepreneurs who run informal businesses, personal long-term financial planning is crucial. Those who have employment in the formal sector can rely on the compensation system that automatically incorporates money allocation for paying an insurance premium or retirement package, but this is not the case for people in the informal sector.

Participants were asked to identify several critical areas that require financial planning. Convergent responses were found, of which the three main responses for financial planning goals were - children's education, housing, and hajj (pilgrimage). Overall, all female respondents of the interviews and FGDs prioritised children's education. This result is in line with previous studies, that microfinance provided to women had a broader impact on other aspects such as health and education because women are more concerned about these issues (see among others: Blumberg, 1989), relative to when the service was provided to men.

At least two interviewees raised the issue that financial planning for children's education is a part of their investments for old age. The participants believe that good education is a fundamental need for children to be successful in their lives, and these successful children would take care of their parents during the latter's retirement days. Following this plan, parents do not have to be independent when they stop working.

### **5.3.3. Financial literacy**

Scholars have argued that financial literacy is an essential element of financial capability (see for example: Personal Finance Research Centre, 2005; E. Johnson & Sherraden, 2006; Huang et al., 2014). What is the view of the microfinance institutions' clients regarding financial literacy? It must be noted first that at the beginning of the interviews and FGDs, the respondents were not given the details about the elements of financial literacy as structured by mainstream literature.

A majority of clients did not think of financial literacy when asked about the elements of financial capability. However, it can be argued that if their concept of “financial literacy” includes the awareness of the need for financial management and or financial planning instead of the knowledge of compound interest, inflation, and diversification, financial literacy becomes necessary. This definition of financial literacy, as explained in the literature review, is too broad and is often confused with the term financial capability, which is central to this dissertation. Therefore, to avoid confusion, in interpreting the results of the interviews and FGDs, we stick to the concept of financial literacy more as knowledge instead of behaviour or other dimensions. However, other scopes of knowledge are incorporated in analysing the responses of the participants.

When financial literacy is viewed as the understanding of how financial products, services, and institutions work, the respondents can see that it is a relevant factor for financial capability. This understanding might widen the choice of products and/or services a person can use to support his or her financial management and planning. Some interviews with the clients of microfinance institutions and management revealed that there are some negative perceptions towards certain financial products, such as insurance, that can enhance people’s reluctance to use these products.

Interviews with some of the microfinance institutions’ management provided the opportunities to go deeper about the importance of financial literacy. The mainstream conceptualisation of financial literacy, which constitutes knowledge of and the know-how to apply compound interest, inflation, and diversification, was explained to the interviewees. Their responses tend to be convergent. While they acknowledge that financial literacy is important, they do not see the urgency of financial literacy for people with socio-economic backgrounds such as their clients. They argue that, given the circumstances of these people, without financial literacy as defined above, people can be still financially capable.

The management believe that their clients, in general, have low levels of financial literacy. Financial literacy is also perceived as not having a significant impact on financial behaviour. Psychological factors such as self-control are viewed to have more important roles in influencing financial behaviour. Attempts to improve the clients’ financial literacy are perceived to have limited effects, if not futile.

### **5.3.4. The use of financial services**

Participants were then asked about financial products, services, and or devices that they use. With regards to financial planning, the interviews and FGDs revealed that participants rely heavily on savings rather than more complex financial products such as insurance. Some of the clients are already exposed to various savings' products, including those offered by banks. Less sophisticated clients use informal products such as rotated savings and credit associations (ROSCA). As ROSCA groups do not provide a definitive and written contract, trustworthiness plays a crucial role in the economic exchanges within the groups. The number of ROSCA groups in which clients participate depends to some extent on their social networks: clients with wider social networks might participate in ROSCA groups in which the members are people from the same neighbourhood, family, religious group, and or microfinance institutions.

In addition to these products or services, clients have an option to save in microfinance institutions. Some of these institutions label their products according to their purposes. For example, in some microfinance institutions we can find savings products for Hajj or children's education preparation. However, as some microfinance institutions' management revealed, relatively more sophisticated clients save in their institutions only in order to fulfil the minimum sinking fund requirement, because they have loans from the institutions. When their real intention is to save, these clients prefer banks.

We can also see the importance of informal mechanisms for people in maintaining their financial capability, and these informal mechanisms rely on social networks. The extent of social networks is an important factor that can influence financial capability, and the effect can be multiplied. This is not to say that informal mechanisms can fully substitute the formal mechanism in supporting financial capability, especially when a relatively significant amount of money is at stake. Formal and informal mechanisms are also closely intertwined. Being a client of a microfinance institution expands one's social network. When a client has a wider social network, he or she has more options of informal mechanisms for financial exchanges, for example, through more ROSCA groups, which is an illustration of how social networks can support a person's financial capability.

It is believed that several factors drive the choice of financial products/services/devices among clients, and respondents were asked specifically about the appealing features of the sharia-based microfinance institutions' services. The main reason why clients still use these services is because of the familial and friendly atmosphere of microfinance institutions. The

agents play a crucial role in building this aspect as they do not only serve as agents, but also provide day-to-day services to the clients such as helping in management of bills. These agents know the clients and their families personally, and in some instances, they share similar social networks. Clients can consult them about a range of things, from religious matters to which schools they have to send their children to. In short, clients see these agents as a part of their community. On the other hand, more formal institutions such as banks with their administrative procedures can sometimes be intimidating, which leads to people viewing banking products to be expensive and complicated.

## **5.4. Discussions and concluding remarks**

The results of the qualitative phase of this study show that there are several similarities as well as differences between the conceptualisation of financial capability by microentrepreneurs in Indonesia and those raised previously. Two notable studies that incorporated a participatory approach in conceptualising financial capability were the ones by Personal Finance Research Centre (2005) and Kempson et al. (2013). In their work, which sought to conceptualise financial capability among people from emerging countries, Kempson et al. (2013) acknowledged differences on how financial capability is defined by different societies. This dissertation complements these previous findings by looking at microentrepreneurs in the context of developing countries.

In general, we can see that the result is to some extent similar to Kempson et al.'s (2013) study in Colombia, Malawi, Mexico, Namibia, Papua New Guinea, Tanzania, Uruguay, and Zambia. It is also shown that financial management and financial planning are the two most important elements of financial capability, supported by the fact that these two topics emerged during the data collection process. A similar conceptualisation can be found in lower-income group societies in developed countries like United Kingdom (Personal Finance Research Centre, 2005). However, unlike what was found in this study, the ability to consult about financial matters did not emerge as one of the capability during the interviews and FGDs, although the ability to consult about other daily life issues was considered necessary. The participants were specifically asked whether the respective ability is important given their situations, but there was no acknowledgement of its importance.

This finding, in which people do not consider the ability to consult about financial matters as a vital element of financial capability, requires further explanation. The interviews and FGDs

reveal that for financial issues, participants consult with people within their proximate social networks, such as spouses, other family members, and friends. They may not consider these inputs as a significant value-add, given the fact that these people might not be financially savvy.

The nexus between financial literacy and capability is another interesting issue raised in this dissertation. Several earlier studies viewed that financial literacy is one part of financial capability, as argued by E. Johnson & Sherraden (2006) and Huang et al. (2014). Meanwhile, Kempson et al. (2013) suggested a more complex relationship between financial literacy and financial capability, pointing out that a person can still be financially capable without sufficient financial literacy as defined by mainstream literature. The general idea captured from the interviews and FGDs is that given the current circumstances of microentrepreneurs, who mostly can be classified as productive poor, financial literacy is not an essential part of financial capability. The participants, in general, do not value financial literacy, and consequently, financial education might not create a significant impact.

As financial literacy is viewed to be less important for those with limited resources, does this mean that financial literacy training should only be given to the wealthy? This may be supported by a utilitarian view that considers only immediate costs and benefits. The utilitarian view from the perspective of the participants may also lead to a similar outcome: participants who do not see the benefit of financial literacy training might be reluctant to participate.

However, if we regard financial literacy as a basic right to survive, then it should be provided to everyone without considering the impact of the training for them. In addition, even when one still believes that financial literacy should be given only to those with resources, the possibility of upward financial mobility (i.e. a potential of being richer) must be taken into account. In other words, financial literacy will be more valuable for future well-being. If financial education provided to adults has very little benefit, it would be worth making it available to the poorer people at an earlier age.

The fact that the subjects of this study are microentrepreneurs also contributes to the result. One important characteristic, as addressed by many of the interviews' and FGDs' participants, is that they tend to mix personal with business financial management. It is reflected from some of the responses that were derived from circumstances and experiences in managing businesses. For example, a client explicitly explained sound financial management as the ability to accurately determine how much money is needed for the production of goods and

services. Some clients also mentioned business expansion as one of the most important objectives of financial planning.

Another issue that is worth exploring is the plurality of motives of people in dealing with their financial matters. The way people choose financial products or devices is not merely based on direct costs and benefits calculations, but also on other considerations that can be derived from their complex lives. People view that the value of family, friendship and other social networks are important in their financial exchanges, making institutions that offer these values, attractive. Consequently, products and services offered should be in line with the value system within a community. Other formal financial services providers such as banks, which originally do not operate based on these values, began to recognise the importance of tailored strategies in offering products and services. The use of branchless banking in which the agents are the respected people in the community is an example of their strategies.

In summary, the political and socio-economic systems, as well as demographic factors, contribute to people's ways of living and the construction of their identities, and thus lead to different manifestations of financial capability.

# CHAPTER 6

## CHARACTERISTICS OF THE SURVEY'S SAMPLE

### 6.1. Introduction

The aim of this chapter is to provide an overview of the characteristics of the survey's sample, which comprises more than 2,300 respondents. It begins with a summary of the socio-demographic characteristics of the survey's respondents, including gender, age, place of living, income category, and education background. Afterwards, descriptive statistics on each of the variables examined in this study are presented: financial literacy, financial capability, cognitive ability, self-efficacy, life satisfaction, household financial decision-making authority, resources and functionings, and conversion rate efficiency. It should be noted that for variables that are nominal / dichotomous in nature, one can find the frequencies and percentages of responses towards the questions. For those treated as ordinal and interval variables, the main indicators are the means (average) and standard deviations. Additionally, to better understand variations across different socio-demographic groups of the sample, some cross-tabulation analyses and analyses of variance (ANOVA) are presented.

### 6.2. Socio-demographic characteristics

Table 6.1. Socio-demographic characteristics: Frequencies

Variable	Value= 0	Percentage 0	Value = 1	Percentage 1	N
<b>Region</b>					
DI Yogyakarta (0 = Not live in DI Yogyakarta)	1,288	54.58	1,072	45.42	2,360
West Nusa Tenggara (0 = Not live in West Nusa Tenggara)	1,965	83.26	395	16.74	2,360
South Sulawesi (0 = Not live in South Sulawesi)	1,467	62.16	893	37.84	2,360
<b>Gender</b>					
Female (0 = Male)	904	38.31	1,456	61.69	2,360
<b>Income category</b>					
< IDR 1.5 million (USD 113.98)	1,713	72.58	647	27.42	2,360
IDR 1.5 million (USD 113.98) - IDR 2 million (USD 151.98)	1,614	68.39	746	31.61	2,360
IDR 2 million (USD 151.98) - IDR 6 million (USD 455.93)	1,563	66.23	797	33.77	2,360
IDR 6 million (USD 455.93) - 17 million (USD 1,291.83)	2,235	94.70	125	5.30	2,360
> IDR 17 million (USD 1,291.83)	2,315	98.09	45	1.91	2,360
<b>Years of education</b>					
No formal education	2,144	90.85	216	9.15	2,360
1-6 years	1,929	81.74	431	18.26	2,360
7-9 years	1,725	73.09	635	26.91	2,360
>9 years	1,282	54.32	1,078	45.68	2,360

Source: Author's own work

Table 6.1 presents a summary of information regarding respondents' socio-demographic characteristics. The age of respondents ranged between 17 and 70 years, with a mean of approximately 40 years and standard deviation of 10.56 years. Most of our respondents (more than 45 percent) are inhabitants of DI Yogyakarta, which is located in Indonesia's most populous island, Java. The fact that almost two-thirds of our respondents are female echoes the notion that females are the typical target market for microfinance institutions. From the perspective of the institutions themselves, serving female clients is more desirable since evidence has shown a better repayment rate among females compared to male clients (Khandker, Khalily, & Khan, 1995; Goetz & Gupta, 1996; Armendariz & Morduch, 2005). From a social policy point of view, channelling funds through female members of a household is preferred due to the positive impact this has on the well-being of the household (Blumberg, 1989; Khandker, 2005).

About 59.03 percent of the respondents reported bringing in a monthly income of less than IDR 2 million (USD 151.98). This means that they earn considerably less than Indonesia's GDP per capita in 2015, which according to the World Bank was USD 3,336 or USD 278 monthly (World Bank, 2017). When the respondents are classified into different provinces according to where they live, differences in income patterns can be identified. While in DI Yogyakarta and South Sulawesi the income categories that dominate the sample are income classes 2 and 3 (IDR 1,500,000 / USD 113.98 – IDR 2,000,000 / USD 151.98 and IDR 2,000,000 / USD 151.98 – IDR 6,000,000 / USD 455.93), in West Nusa Tenggara most of the respondents belong to the lowest income category (< IDR 1,500,000 / USD 113.98). Having collected these data, it is useful to conduct relevant comparisons such as against regional GDP. According to the official figures for 2015 published by Statistics Indonesia (2017), West Nusa Tenggara had an annual regional GDP of IDR 21,749,400 (approximately USD 1,652.94), or IDR 1,812,450 (USD 137.74) per month, the third lowest among all provinces of Indonesia. DI Yogyakarta and South Sulawesi's annual regional GDP were IDR 27,573,470 (USD 2,095.57) and IDR 39,942,990 (USD 3,035.65), respectively. Other figures which are relevant for a broader comparison for this income data include the monthly regional minimum wage, in which the latest ones for DI Yogyakarta, West Nusa Tenggara, and South Sulawesi are IDR 947,100 (approximately USD 71.97), IDR 1,210,000 (approximately USD 91.95), and IDR 1,800,000 (approximately USD 136.78), respectively.

Overall, there is still a relatively substantial proportion of people that have less than nine years of formal education. Similar to the case of income category, when the sample is broken down based on the provinces in which respondents live, the proportion of those who are not

formally educated in West Nusa Tenggara is almost 12 percent, which is significantly higher than DI Yogyakarta (9.61 percent) and South Sulawesi (7.73 percent). The chi-square test result confirms the significance of these differences. However, since the process of formal education in the case of most respondents happened years before the survey and it is possible that respondents may have moved between provinces, to conclude that the government's mandatory schooling programme is less successful in West Nusa Tenggara is premature.

### 6.3. Financial literacy

Table 6.2. Financial literacy: Frequencies

Variable	Value= 0	Percentage 0	Value = 1	Percentage 1	N
Financial literacy					
Interest rate and inflation (0 = incorrect)	1,923	81.48	437	18.52	2,360
Diversification (0 = incorrect)	1,956	82.88	404	17.12	2,360
Installment (0 = incorrect)	1,430	60.59	930	39.41	2,360
BPJS right (0 = incorrect)	451	19.11	1,909	80.89	2,360
BPJS coverage (0 = incorrect)	1,415	59.96	945	40.04	2,360
All FL answers wrong	2,088	88.47	272	11.53	2,360
Get one FL answer correct	1,790	75.85	570	24.15	2,360
Get two FL answer correct	1,565	66.31	795	33.69	2,360
Get three FL answer correct	1,879	79.62	481	20.38	2,360
Get four FL answer correct	2,172	92.03	188	7.97	2,360
Get five FL answer correct	2,306	97.71	54	2.29	2,360

Source: Author's own work

The average score of respondents for financial literacy is 0.3919 (rescaled), with a standard deviation of 0.2392. To better understand how the financial literacy scores were distributed, Table 6.2 categorises respondents based on the number of questions answered correctly. Fewer than 2.50 percent of respondents answered all of the questions correctly. Most of the respondents (33.69 percent) could only manage to get two correct answers, while almost 12 percent of respondents failed to answer a single question correctly, including the one that examines basic knowledge regarding national social security system. The question about the right to be covered by the national social security system gleaned the most correct responses (80.89 percent), while the very low proportion of correct answers to the question about diversification (17.12 percent) indicates that this concept is not well-understood by the respondents in general.

From these descriptive statistics, relatively low levels of financial literacy are identified, even among micro-entrepreneurs who encounter business decisions in everyday life. Similar

findings regarding the level of financial literacy can also be found in a study by Mandell (2008), who showed that a large proportion of students in their sample had low levels of financial literacy. An explanation of this can be derived from the theory of skill formation that has been long discussed in the economics of human development (Heckman & Mosso, 2014; Heckman & Corbin, 2016). People's skills are formed from the time they are children and adolescents, and social and environmental factors play a significant role. Most people do not experience financial decision making, which is assumed to require basic levels of financial literacy, until they reach a certain age. Therefore, since the development of skills in many instances require direct experience in early ages (Heckman & Corbin, 2016), the formation of financial literacy into adulthood might not optimum.

One can argue that those who do not have the necessary formal education, or whose social and environmental circumstances during childhood and adolescence did not allow the building of adequate financial literacy, might acquire the skill in adulthood through direct experiences with financial decision making or engagements in financial literacy trainings. However, assuming that they have the freedom in participating in financial education, there should be a justified reason for acquiring such a skill. Lusardi & Mitchell (2014) provided a conceptual model which shows that people will participate in financial education when they believe that the benefits of taking part in the training outweigh the costs associated with it. Discussing the cost and benefit analysis of financial education for micro-entrepreneurs is not within the scope of this study, but this is a fruitful direction for further empirical research.

Table A1 summarises ANOVA's results in order to ascertain any disparities regarding financial literacy among different groups of respondents. The average score for financial literacy is higher among men than women (0.4259 vs. 0.3709), and this disparity is statistically significant at lower than 1 percent based on the ANOVA test. A higher standard deviation accompanies this higher average score for men. Similar gaps can also be found in terms of age, place of living, income, and education. A comparison of financial literacy scores' average among the three age groups indicates that older respondents tend to be less financially literate. The difference is statistically significant according to the ANOVA test result. While the average financial literacy score is the highest among those living in Java, the lowest average was recorded in South Sulawesi. The result of the ANOVA test confirms that these differences are statistically significant at 1 percent. The pattern of average scores in terms of income is complicated, but the ANOVA test shows the differences to be significant. The relationship between financial literacy and income to some extent resembles an inverted U-shape. The pattern of financial literacy variation based on years of formal education is

statistically significant and clearer, whereby the average financial literacy score increases with years of formal education.

The above result that shows that women in general have lower financial literacy echoes prior studies (see for example: Delavande et al., 2008; Bucher-Koenen & Lusardi, 2011; Lusardi & Mitchell, 2014). Significant discrepancies in financial literacy levels among people from different age groups are in line with previous findings by Finke, Howe, & Huston (2016), in which financial literacy is related to the declining cognitive ability among older people.

Women's lower levels of financial literacy have attracted attempts to identify some explanations, mostly by using Blinder-Oaxaca (Oaxaca, 1973) decomposition technique that attributes the difference in financial literacy between men and women into two components: the production process and socio-demographic differences. The former component is the result of different production processes of financial literacy that leads to a gap in this skill. According to the model proposed by Lusardi & Mitchell (2014), the decision to invest in financial literacy depends on the standard cost and benefit calculation, and those who do not expect the benefit to be large enough to compensate the cost tend to exert less effort in acquiring the skill. It is then argued that women's lack of involvement in financial decision making leads to lower levels of financial literacy. Although this is conceptually appealing and follows the traditional assumption of mainstream economics, this explanation lacks empirical support. Fonseca, Mullen, Zamarro, & Zissimopoulos (2012) found limited evidence to the claim, since a positive relationship between financial decision making and financial literacy is only found among men. Meanwhile, Bucher-Koenen & Lusardi (2011) found that women who are sole decision makers also tend to have lower levels of financial literacy, which implies that a household's financial decision-making arrangement cannot explain the gender gap in financial literacy. It is also not easy to reconcile this line of thought in the context of Indonesia, where in general, even if women have lower levels of financial literacy, they still often play a major role in household decision making (Papanek & Schwede, 1988).

With regards to the second component, OECD/INFE (2013) provided an exhaustive summary on the correlations between the gap in financial literacy and discrepancies in the socio-demographic conditions of men and women. Indonesia itself is not well-positioned in terms of the gender development index, being at the 110<sup>th</sup> place. Gender inequalities in terms of education can be still identified from some indicators related to participation in formal education by men and women. With regards to the labour market, the economic development in many developing countries seen in the past few decades has not resulted in a significant improvement of female participation in the labour market with women being over-represented

in the informal sectors (Mehrotra & Biggeri, 2005). These facts, together with this study's finding that women's level of education tends to be lower than that of men, provide a stronger case for the second component.

## 6.4. Personality traits

Table 6.3. Personality traits: Summary

Variable	Obs	Mean	Std. Dev	Min	Max
Self-efficacy in financial decision making (1 = Strongly disagree; 5 = Strongly agree)					
Confidence on indentifying financial investment	2,360	3.5496	0.8117	1.00	5.00
Confidence in good financial investment	2,360	3.5564	0.7836	1.00	5.00
Average confidence in financial decision making (rescaled 0-1)	2,360	0.6382	0.1875	0.00	1.00
Self-control in money matters (1 = Strongly disagree; 5 = Strongly agree)					
Spending money wisely	2,360	3.9424	0.7349	1.00	5.00
Cannot be trusted with money	2,360	2.6000	1.0923	1.00	5.00
Average self-control in money matters (rescaled 0-1)	2,360	0.6575	0.1434	0.00	1.00
General trust (1 = Strongly disagree; 5 = Strongly agree)					
Need to be aware	2,360	3.7873	0.8402	1.00	5.00
Trust to neighbour	2,360	3.3788	0.9890	1.00	5.00
Trust to stranger	2,360	3.1852	0.9498	1.00	5.00
Average trust (rescaled 0-1)	2,360	0.4814	0.1356	0.00	1.00

Source: Author's own work

Self-efficacy in financial decision making is measured using the responses to two questions in a 1-5 Likert scale, in which a higher score indicates a higher level of confidence. As can be seen from Table 6.3, respondents tend to have high confidence, since the average scores of responses to the questions are higher than 3.5. The average scores of responses to the two questions were then combined into a rescaled (0-1) score, and the average financial self-efficacy score is 0.64.

Several ANOVAs were performed to shed more light on the variations between different groups of respondents, the results of which are displayed in Table A2 in Appendix A. When the sample is divided according to gender, the average self-efficacy score of men is higher than that of women, and the standard deviation is lower. This result is in line with previous findings by Estes & Hosseini (1988), Zinkhan & Karande (1991), and Barber & Odean (2001), who identified that women reported lower levels of confidence about their ability in making decisions and the outcome of those decisions. Estes & Hosseini (1988) even showed that among explanatory factors that can be used to discriminate confidence in investment decision making, gender is the most significant. As raised earlier, since many areas of

financial decision making involve uncertain outcomes in the future, in some cases, high confidence can turn into overconfidence (McCannon, Asaad, & Wilson, 2016).

With respect to other socio-demographic characteristics, we can see that more formally educated respondents in general exhibit higher levels of confidence. There is no statistically significant difference regarding self-efficacy among people from different regions. Those in the second age group ( $35 < \text{age} \leq 45$  years) tend to exhibit the highest level of self-efficacy, which suggests that the relationship between self-efficacy and age resembles an inverted U-shape. A tendency is also revealed of a positive relationship existing between self-efficacy and income.

A similar way of measurement is also used to determine respondents' perceptions on self-control, and the questions used are phrased as whether the respondents can spend money wisely and cannot be trusted with money. The means to these questions are 3.9424 and 2.6000, respectively. It should be noted that for the second measure, the higher the score, the lower the perceived self-control. Accordingly, the score was then reversed. The standardised average value of these two measures of self-control is 0.6575.

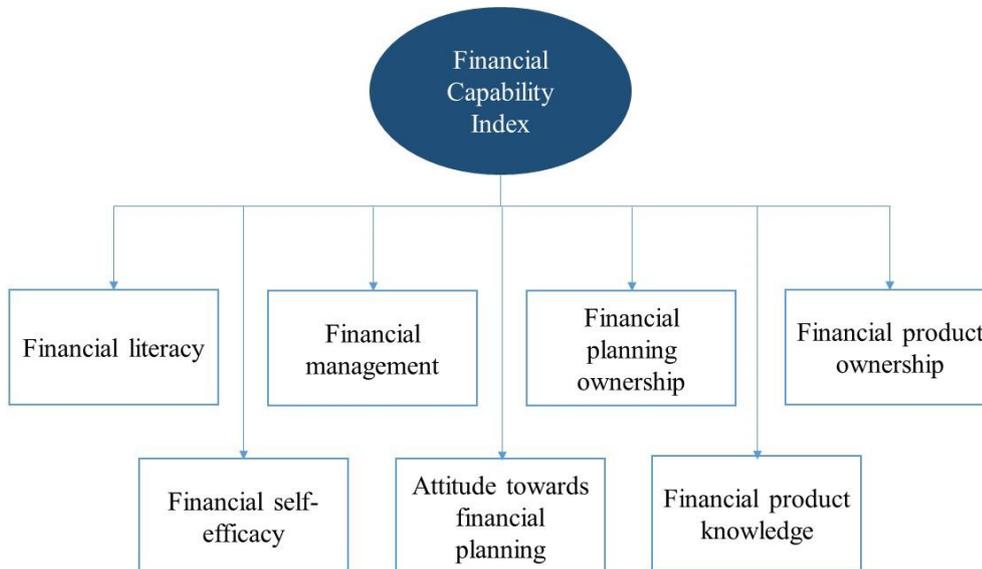
We can see from the ANOVA tests presented in Appendix A Table A3 that men in general reported higher scores of self-control. Similar findings regarding men's higher self-control can also be found in studies by Karoly & Ruehlman (1982) and Wang, Fan, Tao, & Gao (2017). Those living in West Nusa Tenggara have the highest average score of self-control, while it can be suggested that a person with a higher income level tend to score higher in this personality trait. A similar positive relationship can also be found between age and self-control score.

The general level of trust is reflected by three questions: need to be aware, trust to neighbours, and trust to strangers. We should note that in the first question, the higher the score, the lower the level of trust. The average score of 3.79 out of maximum 5 for this question indicates that respondents tend to show lower levels of trust. The level of trust to neighbours, whom can be considered as respondents' inner social circle, is higher than that to strangers. A standardised average score was calculated based on the three indicators reflecting general trust, which is 0.4814.

Referring to the ANOVA tests' results presented in Appendix A Table A4, it seems that there are regional differences in the general level of trust. Those in DI Yogyakarta exhibit the highest average score of general trust. Moreover, the result also suggests a negative relationship between trust and income level.

## 6.5. Financial capability index

Figure 6.1. Financial capability index



Source: Author's own work

This section attempts to measure financial capability in order to create an index that can be used as a comparison of the levels of financial capability among participants (Figure 6.1). The previous chapter suggests that financial management, financial planning, and financial products and ownership are essential elements of financial capability among microfinance institutions' clients. In addition to these four elements, financial literacy and financial self-efficacy were also included in constructing the measure of financial capability. The inclusion of psychological factors to measure financial capability might be controversial. On the one hand, Nussbaum (2000) highlighted the role of emotions in people's capability and suggest the incorporation of psychological theories in conceptualising capability. On the other hand, the way these psychological factors are measured is subjected to some criticism. In a typical large scale survey such as used in this study, usually researchers rely on self-reported questions. The subjective nature of the responses to these questions has attracted opposition from several scholars who highlight the problems of potential manipulations and adaptive preferences (see among others: Borghans et al., 2008). This trade-off cannot be easily resolved, but this dissertation incorporates psychological variables such as self-efficacy in financial decision making and self-control with regards to money matters, to create a more complete measure of financial capability.

Table 6.4. Financial management, financial planning, financial products' knowledge, and financial products' ownership: Frequencies

Variable	Value= 0	Percentage 0	Value = 1	Percentage 1	N
Has financial management planning					
Always	2,014	85.34	346	14.66	2,360
Most of the time	1,507	63.86	853	36.14	2,360
Seldom	1,745	73.94	615	26.06	2,360
Never	1,814	76.86	546	23.14	2,360
Adherence to financial management planning					
Always	2,334	98.9	26	1.1	2,360
Most of the time	1,385	58.69	975	41.31	2,360
Seldom	1,829	77.5	531	22.5	2,360
Never	1,884	79.83	476	20.17	2,360
Financial planning based on purpose					
Education	345	14.62	2,015	85.38	2,360
Housing	689	29.22	1,669	70.78	2,360
Hajj	662	28.05	1,698	71.95	2,360
Knowledge financial products / services / institutions					
Microfinance products	51	2.16	2,306	97.84	2,360
ROSCA	247	10.47	2,113	89.53	2,360
Informal credit / loan sharks	980	41.53	1,380	58.47	2,360
Pawn shops	533	22.58	1,827	77.42	2,360
Bank savings	324	13.73	2,036	86.27	2,360
Bank credit	911	38.62	1,448	61.38	2,360
Insurance	893	37.87	1,465	62.13	2,360
Mutual funds	2,051	86.91	309	13.09	2,360
Stocks	1,857	78.69	503	21.31	2,360
Bonds	2,072	87.8	288	12.2	2,360
Ownership / participation financial products / services / institutions					
Microfinance products	150	6.36	2,210	93.64	2,360
ROSCA	520	22.03	1,840	77.97	2,360
Informal credit / loan sharks	2,073	87.84	287	12.16	2,360
Pawn shops	1,523	64.53	837	35.47	2,360
Bank savings	623	26.4	1,737	73.6	2,360
Bank credit	1,577	66.82	783	33.18	2,360
Insurance	1,581	66.99	779	33.01	2,360
Mutual funds	2,294	97.24	65	2.76	2,360
Stocks	2,200	93.22	160	6.78	2,360
Bonds	2,322	98.43	37	1.57	2,360

Source: Author's own work

Table 6.5. Financial management, financial planning, financial products' knowledge, financial products' ownership, and financial capability: Summary

Variable	Obs	Mean	Std. Dev	Min	Max
Financial management	2354	0.5574	0.3031	0.00	1.00
Importance of financial planning (1 = Very not important; 5 = Very important)					
Children's education	2359	4.50	0.86	1.00	5.00
Housing	2360	3.82	0.91	1.00	5.00
Hajj	2360	4.07	0.86	1.00	5.00
Importance of financial planning score (rescaled)	2359	0.7823	0.1631	0.00	1.00
Financial products knowledge score	2354	0.5797	0.2217	0.00	1.00
Financial products ownership score	2358	0.3702	0.1510	0.00	1.00
Financial capability index	2343	0.5829	0.1212	0.1771	0.9417

Source: Author's own work

Tables 6.4 and 6.5 present the frequencies and key statistics for the remaining three elements of financial capability that have not been discussed in the previous sections. With regards to financial management, surprisingly almost 77 percent of the respondents reported that they have a sort of daily financial management planning (including those who responded with “always”, “most of the time”, and “seldom”). Among those who have daily financial management planning, most of them (41.31 percent) only seldom adhere to the planning. A rescaled financial management score (0-1) was created based on the responses to these two questions. The mean score is 0.5574, and the standard deviation is 0.3031.

The ANOVA results presented in Appendix A Table A5 suggest that while there is no significant difference between men’s and women’s financial management scores, there are some gaps in terms of place of living, age group, income group, and years of formal education. People in West Nusa Tenggara seem to be the ones who have the best financial management behaviour. The older the respondent, the lower the financial management score in general. It is also clear that there are tendencies that people from higher income and formal education groups have better financial management scores.

There are two aspects with regards to financial planning: the importance of financial planning for three different objectives (education, housing, and hajj/umra) and financial planning ownership for these objectives. Details on their measurements have been provided in Chapter 4. The average score of the importance of financial planning is 0.7823, with a standard deviation of 0.1631. As can be seen from Table A6 in Appendix A, there is no statistical difference between the average scores of men and women. However, the ANOVA results are significant for the remaining socio-demographic indicators. Those living in West Nusa Tenggara in general have the highest score compared to the peers in the other provinces. There seems to be a negative correlation between age and the score of the importance of financial planning. Meanwhile, income and years of education tend to be positively associated with the score.

As can be seen from Table 6.5, among the different goals of financial planning asked in the questionnaire, education can be considered as more important compared to Hajj and housing expenditure. One can interpret that the figures of financial planning ownership, in which there are more respondents with financial planning for education than those with financial planning for housing and hajj expenditure, as the consequences of education as a more important goal. However, another potential explanation for this finding is the nature of the expenditures for these different purposes. Hajj and housing expenditures often involve significantly more

money compared to education related expenses, and henceforth some respondents have not been able to allocate money for them yet.

There are gaps in the perceptions of people from different groups of population regarding the importance of financial planning for education, as suggested by the ANOVA results (Appendix A Table A7a). Women in general have a lower average score compared to men, while people in West Nusa Tenggara have the highest average score among those living in the three provinces. The importance of financial planning for education tends to be lower as the respondents get older. Both income and years of formal education tend to be positively associated with the mean score of the importance of financial planning for education.

The importance of financial planning for housing are perceived differently among people from different regions, age groups, and education backgrounds, as can be seen from Appendix A Table A7b. Those who live in West Nusa Tenggara, are younger, and have longer years of formal education, tend to have higher mean scores. These differences are supported by the significant ANOVA results.

With regards to financial planning for hajj and umra, significant differences are only found among people from different provinces and income groups (Appendix A Table A7c). Similar to financial planning for the previous two goals, financial planning for hajj and umra are perceived more important among people in West Nusa Tenggara and those with higher levels of income.

The second aspect of financial planning is ownership. Table A8 in Appendix A provides the ANOVA using the rescaled score of financial planning ownership. Significant differences are found among people from different regions, age groups, income levels, and formal education background. Overall, those who live in West Nusa Tenggara, are younger, have higher levels of income, and experienced longer formal education, tend to score higher in financial planning ownership.

The average score of the respondents' financial products' knowledge is 0.5797, with a standard deviation of 0.2217. Meanwhile, for financial products' ownership, the scores' mean is 0.3702 and the standard deviation is 0.1510. As shown by Table 6.6, aside from microfinance products, a significant majority of the respondents know (89.53 percent) and participate (77.97 percent) in ROSCA. Knowledge on relatively advanced financial products is limited, with only slightly more than 13 percent know about mutual funds, more than 21 percent know about stocks, and more than 12 percent know about bonds. As expected, ownerships on these products are even smaller, in which no product is owned by more than 7

percent of the respondents. One important finding is that a significant proportion of our sample is exposed to banking products, especially the savings. Slightly higher than 86 percent know about bank savings, and more than 73 percent admit that they have bank savings. Regarding credits, more than 61 percent know about this product, while approximately 33 percent have bank loans.

The results of ANOVA for financial products' knowledge and ownership are displayed in Appendix A Tables A7 and A8. We can see that inter-group scores' gaps are statistically significant. In general, those who have higher scores in financial products' knowledge and ownership are people who live in West Nusa Tenggara, have higher levels of income and longer formal education. It should be noted that there are differences in patterns of financial products' knowledge and ownership scores in terms of gender and age group. While men tend to score higher in financial products' knowledge, they tend to perform poorer in terms of financial products' ownership. The youngest age group has the highest overall score of financial products' knowledge, while it is the middle age group ( $35 < \text{age} \leq 45$ ) that has the highest average score of financial products' ownership.

The information regarding financial management, financial planning, financial products' knowledge and ownership, financial literacy, and personality traits related to financial matters were combined into an index of financial capability. After rescaling the index into the 0-1 scale, we can see that the average value of the index is 0.5829 (standard deviation 0.1212). As can be seen from Appendix A Table A11a, all the socio-demographic indicators might be used to predict variations in the financial capability scores, as suggested by the significant *p*-value of ANOVA results. Overall, men have a higher level of financial capability than women. In terms of place of living, people in West Nusa Tenggara have the highest average score of financial capability. Younger people tend to have higher levels of financial capability, while those who have higher levels of income and years of formal education also have higher financial capability scores. These variables are then included in the regression models discussed in the following chapter.

For robustness check, an alternative index is built using principal component analysis (PCA). We can refer to the results of ANOVA provided in Appendix A Table A11b to investigate whether similar patterns to the ones when equal-weighted index was used can be found. In general, we can see that the uses of equal-weighted index and PCA index lead to indifferent conclusions with regards to the nature of the relationships between financial capability and socio-demographic characteristics. Consequently, as explained in the methodology chapter, the remaining analyses related to financial capability are based on the equal-weighted index.

## 6.6. Cognitive ability

Table 6.6. Cognitive ability indicators: Frequencies

Variable	Value= 0	Percentage 0	Value = 1	Percentage 1	N
Cognitive score					
Date correct	207	8.77	2,153	91.23	2,360
Percentage correct	1,855	78.6	505	21.4	2,360
Ratio correct	1,914	81.1	446	18.9	2,360
All cognitive ability answers wrong	2,229	94.45	131	5.55	2,360
Get one cognitive ability answer correct	913	38.69	1,447	61.31	2,360
Get two cognitive ability answer correct	1,671	70.81	689	29.19	2,360
Get three cognitive ability answer correct	2,267	96.06	93	3.94	2,360

Source: Author's own work

Respondents' cognitive abilities are measured by three questions on date awareness, the concept of percentage, and the concept of ratio. Similar to calculating the score for financial literacy, cognitive scores are determined by the proportion of questions answered correctly. The average rescaled score (0 to 1) is 0.4384. Table 6.6 provides a breakdown of the figures of each question. Less than four percent of the respondents answered all of the questions accurately, while more than 60 percent could only answer one question correctly. A significant majority of the respondents (91.23 percent) were aware of the date of the interview. The respondents found the second and third questions on cognitive ability difficult, as indicated by the low percentage of correct responses (21.4 percent and 18.9 percent, respectively).

There were several ANOVAs performed to see whether there is a significant disparity in cognitive ability among respondents from different groups (Appendix A Table A12). With regards to place of living, the results suggest that those who live in West Nusa Tenggara tend to have lower cognitive ability compared to those living in the other two provinces. This is in line with the previous narrative on the relatively low level of education among respondents from West Nusa Tenggara, thus supporting previous empirical evidence on the positive correlation between cognitive ability and level of formal education (Richards & Sacker, 2003). Prior researches suggest that cognitive ability declines with age (see for example: Herd, Su, & Holden, 2011; Kim et al., 2012). In this study, according to the ANOVA test, those in the oldest age category (>45 years) have the lowest average cognitive score. Men in general have higher cognitive ability scores than women, but the difference of the scores is not statistically significant. There is a tendency for people with a higher level of income to also have a higher level of cognitive ability.

## 6.7. Household financial decision-making authority

One of the main variables in this study is household financial decision-making authority. This variable is captured in a simple manner, whereby the respondents were asked which member of the household has the most dominant role in financial decision making. The case in which both the husband and wife in a household are more or less equally responsible can be captured by one of the answer's choices. Among all respondents, slightly more than a quarter admit that they are the main financial decision makers in their households. As can be seen from Table 6.7, more than 27 percent of respondents have shared decision-making authority equally with their spouses, while more than 47.5 percent are not the main decision-maker.

Table 6.7. Financial decision making: Frequencies

Variable	Value= 0	Percentage 0	Value = 1	Percentage 1	N
Financial decision-making authority					
Not the main decision maker	1,252	53.10	1,106	46.90	2,358
Joint involvement	1,706	72.35	652	27.65	2,358
Main decision maker	1,758	74.55	600	25.45	2,358

Source: Author's own work

The percentage of households with joint financial decision makers is relatively small, at least compared to the findings of Bernasek & Bajtelsmit (2002) that revealed 62 percent of households in their sample have joint systems with regards to savings and investment decisions. One can find this small proportion to be contradictory to what has been suggested by contingency theory. According to this theory, intuitively, higher uncertainties in terms of income irregularity faced by clients of microfinance institutions echoed by the nature of financial decision making, should lead to joint involvement in decision making (Duncan, 1972; Galbraith, 1973).

Using the entire sample, crosstabulation analyses based on gender, age, financial literacy, and cognitive ability were performed, and the result is presented in Appendix A Table A13. We can see that there is no clear pattern of the involvement in decision making according to gender, and the value of chi-square test is not statistically significant. The proportion of women who have the main responsibility in household financial decision making is lower than that of men, but similarly, the proportion of those who admit that they are not involved is also larger than the proportion of men who provide the same answer. More women respondents revealed that financial decisions in their households are made jointly with the

spouse. Age appears to be a significant potential predictor in financial decision-making authority. There is a higher proportion of people in the second age group who jointly make financial decisions with their spouses. Financial literacy might play a role, as indicated by the significant  $p$ -value of chi-square. When the performances of the respondents were divided according to the number of correct answers, the pattern, however, is not very straightforward. Since the issue of gender is central to the further analysis, after conducting the crosstabulation analysis using the whole sample, a similar procedure is also applied to the male sample and female sample, separately. Variables that are used in the crosstabulation using the gender-based sample are geographic region, income category, financial literacy, and cognitive ability. The results are presented in Appendix A Tables A12a and A12b. In the case of male respondents, all of these variables except for income category can be considered as potential factors that can explain the involvement in financial decision making. One interesting result is that the proportion of male respondents who share equally the responsibility of household financial decision making with the spouse is significantly higher in DI Yogyakarta compared to the other two provinces. This is compensated by the relatively low proportion of male respondents in DI Yogyakarta who report that they are not involved in household financial decision making. The differences between this latter proportion and each of those in the other two provinces are more than 8.5 percent. In terms of age, older men tend to have a higher probability to be less involved in household financial decision making. Financial literacy again might play a significant role as indicated by the significant  $p$ -value of the chi-square. There is a tendency among those who at least can answer one question correctly that they will be more likely to be involved in household financial decision making. A similar pattern is also found with regards to respondents' performance in answering questions on cognitive ability. The proportion of those who are not involved in household financial decision making is lower among those with higher cognitive ability score.

Among female respondents, all variables used in the crosstabulation analysis are potentially valuable in explaining one's authority in household financial decision making. Similar to what we found among male respondents, the geographic region also potentially holds a role in explaining the involvement of financial decision making among women. In general, the result implies that women in West Nusa Tenggara tend to have less role. The proportion of women in this province who are not involved in financial decision making is considerably higher if we compare the number in the cases of those living in DI Yogyakarta and South Sulawesi. This is compensated by the lower proportion of women who have full responsibility in this decision-making area. In contrast to the previous findings when conducting the

crosstabulation using the whole sample and male sample only, the *p*-value of chi-square suggests that there seems a pattern of women's involvement in financial decision making according to their ages. Based on the chi-square test, financial literacy is also another potential factor that can explain the pattern of household financial decision making. However, the crosstabulation figure between these two variables does not suggest a clear linear pattern of the potential relationship's characteristic.

To get a better picture on the issue of gender and household financial decision making, the sample is analysed in terms of main financial decision maker's gender. Crosstabulation analyses were also performed to see whether there are variations in the gender of the main financial decision maker among households with different socio-demographic characteristics. The results are presented in Table A15 in Appendix A. Overall, the percentage of households with male main decision makers is higher than that of those with female main decision-makers, but the difference in percentage is not as sharp as the one found by Bernasek & Bajtelsmit (2002). In their study, 26 percent of households have men as primary decision makers and 12 percent with female decision makers. Geographic region and age group are the two variables that worth further investigation due to their significance according to the *p*-values of chi-square statistics. In all the three provinces, the majority of households have male main financial decision makers and West Nusa Tenggara seems to have the widest gap in terms of male versus female decision makers. A higher proportion of female decision-makers can be found in among households of the older respondents.

## **6.8. Life satisfaction**

The SWB examined in this study is life satisfaction and measured by a 1-5 Likert scale. Table A16 in Appendix A presents the summary statistics and the results of ANOVA using socio-demographic indicators as the explanatory variables. The average score of life satisfaction is 3.69 out of 5, which can be considered as relatively high. There is not enough statistical evidence to say that there is a difference between men's and women's overall life satisfaction, while it is indicated that differences in the overall levels of life satisfaction can be found among people living in different provinces (people in West Nusa Tenggara tend to be the most satisfied with their lives), those with different levels of income (people with higher levels of income tend to have higher levels of life satisfaction), and those with different formal education background (longer formal education in general increases life satisfaction).

## 6.9. Resources, functionings, and quality of life

Resources are proxied by business profits. The average monthly business profits of respondents is slightly more than IDR 3.3 million (USD 252). Male respondents, in general, enjoy a higher level of profit (IDR 3,581,265 / USD 272), compared to female respondents (IDR 3,150,894 / USD 239), with a statistically significant ANOVA test result (Appendix A Table A17). The overall profit of microentrepreneurs in DI Yogyakarta is the highest (IDR 3,561,609 / USD 270.60). The difference in profit according to place of living is significant, as demonstrated by the ANOVA test.

Table 6.8. Functionings: Frequencies

Variable	Value= 0	Percentage 0	Value = 1	Percentage 1	N
Knowledge medical action (0 = do not know)	48	2.03	2,312	97.97	2,360
Medical checkup in the past 1 year (0 = no medical checkup)	1,523	64.53	837	35.47	2,360
Health condition does not limit activity (0 = limit activity)	631	26.75	1,728	73.25	2,360
No Experience food security problem in the past 1 year (0 = no food security problem)	836	35.48	1,520	64.52	2,360
Eat meat routinely min 2x per week					
Yes	505	21.4	1,855	78.6	2,360
No because cannot afford	2,134	90.42	226	9.58	2,360
No because do not eat meat	2,244	95.08	116	4.92	2,360
No because there is no time to cook meat	2,273	96.31	87	3.69	2,360
No because of other reasons	2,284	96.78	76	3.22	2,360
Status of current house ownership					
Own house	674	28.56	1,686	71.44	2,360
Family / relative's house	1,893	80.21	467	19.79	2,360
Rent	2,188	92.71	172	7.29	2,360
Others	2,325	98.52	35	1.48	2,360
Toilet					
Own toilet with septic tank	420	17.8	1,940	82.2	2,360
Own toilet with no septic tank	2,078	88.05	282	11.95	2,360
Public toilet	2,281	96.65	79	3.35	2,360
Do not go to toilet	2,301	97.5	59	2.5	2,360

Source: Author's own work

We can see the summary of functionings' indicators in Table 6.8. There are three areas of functionings that this dissertation focuses on: health, nourishment, and housing. Health is measured by questions on the three following areas: knowledge about medical action, medical check-ups, and health limitations. An overwhelming majority of the respondents (almost 98 percent) understand when medical action needs to be taken. However, less than 36 percent had had a medical check-up within a one-year period prior to the survey. Almost three-quarters of respondents reported that their health conditions did not limit their daily activities. An index was built based on these three measures on health functionings, and the average value of the index is 0.69 (rescaled 0-1). Using this index, ANOVAs were performed to see

whether there are differences in health functionings among people with different socio-demographic backgrounds. The results are presented in Appendix A Table A18. Statistically, we can say that differences can be found when the sample is grouped based on place of living and income level. Those who live in West Nusa Tenggara in general score higher compared to those in the other two provinces, and there is a tendency that a higher level of income is associated with a higher score in health functioning.

Nourishment is measured by the frequency with which respondents consume meat in one week, as well as a subjective measure of food security. The result presented in Table 6.8 shows that approximately 64 percent of the respondents believe that they do not have any problems regarding food security. The question about the consumption of meat poses some ambiguity as a negative response might be due to personal taste or certain ways of life, rather than the respondents' ability/wherewithal to purchase meat. The responses are re-coded to accommodate this possibility, and the results show that more than 14 percent of the respondents were not able to consume meat due to income or time limitations. Using a rescaled index of nourishment, we can see discrepancies in nourishment among different sub-samples. As revealed by Table A19 in Appendix A, all *p*-values of ANOVA tests are statistically significant, indicating that discrepancies can be found according to gender (men have a higher average score), place of living (those in DI Yogyakarta in general score the highest), age (older people tend to score lower), income level (those with higher income levels have a higher average score), and education background (more educated people in general have better nourishment). The result showing the different levels of nourishment among people from different provinces is in line with Statistics Indonesia's (2016) data on daily calories and protein consumption, in which DI Yogyakarta outperformed the other two surveyed provinces.

Housing quality is measured by three questions. The first such question concerns the ownership status of the house, specifically whether it is self-owned or not. The result shows that the proportion of respondents who own their houses is relatively significant (71.44 percent). Another aspect of housing examined is the type of toilet respondents use. Here, a significantly high proportion of the respondents (94.15 percent) use their own toilet, whether the toilet is equipped with a septic tank or not. For the final question, respondents were provided with an opportunity to give a subjective perception of their houses, and there is a huge majority of respondents (more than 90 percent) who perceive their houses as adequate or more than adequate. The results of ANOVAs regarding housing can be seen in Appendix A Table A20. Statistically significant differences in housing can be found among people from

different regions and age groups. In terms of region, people in West Nusa Tenggara overall have better housing conditions, while in terms of age, it is the second age group ( $35 < \text{age} \leq 45$ ) that has the highest average score in housing.

By combining the three dimensions into an equal-weighted index, we can see discrepancies in quality of life in terms of all socio-demographic indicators, except gender (Appendix A Table A21a). Overall, those in DI Yogyakarta and the second age group ( $35 < \text{age} \leq 45$ ) have the highest average scores, and there are positive associations between the index of quality of life and income level and formal education background.

Similar to the case of financial capability measure, an alternative index is built using PCA. ANOVA is performed to check whether there are similar patterns of quality of life in terms of gender, place of living, age, income level, and years of formal education. Appendix A Table A21b exhibits the result and we can see that the patterns are not different from what have been found using the equal weighted index. There is no statistically significant difference between the quality of life of men and women, while having a higher level of income and longer years of formal education tends to increase quality of life.

## **6.10. Conversion rate efficiency**

This study calculates respondents' efficiency scores using the Free Disposal Hull (FDH) with order- $m$  specification. Profit serves as resources, while health, nourishment, and housing quality are the three functionings. Since an output-oriented number is used, a score of 1 signals efficiency, while a score of higher than 1 means inefficiency. For example, an efficiency score of 1.15 indicates that given the level of input a respondent utilises in his or her current condition, referring to the existing benchmark, he or she should be able to produce 115 percent of his or her current output to achieve full efficiency. Order- $m$  specification allows respondents to have scores of less than 1, which means they are super-efficient.

From Table A22 in Appendix A, we can see that a large proportion of respondents are efficient (86.78 percent), while 12.76 percent of them are considered inefficient. The proportion of inefficient people in terms of conversion rate is relatively low, at least when compared to the one of Binder & Broekel's (2011) study among individuals in Great Britain, which showed that slightly more than half of the sample are inefficient. In the case of this present study, it might be caused by the fact that the sample is relatively homogeneous; i.e. coming only from three provinces and having relatively similar occupations

(microentrepreneurs). When a larger and more diverse sample from Indonesia is derived, the results may be different.

A crosstabulation analysis shows that there are differences in the levels of efficiency among respondents from different provinces. DI Yogyakarta has the highest proportion of efficient people in terms of conversion rate, while West Nusa Tenggara has the lowest. With regards to income, the pattern shows that those with higher levels of income are more efficient, although the lowest income category has the highest proportion of super-efficient people. Significant differences are also found in efficiency levels among people from different age groups, with the proportion of people who are efficient being highest in the middle age category.

Variations in the levels of financial literacy seem to explain the efficiency differential, as indicated by the significant chi-square number.

## **6.11. Concluding remarks**

This chapter explores the characteristics of the survey sample used in this dissertation, which complements the explanations in Chapter 2 regarding the context of this research. Overall, it can be concluded that the levels of financial literacy and capability of microfinance institutions' clients in Indonesia are still relatively low. The results of the cross tabulation analyses and ANOVA further illustrate how we can still see gaps in terms of these variables among those with different socio-demographic indicators, such as regions, age groups, levels of income, and formal education backgrounds. Among the elements of financial capability, gender gaps can be found in the levels of financial literacy, financial self-efficacy, financial products' knowledge, and financial products' ownership.

It is also revealed that the proportion of the sample reporting that there is an equal authority in household financial decision making is relatively low, considering that finance is an area that is often perceived as difficult and full of uncertainties. More households reported that they have a male decision maker.

Statistics on conversion rate efficiency provide an additional spectrum of information of the human condition. We can see that a significant majority of the respondents are efficient in terms of conversion rates. There are indications that regions, income level, age, and financial literacy can be used to predict conversion rate efficiency. While this information regarding conversion rate efficiency is valuable, it should be used as a complement rather than a substitute for other metrics of human well-being and agency.

The results of cross tabulation analyses and ANOVA that show the relevance of socio-demographic indicators in explaining differences in the main variables of this dissertation will be used as an additional justification for including them as control variables in the regression models examined in the next chapter.

It should again be noted that the sample might not be representative in terms of Indonesia's overall population. Since this study focuses on microfinance institutions' clients, one can argue that these people tend to be more advanced in terms of financial matters. For example, they might have in general higher levels of financial literacy and more interested or involved in household financial decision-making than the typical individuals. A further investigation regarding these claims, although important and interesting, is beyond the scope of this dissertation.

## CHAPTER 7

### RESULTS AND DISCUSSIONS: QUANTITATIVE ASPECT

#### 7.1. Introduction

This chapter presents the main findings of this dissertation. In Section 7.2, an index of financial capability is constructed, and using this index, some predictors of the level of financial capability are identified. The same index is also used to investigate the instrumental value of financial capability on quality of life, and the results thereof are presented in Section 7.3.

The focus is then shifted from financial capability to financial literacy in the following three sections. Section 7.4 provides the results and discussions on the role of financial literacy as a conversion factor. Both Sections 7.5 and 7.6 cover the role of financial literacy in financial decision-making authority. In the former, one can find whether financial literacy has an impact on household financial decision-making authority. The latter examines the relationship between household financial decision-making authority and life satisfaction, and whether people with different levels of financial literacy perceive household financial decision making in the same way or not.

#### 7.2. Financial capability and its predictors

##### 7.2.1. Regressions' results

To investigate factors predicting financial capability, regression models (3) and (4) were performed, the results of which are presented in Table 7.1. Columns 2, 3, and 4 report the coefficients, standard error, and the probability of significance, respectively, of the first regression's output in which only socio-demographic indicators (gender, age, education, income, and place of living) are included as predictors. Meanwhile, columns 5, 6, and 7 display the output of the regression where cognitive ability is added as an explanatory factor. The result of the Breusch-Pagan test confirms the problem of heteroskedasticity, leading to the use of OLS with robust standard error. There is no indication of a multicollinearity problem, as indicated by the Variance Inflation Factors (VIFs).

Table 7.1. Predictors of financial capability: Regressions' results using all sample

Variable	Financial capability							
	Coefficients		Standard error	P>t	Coefficients		Standard error	P>t
Dummy woman	-0.0088	*	0.0048	0.0660	-0.0086	*	0.0047	0.0690
Age	-0.0019	***	0.0002	0.0000	-0.0018	***	0.0002	0.0000
Dummy high income	0.0548	***	0.0048	0.0000	0.0532	***	0.0047	0.0000
Dummy high education	0.0431	***	0.0047	0.0000	0.0421	***	0.0046	0.0000
Dummy West Nusa Tenggara	0.0057		0.0061	0.3510	0.0089		0.0061	0.1440
Dummy South Sulawesi	-0.0227	***	0.0053	0.0000	-0.0227	***	0.0052	0.0000
Cognitive ability					0.0904	***	0.0111	0.0000
Cons	0.6314	***	0.0114	0.0000	0.5883	***	0.0122	0.0000
N	2343			2343				
Regression method	OLS robust standard error			OLS robust standard error				
Prob F-statistics	0.0000			0.0000				
R-squared	0.1394			0.1642				
VIF	1.11			1.10				

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

We can see that all of the independent variables, except the dummy variable for those living in West Nusa Tenggara, are significant predictors of financial capability. Those who are women, older, and live in South Sulawesi tend to have lower levels of financial capability, while more educated people and those with higher levels of income, are generally associated with having higher levels of financial capability. When model (4) was run, cognitive ability is shown to be a significant and positive predictor of financial capability. Those socio-demographic indicators that were significant in model (3) remain significant, and there is no change in their signs.

To understand within-group variations on the relationships between socio-demographic, cognitive ability, and financial capability, the same regression models were performed using different samples that were divided according to gender, place of living, income, and years of formal education categories. As demonstrated by Appendix B Tables B1a and B1b, there is no notable difference in the regression results between the men and women sub-samples in terms of coefficients' signs, except for the marginally significant coefficient of the dummy variable for those living in West Nusa Tenggara among the men sample. The signs of the remaining variables on financial capability are similar to those found in the case of the entire sample.

When the regression models were applied to the samples divided based on the place of living, we can see that a significant effect of the gender variable was only found among those in

West Nusa Tenggara (Appendix B Tables B2a, B2b, and B2c). Being a woman in this province is associated with having a lower level of financial capability. Meanwhile, the significant effect of cognitive ability in predicting the level of financial capability is only found among people living in DI Yogyakarta and South Sulawesi. The coefficients of the remaining variables have similar signs to those in the regression results of the entire sample.

In general, when the sample was divided according to levels of income, the effects of each of the independent variables are similar in the case of those with low and high income (Appendix B Tables B3a and B3b). However, being a woman in the low income group means a lower level of financial capability, while this was not found among the high income group. People in the lower income who live in West Nusa Tenggara tend to have a higher level of financial capability compared to those in DI Yogyakarta.

As we can see from Tables B4a and B4b in Appendix B, dividing the sample based on levels of education also yielded the same general results. The signs of the coefficients of financial capability were similar to the previous findings in the regression results with different sets of sample. Nevertheless, the effect of age seems to be stronger among people with lower education.

### **7.2.2. Discussions**

Most of the hypotheses about the significant roles of socio-demographic indicators and cognitive ability in predicting the level of financial capability are confirmed by the results of the regressions. Overall, with regards to gender, the results support the mainstream literature that shows women having a lower financial capability level as compared to men (Lusardi & Mitchell, 2006; Taylor et al., 2009; L. Xu & Zia, 2012). This is worrying considering the important role Indonesian women play in household decision making. This contradiction between women's role in decision making and their low levels of financial capability was raised earlier by S. Johnson et al. (2015) in the case of a Kenyan community, in which the main money managers in households might not be those with superior financial capabilities.

Further investigations into the different components of financial capability can also be fruitful in order to better understand the underlying causes of the differences in financial capability. The previous chapter has elaborated some explanations on the gap in financial literacy between men and women, and this sub-section aims to present some possible justifications on the gap in other components of financial capability.

In terms of knowledge of financial products, for example, the notion of why women know about fewer products can be explored further. Some relevant questions to be asked are: how do financial institutions, particularly formal institutions, offer their products and services? Do they approach husbands or wives? Does it depend on the main financial decision maker in the family? What role do power relations play in explaining this phenomenon? S. Johnson (2013) argued that the market is gendered, in which investment opportunities for men and women are different. In their research regarding Indonesian female microentrepreneurs, Babbitt, Brown, & Mazaheri (2015) found that access to finance is one of the major obstacles faced. This lack of access to finance is often a result of many factors, such as limited knowledge on how to apply for credit, issues of property rights, and the need for men's approval in using household assets as collateral.

Analysing the statistically significant different responses by male and female respondents in terms of attitudes towards financial planning can benefit from an understanding of the nature of power relations and the division of responsibilities within households. It might be the case that since men (husbands) are expected to provide for their families, they will hold stronger opinions towards the importance of financial planning for education. Another potential explanation is that women put less value on education due to various reasons, such as the society's perception of the importance of education for women. The implementation of power relations can hardly be separated from the widely-held belief about the different roles of men and women. This has been documented by previous studies, for example with regards to women entrepreneurs. Although it has been addressed by Babbitt et al. (2015) that in Indonesia husbands encourage their wives to run informal small businesses, we can still see some pressures that inhibit women to grow their businesses. For instance, women are expected to spend most of their time at home and to deal with family matters (Fletschner & Carter, 2008; Babbitt et al., 2015).

The regulators' focus on financial literacy for women is already on track. However, they also need to look further at the dynamics in society that cause lower women's overall financial capability and find ways to improve their financial capability not only through financial education, but also through the improvement of other influencing aspects. Many studies have shown that financial education programmes, especially those targeting adults, have limited effects. Without addressing gender-based inequities in the expansion of people's financial capability, this effort will most likely be futile. As financial capability is closely linked to other aspects of people's life, coordination among different government agencies is needed for public policy interventions.

Social network mechanisms can be considered as an explanatory factor for inter-group gaps in financial capability. The importance of social networks has been discussed in other contexts, such as the diffusion of microfinance (Banerjee, Chandrasekhar, Duflo, & Jackson, 2013). People with similar educational backgrounds have greater levels of interaction with one another, while contact is also high amongst people living or working in the same locations or areas. This topic emerged several times in the interviews and FGDs during the qualitative phase.

There are various explanations on how social networks affect financial capability among the productive poor. First, people learn from each other (Bandura & Walters, 1965). For instance, the social networks to which a person belongs determines the topics they discuss in daily conversations. The interviews and FGDs during the qualitative phase suggest that when asking for financial advice, for example, a person will turn to those in their social networks. When one is choosing which financial product or service to use, positive word-of-mouth from people surrounding them plays a significant role in their final decision. This is especially true if within the social networks, there is someone who acts as an influencer. Targeting the most influential person within a community in order to have a wider marketing impact has been used by some microfinance institutions. In other cases, the management of microfinance institutions engage themselves in social activities. According to an interview with a marketing officer in Makassar, South Sulawesi, approaching the leader of a community is an effective starting point in getting people to use their services. When the leader of the community has been informed about the microfinance products or services, irrespective of whether this leader adopts the usage of those products or services, there is a higher probability that the products or services will be used by members of that society. A similar strategy has been employed in introducing microfinance services to potential clients in India, with demonstrable success (Banerjee et al., 2013).

Second, social networks are correlated with financial capability through access to financial institutions, which is particularly useful in helping people in daily financial management and financial planning. This can be reflected in microfinance institutions recruiting clients for loans. The existence of microfinance institutions is to overcome limited access to financial services with regards certain segments of society, which is mainly caused by a lack of collaterals. As a substitute to physical collaterals, microfinance institutions rely on personal guarantees. In some cases, the institutions only provide group lending, in which the members of the group serve to monitor each other. Therefore, to be referred by someone else to receive a loan, and to become a member in a group lending, one needs to partly rely on their social

networks. The wider the social network of a person, the higher the probability of that person will have a higher level of financial capability.

## 7.3. Financial capability and quality of life

### 7.3.1. Regressions' results

This sub-section focuses on the results of models (5), (6), and (7) which were run to examine whether financial capability contributes to the improvement of the quality of life. The quality of life is measured by an index built from indicators of general health, nourishment, and housing condition. The regressions' results using all sample can be found in Table 7.2.

Columns 2, 3, and 4 present the results for model (5), in which financial capability serves as the only independent variable. We can see that it has a positive and significant effect on the quality of life. When socio-demographic indicators and cognitive ability are introduced in model (6) and (7), the statistical significance of financial capability remains. In general, those who are older, wealthier (as measured by income), and better in cognitive ability tend to have higher levels of financial capability. The negative sign of the coefficient of dummy variable for those living in South Sulawesi confirms that on average, these people have lower financial capability than those living in DI Yogyakarta.

Table 7.2. Financial capability and quality of life: Regressions' results using all sample

Variable	Quality of life: All sample								
	Model (5)			Model (6)			Model (7)		
	Coefficients	Robust standard error	P> z	Coefficients	Robust standard error	P> z	Coefficients	Robust standard error	P> z
Financial capability	0.3002 ***	0.0278	0.0000	0.2531 ***	0.0294	0.0000	0.2341 ***	0.0301	0.0000
Dummy woman				0.0051	0.0063	0.4220	0.0051 ***	0.0063	0.4180
Age				0.0009 ***	0.0003	0.0040	0.0009 ***	0.0003	0.0030
Dummy high income				0.0545 ***	0.0062	0.0000	0.0546 ***	0.0062	0.0000
Dummy education				0.0049	0.0064	0.4460	0.0050	0.0064	0.4310
Dummy West Nusa Tenggara				-0.0050	0.0095	0.5950	-0.0027	0.0094	0.7720
Dummy South Sulawesi				-0.0320 ***	0.0067	0.0000	-0.0324 ***	0.0067	0.0000
Cognitive ability							0.0591 ***	0.0151	0.0000
Cons	0.5886 ***	0.0170	0.0000	0.5643 ***	0.0243	0.0000	0.5480 ***	0.0243	0.0000
N		2339			2339			2339	
Regression method	OLS robust standard error			OLS robust standard error			OLS robust standard error		
Prob F-statistics	0.0000			0.0000			0.0000		
R-squared	0.0543			0.0936			0.0998		
VIF	1.00			1.14			1.13		

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Following the procedure in the previous section, the regressions models were then performed using sub-samples divided by gender, place of living, income level, and formal education background. Some notable findings are worth to mention. When the whole sample was divided according to gender (Appendix C Tables C1a and C1b), it can be seen that among both men and women, financial capability has a positive and significant relationship with the quality of life. In the case of men, the predictive power of age is not significant, and those who live in West Nusa Tenggara tend to have lower financial capability than the peers living in DI Yogyakarta.

Appendix C Table C2b reveals that there are some interesting results among those living in West Nusa Tenggara. One important point is that financial capability does not have any significant relationship with the quality of life among people in this province. Women and those with higher levels of education tend to have higher levels of quality of life, something that was not found in the other two provinces. In general, the dynamics among the variables in the other two provinces are similar to the general findings above, except that age does not significantly predict quality of life with regards to people in South Sulawesi.

From Appendix C Tables C3a and C3b, we can see that financial capability significantly affects the quality of life among both low and high income groups. However, the effects of socio-demographic indicators among high-income people are not significant, except the dummy variable for those living in South Sulawesi.

Dividing the sample according to years of education does not reveal any significant additional information. As can be seen from Appendix C Tables C4a and C4b, the nature of the relationships among the variables in general are similar to what have been found in the case of regressions using the entire sample.

### **7.3.2. Discussions**

The findings from the regressions in Sub-section 7.3.1 confirm the instrumental value of financial capability in enhancing people's quality of life. Only limited empirical studies that link financial capability with other measures of well-being were found in the literature. One of these studies is Taylor et al. (2011)'s, that showed a positive relationship between financial capability and psychological well-being. People with higher financial capability, as conceptualised in this dissertation, are expected to have better financial management, planning, literacy, and attitude, and therefore are more likely to experience the desired quality

of life. By incorporating the quality-of-life measure that comprised of health, nourishment, and housing, this study provides an additional perspective to see the instrumental value of financial capability.

The issue of inequality between those living in Java and non-Java areas is again raised as our regression results (Table 7.3) suggest that those who live in South Sulawesi tend to have lower scores on quality of life than their counterparts in DI Yogyakarta (Java). Meanwhile, there is no strong case to support that *ceteris paribus*, gender causes differences in quality of life, but this might be due to the fact that some measures of quality of life represent a household rather than an individual. Therefore, in some aspects, men and women belonging to the same households have a similar level of quality of life. The effect of financial capability on quality of life in general is uniform across different sub-samples.

## **7.4. Financial literacy and conversion rate efficiency**

### **7.4.1. Regressions' results**

Table 7.3 summarises the results of regression models (8), (9), and (10) using the entire sample data. Since a higher score of the dependent variable indicates a higher level of inefficiency, a negative sign of a coefficient should be interpreted as a positive effect towards conversion rate efficiency. The second column displays the estimated regression coefficients when financial literacy is the sole independent variable, i.e. model (8). In line with the initial expectation, a higher level of financial literacy is associated with superior efficiency. One can notice the very low  $R^2$ , which indicates that many other variables can explain variations in the efficiency scores. This variable remains significant although other indicators are introduced to the model. Financial self-efficacy and cognitive skill also turn out to be significant predictors. This result also confirms the prior expectation on the importance of psychological aspects to people's overall efficiency. On the other hand, socio-demographic indicators, except for place of living, seem to be poor factors in predicting conversion rate efficiency. Those who live in South Sulawesi (outside of Java) tend to have lower conversion rates.

The results above did not capture the possible within-group inequalities. To understand this possibility, the regression models were run using different subsets of sample based on gender, place of living, profit level, and age. From Appendix D Tables D1a and D1b, it can be seen that the statistical models perform poorer in the case of the male sample rather than the female sample. This at least can be seen from the  $F$ -statistics and  $R^2$ s. Among the male sample,

although a negative sign is what we expected, financial literacy does not have any significant relationship with conversion rate efficiency, even in the case where the control variables were not included. Cognitive ability and the place of living are significant predictors. Men who live in West Nusa Tenggara and South Sulawesi (both are outside of Java) tend to have lower conversion rates efficiency. Among female respondents, higher financial literacy and financial self-efficacy are associated with better conversion rate efficiency, confirming prior expectations. Using this result, one can predict that overall, women who live in South Sulawesi have lower levels of conversion rate efficiency.

As we can see in Appendix D Tables D2a, D2b, and D2c, in terms of regions, the predictive power of financial literacy holds in the context of people in DI Yogyakarta and South Sulawesi. Similar to the findings when all cases are included, financial literacy negatively (positively) affects inefficiency (efficiency). The significant positive role of financial self-efficacy is confirmed among those living in DI Yogyakarta, but not in other provinces. Its significance is maintained even after several socio-demographic indicators are incorporated into the model. Meanwhile, cognitive ability is only significant in the cases of people in South Sulawesi.

Appendix D Tables D3a and D3b display the regressions' results using sub-samples divided according to the levels of business profit. The predictive power of financial literacy holds among people whose profit levels are IDR 2,000,000 / USD 151.98 or lower (inclusive). Nevertheless, the introduction of cognitive skills and socio-demographic variables into the model eliminates the statistical significance of financial literacy even at 10 percent level. Among this profit group, those who live in South Sulawesi tend to have lower levels of efficiency. Meanwhile, among those in the high profit group, financial literacy does not have any significant correlation with the conversion rate efficiency. Similar to the finding in the lower profit group, those with higher levels of cognitive ability tend to be more efficient in terms of conversion rate, and those living in South Sulawesi in general have lower levels of conversion rate efficiency. In addition to the impact of financial literacy, one notable difference between the two profit groups is the significance of age among the higher profit group, in which the variable is associated positively with conversion rate efficiency.

Table 7.3. Financial literacy and conversion rate efficiency: Regressions' results using all sample

Variable	Conversion efficiency (order-m)															
	1944			1936			1936			1902						
	Coefficients	Robust standard error	P> t	Coefficients	Robust standard error	P> t	Coefficients	Robust standard error	P> t	Coefficients	Robust standard error	P> t				
Financial literacy	-0.0560	***	0.0163	0.0010	-0.0466	***	0.0166	0.0050	-0.0417	**	0.0165	0.0120	-0.0308	*	0.0168	0.0670
Self-efficacy					-0.0564	**	0.0221	0.0110	-0.0514	**	0.0224	0.0220	-0.0515	**	0.0225	0.0220
Cognitive skill									-0.0690	***	0.0203	0.0010	-0.0724	***	0.0206	0.0000
Dummy West Nusa Tenggara													0.0118		0.0125	0.3450
Dummy South Sulawesi													0.0375	***	0.0093	0.0000
Dummy women													-0.0105		0.0084	0.2120
Age													-0.0003		0.0004	0.4800
Constant	1.0896	***	0.0084	0.0000	1.1229	***	0.0163	0.0000	1.1477	***	0.0172	0.0000	1.1473	***	0.0256	0.0000
N	1944			1936			1936			1902						
Regression Method	OLS robust standard error			OLS robust standard error			OLS robust standard error			OLS robust standard error						
Prob F	0.0006			0.0002			0.0000			0.0000						
R-squared	0.0058			0.0089			0.0158			0.0256						
VIF	1.00			1.06			1.05			1.09						

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

When the sample is divided according to the age groups (Appendix D Tables D4a, D4b, and D4c), the estimated results show the importance of financial literacy among the second ( $35 < \text{age} \leq 45$  years) and third (older than 45 years) age groups due to the coefficients' signs and significance. In these groups, in addition to financial literacy, cognitive skill has a significant and positive effect on conversion rate efficiency. Among people belonging to the third age group, those living in South Sulawesi overall have lower levels of conversion rate efficiency. On the other hand, financial literacy is not a significant predictor for conversion rate efficiency among those in the youngest age group. Instead, cognitive ability plays an important role among them. People living in West Nusa Tenggara and South Sulawesi, in general, have lower conversion rates efficiency within this age group, while women tend to be more efficient.

#### **7.4.2. Discussions**

The regressions' results presented in Sub-section 7.4.1 confirm one of the hypotheses of this dissertation that financial literacy, in general, is indeed necessary for conversion rate efficiency. In addition to prior studies that show the importance of financial literacy for financial behaviour (Bernheim & Garrett, 2003; Stango & Zinman, 2007; Lusardi, 2008; Behrman et al., 2012), this dissertation shows that financial literacy also helps a person to improve his or her conversion rate efficiency. Although the narrative in the literature of financial literacy argues that the skill is necessary given the more complex financial development nowadays (OECD/INFE, 2012), it is shown that even among Indonesian microentrepreneurs who encounter a relatively simpler formal financial system and rely highly on the informal sector, financial literacy can make a difference, specifically in improving their conversion rates.

Financial self-efficacy is also a significant predictor in the model. In addition to the role of self-efficacy on various types of skills, decision making, and behaviours (see for example: Bandura, 1977; Ajzen, 1991; Benabou & Tirole, 2002), its significance can also be seen for conversion rate efficiency.

We can also see the importance of cognitive ability in conversion rate efficiency. The relationship between the two variables is something that has not been widely explored in the capability approach literature. As explained in the previous chapter, studies on conversion factors and rates focused more on socio-demographic indicators (Chiappero-Martinetti & Salardi, 2008; Binder & Broekel, 2011).

The significant predictive powers of socio-demographic variables in the regression models, together with the results from descriptive statistics, confirm discrepancies in people's ability in transforming resources into functionings. People living in South Sulawesi tend to be less efficient compared to the peers living in DI Yogyakarta. With a similar profit level, those in South Sulawesi might have lower functioning achievements than the ones in DI Yogyakarta. Culture might influence these differences since there are several customs/traditions in South Sulawesi that need significant monetary expenditure and thus limit the achievement of basic functionings in this study. Another potential explanation is the differences in supporting external environments, such as infrastructure and regional policies, since these factors have been argued to have impacts on conversion rate (Kuklys, 2005). However, further formal examinations to confirm these presumptions are needed.

Dividing the sample into different sub-groups shed additional light on within-group variations and the more specific role of each independent variable. First, when the sample is dichotomised into men and women, it turns out that the important role of financial literacy in enhancing conversion efficiency is only found among women. This should be worrying since the descriptive statistics show somewhat lower financial literacy levels among women.

Financial literacy contributes to the conversion rate efficiency among less wealthy people (as indicated by the profit level). Prior qualitative interviews (Sub-section 5.2.3) revealed that there were doubts about the importance of financial literacy for poor people, since according to an informal cost and benefit analysis, they do not have sufficient motivation and educational background to gain such knowledge. However, which components of costs and benefits drive one to gain financial literacy are not always crystal clear. The interviewees might think that one needs financial literacy because he or she possesses a significant amount of money that needs to be invested, and financial literacy helps them to decide where to invest. The reverse could also prevail: financial literacy is important when one has very limited resources, and thus the ability to manage those resources to achieve optimum functionings is crucial. The latter is the one supported by the result of this dissertation.

The results presented in Sub-section 7.4.1 also suggest that the importance of financial literacy is not similar across various age groups. One explanation is the unique life-cycle stages faced by people from different age groups, in which each period is often characterised by specific needs and priorities. Financial literacy has been shown as more important for older people. Indeed, the crucial role of personal financial management for older people has been raised by C. Browning & Finke (2015), who specifically pointed out its importance for retirement life. This again should be treated as a precaution, given that the levels of financial

literacy among older people tend to be lower due to various causes, such as declining cognitive abilities (Finke et al., 2016).

The significant role of financial self-efficacy in conversion rate efficiency is only found in the regressions involving microentrepreneurs living in DI Yogyakarta, those with lower levels of income, and women. These show that the role of psychological factors might be distinct among different sub-groups of people. Meanwhile, cognitive ability can be considered as the most important predictor since it increases conversion rate efficiency in almost every sub-group, except for people in DI Yogyakarta and West Nusa Tenggara.

As one can see from the results of the regressions, the low  $R^2$ s indicate that a large proportion of the variance cannot be explained by our models that include financial literacy. Indeed, as raised earlier, the process of converting resources into functionings is a rather complex process and governed by various factors, while the way it is presented in this study is a form of simplification. More studies regarding the relevant conversion factors can be performed in the future.

## **7.5. Financial literacy and household financial decision-making authority**

### **7.5.1. Regressions' results**

Following the explanation in the chapter on methodology, to see the role of financial literacy in household financial decision-making authority, this dissertation employs the logistic regression technique for models (11), (12), (13), and (14) in which decision-making authority serves as the dependent variable. As can be inferred from Table 7.4, financial literacy does not have any significant effect on the probability of someone being the household's primary financial decision maker in all five of the selected models. Cognitive ability has a positive and statistically significant role in predicting financial decision-making authority. The effect remains significant after controlling for socio-demographic indicators. Both socio-demographic indicators included in the model, namely gender and education level, do not have any significant prediction power.

The sample was then divided according to gender, and similar regression models were applied to the male and female sub-samples. Appendix E Tables E1a and E1b present the results. We can see that among men, financial literacy is a significantly positive predictor of authority in

household financial decision making. No other explanatory variable included in the models is significant. The  $p$ -value of chi-square suggests that the first four models are overall statistically significant. When the same models were applied to the female sample, different results were revealed. Only the last two models have significant  $p$ -values of chi-square measures. Financial literacy does not have any significant effect on authority in financial decision making in all five models. The  $p$ -value result of the  $z$ -test shows that cognitive ability significantly increases authority in household financial decision making, and this is similar to the finding when the regression models were applied to the entire sample.

As Tables E2a, E2b, and E2c in Appendix E suggest, patterns of relationships between the variables differ from one province to the next. The nature of the relationship between financial literacy and decision-making authority is not uniform across sub-groups. In DI Yogyakarta, overall we can see that higher financial literacy can be associated with higher authority in household financial decision making. Financial literacy is a significant predictor in models (12), (13a), and (13b), but not in model (11), where it serves as the only explanatory variable, and model (14), where all variables are included. The positive sign of financial literacy can also be found among people in West Nusa Tenggara, although in model (12) it is no longer significant. Interestingly, the opposite relationship holds for those living in South Sulawesi. For people in this province, financial literacy is a negative predictor of one's authority in household financial decision making, and it is significant in all five models. For people living in DI Yogyakarta, financial self-efficacy, in general, has a negative and significant relationship with the authority in household financial decision making, even after controlling for additional explanatory variables. In the case of those living in West Nusa Tenggara, the significant effect of self-efficacy in financial decision making cannot be confirmed. Another notable finding is the positive and significant effect of self-efficacy among people in South Sulawesi, which is contrary to what we found in the case of people living in DI Yogyakarta.

There is no single conclusion on the relationship between self-control and financial decision-making authority, but, in general, it tends to be negative. Nevertheless, when the second regression model was performed using the sample of those living in DI Yogyakarta, self-control has a positive and significant effect. The inclusion of other explanatory variables eliminates the significance of self-control. Among those living in West Nusa Tenggara and South Sulawesi, self-control has negative and significant signs in models (12), (13a), (13b), and (14).

Trust is a significant predictor of financial decision-making authority in DI Yogyakarta and West Nusa Tenggara, but the nature of the effect is inconclusive. Among those living in DI Yogyakarta, trust has a negative impact, while among their peers in West Nusa Tenggara, the same variable positively affects authority in financial decision making.

Meanwhile, a significant impact of cognitive ability is found only among those living in West Nusa Tenggara and South Sulawesi, and the coefficients' signs are positive. The effects of the two socio-demographic variables in our models are inconclusive. Gender is a significant predictor in the case of those living in South Sulawesi, where being a woman increases one's authority in household financial decision making. Among people in DI Yogyakarta, having a longer formal education is associated with higher authority in financial decision making within households.

When applied to different subsets of sample divided according to respondents' income levels, the regression models cannot explain the relationships among the variables statistically, as indicated from the non-significant *p*-value of chi-square (Appendix E Tables E3a and E3b). Financial literacy, financial self-efficacy, self-control, and the general level of trust overall do not have any significant influence on the authority in financial decision making. Cognitive ability is a significant predictor among both the low and income groups.

One might note that all models do not provide statistically significant explanations when applied to all of the different age groups (Appendix E Tables E4a, E4b, and E4c). Cognitive ability can be seen as a significant predictor of the involvement as a household's primary financial decision maker with a positive effect in the oldest age group. Within the same age group, women tend to have a higher authority in household financial decision making. In the middle age group, a higher level of general trust is associated with a higher probability of being the main household financial decision maker.

Table 7.4. Financial literacy and financial decision-making authority: Regressions' results using all sample

Variable	Decision making														
	Coefficients	Standard error	P> z												
Financial literacy	0.0499	0.1726	0.7720	0.1021	0.1791	0.5690	0.0781	0.1800	0.6640	0.0485	0.1806	0.7880	0.0522	0.1847	0.7770
Self-efficacy				-0.0770	0.2420	0.7500	-0.1188	0.2437	0.6260	-0.1238	0.2441	0.6120	-0.1125	0.2445	0.6450
Self-control				-0.3326	0.3125	0.2870	-0.2451	0.3181	0.4410	-0.3536	0.3211	0.2710	-0.3458	0.3214	0.2820
General trust							0.4653	0.3115	0.1350	0.4938	0.3121	0.1140	0.4974	0.3123	0.1110
Cognitive ability										0.5470 ***	0.1987	0.0060	0.5452 ***	0.1988	0.0060
Women													0.1193	0.0862	0.1660
Education													0.0445	0.0857	0.6040
Constant	0.1044	0.0792	0.1880	0.3519	0.2088	0.0920	0.1065	0.2656	0.6880	-0.0604	0.2728	0.8250	-0.1690	0.2833	0.5510
N	2358			2358			2358			2358			2358		
Regression Method	Logistic regression														
Prob > chi-square	0.7724			0.6253			0.4077			0.0404			0.0570		
Pseudo R-squared	0.0000			0.0005			0.0012			0.0036			0.0042		
VIF	1.00			1.15			1.14			1.12			1.11		

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

## 7.5.2. Discussions

As revealed by the results of the regressions, the notion that a higher level of financial literacy will lead to higher authority in household financial decision making is not universal and, rather, is conditional upon various factors. Financial literacy has a non-significant relationship with decision-making authority in the regression model that was applied to the entire sample. A higher financial literacy is associated with a higher authority in household financial decision making among male respondents, but not in the case of female respondents. Results of different regressions in each of the province suggest that cultural context and environmental factors influence the dynamics of the relationships between the variables. For those who live in DI Yogyakarta and West Nusa Tenggara, financial literacy has a positive and significant relationship with household financial decision-making authority. However, the relationship is negative in the case of people living in South Sulawesi.

One variable that should receive more attention is financial self-efficacy. Its effect on the probability of being the primary financial decision maker is negative and significant, and this can be consistently found among women, those living in DI Yogyakarta, and those in the youngest age group. This result again highlights the importance of behavioural science: taking into account some psychological variables identifies further clues in the dynamics of household financial decision making.

The significance of gender variable is only found among the oldest age group and those living in South Sulawesi. This indicates that divisions of labour are more prevalent among these groups of people. One explanation might be a more prescribed role of men and women among them.

Cognitive ability seems to be an important factor in explaining the authority in financial decision making. It is the only variable that has a significant effect when regression models were applied to the entire sample. The sign of its effect is also consistent across regression models and samples, suggesting that it is a robust predictor of household financial decision-making authority. There is an indication that basic numeracy skill, as measured by our proxy of cognitive ability, is more important than specific financial literacy skills for the authority in household financial decision making.

Given the above discussions, further attention might be merited for factors that are suggested to have negative and significant relationships with household financial decision-making authority. When we see that factors such as financial literacy and financial self-efficacy have adverse impacts on household financial decision-making authority in certain cases, should we

worry if one has higher levels of these traits - since it will lower his or her involvement in household financial decision making? The answer to this question is not very straightforward.

As previously noted, a lower probability of being the household's main financial decision maker does not necessarily be interpreted as a negative thing if we assume that the involvement in other decision-making areas or non-household activities is higher. It is possible that skills or abilities needed to perform financial decision making are also similar to the ones required for other decision areas in and outside of the household. The respondents in our research are microentrepreneurs, and their jobs require the ability to manage financial matters as well. When one's attention has been directed towards the daily business management, his or her involvement in other activities, including household financial decision making, might be diminished. Doss (2011) suggested that those with certain skills are more successful in seeking jobs, and this might also be the case for financial self-efficacy, especially when we refer to Heckman & Rubinstein (2001)'s point about the importance of non-cognitive traits.

The discussion on household decision-making authority is especially crucial in the topic of women's empowerment since there is a long-held tradition in many societies that women are expected to be in charge of households' matters (Brogan & Kutner, 1976). A number of previous studies have raised a similar concern when they discussed the impact of women earning money (such as that from Conditional Cash Transfers / CCTs) on their authority in household decision making. In one sense, it reinforces the gender stereotype regarding women's role within the households (see for example: Molyneux, 2006). Therefore, even though factors like self-efficacy in financial decision making have negative effects on household financial decision-making authority, they might positively affect authority in other areas due to the specialisation effect. Nevertheless, it should be noted that complete specialisation does not always occur (see for example: E. M. Berger, 2013). In the case of this dissertation, the lack of information on the responsibilities in other decision making areas does not allow the examination of whether complete versus incomplete specialisation prevails, and this is a topic that might be explored in future research.

## 7.6. Household financial decision-making authority and life satisfaction

### 7.6.1. Regressions' results

Table 7.5 provides the regressions' results that were performed on the entire sample. As can be seen from the table, financial decision-making authority has a negative impact on life satisfaction, and this relationship is statistically significant at 5 percent level. The results also reveal that in general, people who have higher levels of income tend to be more satisfied with their lives and those in West Nusa Tenggara tend to have higher levels of life satisfaction than the peers living in DI Yogyakarta. Meanwhile, there is no significant difference in the levels of life satisfaction between those living in South Sulawesi and the peers in DI Yogyakarta. The result shows no sufficient statistical evidence to support that gender, age, and education matter for life satisfaction in general.

Table 7.5. Household financial decision-making authority and life satisfaction: Regressions' results using all sample

Variable	Life satisfaction							
	Coefficients		Robust standard error	P> z	Coefficients		Robust standard error	P> z
Financial decision-making authority	-0.1055	**	0.0498	0.0340	-0.1010	**	0.0502	0.0440
Woman					0.0062		0.0469	0.8940
Age					-0.0024		0.0022	0.2710
High education					0.0499		0.0480	0.2990
High income					0.2619	***	0.0471	0.0000
Dummy West Nusa Tenggara					0.1428	**	0.0659	0.0300
Dummy South Sulawesi					0.0567		0.0504	0.2610
Cut 1	-2.2008		0.0683		-2.1381		0.1289	
Cut 2	-1.4208		0.0411		-1.3564		0.1178	
Cut 3	-0.5058		0.0304		-0.4305		0.1165	
Cut 4	1.2228		0.0369		1.3178		0.1204	
N			2358				2358	
Regression Method	Ordered probit robust standard error				Ordered probit robust standard error			
Prob > chi-square			0.0340				0.0000	
Pseudo R-squared			0.0008				0.0085	
VIF			1.00				1.09	

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

It is necessary to conduct further robustness checks in the regression models specified above. One problem that often occurs in this typical relationship is endogeneity, where the error term is correlated with one or more regressors. A possible source of endogeneity is the problem of reverse causality. With regards to the regression models in this section, empirical evidence by

Delis & Mylonidis (2015) suggested the importance of happiness, in addition to trust, for financial decisions.

To address this problem of endogeneity, the use of two-step regression with instrumental variable (IV) was considered (Wooldridge, 2013). Selecting instrumental variables is not a straightforward task. The condition of instrument exogeneity must be ensured, that is, the IV must not have a partial effect on the dependent variable (in the case of the regression above, life satisfaction), but correlated with the suspected endogenous variable (financial decision-making authority). Among the variables collected from the sample, age is a potential candidate of IV. While evidence by Johnston et al. (2016) showed that older people tend to have higher decision-making authority in households in some cases, Blanchflower & Oswald (2000) suggested that the effect of age on life satisfaction is not linear.

Before applying the two-step regression technique, we should check whether it is necessary. To do so, the Durbin-Wu-Hausman (DWH) test as specified in Davidson & MacKinnon (1993) was performed. The use of DWH test to identify endogeneity bias can also be seen in the works of Altunbaş & Thornton (2012), Z. Xu, (2017), and Sheikh (2018). This procedure involves running an augmented regression by including the residual from the endogenous independent variable, as a function of the exogenous variables, in the original model. When the coefficient of the residual is statistically significant, endogeneity persists and the use of two-step regression is necessary. Tables F1a and F1b in Appendix F present the outputs of the DWH test, and they suggest that financial decision-making authority is not endogenous and there is no need to apply the two-step regression technique.

We can see how authority in financial decision making affects life satisfaction between men and women differently (Appendix F Tables F2a and F2b). Among men, although insignificant, a positive sign of financial decision-making authority's coefficient can be identified. On the other hand, as the result of the regression demonstrates, in the case of women, having a higher authority tend to be associated with lower levels of life satisfaction. In both samples, we can consistently predict that a higher level of income increases life satisfaction. Meanwhile, men who live in West Nusa Tenggara tend to be more satisfied with their lives compared to men in DI Yogyakarta, while living in different geographical regions is not associated with the levels of life satisfaction in the case of women.

The nature of the relationship between the authority in financial decision making and life satisfaction is not similar among people living in different provinces (Appendix F Tables F3a, F3b, and F3c). Sole authority in financial decision making tends to significantly reduce the

level of life satisfaction among people in West Nusa Tenggara and South Sulawesi. In the case of people living in DI Yogyakarta, although the coefficient's sign is negative, the impact of financial decision-making authority on life satisfaction is not significant. One notable finding is that women in West Nusa Tenggara tend to have lower levels of life satisfaction, while this cannot be found in other provinces. In addition, income is not a significant predictor of life satisfaction among people living in South Sulawesi, despite its positive coefficient.

A series of regressions were performed using sub-samples divided according to the levels of income, and the results are presented in Appendix F Tables F4a and F4b. They show that a sole financial decision-making authority has a significant detrimental effect on one's life satisfaction among those with lower levels of income ( $\leq$  IDR 6 million / USD 455.93), while the effect is insignificant among people with more income ( $>$  IDR 6 million / USD 455.93). There is an indication that high education is a source of life satisfaction for people with lower levels of income. Meanwhile, still within this income group, people in West Nusa Tenggara and South Sulawesi tend to be more satisfied with their lives. With regards to these results, one should note the relatively small number of observations at the higher income group.

As shown in Appendix F Tables F5a and F5b, when the entire sample is divided according to the levels of education ( $\leq$  nine-years of formal education versus  $>$  nine-years of formal education), we can see that financial decision-making authority has different overall impacts on life satisfaction for people belonging to each group. For those in the low education group, being a sole decision maker in financial matters is expected to decrease the level of life satisfaction. The significance of this relationship disappears when other variables are included in the model. The relationship between financial decision-making authority and life satisfaction is not significant for people with longer years of formal education. Income is again a relevant predictor of life satisfaction in both groups, while among people with less formal education, being older is associated with lower levels of life satisfaction. In addition, more educated people who live in West Nusa Tenggara tend to be more satisfied with their lives.

It has been argued that financial decision making is unique due to its complexity and uncertainty, and might require specific skills. Therefore, it is hypothesised that having financial decision-making authority might mean different things for people with different levels of skills. The sample was then divided according to respondents' cognitive scores (high: 0.67 and 1; low: 0 and 0.33) and financial literacy (high: scores 0.6 and above; low: scores 0.4 or lower), and the same regression models were employed using these subsets of

sample. The results for the subsets of sample according to cognitive scores are presented in Appendix F Tables F6a and F6b. We can see that there are more or less similar effects of financial decision-making authority, age, and the income level on life satisfaction among those who are less formally educated and those with lower cognitive scores. In the case of people with higher cognitive scores, financial decision-making authority does not significantly predict the level of life satisfaction. Differences with regards to the predictive power of geographical regions can also be found between people who have higher and those who have lower scores in cognitive ability. For people with lower cognitive scores, those who live in West Nusa Tenggara in general tend to have higher levels of life satisfaction than the peers in DI Yogyakarta, while among people with higher cognitive scores, the ones in South Sulawesi tend to be more satisfied with their lives.

When the sample is grouped based on the financial literacy scores, as we can see in Appendix F Tables F7a and F7b, financial decision making-authority significantly decreases the level of life satisfaction only among those with lower levels of financial literacy, while the similar relationship is insignificant in the case of people with higher levels of financial literacy. For both groups, income is positively associated with life satisfaction, and those living in West Nusa Tenggara are expected to be more satisfied with their lives.

### **7.6.2. Discussions**

Overall, we can see that there is a negative relationship between sole financial decision-making authority and life satisfaction. As explained in the literature review, an explanation of this finding would be that financial decision-making authority is perceived more as a burden rather than a source of power and the reflection of agency. In this case, the satisfaction felt as a result of increased agency in financial decision making does not compensate the view that financial decision making is a burden, possibly because it is difficult, boring, and full of uncertainties (World Bank, 2014). One might note that this interpretation depends heavily on the assumption that the sense of agency should contribute positively towards life satisfaction, while this is not necessarily the case (Welzel & Inglehart, 2010). To add more complexities, financial decision-making authority might indeed increase the sense of agency, but the society does not value agency highly and thus higher agency is not associated positively with life satisfaction. Meanwhile, income is a significant predictor of life satisfaction, as also concluded by previous studies on SWB (Frey & Stutzer, 1999; Feeny et al., 2014). In line

with Welzel & Inglehart (2010), in the context of this research, monetary resources are still prioritised over agency.

Nonetheless, the analyses that were separated based on socio-demographic factors, financial literacy, cognitive skills, and financial self-efficacy reveal that these variables matter in the relationship between financial decision-making authority and life satisfaction. Those who are in more advantaged positions in terms of income and education do not exhibit statistically significant relationships between financial decision-making authority and life satisfaction despite the negative regressions' coefficients. Negative and significant relationships are only found among those with lower income and education. This finding with regards to income provides additional evidence on the finding by Snape et al. (1999) and Watson et al. (2013) that decision-making authority in financial matters is perceived as a burden for those who are less wealthy, thus negatively affects life satisfaction. Meanwhile, there is an indication that longer years of education might have helped people to realise the importance of agency, and consequently compensates the negative correlation between financial decision-making authority and life satisfaction.

The findings with regards to gender deserve special attention. As we can see, the significant negative relationship between household financial decision-making authority and life satisfaction is only found among women. This again brings the issue of the widely held belief that women in Indonesia should be responsible for household financial decision making, such as households budgeting (Papanek & Schwede, 1988). According to the identity hypothesis of Akerlof & Kranton (2000), for women, having the authority of financial decision making is expected to be positively associated with life satisfaction. However, the finding in this dissertation suggests that this is not the case. Even if this is the case, the negative view on financial decision making (e.g. as a burden due to its difficulties and uncertainties) outweighs the positive effect of decision-making authority on life satisfaction.

This part of the dissertation puts an additional perspective to understand the value of skills and personality traits, and complement previous theories and studies that put the importance of these variables for the sense of agency. It should also be highlighted that negative and significant associations between financial decision making and life satisfaction were only found among those with lower levels of financial literacy and cognitive skills. This might explain partly why women, less formally educated, and poorer people in terms of income significantly associate financial decision-making authority negatively; because they tend to perform worse in financial literacy and cognitive ability scores. We can consider this as

evidence of the importance of skills in helping people to view financial decision-making authority less as a burden, and strengthening the value of agency.

## **7.7 Concluding remarks**

This chapter examines the evaluation of financial literacy within the capability approach framework. In the second and third sections, financial literacy is included as one element of the financial capability index. Although the skill was not mentioned as essential for financial capability in the participatory exercise as explained in Chapter 5, it has been argued later that financial literacy is valuable by its own, similar to other types of literacy and skills. The index was then used to investigate factors that can predict levels of financial capability, and how financial capability is correlated with quality of life. With regards to the former research topic, socio-demographic indicators such as gender, age, income, geographical region, and education, can predict the level of financial capability. The results are in line with previous studies. For example, women tend to score lower in financial capability, which is similar to the findings by M. Taylor et al. (2011) and S. Johnson et al. (2015). Social networks of the respondents can explain these findings, in which people tend to interact more with others with similar socio-demographic characteristics. There are various mechanisms involved in this “diffusion” of financial capability through social networks, such as identity building and word-of-mouth. Inter-social groups’ inequalities lead to different levels of financial capability among people with distinct socio-demographic characteristics. In the second topic, financial capability is suggested to have a positive and significant effect on the level of quality of life. This indicates that the achievement of quality of life depends on the ability and behaviour in managing financial matters.

Section 7.4 is intended to discuss the role of financial literacy, together with cognitive ability and self-efficacy, on conversion rate efficiency. One of the fundamental tenets of the capability approach is its argument that two people with a similar level of resources can achieve different levels of functionings, and this depends on factors that can affect conversion rates. It can be seen that higher levels of financial literacy, cognitive ability, and self-efficacy lead to an increase in conversion rate efficiency. Further analyses allow us to see discrepancies in the roles of these variables among people with different socio-demographic backgrounds, similar to what have been found by Chiappero-Martinetti & Salardi (2008) in the Italian sample.

The importance of financial literacy, cognitive ability, and personality traits for household financial decision-making authority is discussed in Section 7.5. Decision-making authority itself has been used as a reflection of agency, which is an important spectrum of information in the capability approach. The results tend to be less straightforward compared to the ones in the previous sections. Financial literacy has a significant impact when the regression models were implemented only among male sub-sample, while cognitive test score consistently has positive impacts across different sub-samples. One interpretation of these findings is that the general skill, as reflected from cognitive test score, matters more than the specialised skill (financial literacy) for agency. Financial self-efficacy, on the other hand, has a negative and significant impact among some socio-demographic groups. Nevertheless, the negative effect of financial self-efficacy is not necessarily harmful. Considering the division of labour within a family, even when a person is not responsible for household financial decision making, he or she can exercise agency in other households' areas, or even outside of the households.

Section 7.6 directly follows the previous one and discusses the relationship between financial decision-making authority and life satisfaction. It was not clear whether a sense of agency should lead to a higher life satisfaction, and there were not many discussions on this issue in the literature. To make things more complicated, in addition to a source of agency, household financial decision-making authority can be perceived as a burden, and consequently having a higher authority potentially can lead to a lower level of life satisfaction. The results in Section 7.6 indeed show that in general, having a sole responsibility as the household financial decision maker can negatively affect life satisfaction. Nevertheless, this negative relationship is not significant when the regressions were applied to the male subsets of sample, and those who score high in cognitive ability and financial literacy. The role of gender in the relationships between decision-making authority and life satisfaction can also be found in a study by Fernandez et al. (2015), but the evidence on the role of skills is a novel one. This is one result that this study aims to highlight: people with higher skills, both in terms of financial literacy and cognitive ability, tend to perceive household financial decision making less as a burden.

## **CHAPTER 8**

### **CONCLUSION**

#### **8.1. The importance of financial literacy**

Financial literacy has been increasingly researched in the past few years. There is a stream in the literature investigating the impact of financial literacy, in which the majority are focused on financial behaviour, such as the take-up of formal financial products and financial management. Despite the importance of these studies for policymakers and financial services providers, it is argued that an exclusive concentration on financial behaviour limits the scope of evaluation of financial literacy. In addition, it should be noted that the skill has been envisioned to be useful in the improvement of the human condition in a more general sense. This is the main literature gap addressed by this dissertation, in which it evaluates the importance of financial literacy using the capability approach framework.

The roles of cognitive ability and personality traits are also included in the discussions. The literature on human capital was originally focused on the importance of cognitive skills, but later it was shown in behavioural economics studies that non-cognitive features, or personality traits, also play crucial roles in various other aspects of human life. Three personality traits are included in these studies: self-efficacy, self-control, and general level of trust.

Specifically, four themes are raised in this dissertation. The first one goes beyond financial literacy and focuses on financial capability. Three sub-topics are raised in this part: the conceptualisation of financial capability, factors predicting the levels of financial capability, and the relationship between financial capability and quality of life.

There are some confusions with the terms financial literacy and financial capability, and indeed some scholars treat both concepts as similar. However, it becomes clearer that the two are different, and there is a view that financial literacy is an important element of financial capability. Using a participatory approach, this dissertation investigates whether microfinance institutions' clients and management share this similar view. The result suggests that financial literacy, defined by the mainstream literature as the understanding of the concepts of inflation, interest rate, diversification, and mortgage, is not viewed as crucial. At the same time, the results exhibit some similarities with previous studies in other developing countries, in which financial management and financial planning are the two most important elements of financial

capability. This finding implies that the conceptualisation of financial capability partly is driven by socio-demographic conditions.

An index of financial capability was then built. Although based on the results of FGDs and interviews only financial management and financial planning were considered important, in this index other dimensions such as financial literacy, knowledge of financial products, and ownership of financial products were also included. It is argued that these dimensions are crucial for people to function properly in dealing with financial matters.

Using this index, this dissertation suggests that socio-demographic indicators are useful predictors of levels of financial capability. Women and younger people tend to possess lower levels of financial capability. Meanwhile, as expected, income, education, and cognitive skills tend to be positively associated with financial capability. Therefore, not only do people in developing countries and in the lower position in the developed world have similar conceptualisations of financial capability, but they are also similar in their levels of financial capability.

Financial capability has been shown to have a positive relationship with quality of life. In this study, quality of life is measured by a composite index reflecting three basic functionings: health, nourishment, and housing. As hypothesised, financial capability is positively associated with quality of life. The results provide empirical evidence of the importance of financial matters in people's lives.

The second topic looks at whether financial literacy enhances individuals' conversion rate efficiency. The results suggest that financial literacy indeed contributes significantly to conversion rate efficiency, in which there is a positive relationship between the two variables. Financial self-efficacy and cognitive ability are also significant predictors with positive signs towards conversion efficiency. Those living in South Sulawesi tend to be less efficient in converting resources into functionings compared to their peers in DI Yogyakarta. More in-depth analyses by dividing the respondents according to their socio-demographic characteristics suggest that financial literacy tends to be more crucial in enhancing conversion efficiency among women, those living in DI Yogyakarta and South Sulawesi, less wealthy people (in terms of business profit), and older people. Cognitive ability has a more universal role since its significance can be found in the regressions involving most of the sub-samples. Meanwhile, financial self-efficacy is only relevant for certain groups, such as women, those living in DI Yogyakarta, and those with low levels of income.

However, caution is required in using the results regarding conversion rate efficiency. One can use them as a justification to focus on specific groups of people that are considered inefficient. However, conversion rate efficiency is only one dimension and should not be treated as the only relevant source of information regarding people's conditions. It should be treated as a complement rather than a substitute for other quality-of-life and well-being measures such as monetary resources, functionings, etc. As Binder & Broekel (2011) have warned, there might be extreme cases where individuals who have very low levels of profit achieve the basic functionings examined in this study, and are thus considered as efficient or even super-efficient, as the estimation technique permits. In this case, as Binder & Broekel (2011) put on their words that, "...absolute poverty would be masked behind relative efficiency" (p. 262).

The third topic raised in this dissertation centres on the roles of financial literacy, cognitive ability, and personality traits on household financial decision-making authority. The findings suggest that the influence of financial literacy on one's authority in financial decision making is context dependent. In certain cases, these variables have positive and significant effects on decision-making authority, while in others we can see negative and statistically insignificant results. A negative relationship between financial literacy or financial self-efficacy and authority in financial decision making is not necessarily unfavourable. Due to the division of labour within households, higher financial literacy might mean higher authority in decisions/activities outside of the household. This particular interpretation is especially important when linked to the issue of women's empowerment. Although higher household decision-making authority is often associated with more empowerment (see for example: Allendorf 2007; Bertocchi et al. 2014), we can be critical about this. Less responsibility in the household might increase one's participation in economic and social activities outside it, which would strengthen one's position within society. Moreover, in many cases, household financial decision-making authority can be seen as a burden rather than a source of empowerment (World Bank 2014; Pahl 1980; Watson et al., 2013).

Future research in this area might consider including both the responses from husbands and wives. Although Davis (1970) argued that having data from both husbands and wives does not add significant value since their responses tend to converge, a recent study by D. W. Johnston et al. (2016) on a similar topic suggested the relevance of information provider on this inquiry. Moreover, including not only information about the respondents, but also from the spouses, can enrich the discussions. Having these data will allow us to look at the positions of the respondents with regards to some indicators relative to their spouses. Previous

studies have included data such as relative income and relative education of spouses, which can serve to uncover some important dynamics in household decision making.

The fourth theme tries to provide answers to a few fundamental questions: how do people feel about household financial decision making? How does a higher authority in financial decision making affect one's life satisfaction? Decision-making authority has been perceived both as a reflection of agency and a burden, therefore its relationship with life satisfaction is complex. Financial decision making itself is unique due to its difficulties and complexities, and therefore including the roles of skills in the discussions is relevant. The results reveal that in general financial decision-making authority is perceived negatively. Given other factors held constant, a higher level of household financial decision-making authority decreases one's life satisfaction. One important result that should be highlighted in this third topic is that for those with higher levels of financial literacy and cognitive skills, the negative relationship between financial decision-making authority and life satisfaction is not statistically significant. This finding provides an additional perspective on the importance of financial literacy and cognitive skills, in which these skills help people to view household financial decision making less as a burden and to have a less negative perspective on exercising agency in relatively difficult and uncertain tasks. Interpreting the relationship between financial decision-making authority and life satisfaction is complex, and further qualitative studies to understand this is crucial. Potentially, one can extrapolate the results for other decision-making areas.

This last theme raised in this dissertation is particularly important as it provides one alternative way to use both capability approach and SWB simultaneously in one academic research. It enriches the previous literature that have taken different routes in bridging both frameworks, such as highlighting the positive correlations between capability measures and SWB (see for example: Anand et al., 2009) or the creation of subjective well-being capability (SWC) (Binder, 2014).

## **8.2. Policy implications**

The results summarised above have some relevant policy implications. We can relate these findings with Indonesia's national strategy of financial inclusion, which has been explained in Chapter 2. One of the pillars of this national effort is addressing the problem of financial literacy through financial education. There are some important issues with regards to this pillar. First, the roles of financial literacy and cognitive ability for human development have

become more apparent in this dissertation. It is mentioned that two of the ultimate goals of the national financial inclusion strategy are poverty reduction and income equality. It can be inferred that the benefit of financial literacy by far has been seen mostly in terms of opulence measures. The results indicate that financial literacy is also crucial for the other aspect of human advantage, namely agency. This provides additional justification for policymakers to design policies aimed at the improvement of these skills.

Second, policymakers' common conceptualisation of financial literacy is not very clear. The focus seems to be more on the knowledge and ownership of financial products rather than the understanding of the general financial landscape. This can be inferred from the survey that defines financial literacy as the knowledge and use of different formal financial products and services, and from the fact that the main policy actors are financial services regulators.

While measures of knowledge and the use of financial products and services have their own importance in relation to financial inclusion, an indicator reflecting the understanding of the concept of inflation rate, interest rate, and diversification deal with a more general financial landscape. This understanding can help people to function properly in society and provide the expected response towards changes in policy directions, such as those related to fiscal and monetary issues. Further efforts in enhancing financial literacy should also incorporate this wider concept of financial literacy beyond knowledge and the use of financial products.

Third, there should be more integration between financial education policy with education policy in general, since the overall low level of financial literacy might be correlated to the low performance in cognitive tests. As we can see, many aspects of financial literacy demand proficiency in math abilities, while there were a considerably low proportion of the sample who understood the concepts of percentage and ratio. These low math abilities should be a concern for policymakers. However, the nature and cause of this problem are highly complex, and further discussions on these are beyond the scope of this dissertation.

Fourth, addressing low levels of financial literacy is necessary but not sufficient and it might be useful for policymakers to shift their attention towards financial capability. As explained previously, and also conceptualised in this dissertation, financial capability is a wider term and also reflects people's financial attitude, behaviour, and access to financial products and services. One implication of this shift is that financial education that solely focuses on hard and cognitive skills is not adequate. Voluntary exclusion from the formal financial sector, for example, might not be due to a lack of financial literacy, but rather to a lack of trust. The design of a financial inclusion policy therefore needs to incorporate this factor. Infrastructure

in finance should also be improved to increase access and allow people to benefit from the financial system. Programmes such as branchless banking are useful, especially considering that many people live in remote areas.

Policymakers should also incorporate measures that can address the problems of gender inequalities found in this dissertation. Women in general have lower levels of financial capability, which are rooted in the discrepancies in financial literacy and self-efficacy between men and women. Gaps in financial literacy show that efforts toward financial education might be focused on certain socio-demographic groups. Self-efficacy is a part of personality traits. If policymakers are serious about women empowerment and gender equality, the issue of different personality traits of men and women and the underlying causes related to social construction must also be addressed.

In a more macro-sense, there have been debates whether policymakers should consider more about people's capability or SWB (happiness or life satisfaction) in devising their strategies. Studies have shown that some objective measures of capabilities are positively correlated with life satisfaction. However, we can see some criticisms towards these measures that they do not truly measure capabilities, since there is lack of reflection of agency and opportunity in them. Meanwhile, there are studies showing that the relationship between household decision-making authority, which is a proxy of agency, and SWB in general is negative, suggesting that there are cases with a difficult trade-off between the enhancement of capabilities and that of SWB. The finding that the significant negative relationship between decision-making authority and SWB is absent among those with high levels of financial literacy and cognitive ability raises an important point: skills are needed for simultaneous achievement of capability and SWB, at least in the case of financial matters. It might be fruitful for future studies to further investigate this issue with regards to other areas and settings of decision making.

# APPENDICES

## Appendix A. ANOVAs and crosstabulation analyses

Table A1. Financial literacy and socio-demographic factors: ANOVA's results

	Obs	Mean	Std. Dev	Min	Max	p-value ANOVA
All sample	2,360	0.3919	0.2392	0	1	N/A
Gender						0.0000 ***
Men	904	0.4259	0.2443	0	1	
Women	1456	0.3709	0.2335	0	1	
Region (%)						0.0000 ***
DI Yogyakarta (0 = Not live in DI Yogyakarta)	1072	0.4315	0.2564	0	1	
West Nusa Tenggara (0 = Not live in West Nusa Tenggara)	395	0.3843	0.2148	0	1	
South Sulawesi (0 = Not live in South Sulawesi)	893	0.3478	0.2193	0	1	
Age group						0.0000 ***
Age group 1	825	0.4230	0.2369	0	1	
Age group 2	816	0.3968	0.2391	0	1	
Age group 3	719	0.3508	0.2362	0	1	
Income						0.0001 ***
< IDR 1.5 million (USD 113.98)	647	0.3709	0.2313	0	1	
IDR 1.5 million (USD 113.98) - IDR 2 million (USD 151.98)	746	0.3764	0.2383	0	1	
IDR 2 million (USD 151.98) - IDR 6 million (USD 455.93)	797	0.4248	0.2373	0	1	
IDR 6 million (USD 455.93) - 17 million (USD 1,291.83)	125	0.3920	0.2717	0	1	
> IDR 17 million (USD 1,291.83)	45	0.3689	0.2485	0	0.8	
Years of education						0.0000 ***
No formal education	216	0.2815	0.2157	0	1	
1-6 years	431	0.3234	0.2173	0	1	
7-9 years	635	0.3795	0.2144	0	1	
>9 years	1078	0.4488	0.2499	0	1	

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table A2. Financial self-efficacy and socio-demographic factors: ANOVA's results

	Obs	Mean	Std. Dev	Min	Max	p-value ANOVA
Gender						0.0000 ***
Men	904	0.6582	0.1843	0	1	
Women	1456	0.6259	0.1885	0	1	
Region (%)						0.2169
DI Yogyakarta (0 = Not live in DI Yogyakarta)	1072	0.6456	0.1947	0	1	
West Nusa Tenggara (0 = Not live in West Nusa Tenggara)	395	0.6323	0.1610	0.125	1	
South Sulawesi (0 = Not live in South Sulawesi)	893	0.6320	0.1896	0	1	
Age group						0.0303 **
Age group 1	825	0.6388	0.1679	0	1	
Age group 2	816	0.6498	0.1883	0	1	
Age group 3	719	0.6245	0.2064	0	1	
Income						0.0000 ***
< IDR 1.5 million (USD 113.98)	647	0.5952	0.1796	0	1	
IDR 1.5 million (USD 113.98) - IDR 2 million (USD 151.98)	746	0.6292	0.1728	0	1	
IDR 2 million (USD 151.98) - IDR 6 million (USD 455.93)	797	0.6626	0.1917	0	1	
IDR 6 million (USD 455.93) - 17 million (USD 1,291.83)	125	0.7350	0.2031	0	1	

Table A2 (continued). Financial self-efficacy and socio-demographic factors: ANOVA's results

	Obs	Mean	Std. Dev	Min	Max	p-value ANOVA
> IDR 17 million (USD 1,291.83)	45	0.7056	0.2341	0.25	1	
Years of education						0.0000 ***
No formal education	216	0.6111	0.1827	0	1	
1-6 years	431	0.6111	0.1783	0	1	
7-9 years	635	0.6325	0.2050	0	1	
>9 years	1078	0.6579	0.1791	0	1	

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table A3. Self-control and socio-demographic factors: ANOVA's results

	Obs	Mean	Std. Dev	Min	Max	p-value ANOVA
Total	2360	0.6575	0.1434	0	1	N/A
Gender						0.0011 ***
Men	904	0.6697	0.1453	0.1666667	1	
Women	1456	0.6499	0.1417	0	1	
Region (%)						0.0053 ***
DI Yogyakarta (0 = Not live in DI Yogyakarta)	1072	0.6637	0.1432	0.1666667	1	
West Nusa Tenggara (0 = Not live in West Nusa Tenggara)	395	0.6679	0.1339	0.3333333	1	
South Sulawesi (0 = Not live in South Sulawesi)	893	0.6454	0.1469	0	1	
Age group						0.1683
Age group 1	825	0.6520	0.1385	0.25	1	
Age group 2	816	0.6649	0.1422	0.1666667	1	
Age group 3	719	0.6553	0.1499	0	1	
Income						0.0007 ***
< IDR 1.5 million (USD 113.98)	647	0.6434	0.1330	0.25	1	
IDR 1.5 million (USD 113.98) - IDR 2 million (USD 151.98)	746	0.6508	0.1335	0.1666667	1	
IDR 2 million (USD 151.98) - IDR 6 million (USD 455.93)	797	0.6697	0.1509	0	1	
IDR 6 million (USD 455.93) - 17 million (USD 1,291.83)	125	0.6813	0.1710	0.3333333	1	
> IDR 17 million (USD 1,291.83)	45	0.6889	0.1925	0.25	1	
Years of education						0.0000 ***
No formal education	216	0.6312	0.1474	0.1666667	1	
1-6 years	431	0.6324	0.1378	0	1	
7-9 years	635	0.6606	0.1418	0.1666667	1	
>9 years	1078	0.6709	0.1439	0.25	1	

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table A4. General trust and socio-demographic factors: ANOVA's results

	Obs	Mean	Std. Dev	Min	Max	p-value ANOVA
Total	2360	0.4814	0.1356	0	1	N/A
Gender						0.4528
Men	904	0.4841	0.1404	0	1	
Women	1456	0.4797	0.1326	0	0.92	
Region (%)						0.0000 ***
DI Yogyakarta (0 = Not live in DI Yogyakarta)	1072	0.5071	0.1204	0	1	
West Nusa Tenggara (0 = Not live in West Nusa Tenggara)	395	0.4762	0.1445	0	0.92	
South Sulawesi (0 = Not live in South Sulawesi)	893	0.4529	0.1428	0	0.92	
Age group						0.5012
Age group 1	825	0.4840	0.1353	0	0.92	
Age group 2	816	0.4830	0.1382	0	0.92	
Age group 3	719	0.4765	0.1331	0	1	

Table A4 (continued). General trust and socio-demographic factors: ANOVA's results

	Obs	Mean	Std. Dev	Min	Max	p-value ANOVA
Income						0.0068 ***
< IDR 1.5 million (USD 113.98)	647	0.4924	0.1378	0	1	
IDR 1.5 million (USD 113.98) - IDR 2 million (USD 151.98)	746	0.4873	0.1237	0	0.92	
IDR 2 million (USD 151.98) - IDR 6 million (USD 455.93)	797	0.4708	0.1433	0	0.92	
IDR 6 million (USD 455.93) - 17 million (USD 1,291.83)	125	0.4680	0.1273	0	0.92	
> IDR 17 million (USD 1,291.83)	45	0.4500	0.1573	0	0.75	
Years of education						0.7169
No formal education	216	0.4718	0.1225	0.08	0.83	
1-6 years	431	0.4816	0.1423	0	0.83	
7-9 years	635	0.4808	0.1264	0	0.92	
>9 years	1078	0.4835	0.1407	0	1	

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table A5. Financial management and socio-demographic factors: ANOVA's results

	Obs	Mean	Std. Dev	Min	Max	p-value ANOVA
Total	2354	0.5574	0.3031	0	1	N/A
Gender						0.4537
Men	902	0.5634	0.3045	0	1	
Women	1452	0.5537	0.3023	0	1	
Region (%)						0.0251 **
DI Yogyakarta (0 = Not live in DI Yogyakarta)	1067	0.5480	0.3150	0	1	
West Nusa Tenggara (0 = Not live in West Nusa Tenggara)	395	0.5949	0.2832	0	1	
South Sulawesi (0 = Not live in South Sulawesi)	892	0.5521	0.2961	0	1	
Age group						0.0000 ***
Age group 1	822	0.6036	0.2833	0	1	
Age group 2	814	0.5756	0.2873	0	1	
Age group 3	718	0.4839	0.3284	0	1	
Income						0.0000 ***
< IDR 1.5 million (USD 113.98)	644	0.5122	0.3184	0	1	
IDR 1.5 million (USD 113.98) - IDR 2 million (USD 151.98)	744	0.5490	0.3004	0	1	
IDR 2 million (USD 151.98) - IDR 6 million (USD 455.93)	796	0.5849	0.2904	0	1	
IDR 6 million (USD 455.93) - 17 million (USD 1,291.83)	125	0.6274	0.2833	0	1	
> IDR 17 million (USD 1,291.83)	45	0.6635	0.2971	0	1	
Years of education						0.0000 ***
No formal education	215	0.4219	0.3136	0	1	
1-6 years	431	0.4982	0.3131	0	1	
7-9 years	634	0.5309	0.2950	0	1	
>9 years	1074	0.6240	0.2852	0	1	

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table A6. Perception of financial planning and socio-demographic factors: ANOVA's results

	Obs	Mean	Std. Dev	Min	Max	p-value ANOVA
Gender						0.1105
Men	904	0.7891	0.1537	0	1	
Women	1455	0.7781	0.1685	0	1	
Region (%)						0.0007 ***
DI Yogyakarta (0 = Not live in DI Yogyakarta)	1072	0.7749	0.1548	0	1	
West Nusa Tenggara (0 = Not live in West Nusa Tenggara)	394	0.8105	0.1608	0	1	

Table A6 (continued). Perception of financial planning and socio-demographic factors: ANOVA's results

	Obs	Mean	Std. Dev	Min	Max	p-value ANOVA	
South Sulawesi (0 = Not live in South Sulawesi)	893	0.7787	0.1723	0	1		
Age group						0.0000	***
Age group 1	824	0.7999	0.1571	0	1		
Age group 2	816	0.7853	0.1615	0	1		
Age group 3	719	0.7587	0.1689	0	1		
Income						0.0005	***
< IDR 1.5 million (USD 113.98)	647	0.7656	0.1684	0	1		
IDR 1.5 million (USD 113.98) - IDR 2 million (USD 151.98)	746	0.7787	0.1548	0	1		
IDR 2 million (USD 151.98) - IDR 6 million (USD 455.93)	796	0.7904	0.1666	0	1		
IDR 6 million (USD 455.93) - 17 million (USD 1,291.83)	125	0.8253	0.1575	0	1		
> IDR 17 million (USD 1,291.83)	45	0.8185	0.1380	0.5	1		
Years of education						0.0000	***
No formal education	216	0.7346	0.1610	0	1		
1-6 years	431	0.7697	0.1709	0	1		
7-9 years	635	0.7810	0.1517	0	1		
>9 years	1077	0.7977	0.1646	0	1		

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table A7a. Financial planning for education and socio-demographic factors: ANOVA's results

	Obs	Mean	Std. Dev	Min	Max	p-value ANOVA	
Gender						0.0130	**
Men	904	4.5542	0.8120	1	5		
Women	1455	4.4632	0.8947	1	5		
Region (%)						0.0109	**
DI Yogyakarta (0 = Not live in DI Yogyakarta)	1072	4.5215	0.8310	1	5		
West Nusa Tenggara (0 = Not live in West Nusa Tenggara)	394	4.5787	0.8502	1	5		
South Sulawesi (0 = Not live in South Sulawesi)	893	4.4345	0.9068	1	5		
Age group						0.0000	***
Age group 1	824	4.5704	0.8115	1	5		
Age group 2	816	4.5319	0.8617	1	5		
Age group 3	719	4.3769	0.9148	1	5		
Income						0.0091	***
< IDR 1.5 million (USD 113.98)	647	4.4019	0.9088	1	5		
IDR 1.5 million (USD 113.98) - IDR 2 million (USD 151.98)	746	4.5067	0.8674	1	5		
IDR 2 million (USD 151.98) - IDR 6 million (USD 455.93)	796	4.5427	0.8523	1	5		
IDR 6 million (USD 455.93) - 17 million (USD 1,291.83)	125	4.6240	0.7146	1	5		
> IDR 17 million (USD 1,291.83)	45	4.6000	0.6537	3	5		
Years of education						0.0000	***
No formal education	216	4.1157	1.0345	1	5		
1-6 years	431	4.4084	0.8946	1	5		
7-9 years	635	4.5102	0.7989	1	5		
>9 years	1077	4.6035	0.8280	1	5		

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table A7b. Financial planning for housing and socio-demographic factors: ANOVA's results

	Obs	Mean	Std. Dev	Min	Max	p-value ANOVA
Gender						0.1969
Men	904	3.8485	0.8590	1	5	
Women	1456	3.7988	0.9387	1	5	
Region (%)						0.0000 ***
DI Yogyakarta (0 = Not live in DI Yogyakarta)	1072	3.7052	0.9192	1	5	
West Nusa Tenggara (0 = Not live in West Nusa Tenggara)	395	3.9696	0.9119	1	5	
South Sulawesi (0 = Not live in South Sulawesi)	893	3.8858	0.8797	1	5	
Age group						0.0000 ***
Age group 1	825	3.9358	0.8851	1	5	
Age group 2	816	3.8064	0.8871	1	5	
Age group 3	719	3.6954	0.9443	1	5	
Income						0.6714
< IDR 1.5 million (USD 113.98)	647	3.7975	0.9315	1	5	
IDR 1.5 million (USD 113.98) - IDR 2 million (USD 151.98)	746	3.8217	0.8680	1	5	
IDR 2 million (USD 151.98) - IDR 6 million (USD 455.93)	797	3.8105	0.9204	1	5	
IDR 6 million (USD 455.93) - 17 million (USD 1,291.83)	125	3.9280	0.9434	1	5	
> IDR 17 million (USD 1,291.83)	45	3.8667	0.9677	2	5	
Years of education						0.0206 **
No formal education	216	3.7083	0.8425	1	5	
1-6 years	431	3.7494	0.9752	1	5	
7-9 years	635	3.8063	0.8997	1	5	
>9 years	1078	3.8738	0.8971	1	5	

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table A7c. Financial planning for hajj and umra and socio-demographic factors: ANOVA's results

	Obs	Mean	Std. Dev	Min	Max	p-value ANOVA
Gender						0.8443
Men	904	4.0664	0.8233	1	5	
Women	1456	4.0735	0.8755	1	5	
Region (%)						0.0170 **
DI Yogyakarta (0 = Not live in DI Yogyakarta)	1072	4.0718	0.8309	1	5	
West Nusa Tenggara (0 = Not live in West Nusa Tenggara)	395	4.1722	0.8159	1	5	
South Sulawesi (0 = Not live in South Sulawesi)	893	4.0246	0.8981	1	5	
Age group						0.3446
Age group 1	825	4.0897	0.8414	1	5	
Age group 2	816	4.0858	0.8609	1	5	
Age group 3	719	4.0320	0.8658	1	5	
Income						0.0000 ***
< IDR 1.5 million (USD 113.98)	647	3.9876	0.8954	1	5	
IDR 1.5 million (USD 113.98) - IDR 2 million (USD 151.98)	746	4.0161	0.8108	1	5	
IDR 2 million (USD 151.98) - IDR 6 million (USD 455.93)	797	4.1292	0.8694	1	5	
IDR 6 million (USD 455.93) - 17 million (USD 1,291.83)	125	4.3520	0.7752	1	5	
> IDR 17 million (USD 1,291.83)	45	4.3556	0.6794	3	5	
Years of education						0.4151
No formal education	216	3.9907	0.8518	1	5	
1-6 years	431	4.0789	0.8778	1	5	
7-9 years	635	4.0551	0.7954	1	5	
>9 years	1078	4.0928	0.8814	1	5	

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table A8. Financial planning ownership and socio-demographic factors: ANOVA's results

	Obs	Mean	Std. Dev	Min	Max	p-value ANOVA
Gender						0.9108
Men	903	0.7593	0.3227	0	1	
Women	1455	0.7608	0.3131	0	1	
Region (%)						0.0173 **
DI Yogyakarta (0 = Not live in DI Yogyakarta)	1072	0.7491	0.3135	0	1	
West Nusa Tenggara (0 = Not live in West Nusa Tenggara)	394	0.8012	0.2848	0	1	
South Sulawesi (0 = Not live in South Sulawesi)	892	0.7556	0.3325	0	1	
Age group						0.0000 ***
Age group 1	825	0.7891	0.3019	0	1	
Age group 2	815	0.7840	0.3001	0	1	
Age group 3	718	0.7001	0.3429	0	1	
Income						0.0000 ***
< IDR 1.5 million (USD 113.98)	647	0.6950	0.3396	0	1	
IDR 1.5 million (USD 113.98) - IDR 2 million (USD 151.98)	745	0.7682	0.3153	0	1	
IDR 2 million (USD 151.98) - IDR 6 million (USD 455.93)	796	0.7906	0.3014	0	1	
IDR 6 million (USD 455.93) - 17 million (USD 1,291.83)	125	0.8240	0.2663	0	1	
> IDR 17 million (USD 1,291.83)	45	0.8519	0.2416	0	1	
Years of education						0.0000 ***
No formal education	216	0.6358	0.3695	0	1	
1-6 years	430	0.7457	0.3234	0	1	
7-9 years	634	0.7676	0.2956	0	1	
>9 years	1078	0.7866	0.3088	0	1	

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table A9. Financial product knowledge and socio-demographic factors: ANOVA's results

	Obs.	Mean	Std. Dev	Min	Max	p-value ANOVA
Total	2354	0.5797	0.2217	0	1	N/A
Gender						0.0000 ***
Men	903	0.6074	0.2295	0	1	
Women	1451	0.5625	0.2150	0	1	
Region (%)						0.0000 ***
DI Yogyakarta (0 = Not live in DI Yogyakarta)	1071	0.5861	0.2321	0	1	
West Nusa Tenggara (0 = Not live in West Nusa Tenggara)	390	0.6154	0.2187	0.1	1	
South Sulawesi (0 = Not live in South Sulawesi)	893	0.5566	0.2075	0.1	1	
Age group						0.0003 ***
Age group 1	824	0.6007	0.2255	0	1	
Age group 2	813	0.5798	0.2250	0	1	
Age group 3	717	0.5555	0.2112	0	1	
Income						0.0000 ***
< IDR 1.5 million (USD 113.98)	643	0.5171	0.2317	0	1	
IDR 1.5 million (USD 113.98) - IDR 2 million (USD 151.98)	745	0.5532	0.2047	0.1	1	
IDR 2 million (USD 151.98) - IDR 6 million (USD 455.93)	796	0.6389	0.2161	0	1	
IDR 6 million (USD 455.93) - 17 million (USD 1,291.83)	125	0.6496	0.1843	0.1	1	
> IDR 17 million (USD 1,291.83)	45	0.6733	0.2049	0.2	1	
Years of education						0.0000 ***
No formal education	214	0.4902	0.2251	0	1	
1-6 years	428	0.5297	0.1994	0.1	1	
7-9 years	635	0.5764	0.2063	0	1	
>9 years	1077	0.6194	0.2290	0	1	

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table A10. Financial product ownership and socio-demographic factors: ANOVA's results

	Obs	Mean	Std. Dev	Min	Max	p-value ANOVA
Total	2358	0.3702	0.1510	0	1	N/A
Gender						0.0558 *
Men	903	0.3627	0.1543	0	1	
Women	1455	0.3749	0.1488	0	1	
Region (%)						0.0001 ***
DI Yogyakarta (0 = Not live in DI Yogyakarta)	1071	0.3570	0.1408	0	1	
West Nusa Tenggara (0 = Not live in West Nusa Tenggara)	394	0.3921	0.1520	0	1	
South Sulawesi (0 = Not live in South Sulawesi)	893	0.3764	0.1607	0	1	
Age group						0.0012 ***
Age group 1	824	0.3711	0.1504	0	1	
Age group 2	816	0.3830	0.1488	0	1	
Age group 3	718	0.3547	0.1530	0	0.9	
Income						0.0000 ***
< IDR 1.5 million (USD 113.98)	645	0.3251	0.1548	0	1	
IDR 1.5 million (USD 113.98) - IDR 2 million (USD 151.98)	746	0.3696	0.1475	0	1	
IDR 2 million (USD 151.98) - IDR 6 million (USD 455.93)	797	0.3961	0.1431	0	1	
IDR 6 million (USD 455.93) - 17 million (USD 1,291.83)	125	0.4168	0.1401	0.1	0.8	
> IDR 17 million (USD 1,291.83)	45	0.4400	0.1529	0.2	0.9	
Years of education						0.0000 ***
No formal education	215	0.3149	0.1611	0	0.8	
1-6 years	431	0.3682	0.1606	0	1	
7-9 years	635	0.3682	0.1482	0	1	
>9 years	1077	0.3833	0.1441	0	1	

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table A11a. Financial capability index (equal-weighted) and socio-demographic factors: ANOVA's results

	Obs	Mean	Std. Dev	Min	Max	p-value ANOVA
Total	2343	0.5829	0.1212	0.1771	0.9417	N/A
Gender						0.0001***
Men	899	0.5952	0.1211	0.2646	0.9125	
Women	1444	0.5753	0.1206	0.1771	0.9417	
Region (%)						0.0001***
DI Yogyakarta (0 = Not live in DI Yogyakarta)	1065	0.5855	0.1269	0.1792	0.9125	
West Nusa Tenggara (0 = Not live in West Nusa Tenggara)	387	0.6026	0.0997	0.2063	0.9417	
South Sulawesi (0 = Not live in South Sulawesi)	891	0.5712	0.1214	0.1771	0.8750	
Age group						0.0000***
Age group 1	819	0.6017	0.1098	0.2156	0.9125	
Age group 2	810	0.5932	0.1127	0.1896	0.9417	
Age group 3	714	0.5496	0.1354	0.1771	0.8750	
Income						0.0000***
< IDR 1.5 million (USD 113.98)	638	0.5421	0.1243	0.1771	0.8469	
IDR 1.5 million (USD 113.98) - IDR 2 million (USD 151.98)	742	0.5750	0.1144	0.2229	0.8458	
IDR 2 million (USD 151.98) - IDR 6 million (USD 455.93)	793	0.6113	0.1151	0.1958	0.9417	
IDR 6 million (USD 455.93) - 17 million (USD 1,291.83)	125	0.6362	0.1040	0.3542	0.8750	
> IDR 17 million (USD 1,291.83)	45	0.6443	0.1286	0.3313	0.8875	
Years of education						0.0000***
No formal education	212	0.5017	0.1423	0.179167	0.8125	
1-6 years	427	0.5481	0.1168	0.177083	0.8625	
7-9 years	633	0.5774	0.1114	0.189583	0.852083	
>9 years	1071	0.6161	0.1116	0.203125	0.941667	

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table A11b. Financial capability index (PCA) and socio-demographic factors: ANOVA's results

	Obs	Mean	Std. Dev	Min	Max	p-value ANOVA
Gender						0.0011 ***
Men	899	0.1256	1.4651	-4.2802	4.1725	
Women	1444	-0.0782	1.4630	-5.2069	4.0836	
Region (%)						0.0055 ***
DI Yogyakarta (0 = Not live in DI Yogyakarta)	1065	0.0001	1.5115	-4.8731	3.9268	
West Nusa Tenggara (0 = Not live in West Nusa Tenggara)	387	0.2436	1.1963	-4.6009	4.1725	
South Sulawesi (0 = Not live in South Sulawesi)	891	-0.1060	1.5075	-5.2069	3.4863	
Age group						0.0000 ***
Age group 1	819	0.2154	1.3334	-4.4040	4.1725	
Age group 2	810	0.1240	1.3688	-4.8731	4.0836	
Age group 3	714	-0.3878	1.6371	-5.2069	3.4863	
Income						0.0000 ***
< IDR 1.5 million (USD 113.98)	638	-0.5345	1.4964	-5.2069	3.4366	
IDR 1.5 million (USD 113.98) - IDR 2 million (USD 151.98)	742	-0.0895	1.3913	-4.6444	3.0580	
IDR 2 million (USD 151.98) - IDR 6 million (USD 455.93)	793	0.3547	1.3834	-4.7532	4.1725	
IDR 6 million (USD 455.93) - 17 million (USD 1,291.83)	125	0.7193	1.2346	-2.5096	3.1606	
> IDR 17 million (USD 1,291.83)	45	0.8054	1.4441	-2.7515	3.9268	
Years of education						0.0000 ***
No formal education	212	-0.9482	1.6915	-4.79521	2.653183	
1-6 years	427	-0.3656	1.4328	-5.20691	3.32716	
7-9 years	633	-0.0650	1.3804	-4.72788	3.436624	
>9 years	1071	0.3718	1.3528	-4.87305	4.172539	

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table A12. Cognitive ability and socio-demographic factors: ANOVA's results

	Obs	Mean	Std. Dev	Min	Max	p-value ANOVA
Total	2,360	0.4384	0.2124	0	1	N/A
Gender						0.4248
Men	904	0.4428	0.2228	0	1	
Women	1456	0.4357	0.2056	0	1	
Region (%)						0.0336 **
DI Yogyakarta (0 = Not live in DI Yogyakarta)	1072	0.4412	0.2270	0	1	
West Nusa Tenggara (0 = Not live in West Nusa Tenggara)	395	0.4135	0.1901	0	1	
South Sulawesi (0 = Not live in South Sulawesi)	893	0.4461	0.2027	0	1	
Age group						0.0059 ***
Age group 1	825	0.4424	0.2056	0	1	
Age group 2	816	0.4522	0.2106	0	1	
Age group 3	719	0.4182	0.2206	0	1	
Income						0.0008 ***
< IDR 1.5 million (USD 113.98)	647	0.4086	0.2119	0	1	
IDR 1.5 million (USD 113.98) - IDR 2 million (USD 151.98)	746	0.4491	0.2133	0	1	
IDR 2 million (USD 151.98) - IDR 6 million (USD 455.93)	797	0.4496	0.2123	0	1	
IDR 6 million (USD 455.93) - 17 million (USD 1,291.83)	125	0.4427	0.1975	0	1	
> IDR 17 million (USD 1,291.83)	45	0.4815	0.2079	0.3	1	
Years of education						0.0020 ***
No formal education	216	0.3904	0.2348	0	1	
1-6 years	431	0.4292	0.2073	0	1	
7-9 years	635	0.4436	0.1975	0	1	
>9 years	1078	0.4487	0.2169	0	1	

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table A13. Household financial decision-making authority and socio-demographic factors: Crosstabulation's results using all sample

Variables	Not the main decision maker	Joint involvement	Main decision maker	p-value chi-square
Total	46.90	27.65	25.45	
Gender				0.2400
Men	48.67	25.77	25.55	
Women	45.80	28.82	25.38	
Age group				0.0230 **
Age group 1	45.32	30.74	23.94	
Age group 2	49.51	26.59	23.90	
Age group 3	45.76	25.31	28.93	
Financial literacy				0.0000***
All answers wrong	36.40	30.15	33.46	
1 correct answer	47.89	27.29	24.82	
2 correct answers	53.08	25.41	21.51	
3 correct answers	46.99	26.40	26.61	
4 correct answers	36.70	36.17	27.13	
5 correct answers	33.33	33.33	33.33	
Cognitive ability				0.0760*
All answers wrong	49.62	29.01	21.37	
1 correct answer	48.44	27.40	24.15	
2 correct answers	44.56	28.01	27.43	
3 correct answers	36.56	26.88	36.56	

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table A14a. Household financial decision-making authority and socio-demographic factors: Crosstabulation's results using male sub-sample

Variables	Not the main decision maker	Joint involvement	Main decision maker	p-value chi-square
Total	48.67	25.77	25.55	N/A
Region (%)				0.0000***
DI Yogyakarta (0 = Not live in DI Yogyakarta)	41.61	33.1	25.30	
West Nusa Tenggara (0 = Not live in West Nusa Tenggara)	50.32	27.1	22.58	
South Sulawesi (0 = Not live in South Sulawesi)	57.06	15.64	27.30	
Income category				0.3160
< IDR 1.5 million (USD 113.98)	46.58	25.39	28.04	
IDR 1.5 million (USD 113.98) - IDR 2 million (USD 151.98)	43.44	31.83	24.73	
IDR 2 million (USD 151.98) - IDR 6 million (USD 455.93)	49.42	27.74	22.84	
IDR 6 million (USD 455.93) - 17 million (USD 1,291.83)	38.16	30.26	31.58	
> IDR 17 million (USD 1,291.83)	38.71	45.16	16.13	
Age group				0.0770*
Age group 1	42.49	29.71	27.80	
Age group 2	51.55	22.67	25.78	
Age group 3	52.42	24.91	22.68	
Financial literacy				0.0100**
All answers wrong	42.11	27.37	30.53	
1 correct answer	56.02	22.29	21.69	
2 correct answers	53.02	24.76	22.22	
3 correct answers	49.05	24.29	26.67	
4 correct answers	30.77	36.26	32.97	
5 correct answers	33.33	29.63	37.04	
Cognitive ability				0.0630*
All answers wrong	51.61	30.65	17.74	
1 correct answer	50.10	26.20	23.71	
2 correct answers	46.95	25.09	27.96	
3 correct answers	37.50	17.50	45.00	

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table A14b. Household financial decision-making authority and socio-demographic factors: Crosstabulation's results using female sub-sample

Variables	Not the main decision maker	Joint involvement	Main decision maker	p-value chi square
Total	45.80	28.82	25.38	N/A
Region (%)				0.0380*
DI Yogyakarta (0 = Not live in DI Yogyakarta)	42.30	31.60	26.10	
West Nusa Tenggara (0 = Not live in West Nusa Tenggara)	52.85	26.62	20.53	
South Sulawesi (0 = Not live in South Sulawesi)	46.57	26.53	26.9	
Profit category				0.0770*
< IDR 1.5 million (USD 113.98)	46.58	25.39	28.04	
IDR 1.5 million (USD 113.98) - IDR 2 million (USD 151.98)	43.44	31.83	24.73	
IDR 2 million (USD 151.98) - IDR 6 million (USD 455.93)	49.42	27.74	22.84	
IDR 6 million (USD 455.93) - 17 million (USD 1,291.83)	38.16	30.26	31.58	
> IDR 17 million (USD 1,291.83)	38.71	45.16	16.13	
Age group				0.0010***
Age group 1	47.06	31.37	21.57	
Age group 2	48.18	29.15	22.67	
Age group 3	41.78	25.56	32.67	
Financial literacy				0.0020***
All answers wrong	33.33	31.64	35.03	
1 correct answer	44.53	29.35	26.12	
2 correct answers	53.13	25.83	21.04	
3 correct answers	45.39	28.04	26.57	
4 correct answers	42.27	36.08	21.65	
5 correct answers	33.33	37.04	29.63	
Cognitive ability				0.5780
All answers wrong	47.83	27.54	24.64	
1 correct answer	47.51	28.09	24.40	
2 correct answers	42.93	30.00	27.07	
3 correct answers	35.85	33.96	30.19	

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table A15. Decision-maker's gender: Crosstabulation's results

Variables	Male main decision maker	Female main decision maker	Joint decision maker	p-value chi square
Total	37.34	34.15	28.51	
Region (%)				0.0000***
DI Yogyakarta (0 = Not live in DI Yogyakarta)	34.84	31.70	33.46	
West Nusa Tenggara (0 = Not live in West Nusa Tenggara)	40.63	31.87	27.49	
South Sulawesi (0 = Not live in South Sulawesi)	38.74	38.16	23.10	
Profit category				0.3040
Lower profit ( $\leq$ IDR 2,000,000)	36.85	33.43	29.72	
Higher profit ( $>$ IDR 2,000,000)	38.04	35.18	26.78	
Age group				0.0000***
Age group 1	39.12	29.06	31.82	
Age group 2	38.85	33.96	27.19	
Age group 3	33.57	40.20	26.22	

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table A16. Life satisfaction and socio-demographic factors: ANOVA's results

	Obs	Mean	Std. Dev	Min	Max	p-value ANOVA
Total	2360	3.69322	0.80479	1	5	N/A
Gender						0.6236
Men	904	3.7035	0.8004	1	5	
Women	1456	3.6868	0.8077	1	5	
Region (%)						0.0346**
DI Yogyakarta (0 = Not live in DI Yogyakarta)	1072	3.6502	0.8130	1	5	
West Nusa Tenggara (0 = Not live in West Nusa Tenggara)	395	3.7646	0.7692	1	5	
South Sulawesi (0 = Not live in South Sulawesi)	893	3.7133	0.8082	1	5	
Age group						0.0874*
Age group 1	825	3.7382	0.7785	1	5	
Age group 2	816	3.6875	0.8225	1	5	
Age group 3	719	3.6481	0.8125	1	5	
Income						0.0000***
< IDR 1.5 million (USD 113.98)	647	3.5363	0.8299	1	5	
IDR 1.5 million (USD 113.98) - IDR 2 million (USD 151.98)	746	3.6877	0.7945	1	5	
IDR 2 million (USD 151.98) - IDR 6 million (USD 455.93)	797	3.7666	0.7898	1	5	
IDR 6 million (USD 455.93) - 17 million (USD 1,291.83)	125	3.9520	0.6939	1	5	
> IDR 17 million (USD 1,291.83)	45	4.0222	0.7226	2	5	
Years of education						0.0001***
No formal education	216	3.4676	0.8938	1	5	
1-6 years	431	3.6589	0.7484	1	5	
7-9 years	635	3.7370	0.7773	1	5	
>9 years	1078	3.7263	0.8167	1	5	

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table A17. Profit and socio-demographic factors: ANOVA's results

	Obs	Mean	Std. Dev	Min	Max	p-value ANOVA
Total	2109	3,318,634	3,593,643	1,000,000	30,000,000	N/A
Gender						0.0073 ***
Men	822	3,581,265	3,878,959	1,000,000	30,000,000	
Women	1287	3,150,894	3,389,827	1,000,000	30,000,000	
Region (%)						0.0099 ***
DI Yogyakarta (0 = Not live in DI Yogyakarta)	982	3,561,609	4,237,126	1,000,000	30,000,000	
West Nusa Tenggara (0 = Not live in West Nusa Tenggara)	312	2,949,679	3,162,664	1,000,000	30,000,000	
South Sulawesi (0 = Not live in South Sulawesi)	815	3,167,117	2,799,886	1,000,000	25,000,000	
Age group						0.0001 ***
Age group 1	721	2,926,768	2,955,408	1,000,000	30,000,000	
Age group 2	739	3,748,444	4,165,666	1,000,000	30,000,000	
Age group 3	614	3,299,186	3,528,197	1,000,000	25,000,000	
Years of education						0.0173 **
No formal education	182	2,827,473	3,195,579	1,000,000	30,000,000	
1-6 years	377	2,948,541	2,935,541	1,000,000	30,000,000	
7-9 years	577	3,504,679	3,741,258	1,000,000	30,000,000	
>9 years	972	3,445,062	3,788,941	1,000,000	30,000,000	

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table A18. Health and socio-demographic factors: ANOVA's results

	Obs	Mean	Std. Dev	Min	Max	p-value ANOVA
Total	2359	0.6890	0.2084	0	1	N/A
Gender						0.9704
Men	904	0.6888	0.2122	0	1	
Women	1455	0.6891	0.2060	0	1	
Region (%)						0.0000***
DI Yogyakarta (0 = Not live in DI Yogyakarta)	1072	0.7034	0.2163	0	1	
West Nusa Tenggara (0 = Not live in West Nusa Tenggara)	395	0.7063	0.2093	0	1	
South Sulawesi (0 = Not live in South Sulawesi)	892	0.6641	0.1956	0	1	
Age group						0.9614
Age group 1	825	0.6905	0.2106	0	1	
Age group 2	816	0.6887	0.2077	0	1	
Age group 3	718	0.6876	0.2069	0	1	
Income						0.0085***
< IDR 1.5 million (USD 113.98)	646	0.6842	0.2101	0	1	
IDR 1.5 million (USD 113.98) - IDR 2 million (USD 151.98)	746	0.6729	0.2035	0	1	
IDR 2 million (USD 151.98) - IDR 6 million (USD 455.93)	797	0.6993	0.2101	0	1	
IDR 6 million (USD 455.93) - 17 million (USD 1,291.83)	125	0.7227	0.2019	0.333333	1	
> IDR 17 million (USD 1,291.83)	45	0.7481	0.2265	0.3	1	
Years of education						0.5125
No formal education	216	0.6898	0.2295	0	1	
1-6 years	431	0.6991	0.2108	0	1	
7-9 years	635	0.6798	0.2085	0	1	
>9 years	1077	0.6902	0.2029	0	1	

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table A19. Nourishment and socio-demographic factors: ANOVA's results

	Obs	Mean	Std. Dev	Min	Max	p-value ANOVA
Total	2356	0.7400	0.3152	0	1	N/A
Gender						0.0598*
Men	902	0.7555	0.3122	0	1	
Women	1454	0.7304	0.3168	0	1	
Region (%)						0.0008***
DI Yogyakarta (0 = Not live in DI Yogyakarta)	1072	0.7663	0.3164	0	1	
West Nusa Tenggara (0 = Not live in West Nusa Tenggara)	393	0.7087	0.3288	0	1	
South Sulawesi (0 = Not live in South Sulawesi)	891	0.7222	0.3054	0	1	
Age group						0.0482**
Age group 1	824	0.7549	0.3098	0	1	
Age group 2	814	0.7457	0.3105	0	1	
Age group 3	718	0.7166	0.3257	0	1	
Income						0.0000***
< IDR 1.5 million (USD 113.98)	646	0.6416	0.3539	0	1	
IDR 1.5 million (USD 113.98) - IDR 2 million (USD 151.98)	746	0.7225	0.3034	0	1	
IDR 2 million (USD 151.98) - IDR 6 million (USD 455.93)	794	0.8086	0.2816	0	1	
IDR 6 million (USD 455.93) - 17 million (USD 1,291.83)	125	0.8560	0.2273	0.5	1	
> IDR 17 million (USD 1,291.83)	45	0.9111	0.2208	0.0	1	
Years of education						0.0000***
No formal education	216	0.5949	0.3498	0	1	
1-6 years	431	0.6972	0.3401	0	1	
7-9 years	634	0.7500	0.3043	0	1	
>9 years	1075	0.7805	0.2930	0	1	

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table A20. Housing and socio-demographic factors: ANOVA's results

	Obs	Mean	Std. Dev	Min	Max	p-value ANOVA
Total	2360	0.8524	0.2203	0	1	N/A
Gender						0.8835
Men	904	0.8532	0.2095	0	1	
Women	1456	0.8519	0.2268	0	1	
Region (%)						0.1458
DI Yogyakarta (0 = Not live in DI Yogyakarta)	1072	0.8557	0.2080	0	1	
West Nusa Tenggara (0 = Not live in West Nusa Tenggara)	395	0.8667	0.2246	0	1	
South Sulawesi (0 = Not live in South Sulawesi)	893	0.8421	0.2321	0	1	
Age group						0.0000***
Age group 1	825	0.8149	0.2322	0	1	
Age group 2	816	0.8738	0.2108	0	1	
Age group 3	719	0.8711	0.2113	0	1	
Income						0.0000***
< IDR 1.5 million (USD 113.98)	647	0.8109	0.2491	0	1	
IDR 1.5 million (USD 113.98) - IDR 2 million (USD 151.98)	746	0.8405	0.2252	0	1	
IDR 2 million (USD 151.98) - IDR 6 million (USD 455.93)	797	0.8816	0.1950	0	1	
IDR 6 million (USD 455.93) - 17 million (USD 1,291.83)	125	0.9280	0.1441	0.3333	1	
> IDR 17 million (USD 1,291.83)	45	0.9185	0.1449	0.7	1	
Years of education						0.4288
No formal education	216	0.8287	0.2490	0	1	
1-6 years	431	0.8538	0.2285	0	1	
7-9 years	635	0.8556	0.2207	0	1	
>9 years	1078	0.8547	0.2104	0	1	

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table A21a. Quality of life (equal-weighted) and socio-demographic factors: ANOVA's results

	Obs	Mean	Std. Dev	Min	Max	p-value ANOVA
Total	2356	0.7633	0.1557	0.125	1	N/A
Gender						0.2931
Men	902	0.7676	0.1517	0.125	1	
Women	1454	0.7607	0.1581	0.125	1	
Region (%)						0.0001***
DI Yogyakarta (0 = Not live in DI Yogyakarta)	1072	0.7762	0.1531	0.125	1	
West Nusa Tenggara (0 = Not live in West Nusa Tenggara)	393	0.7678	0.1607	0.125	1	
South Sulawesi (0 = Not live in South Sulawesi)	891	0.7458	0.1551	0.125	1	
Age group						0.0459**
Age group 1	824	0.7536	0.1569	0.125	1	
Age group 2	814	0.7727	0.1534	0.125	1	
Age group 3	718	0.7638	0.1564	0.125	1	
Income						0.0000***
< IDR 1.5 million (USD 113.98)	646	0.7212	0.1729	0.125	1	
IDR 1.5 million (USD 113.98) - IDR 2 million (USD 151.98)	746	0.7482	0.1497	0.125	1	
IDR 2 million (USD 151.98) - IDR 6 million (USD 455.93)	794	0.7958	0.1403	0.25	1	
IDR 6 million (USD 455.93) - 17 million (USD 1,291.83)	125	0.8330	0.1076	0.5	1	
> IDR 17 million (USD 1,291.83)	45	0.8528	0.1467	0.4	1	
Years of education						0.0000***
No formal education	216	0.7182	0.1766	0.125	1	
1-6 years	431	0.7567	0.1700	0.125	1	
7-9 years	634	0.7636	0.1544	0.125	1	
>9 years	1075	0.7749	0.1440	0.125	1	

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table A21b. Quality of life (PCA) and socio-demographic factors: ANOVA's results

	Obs	Mean	Std. Dev	Min	Max	p-value ANOVA
Gender						0.2523
Men	902	0.0338	1.0965	-4.6956	1.6200	
Women	1454	-0.0210	1.1485	-4.6956	1.6200	
Region (%)						0.0002 ***
DI Yogyakarta (0 = Not live in DI Yogyakarta)	1072	0.0916	1.1064	-4.6956	1.6200	
West Nusa Tenggara (0 = Not live in West Nusa Tenggara)	393	0.0190	1.1682	-4.6956	1.6200	
South Sulawesi (0 = Not live in South Sulawesi)	891	-0.1186	1.1287	-4.6956	1.6200	
Age group						0.0325 **
Age group 1	824	-0.0737	1.1380	-4.6956	1.6200	
Age group 2	814	0.0723	1.1090	-4.6956	1.6200	
Age group 3	718	0.0026	1.1372	-4.6956	1.6200	
Income						0.0000 ***
< IDR 1.5 million (USD 113.98)	646	-0.3267	1.2674	-4.6956	1.6200	
IDR 1.5 million (USD 113.98) - IDR 2 million (USD 151.98)	746	-0.1060	1.0838	-4.6956	1.6200	
IDR 2 million (USD 151.98) - IDR 6 million (USD 455.93)	794	0.2463	1.0033	-3.7422	1.6200	
IDR 6 million (USD 455.93) - 17 million (USD 1,291.83)	125	0.5197	0.7439	-1.7906	1.6200	
> IDR 17 million (USD 1,291.83)	45	0.6583	1.0076	-2.7887	1.6200	
Years of education						0.0000 ***
No formal education	216	-0.3575	1.2760	-4.6956	1.6200	
1-6 years	431	-0.0609	1.2400	-4.6956	1.6200	
7-9 years	634	0.0093	1.1207	-4.6956	1.6200	
>9 years	1075	0.0908	1.0380	-4.6956	1.6200	

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table A22. Conversion rate efficiency, socio-demographic factors, and financial literacy: Crosstabulation's results

Variables	Non-efficient	Efficient	Super-efficient	p-value chi square
Total (%)	12.76	86.78	0.46	N/A
Gender (%)				
Male	13.78	85.83	0.39	0.5250
Female	12.10	87.39	0.51	
Region (%)				
DI Yogyakarta (0 = Not live in DI Yogyakarta)	9.53	89.81	0.66	0.0000***
West Nusa Tenggara (0 = Not live in West Nusa Tenggara)	13.17	86.12	0.71	
South Sulawesi (0 = Not live in South Sulawesi)	16.53	83.33	0.13	
Profit category				
Lower profit ( $\leq$ IDR 2,000,000 / USD 151.98)	15.00	84.12	0.88	0.0000***
Higher profit ( $>$ IDR 2,000,000 / USD 151.98)	10.28	89.72	0	
Age group				
Age group 1	15.07	84.18	0.75	0.0070***
Age group 2	9.75	90.25	0	
Age group 3	13.14	86.15	0.71	
Financial literacy				
All answers wrong	18.58	80.53	0.88	0.0140**
1 correct answer	13.79	85.56	0.65	
2 correct answers	13.69	85.85	0.47	
3 correct answers	7.03	92.71	0.26	
4 correct answers	12.21	87.79	0	
5 correct answers	10.91	89.09	0	

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

## Appendix B. Predictors of financial capability: Regressions' results using sub-samples

Table B1a. Predictors of financial capability: Regressions' results using male sub-sample

Variable	Financial capability: Men sample							
	Coefficients		Standard error	P>t	Coefficients		Standard error	P>t
Age	-0.0022	***	0.0004	0.0000	-0.0020	***	0.0004	0.0000
Dummy high income	0.0577	***	0.0077	0.0000	0.0552	***	0.0076	0.0000
Dummy high education	0.0434	***	0.0076	0.0000	0.0438	***	0.0075	0.0000
Dummy West Nusa Tenggara	0.0148		0.0101	0.1440	0.0186	*	0.0101	0.0670
Dummy South Sulawesi	-0.0290	***	0.0086	0.0010	-0.0274	***	0.0085	0.0010
Cognitive ability					0.0713	***	0.0171	0.0000
Cons	0.6412	***	0.0178	0.0000	0.6042	***	0.0192	0.0000
N	899			899				
Regression method	OLS robust standard error			OLS robust standard error				
Prob F-statistics	0.0000			0.0000				
R-squared	0.1572			0.1740				
VIF	1.12			1.11				

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table B1b. Predictors of financial capability: Regressions' results using female sub-sample

Variable	Financial capability: Women sample							
	Coefficients		Standard error	P>t	Coefficients		Standard error	P>t
Age	-0.0018	***	0.0003	0.0000	-0.0017	***	0.0003	0.0000
Dummy high income	0.0535	***	0.0062	0.0000	0.0527	***	0.0061	0.0000
Dummy high education	0.0421	***	0.0060	0.0000	0.0398	***	0.0059	0.0000
Dummy West Nusa Tenggara	0.0006		0.0077	0.9380	0.0031		0.0077	0.6930
Dummy South Sulawesi	-0.0191	***	0.0068	0.0050	-0.0205	***	0.0066	0.0020
Cognitive ability					0.1039	***	0.0146	0.0000
Cons	0.6172	***	0.0138	0.0000	0.5707	***	0.0149	0.0000
N	1444			1444				
Regression method	OLS robust standard error			OLS robust standard error				
Prob F-statistics	0.0000			0.0000				
R-squared	0.1218			0.1530				
VIF	1.13			1.11				

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table B2a. Predictors of financial capability: Regressions' results using DI Yogyakarta sub-sample

Variable	Financial capability: DI Yogyakarta							
	Coefficients		Standard error	P>t	Coefficients		Standard error	P>t
Dummy woman	-0.0090		0.0071	0.2060	-0.0073		0.0070	0.2940
Age	-0.0025	***	0.0003	0.0000	-0.0023	***	0.0003	0.0000
Dummy high income	0.0735	***	0.0073	0.0000	0.0693	***	0.0072	0.0000
Dummy high education	0.0394	***	0.0072	0.0000	0.0394	***	0.0071	0.0000
Cognitive ability					0.0925	***	0.0152	0.0000
Cons	0.6502	***	0.0158	0.0000	0.6044	***	0.0168	0.0000
N	1065			1065				
Regression method	OLS robust standard error			OLS robust standard error				
Prob F-statistics	0.0000			0.0000				
R-squared	0.1826			0.2095				
VIF	1.08			1.07				

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table B2b. Predictors of financial capability: Regressions' results using West Nusa Tenggara sub-sample

Variable	Financial capability: West Nusa Tenggara							
	Coefficients		Standard error	P>t	Coefficients		Standard error	P>t
Dummy woman	-0.0301	***	0.0104	0.0040	-0.0304	***	0.0103	0.0030
Age	-0.0013	**	0.0006	0.0330	-0.0013	**	0.0006	0.0350
Dummy high income	0.0381	***	0.0100	0.0000	0.0373	***	0.0101	0.0000
Dummy high education	0.0363	***	0.0097	0.0000	0.0358	***	0.0097	0.0000
Cognitive ability					0.0204		0.0247	0.4110
Cons	0.6371	***	0.0243	0.0000	0.6292	***	0.0263	0.0000
N	387			387				
Regression method	OLS robust standard error			OLS robust standard error				
Prob F-statistics	0.0000			0.0000				
R-squared	0.1266			0.1281				
VIF	1.10			1.09				

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table B2c. Predictors of financial capability: Regressions' results using South Sulawesi sub-sample

Variable	Financial capability: South Sulawesi							
	Coefficients		Standard error	P>t	Coefficients		Standard error	P>t
Dummy woman	-0.0031		0.0081	0.7050	-0.0037		0.0080	0.6470
Age	-0.0012	***	0.0004	0.0040	-0.0011	***	0.0004	0.0060
Dummy high income	0.0385	***	0.0079	0.0000	0.0411	***	0.0079	0.0000
Dummy high education	0.0482	***	0.0078	0.0000	0.0460	***	0.0077	0.0000
Cognitive ability					0.1078	***	0.0196	0.0000
Cons	0.5807	***	0.0191	0.0000	0.5292	***	0.0206	0.0000
N	891			891				
Regression method	OLS robust standard error			OLS robust standard error				
Prob F-statistics	0.0000			0.0000				
R-squared	0.0904			0.1225				
VIF	1.06			1.05				

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table B3a. Predictors of financial capability: Regressions' results using lower income sub-sample

Variable	Financial capability: Low income							
	Coefficients		Standard error	P>t	Coefficients		Standard error	P>t
Dummy woman	-0.0104		0.0065	0.1100	-0.0106	*	0.0064	0.0980
Age	-0.0025	***	0.0003	0.0000	-0.0023	***	0.0003	0.0000
Dummy high education	0.0364	***	0.0062	0.0000	0.0362	***	0.0062	0.0000
Dummy West Nusa Tenggara	0.0130	*	0.0077	0.0920	0.0164	**	0.0077	0.0330
Dummy South Sulawesi	-0.0095		0.0072	0.1900	-0.0123	*	0.0071	0.0840
Cognitive ability					0.0970	***	0.0144	0.0000
Cons	0.6518	***	0.0144	0.0000	0.6053	***	0.0155	0.0000
N	1380			1380				
Regression method	OLS robust standard error			OLS robust standard error				
Prob F-statistics	0.0000			0.0000				
R-squared	0.1079			0.1371				
VIF	1.14			1.12				

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table B3b. Predictors of financial capability: Regressions' results using higher income sub-sample

Variable	Financial capability: High income							
	Coefficients		Standard error	P>t	Coefficients		Standard error	P>t
Dummy woman	-0.0101		0.0071	0.1590	-0.0090		0.0071	0.2000
Age	-0.0008	**	0.0004	0.0400	-0.0008	**	0.0004	0.0460
Dummy high education	0.0524	***	0.0071	0.0000	0.0505	***	0.0070	0.0000
Dummy West Nusa Tenggara	-0.0100		0.0098	0.3090	-0.0072		0.0100	0.4740
Dummy South Sulawesi	-0.0416	***	0.0078	0.0000	-0.0386	***	0.0078	0.0000
Cognitive ability					0.0742	***	0.0172	0.0000
Cons	0.6477	***	0.0189	0.0000	0.6113	***	0.0199	0.0000
N	963			963				
Regression method	OLS robust standard error			OLS robust standard error				
Prob F-statistics	0.0000			0.0000				
R-squared	0.0908			0.1090				
VIF	1.09			1.08				

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table B4a. Predictors of financial capability: Regressions' results using lower education sub-sample

Variable	Financial capability: Lower education							
	Coefficients		Standard error	P>t	Coefficients		Standard error	P>t
Dummy woman	-0.0072		0.0068	0.2900	-0.0060		0.0067	0.3700
Age	-0.0027	***	0.0003	0.0000	-0.0025	***	0.0003	0.0000
Dummy high income	0.0516	***	0.0068	0.0000	0.0510	***	0.0067	0.0000
Dummy West Nusa Tenggara	0.0023		0.0087	0.7940	0.0065		0.0089	0.4630
Dummy South Sulawesi	-0.0241	***	0.0074	0.0010	-0.0239	***	0.0073	0.0010
Cognitive ability					0.0947	***	0.0163	0.0000
Cons	0.6649	***	0.0151	0.0000	0.6176	***	0.0168	0.0000
N	1272			1272				
Regression method	OLS robust standard error			OLS robust standard error				
Prob F-statistics	0.0000			0.0000				
R-squared	0.1025			0.1285				
VIF	1.10			1.09				

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table B4b. Predictors of financial capability: Regressions' results using higher education sub-sample

Variable	Financial capability: Higher education							
	Coefficients		Standard error	P>t	Coefficients		Standard error	P>t
Dummy woman	-0.0099		0.0067	0.1380	-0.0108		0.0066	0.1030
Age	-0.0006	*	0.0004	0.0970	-0.0005		0.0004	0.1330
Dummy high income	0.0545	***	0.0068	0.0000	0.0520	***	0.0067	0.0000
Dummy West Nusa Tenggara	0.0065		0.0086	0.4490	0.0087		0.0086	0.3090
Dummy South Sulawesi	-0.0262	***	0.0076	0.0010	-0.0262	***	0.0074	0.0000
Cognitive ability					0.0850	***	0.0148	0.0000
Cons	0.6276	***	0.0156	0.0000	0.5879	***	0.0164	0.0000
N	1071			1071				
Regression method	OLS robust standard error			OLS robust standard error				
Prob F-statistics	0.0000			0.0000				
R-squared	0.0687			0.0956				
VIF								
VIF	1.10			1.09				

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

## Appendix C. Financial capability and quality of life: Regressions results using sub-samples

Table C1a. Financial capability and quality of life: Regressions results using male sub-sample

Variable	Quality of life: Male sample											
	Coefficients			Robust standard error	P> z	Coefficients			Robust standard error	P> z		
Financial capability	0.2716	***	0.0435	0.0000	0.2281	***	0.0463	0.0000	0.2165	***	0.0475	0.0000
Age					0.0008		0.0005	0.1260	0.0009		0.0005	0.1030
Dummy high income					0.0572	***	0.0099	0.0000	0.0563	***	0.0098	0.0000
Dummy education					0.0030		0.0102	0.7680	0.0037		0.0103	0.7170
Dummy West Nusa Tenggara					-0.0331	**	0.0152	0.0300	-0.0306	**	0.0150	0.0410
Dummy South Sulawesi					-0.0442	***	0.0107	0.0000	-0.0436	***	0.0106	0.0000
Cognitive ability									0.0427	*	0.0233	0.0670
Cons	0.6066	***	0.0271	0.0000	0.5920	***	0.0399	0.0000	0.5773	***	0.0402	0.0000
N				897				897				897
Regression method	OLS			robust standard error	OLS			robust standard error	OLS			robust standard error
Prob F-statistics				0.0000				0.0000				0.0000
R-squared				0.0470				0.0960				0.0998
VIF				1.00				1.16				1.15

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table C1b. Financial capability and quality of life: Regressions results using female sub-sample

Variable	Quality of life: Female sample											
	Coefficients			Robust standard error	P> z	Coefficients			Robust standard error	P> z		
Financial capability	0.3176	***	0.0363	0.0000	0.2701	***	0.0380	0.0000	0.2460	***	0.0389	0.0000
Age					0.0010	**	0.0004	0.0120	0.0010	**	0.0004	0.0110
Dummy high income					0.0539	***	0.0079	0.0000	0.0547	***	0.0079	0.0000
Dummy education					0.0080		0.0083	0.3380	0.0074		0.0083	0.3710
Dummy West Nusa Tenggara					0.0123		0.0121	0.3080	0.0141		0.0121	0.2450
Dummy South Sulawesi					-0.0241	***	0.0086	0.0050	-0.0254	***	0.0086	0.0030
Cognitive ability									0.0689	***	0.0199	0.0010
Cons	0.5781	***	0.0218	0.0000	0.5486	***	0.0299	0.0000	0.5325	***	0.0297	0.0000
N				1442				1442				1442
Regression method	OLS			robust standard error	OLS			robust standard error	OLS			robust standard error
Prob F-statistics				0.0000				0.0000				0.0000
R-squared				0.0582				0.0958				0.1035
VIF				1.00				1.15				1.14

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table C2a. Financial capability and quality of life: Regressions results using DI Yogyakarta sub-sample

Variable	Quality of life: DI Yogyakarta											
	Coefficients			Robust standard error	P> z	Coefficients			Robust standard error	P> z		
Financial capability	0.3756	***	0.0361	0.0000	0.3707	***	0.0398	0.0000	0.3495	***	0.0410	0.0000
Dummy woman					-0.0087		0.0090	0.3340	-0.0078		0.0089	0.3840
Age					0.0015	***	0.0004	0.0010	0.0015	***	0.0004	0.0010
Dummy high income					0.0362	***	0.0090	0.0000	0.0350	***	0.0090	0.0000
Dummy education					-0.0023		0.0098	0.8160	-0.0015		0.0098	0.8820
Cognitive ability									0.0598	***	0.0203	0.0030
Cons	0.5570	***	0.0222	0.0000	0.4903	***	0.0343	0.0000	0.4745	***	0.0341	0.0000
N				1065				1065				1065
Regression method	OLS			robust standard error	OLS			robust standard error	OLS			robust standard error
Prob F-statistics				0.0000				0.0000				0.0000
R-squared				0.0969				0.1233				0.1307
VIF				1.00				1.14				1.13

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table C2b. Financial capability and quality of life: Regressions results using West Nusa Tenggara sub-sample

Variable	Quality of life: West Nusa Tenggara											
	Coefficients			Robust standard error			P> z					
Financial capability	0.1439			0.0957			0.0917					
Dummy woman				0.0359	**		0.0353	**				
Age				0.0007			0.0007					
Dummy high income				0.0517	***		0.0506	***				
Dummy education				0.0296	*		0.0286	*				
Cognitive ability							0.0378					
Cons	0.6817	***	0.0698	0.0000	0.6292	***	0.0818	0.0000	0.6171	***	0.0816	0.0000
N	385			385			385					
Regression method	OLS robust standard error			OLS robust standard error			OLS robust standard error					
Prob F-statistics	0.1955			0.0009			0.0019					
R-squared	0.0078			0.0465			0.0485					
VIF	1.00			1.13			1.12					

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table C2c. Financial capability and quality of life: Regressions results using West Nusa Tenggara sub-sample

Variable	Quality of life: South Sulawesi											
	Coefficients			Robust standard error			P> z					
Financial capability	0.2330	***	0.0458	0.0000	0.1730	***	0.0462	0.0000	0.1521	***	0.0466	0.0010
Dummy woman					0.0124		0.0103	0.2290	0.0121		0.0103	0.2400
Age					0.0004		0.0005	0.4470	0.0004		0.0005	0.4050
Dummy high income					0.0750	***	0.0101	0.0000	0.0773	***	0.0100	0.0000
Dummy education					0.0065		0.0100	0.5150	0.0062		0.0100	0.5340
Cognitive ability									0.0644	**	0.0256	0.0120
Cons	0.6126	***	0.0273	0.0000	0.5841	***	0.0364	0.0000	0.5652	***	0.0371	0.0000
N	889			889			889					
Regression method	OLS robust standard error			OLS robust standard error			OLS robust standard error					
Prob F-statistics	0.0000			0.0000			0.0000					
R-squared	0.0331			0.0902			0.0970					
VIF	1.00			1.08			1.09					

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table C3a. Financial capability and quality of life: Regressions results using lower income sub-sample

Variable	Quality of life: Low income											
	Coefficients			Robust standard error			P> z					
Financial capability	0.2716	***	0.0381	0.0000	0.2821	***	0.0404	0.0000	0.2539	***	0.0414	0.0000
Dummy woman					0.0070		0.0089	0.4290	0.0066		0.0088	0.4540
Age					0.0011	***	0.0004	0.0090	0.0011	***	0.0004	0.0060
Dummy education					0.0120		0.0089	0.1810	0.0129		0.0089	0.1480
Dummy West Nusa Tenggara					-0.0048		0.0129	0.7090	-0.0015		0.0128	0.9080
Dummy South Sulawesi					-0.0420	***	0.0094	0.0000	-0.0446	***	0.0094	0.0000
Cognitive ability									0.0833	***	0.0208	0.0000
Cons	0.5841	***	0.0224	0.0000	0.5396	***	0.0337	0.0000	0.5178	***	0.0335	0.0000
N	1379			1379			1379					
Regression method	OLS robust standard error			OLS robust standard error			OLS robust standard error					
Prob F-statistics	0.0000			0.0000			0.0000					
R-squared	0.0406			0.0607			0.0721					
VIF	1.00			1.15			1.14					

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table C3b. Financial capability and quality of life: Regressions results using higher income sub-sample

Variable	Quality of life: High income											
	Coefficients			Robust standard error	P> z	Coefficients			Robust standard error	P> z		
Financial capability	0.2176	***	0.0395	0.0000	0.2188	***	0.0418	0.0000	0.2107	***	0.0427	0.0000
Dummy woman					0.0046		0.0089	0.6000	0.0050		0.0089	0.5710
Age					0.0008		0.0005	0.1230	0.0008		0.0005	0.1180
Dummy education					-0.0052		0.0092	0.5750	-0.0056		0.0092	0.5450
Dummy West Nusa Tenggara					-0.0064		0.0130	0.6230	-0.0053		0.0130	0.6860
Dummy South Sulawesi					-0.0192	**	0.0096	0.0460	-0.0184	*	0.0096	0.0560
Cognitive ability									0.0300		0.0215	0.1620
Cons	0.6691	***	0.0250	0.0000	0.6467	***	0.0356	0.0000	0.6372	***	0.0360	0.0000
N				960				960				960
Regression method	OLS robust standard error				OLS robust standard error				OLS robust standard error			
Prob F-statistics	0.0000				0.0000				0.0000			
R-squared	0.0326				0.0411				0.0431			
VIF	1.00				1.11				1.10			

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table C4a. Financial capability and quality of life: Regressions results using lower education sub-sample

Variable	Quality of life: Lower education											
	Coefficients			Robust standard error	P> z	Coefficients			Robust standard error	P> z		
Financial capability	0.3567	***	0.0394	0.0000	0.3250	***	0.0408	0.0000	0.3020	***	0.0418	0.0000
Dummy woman					0.0029		0.0093	0.7560	0.0037		0.0093	0.6910
Age					0.0010	**	0.0004	0.0260	0.0010	**	0.0004	0.0210
Dummy high income					0.0594	***	0.0086	0.0000	0.0602	***	0.0085	0.0000
Dummy West Nusa Tenggara					-0.0118		0.0145	0.4150	-0.0083		0.0144	0.5640
Dummy South Sulawesi					-0.0337	***	0.0095	0.0000	-0.0341	***	0.0095	0.0000
Cognitive ability									0.0737	***	0.0220	0.0010
Cons	0.5556	***	0.0229	0.0000	0.5238	***	0.0346	0.0000	0.5023	***	0.0344	0.0000
N				1271				1271				1271
Regression method	OLS robust standard error				OLS robust standard error				OLS robust standard error			
Prob F-statistics	0.0000				0.0000				0.0000			
R-squared	0.0694				0.1116				0.1200			
VIF	1.00				1.12				1.12			

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table C4b. Financial capability and quality of life: Regressions results using higher education sub-sample

Variable	Quality of life: Higher education											
	Coefficients			Robust standard error	P> z	Coefficients			Robust standard error	P> z		
Financial capability	0.2102	***	0.0390	0.0000	0.1539	***	0.0403	0.0000	0.1389	***	0.0416	0.0010
Dummy woman					0.0077		0.0086	0.3720	0.0072		0.0086	0.4050
Age					0.0011	**	0.0005	0.0190	0.0012	**	0.0005	0.0150
Dummy high income					0.0493	***	0.0091	0.0000	0.0488	***	0.0091	0.0000
Dummy West Nusa Tenggara					0.0035		0.0122	0.7720	0.0048		0.0122	0.6950
Dummy South Sulawesi					0.0301	***	0.0097	0.0020	-0.0305	***	0.0096	0.0020
Cognitive ability									0.0445	**	0.0206	0.0310
Cons	0.6461	***	0.0248	0.0000	0.6207	***	0.0328	0.0000	0.6092	***	0.0329	0.0000
N				1068				1068				1068
Regression method	OLS robust standard error				OLS robust standard error				OLS robust standard error			
Prob F-statistics	0.0000				0.0000				0.0000			
R-squared	0.0265				0.0666				0.0709			
VIF	1.00				1.11				1.11			

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own wor

## Appendix D. Conversion rate efficiency: Regressions' results using sub-samples

Table D1a. Conversion rate efficiency: Regressions' results using male sub-sample

Variable	Conversion efficiency (order-m) - Male Sample															
	762			754			754			743						
	Coefficients	Robust standard error	P> t	Coefficients	Robust standard error	P> t	Coefficients	Robust standard error	P> t	Coefficients	Robust standard error	P> t				
Financial literacy	-0.0183	0.0267	0.4930	-0.0175	0.0274	0.5220	-0.0092	0.0272	0.7360	-0.0055	0.0270	0.8400				
Self-efficacy				-0.0072	0.0376	0.8480	-0.0069	0.0375	0.8550	-0.0072	0.0371	0.8460				
Cognitive skill							-0.0739	**	0.0332	0.0260	-0.0748	**	0.0334	0.0250		
Dummy West Nusa Tenggara										0.0419	*	0.0246	0.0890			
Dummy South Sulawesi										0.0365	**	0.0142	0.0110			
Age										-0.0004		0.0009	0.6500			
Constant	1.0793	***	0.0138	0.0000	1.0840	***	0.0273	0.0000	1.1123	***	0.0285	0.0000	1.1075	***	0.0489	0.0000
N	762			754			754			743						
Regression Method	OLS robust standard error			OLS robust standard error			OLS robust standard error			OLS robust standard error						
Prob F	0.4928			0.7792			0.1280			0.0215						
R-squared	0.0006			0.0007			0.0088			0.0216						
VIF	1.00			1.04			1.04			1.09						

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table D1b. Conversion rate efficiency: Regressions' results using female sub-sample

Variable	Conversion efficiency (order-m) - Female sample															
	Coefficients			Robust standard error	P> t	Coefficients			Robust standard error	P> t	Coefficients			Robust standard error	P> t	
Financial literacy	-0.0850	***	0.0202	0.0000	-0.0691	***	0.0206	0.0010	-0.0662	***	0.0205	0.0010	-0.0478	**	0.0212	0.0240
Self-efficacy					-0.0878	***	0.0268	0.0010	-0.0802	***	0.0273	0.0030	-0.0811	***	0.0278	0.0040
Cognitive skill									-0.0643	**	0.0252	0.0110	-0.0696	***	0.0260	0.0080
Dummy West Nusa Tenggara													-0.0070		0.0135	0.6070
Dummy South Sulawesi													0.0365	***	0.0123	0.0030
Age													-0.0002		0.0005	0.6360
Constant	1.0967	***	0.0105	0.0000	1.1472	***	0.0199	0.0000	1.1693	***	0.0211	0.0000	1.1609	***	0.0279	0.0000
N	1182				1182				1182				1159			
Regression Method	OLS robust standard error				OLS robust standard error				OLS robust standard error				OLS robust standard error			
Prob F	0.0000				0.0000				0.0000				0.0000			
R-squared	0.0131				0.0207				0.0265				0.0356			
VIF	1.00				1.06				1.05				1.11			

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table D2a. Conversion rate efficiency: Regressions' results using DI Yogyakarta sub-sample

Variable	Conversion efficiency (order-m) - DI Yogyakarta															
	Coefficients			Robust standard error	P> t	Coefficients			Robust standard error	P> t	Coefficients			Robust standard error	P> t	
Financial literacy	-0.0601	***	0.0194	0.0020	-0.0457	**	0.0193	0.0180	-0.0430	**	0.0194	0.0270	-0.0351	*	0.0190	0.0650
Self-efficacy					-0.0789	***	0.0264	0.0030	-0.0775	***	0.0271	0.0040	-0.0753	***	0.0276	0.0070
Cognitive skill									-0.0170		0.0286	0.5530	-0.0159		0.0287	0.5810
Dummy women													-0.0059		0.0106	0.5770
Age													0.0002		0.0005	0.6990
Constant	1.0767	***	0.0114	0.0000	1.1227	***	0.0214	0.0000	1.1281	***	0.0219	0.0000	1.1157	***	0.0300	0.0000
N	913				912				912				889			
Regression Method	OLS robust standard error				OLS robust standard error				OLS robust standard error				OLS robust standard error			
Prob F	0.0020				0.0004				0.0007				0.0098			
R-squared	0.0096				0.0179				0.0184				0.0160			
VIF	1.00				1.07				1.08				1.06			

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table D2b. Conversion rate efficiency: Regressions' results using West Nusa Tenggara sub-sample

Variable	Conversion efficiency (order-m) - West Nusa Tenggara																																	
	Coefficients			Robust standard error			P> t			Coefficients			Robust standard error			P> t																		
Financial literacy	0.0539			0.0498			0.2810			0.0466			0.0539			0.3880			0.0471			0.0536			0.3810			0.0336			0.0519			0.5170
Self-efficacy									0.0800				0.0773			0.3020			0.0793			0.0747			0.2890			0.0507			0.0717			0.4800
Cognitive skill																			-0.0034			0.0652			0.9590			-0.0005			0.0641			0.9940
Dummy women																											-0.0446			0.0244	*		0.0680	
Age																											-0.0003			0.0016			0.8730	
Constant	1.0460	***		0.0218			0.0000			0.9964	***		0.0470			0.0000			0.9980	***		0.0493			0.0000			1.0579			0.0739	***		0.0000
N				281						274						274						271												
Regression Method	OLS			robust standard error						OLS			robust standard error						OLS			robust standard error												
Prob F				0.2808						0.2633						0.4372						0.3717												
R-squared				0.0050						0.0109						0.0109						0.0240												
VIF				1.00						1.04						1.06						1.06												

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table D2c. Conversion rate efficiency: Regressions' results using South Sulawesi sub-sample

Variable	Conversion efficiency (order-m) - South Sulawesi																																	
	Coefficients			Robust standard error			P> t			Coefficients			Robust standard error			P> t																		
Financial literacy	-0.0599	*		0.0335			0.0740			-0.0494			0.0338			0.1440			-0.0638	*		0.0333			0.0560			-0.0696	**		0.0343			0.0430
Self-efficacy										-0.0660	*		0.0388			0.0890			-0.0450			0.0386			0.2440			-0.0498			0.0384			0.1950
Cognitive skill																			-0.1623	***		0.0318			0.0000			-0.1711	***		0.0326			0.0000
Dummy women																											-0.0031			0.0150			0.8360	
Age																											-0.0011			0.0008			0.1830	
Constant	1.1087	***		0.0145			0.0000			1.1478	***		0.0287			0.0000			1.2115	***		0.0312			0.0000			1.2678	***		0.0485			0.0000
N				750						750						750						742												
Regression Method	OLS			robust standard error						OLS			robust standard error						OLS			robust standard error												
Prob F				0.0743						0.0590						0.0000						0.0000												
R-squared				0.0043						0.0077						0.0361						0.0408												
VIF				1.00						1.04						1.04						1.04												

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table D3a. Conversion rate efficiency: Regressions' results using lower profit sub-sample

Variable	Conversion efficiency (order-m)- low profit <= IDR 2,000,000															
	Coefficients			Robust standard error	P> t	Coefficients			Robust standard error	P> t	Coefficients			Robust standard error	P> t	
Financial literacy	-0.0736	***	0.0232	0.0020	-0.0668	***	0.0241	0.0060	-0.0598	**	0.0239	0.0120	-0.0395	0.0245	0.1070	
Self-efficacy					-0.0491		0.0353	0.1640	-0.0483		0.0352	0.1710	-0.0518	0.0357	0.1470	
Cognitive skill									-0.0692	**	0.0299	0.0210	-0.0815	**	0.0322	0.0120
Dummy West Nusa Tenggara													0.0007		0.0171	0.9680
Dummy South Sulawesi													0.0341	**	0.0153	0.0270
Dummy women													-0.0154		0.0133	0.2460
Age													0.0005		0.0006	0.3980
Constant	1.1084	***	0.0118	0.0000	1.1369	***	0.0235	0.0000	1.1638	***	0.0256	0.0000	1.1399	***	0.0361	0.0000
N	1020			1016			1016			994						
Regression Method	OLS robust standard error			OLS robust standard error			OLS robust standard error			OLS robust standard error						
Prob F	0.0015			0.0021			0.0006			0.0024						
Adjusted R-squared	0.0084			0.0105			0.0165			0.0234						
VIF	1.00			1.06			1.05			1.11						

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table D3b. Conversion rate efficiency: Regressions' results using higher profit sub-sample

Variable	Conversion efficiency (order-m)- high profit > IDR 2,000,000															
	Model 1			Model 2			Model 3			Model 4						
	Coefficients	Robust standard error	P> t	Coefficients	Robust Standard error	P> t	Coefficients	Robust standard error	P> t	Coefficients	Robust standard error	P> t				
Financial literacy	-0.0287	0.0226	0.2050	-0.0209	0.0224	0.3490	-0.0181	0.0225	0.4220	-0.0138	0.0230	0.5500				
Self-efficacy				-0.0430	0.0273	0.1160	-0.0333	0.0281	0.2360	-0.0322	0.0279	0.2480				
Cognitive skill							-0.0697	***	0.0259	0.0070	-0.0582	**	0.0261	0.0260		
Dummy West Nusa Tenggara										0.0274		0.0185	0.1390			
Dummy South Sulawesi										0.0458	***	0.0116	0.0000			
Dummy women										-0.0069		0.0105	0.5120			
Age										-0.0015	**	0.0007	0.0240			
Constant	1.0650	***	0.0114	0.0000	1.0910	***	0.0225	0.0000	1.1136	***	0.0226	0.0000	1.1480	***	0.0371	0.0000
N	924			920			920			908						
Regression Method	OLS robust standard error			OLS robust standard error			OLS robust standard error			OLS robust standard error						
Prob F	0.2046			0.1819			0.0033			0.0000						
Adjusted R-squared	0.0019			0.0042			0.0128			0.0403						
VIF	1.00			1.05			1.05			1.09						

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table D4a. Conversion rate efficiency: Regressions' results using age group 1

Variable	Conversion efficiency (order-m)- Age < 35 years																	
	Coefficients			Robust standard error			P> t			Coefficients			Robust standard error			P> t		
Financial literacy	-0.0006			0.0274	0.9830		0.0085	0.0277	0.7590	0.0110	0.0280	0.6940	0.0371			0.0290	0.2000	
Self-efficacy						-0.0618	0.0454	0.1740		-0.0581	0.0456	0.2030	-0.0753	*	0.0454	0.0970		
Cognitive skill										-0.0611	0.0385	0.1130	-0.0729	*	0.0391	0.0630		
Dummy West Nusa Tenggara													0.0355	**	0.0177	0.0460		
Dummy South Sulawesi													0.0783	***	0.0184	0.0000		
Dummy women													-0.0317	**	0.0151	0.0370		
Constant	1.0786	***	0.0139	0.0000		1.1151	***	0.0325	0.0000	1.1383	***	0.0332	0.0000		1.1288	***	0.0343	0.0000
N				670						665						665		
Regression Method	OLS			robust standard error			OLS			robust standard error			OLS			robust standard error		
Prob F				0.9831						0.3917						0.1549		
Adjusted R-squared				0.0000						0.0027						0.0074		
VIF				1.00						1.03						1.03		

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table D4b. Conversion rate efficiency: Regressions' results using age group 2

Variable	Conversion efficiency (order-m)- age group 2																	
	Coefficients			Robust standard error			P> t			Coefficients			Robust standard error			P> t		
Financial literacy	-0.0710	***	0.0250	0.0050		-0.0682	**	0.0265	0.0100	-0.0644	**	0.0264	0.0150	-0.0579	**	0.0269	0.0320	
Self-efficacy						-0.0195		0.0324	0.5470	-0.0161		0.0327	0.6230	-0.0176		0.0330	0.5930	
Cognitive skill										-0.0533	*	0.0300	0.0760	-0.0560	*	0.0305	0.0670	
Dummy West Nusa Tenggara														-0.0124		0.0191	0.5170	
Dummy South Sulawesi														0.0072		0.0133	0.5880	
Dummy women														0.0153		0.0123	0.2140	
Constant	1.0791	***	0.0133	0.0000		1.0911	***	0.0228	0.0000	1.1114	***	0.0241	0.0000		1.1004	***	0.0274	0.0000
N				677						675						675		
Regression Method	OLS			robust s.e.			OLS			robust s.e.			OLS			robust s.e.		
Prob F				0.0047						0.0115						0.0040		
Adjusted R-squared				0.0120						0.0127						0.0181		
VIF				1.00						1.06						1.05		

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table D4c. Conversion rate efficiency: Regressions' results using age group 3

Variable	Conversion efficiency (order-m)- age group 3															
	Coefficients			Robust standard error	P> t	Coefficients			Robust standard error	P> t	Coefficients			Robust standard error	P> t	
Financial literacy	-0.1050	***	0.0328	0.0010	-0.0905	***	0.0324	0.0050	-0.0819	**	0.0318	0.0100	-0.0754	**	0.0317	0.0180
Self-efficacy					-0.0737	*	0.0390	0.0590	-0.0667	*	0.0398	0.0940	-0.0570		0.0387	0.1420
Cognitive skill									-0.0890	**	0.0379	0.0190	-0.0925	**	0.0370	0.0130
Dummy West Nusa Tenggara													-0.0033		0.0359	0.9260
Dummy South Sulawesi													0.0398	**	0.0174	0.0230
Dummy women													-0.0178		0.0163	0.2740
Constant	1.1105	***	0.0165	0.0000	1.1531	***	0.0305	0.0000	1.1828	***	0.0327	0.0000	1.1703	***	0.0340	0.0000
N	563				562				562				562			
Regression Method	OLS robust s.e.				OLS robust s.e.				OLS robust s.e.				OLS robust s.e.			
Prob F	0.0014				0.0025				0.0006				0.0001			
Adjusted R-squared	0.0176				0.0234				0.0337				0.0462			
VIF	1.00				1.07				1.06				1.07			

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

## Appendix E. Financial literacy and household financial decision-making authority

Table E1a. Financial literacy and household financial decision-making authority: Regressions' results using male sub-sample

Variable	Decision-making																			
	Coefficients			Standard error			P> z			Coefficients			Standard error			P> z				
Financial literacy	0.6564	**	0.2748	0.0170	0.7501	***	0.2854	0.0090	0.7237	**	0.2876	0.0120	0.6932	**	0.2887	0.0160	0.6289	**	0.3006	0.0360
Self-efficacy					-0.4344		0.3940	0.2700	-0.4748		0.3981	0.2330	-0.4591		0.3987	0.2500	-0.4628		0.3988	0.2460
Self-control					-0.1496		0.4964	0.7630	-0.0766		0.5058	0.8800	-0.1461		0.5090	0.7740	-0.1550		0.5092	0.7610
Trust									0.3724		0.4904	0.4480	0.3522		0.4911	0.4730	0.3631		0.4916	0.4600
Cognitive ability													0.4044		0.3048	0.1840	0.4110		0.3050	0.1780
Education																	0.1074		0.1404	0.4440
Coefficient	-0.2261	*	0.1345	0.0930	0.1203		0.3462	0.7280	-0.0710		0.4280	0.8680	-0.1909		0.4381	0.6630	-0.2204		0.4399	0.6160
N	904			904			904			904			904							
Regression Method	Logistic regression			Logistic regression			Logistic regression			Logistic regression			Logistic regression							
Prob > chi-square	0.0165			0.0588			0.0905			0.0812			0.1095							
Pseudo R-squared	0.0046			0.0059			0.0064			0.0078			0.0083							
VIF	1.00			1.14			1.14			1.12			1.13							

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table E1b. Financial literacy and household financial decision-making authority: Regressions' results using female sub-sample

Variable	Decision-making																
	Coefficients			Standard error			P> z			Coefficients			Standard error			P> z	
Financial literacy	-0.3171	0.2256	0.1600	-0.3074	0.2336	0.1880	-0.3265	0.2343	0.1630	-0.3516	0.2351	0.1350	-0.3448	0.2370	0.1460		
Confidence				0.1935	0.3087	0.5310	0.1537	0.3105	0.6210	0.1309	0.3111	0.6740	0.1334	0.3113	0.6680		
Self-control				-0.4788	0.4043	0.2360	-0.3862	0.4112	0.3480	-0.5237	0.4162	0.2080	-0.5212	0.4164	0.2110		
General trust							0.5012	0.4056	0.2170	0.5782	0.4075	0.1560	0.5798	0.4075	0.1550		
Cognitive ability										0.6393	**	0.2642	0.0160	0.6423	**	0.2645	0.0150
Education													-0.0247	0.1090	0.8210		
Coefficient	0.2861	***	0.0992	0.0040	0.4728	*	0.2646	0.0740	0.2044	0.3421	0.5500	0.0025	0.3527	0.9940	0.0048	0.3528	0.9890
N	1454			1454			1454			1454			1454				
Regression Method	Logistic regression																
Prob > chi-square	0.1597			0.3303			0.2917			0.0540			0.0909				
Pseudo R-squared	0.0010			0.0017			0.0025			0.0054			0.0054				
VIF	1.00			1.16			1.14			1.13			1.12				

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table E2a. Financial literacy and household financial decision-making authority: Regressions' results using DI Yogyakarta sub-sample

Variable	Decision-making																		
	Coefficients			Standard error			P> z			Coefficients			Standard error			P> z			
Financial literacy	0.3358	0.2421	0.1660	0.4667	*	0.2557	0.0680	0.5484	**	0.2600	0.0350	0.5292	**	0.2624	0.0440	0.4081	0.2697	0.1300	
Confidence				-1.1999	***	0.3668	0.0010	-1.1723	***	0.3673	0.0010	-1.1697	***	0.3676	0.0010	-1.1749	***	0.3685	0.0010
Self-control				0.8464	*	0.4831	0.0800	0.7541		0.4861	0.1210	0.7191		0.4905	0.1430	0.7239		0.4912	0.1410
General trust								-0.9595	*	0.5320	0.0710	-0.9535	*	0.5320	0.0730	-1.0363	*	0.5355	0.0530
Cognitive ability												0.1529		0.2819	0.5880	0.1540		0.2825	0.5860
Women																-0.0293		0.1282	0.8190
Education																0.2587	**	0.1305	0.0470
Constant	0.1700	0.1208	0.1590	0.3306		0.3116	0.2890	0.8262	**	0.4162	0.0470	0.7857	*	0.4230	0.0630	0.7829		0.4378	0.0740
N	1071			1071			1071			1071			1071						
Regression Method	Logistic regression			Logistic regression			Logistic regression			Logistic regression			Logistic regression						
Prob > chi-square	0.1649			0.0040			0.0023			0.0047			0.0039						
Pseudo R-squared	0.0013			0.0091			0.0114			0.0116			0.0143						
VIF	1.00			1.18			1.16			1.15			1.13						

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table E2b. Financial literacy and household financial decision-making authority: Regressions' results using West Nusa Tenggara sub-sample

Variable	Decision-making														
	Coefficients	Standard error	P> z												
Financial literacy	0.8003 *	0.4736	0.0910	1.0220 **	0.4950	0.0390	0.9525 *	0.4981	0.0560	0.9163 *	0.5029	0.0680	0.7955	0.5092	0.1180
Confidence				1.0037	0.7191	0.1630	0.9413	0.7239	0.1940	1.0549	0.7303	0.1490	1.0337	0.7346	0.1590
Self-control				-2.8761 ***	0.8743	0.0010	-2.7109 ***	0.8861	0.0020	-2.6867 ***	0.8889	0.0030	-3.0887 ***	0.9213	0.0010
General trust							1.7592 **	0.7426	0.0180	1.8345 **	0.7492	0.0140	1.9885 ***	0.7611	0.0090
Cognitive ability										1.2834 **	0.5592	0.0220	1.2020 **	0.5651	0.0330
Women													-0.1293	0.2327	0.5780
Education													0.3647	0.2264	0.1070
Constant	0.3635	0.2083	0.0810	0.8368	0.5663	0.1400	-0.0473	0.6780	0.9440	-0.6865	0.7384	0.3530	-0.4912	0.7766	0.5270
N	395			395			395			395			395		
Regression Method	Logistic regression														
Prob > chi-square	0.0895			0.0026			0.0005			0.0001			0.0001		
Pseudo R-squared	0.0053			0.0260			0.0366			0.4640			0.0529		
VIF	1.00			1.17			1.14			1.12			1.14		

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table E2c. Financial literacy and household financial decision-making authority: Regressions' results using South Sulawesi sub-sample

Variable	Decision-making														
	Coefficients	Standard error	P> z												
Financial literacy	-1.0639 ***	0.3111	0.0010	-1.1978 ***	0.3207	0.0000	-1.1950 ***	0.3221	0.0000	-1.1723 ***	0.3229	0.0000	-0.9834 ***	0.3306	0.0030
Confidence				0.9596 **	0.3896	0.0140	0.9515 **	0.3996	0.0170	0.9021 **	0.4012	0.0250	1.0078 **	0.4052	0.0130
Self-control				-0.9226 *	0.4905	0.0600	-0.9074 *	0.5180	0.0800	-1.0453 **	0.5254	0.0470	-1.0102 *	0.5282	0.0560
General trust							0.0461	0.5059	0.9270	0.0902	0.5072	0.8590	0.1041	0.5102	0.8380
Cognitive ability										0.5897 *	0.3434	0.0860	0.5872 *	0.3456	0.0890
Women													0.3622 **	0.1433	0.0110
Education													-0.2320	0.1409	0.1000
Constant	0.3472 ***	0.1272	0.0060	0.3834	0.3375	0.2560	0.3568	0.4456	0.4230	0.1860	0.4571	0.6840	-0.0974	0.4771	0.8380
N	892			892			892			892			892		
Regression Method	Logistic regression														
Prob > chi-square	0.0006			0.0002			0.0007			0.0005			0.0000		
Pseudo R-squared	0.0096			0.0156			0.0157			0.0180			0.0260		
VIF	1.00			1.12			1.17			1.16			1.14		

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table E3a. Financial literacy and household financial decision-making authority: Regressions' results using lower income group sub-sample

Variable	Decision-making																
	Coefficients	Standard error	P> z														
Financial literacy	0.0934	0.2290	0.6830	0.1345	0.2363	0.5690	0.1137	0.2384	0.6330	0.0759	0.2395	0.7510	0.0963	0.2432	0.6920		
Confidence				-0.1960	0.3236	0.5450	-0.2130	0.3247	0.5120	-0.2129	0.3252	0.5130	-0.1917	0.3260	0.5570		
Self-control				-0.0904	0.4241	0.8310	-0.0450	0.4297	0.9170	-0.1357	0.4325	0.7540	-0.1362	0.4337	0.7530		
General trust							0.2792	0.4215	0.5080	0.3172	0.4225	0.4530	0.3061	0.4229	0.4690		
Cognitive ability										0.5703	**	0.2567	0.0260	0.5665	**	0.2568	0.0270
Women													0.1030	0.1152	0.3710		
Education													-0.0026	0.1125	0.9820		
Constant	0.1292	0.1011	0.2010	0.2927	0.2919	0.3160	0.1449	0.3673	0.6930	-0.0457	0.3778	0.9040	-0.1258	0.3886	0.7460		
N	1392			1392			1392			1392			1392				
Regression Method	Logistic regression																
Prob > chi-square	0.6833			0.8774			0.8909			0.2970			0.4387				
Pseudo R-squared	0.0001			0.0004			0.0006			0.0032			0.0036				
VIF	1.00			1.10			1.10			1.09			1.08				

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table E3b. Financial literacy and household financial decision-making authority: Regressions' results using higher income group sub-sample

Variable	Decision-making																
	Coefficients	Standard error	P> z														
Financial literacy	0.0358	0.2653	0.8930	0.0787	0.2759	0.7750	0.0627	0.2764	0.8210	0.0437	0.2770	0.8750	0.0002	0.2861	1.0000		
Confidence				0.1898	0.3746	0.6120	0.0989	0.3816	0.7960	0.0971	0.3819	0.7990	0.0729	0.3827	0.8490		
Self-control				-0.6422	0.4682	0.1700	-0.5074	0.4799	0.2900	-0.6366	0.4869	0.1910	-0.5885	0.4889	0.2290		
General trust							0.6033	0.4694	0.1990	0.6172	0.4701	0.1890	0.6566	0.4722	0.1640		
Cognitive ability										0.5312	*	0.3150	0.0920	0.5216	*	0.3155	0.0980
Women													0.1226	0.1320	0.3530		
Education													0.1276	0.1348	0.3440		
Constant	0.0513	0.1283	0.6890	0.3373	0.3074	0.2720	0.0315	0.3886	0.9350	-0.1180	0.3992	0.7680	-0.2660	0.4201	0.5270		
N	966			966			966			966			966				
Regression Method	Logistic regression																
Prob > chi-square	0.8927			0.5908			0.4675			0.2666			0.3281				
Pseudo R-squared	0.0000			0.0014			0.0027			0.0048			0.0060				
VIF	1.00			1.22			1.21			1.18			1.16				

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table E4a. Financial literacy and household financial decision-making authority: Regressions' results using age group 1 sub-sample

Variable	Decision-making														
	Coefficients	Standard error	P> z												
Financial literacy	-0.0356	0.2957	0.9040	0.0252	0.3037	0.9340	0.0315	0.3043	0.9180	0.0236	0.3049	0.9380	-0.0805	0.3109	0.7960
Confidence				-0.1830	0.4545	0.6870	-0.1712	0.4562	0.7070	-0.1611	0.4570	0.7240	-0.2046	0.4589	0.6560
Self-control				-0.3689	0.5459	0.4990	-0.4018	0.5559	0.4700	-0.5434	0.5634	0.3350	-0.6259	0.5667	0.2690
General trust							-0.1657	0.5279	0.7540	-0.1245	0.5290	0.8140	-0.1386	0.5301	0.7940
Cognitive ability										0.5810	0.3489	0.0960	0.5415	0.3507	0.1230
Women													-0.1752	0.1475	0.2350
Education													0.2052	0.1461	0.1600
Constant	0.2028	0.1435	0.1580	0.5347	0.3756	0.1550	0.6261	0.4753	0.1880	0.4390	0.4891	0.3690	0.5810	0.5104	0.2550
N	823			823			823			823			823		
Regression Method	Logistic regression														
Prob > chi-square	0.9041			0.8178			0.9052			0.5750			0.3708		
Pseudo R-squared	0.0000			0.0008			0.0009			0.0034			0.0067		
VIF	1.00			1.13			1.13			1.11			1.10		

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table E4b. Financial literacy and household financial decision-making authority: Regressions' results using age group 2 sub-sample

Variable	Decision-making															
	Coefficients	Standard error	P> z													
Financial literacy	0.0097	0.2930	0.9740	0.0080	0.3019	0.9790	-0.0348	0.3034	0.9090	-0.0592	0.3043	0.8460	-0.0484	0.3091	0.8760	
Confidence				-0.1307	0.4080	0.7490	-0.2057	0.4111	0.6170	-0.2083	0.4117	0.6130	-0.1986	0.4120	0.6300	
Self-control				0.2173	0.5370	0.6860	0.4018	0.5469	0.4630	0.3110	0.5515	0.5730	0.3202	0.5526	0.5620	
General trust							1.0153	0.5204	0.0510	1.0494	**	0.5219	0.0440	1.0624	0.5225	0.0420
Cognitive ability										0.4746	0.3395	0.1620	0.4783	0.3402	0.1600	
Women													0.1479	0.1462	0.3120	
Education													0.0810	0.1437	0.5730	
Coefficient	0.0158	0.1357	0.9080	-0.0431	0.3599	0.9050	-0.5905	0.4572	0.1960	-0.7499	0.4721	0.1120	-0.9023	0.4923	0.0670	
N	816			816			816			816			816			
Regression Method	Logistic regression															
Prob > chi-square	0.9736			0.9776			0.4004			0.3058			0.4039			
Pseudo R-squared	0.0000			0.0002			0.0036			0.0053			0.0064			
VIF	1.00			1.15			1.13			1.12			1.10			

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table E4c. Financial literacy and household financial decision-making authority: Regressions' results using age group 3 sub-sample

Variable	Decision-making																
	Coefficients	Standard error	P> z	Coefficients	Standard error	P> z	Coefficients	Standard error	P> z	Coefficients	Standard error	P> z	Coefficients	Standard error	P> z		
Financial literacy	0.2016	0.3176	0.5260	0.3084	0.3382	0.3620	0.2676	0.3412	0.4330	0.2117	0.3436	0.5380	0.3815	0.3567	0.2850		
Confidence				0.0613	0.4045	0.8800	0.0009	0.4102	0.9980	-0.0114	0.4107	0.9780	0.0660	0.4142	0.8730		
Self-control				-0.8307	0.5469	0.1290	-0.7319	0.5573	0.1890	-0.8355	0.5625	0.1370	-0.8256	0.5660	0.1450		
General trust							0.5324	0.5847	0.3630	0.5440	0.5862	0.3530	0.5832	0.5898	0.3230		
Cognitive ability										0.6263	*	0.3501	0.0740	0.6225	*	0.3517	0.0770
Women													0.4235	***	0.1577	0.0070	
Education													-0.2159		0.1710	0.2070	
Coefficient	0.0995	0.1340	0.4580	0.5687	0.3565	0.1110	0.3025	0.4604	0.5110	0.1313	0.4711	0.7800	-0.1972	0.4910	0.6880		
N		719			719			719			719			719			
Regression Method		Logistic regression			Logistic regression			Logistic regression			Logistic regression			Logistic regression			
Prob > chi-square		0.5254			0.4143			0.4499			0.2265			0.2265			
Pseudo R-squared		0.0004			0.0029			0.0037			0.0070			0.0070			
VIF		1.00			1.18			1.18			1.15			1.14			

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

## Appendix F. Financial decision-making authority and life satisfaction: Regressions' results using sub-samples

Table F1a. Durbin-Wu-Hausman test for endogeneity: Result 1

Variable	Household financial decision-making authority		
	Coefficients	Standard error	P> z
Age	0.0058 **	0.0028	0.0380
Dummy woman	-0.0029	0.0584	0.9610
Dummy high income	-0.0144	0.0583	0.8040
Dummy high education	0.0365	0.0595	0.5400
Dummy West Nusa Tenggara	-0.1191	0.0842	0.1570
Dummy South Sulawesi	0.0476	0.0616	0.4400
Constant	-0.9059 ***	0.1406	0.0000
N		2358	
Regression Method		Probit regression	
Prob > chi-square		0.1331	
Pseudo R-squared		0.0037	

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table F1b. Durbin-Wu-Hausman test for endogeneity: Result 2

Variable	Life satisfaction		
	Coefficients	Standard error	P> z
Dummy woman	0.0050	0.0471	0.9160
Dummy high income	0.2556 ***	0.0473	0.0000
Dummy high education	0.0652	0.0461	0.1580
Dummy West Nusa Tenggara	0.0926	0.0867	0.2860
Dummy South Sulawesi	0.0777	0.0524	0.1380
Financial decision-making authority	-0.1007 **	0.0519	0.0520
Residual	-1.3732	1.2164	0.2590
Cut 1	-2.3851	0.3251	
Cut 2	-1.6034	0.3200	
Cut 3	-0.6775	0.3189	
Cut 4	1.0709	0.3194	
N		2358	
Regression Method		Ordered probit	
Prob > chi-square		0.0000	
Pseudo R-squared		0.0086	

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table F2a. Household financial decision-making authority and life satisfaction: Regressions' results using male sub-sample

Variable	Life satisfaction							
	Coefficients		Robust standard error	P> z	Coefficients		Robust standard error	P> z
Financial decision-making authority	0.0543		0.0809	0.5020	0.0416		0.0828	0.6160
Age					-0.0013		0.0035	0.7160
High education					0.0520		0.0782	0.5060
High income					0.3017 ***		0.0774	0.0000
Dummy West Nusa Tenggara					0.4418 ***		0.1116	0.0000
Dummy South Sulawesi					0.0249		0.0835	0.7650
Cut 1	-2.1178		0.1057		-1.9640		0.1931	
Cut 2	-1.3941		0.0662		-1.2373		0.1831	
Cut 3	-0.5015		0.0491		-0.3239		0.1793	
Cut 4	1.2794		0.0606		1.5042		0.1879	
N			904				904	
Regression Method	Ordered probit robust standard error				Ordered probit robust standard error			
Prob > chi-square			0.5024				0.0000	
Pseudo R-squared			0.0002				0.0174	
VIF			1.00				1.11	

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table F2b. Household financial decision-making authority and life satisfaction: Regressions' results using female sub-sample

Variable	Life satisfaction							
	Coefficients		Robust standard error	P> z	Coefficients		Robust standard error	P> z
Financial decision-making authority	-0.2029	***	0.0631	0.0010	-0.1924	***	0.0644	0.0030
Age					-0.0027		0.0029	0.3480
High education					0.0259		0.0611	0.6720
High income					0.2380 ***		0.0606	0.0000
Dummy West Nusa Tenggara					-0.0155		0.0825	0.8510
Dummy South Sulawesi					0.0692		0.0643	0.2820
Cut 1	-2.2592		0.0898		-2.2584		0.1596	
Cut 2	-1.4402		0.0526		-1.4383		0.1419	
Cut 3	-0.5092		0.0388		-0.4982		0.1406	
Cut 4	1.1915		0.0466		1.2166		0.1449	
N			1454				1454	
Regression Method	Ordered probit robust standard error				Ordered probit robust standard error			
Prob > chi-square			0.0013				0.0000	
Pseudo R-squared			0.0029				0.0086	
VIF			1.00				1.11	

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table F3a. Household financial decision-making authority and life satisfaction: Regressions' results using DI Yogyakarta sub-sample

Variable	Life satisfaction					
	Coefficients	Robust standard error	P> z	Coefficients	Robust standard error	P> z
Financial decision-making authority	-0.0253	0.0748	0.7360	-0.0338	0.0762	0.6580
Woman				0.0541	0.0674	0.4230
Age				-0.0020	0.0031	0.5340
High education				-0.0128	0.0756	0.8660
High income				0.3201 ***	0.0700	0.0000
Cut 1	-2.3581	0.1191		-2.3205	0.1950	
Cut 2	-1.2834	0.0572		-1.2361	0.1659	
Cut 3	-0.4271	0.0445		-0.3711	0.1638	
Cut 4	1.2919	0.0559		1.3712	0.1701	
N		1071			1071	
Regression Method	Ordered probit robust standard error			Ordered probit robust standard error		
Prob > chi-square		0.7356			0.0004	
Pseudo R-squared		0.0000			0.0089	
VIF		1.00			1.06	

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table F3b. Household financial decision-making authority and life satisfaction: Regressions' results using West Nusa Tenggara sub-sample

Variable	Life satisfaction					
	Coefficients	Robust standard error	P> z	Coefficients	Robust standard error	P> z
Financial decision-making authority	-0.2325 *	0.1307	0.0750	-0.2978 **	0.1315	0.0240
Woman				-0.3397 ***	0.1250	0.0070
Age				0.0052	0.0071	0.4640
High education				0.1548	0.1191	0.1930
High income				0.4734 ***	0.1224	0.0000
Cut 1	-2.3788	0.1842		-2.2816	0.3487	
Cut 2	-1.6925	0.1133		-1.5998	0.3070	
Cut 3	-0.5508	0.0732		-0.3909	0.3049	
Cut 4	1.0633	0.0839		1.3117	0.3137	
N		395			395	
Regression Method	Ordered probit robust standard error			Ordered probit robust standard error		
Prob > chi-square		0.0751			0.0000	
Pseudo R-squared		0.0034			0.0400	
VIF		1.00			1.09	

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table F3c. Household financial decision-making authority and life satisfaction: Regressions' results using South Sulawesi sub-sample

Variable	Life satisfaction					
	Coefficients	Robust standard error	P> z	Coefficients	Robust standard error	P> z
Financial decision-making authority	-0.1503 *	0.0785	0.0560	-0.1295 *	0.0783	0.0980
Woman				0.0648	0.0791	0.4130
Age				-0.0069 *	0.0036	0.0560
High education				0.0656	0.0747	0.3800
High income				0.1188	0.0765	0.1200
Cut 1	-2.0261	0.0973		-2.1862	0.2048	
Cut 2	-1.4982	0.0706		-1.6570	0.1863	
Cut 3	-0.5823	0.0509		-0.7356	0.1820	
Cut 4	1.2207	0.0607		1.0767	0.1854	
N		892			892	
Regression Method	Ordered probit robust standard error			Ordered probit robust standard error		
Prob > chi-square		0.0556			0.0470	
Pseudo R-squared		0.0016			0.0053	
VIF		1.00			1.05	

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table F4a. Household financial decision-making authority and life satisfaction: Regressions' results using lower income sub-sample

Variable	Life satisfaction					
	Coefficients	Robust standard error	P> z	Coefficients	Robust standard error	P> z
Financial decision-making authority	-0.1123 **	0.0519	0.0300	-0.1074 **	0.0522	0.0400
Woman				-0.0285	0.0485	0.5570
Age				-0.0021	0.0022	0.3510
High education				0.0866 *	0.0496	0.0810
Dummy West Nusa Tenggara				0.1293 *	0.0684	0.0590
Dummy South Sulawesi				0.0930 *	0.0519	0.0730
Cut 1	-2.1963	0.0704		-2.2060	0.1323	
Cut 2	-1.4022	0.0423		-1.4117	0.1202	
Cut 3	-0.4699	0.0313		-0.4761	0.1183	
Cut 4	1.2471	0.0386		1.2468	0.1221	
N		2189			2189	
Regression Method	Ordered probit robust standard error			Ordered probit robust standard error		
Prob > chi-square		0.0303			0.0150	
Pseudo R-squared		0.0009			0.0032	
VIF		1.00			1.12	

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table F4b. Household financial decision-making authority and life satisfaction: Regressions' results using higher income sub-sample

Variable	Life satisfaction					
	Coefficients	Robust standard error	P> z	Coefficients	Robust standard error	P> z
Financial decision-making authority	-0.0692	0.1797	0.7000	-0.0902	0.1830	0.6220
Woman				0.1524	0.1926	0.4290
Age				0.0020	0.0109	0.8550
High education				0.1279	0.1910	0.5030
Dummy West Nusa Tenggara				0.3822	0.2817	0.1750
Dummy South Sulawesi				0.1407	0.2156	0.5140
Cut 1	-2.2802	0.2850		-1.9460	0.6058	
Cut 2	-1.7532	0.1816		-1.4250	0.5328	
Cut 3	-1.0907	0.1375		-0.7641	0.5669	
Cut 4	0.9528	0.1311		1.3021	0.5835	
N		169			169	
Regression Method	Ordered probit robust standard error			Ordered probit robust standard error		
Prob > chi-square		0.7000			0.8016	
Pseudo R-squared		0.0004			0.0086	
VIF		1.00			1.08	

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table F5a. Household financial decision-making authority and life satisfaction: Regressions' results using lower education sub-sample

Variable	Life satisfaction					
	Coefficients	Robust standard error	P> z	Coefficients	Robust standard error	P> z
Financial decision-making authority	-0.1297 *	0.0697	0.0630	-0.1057	0.0721	0.1430
Woman				0.0388	0.0649	0.5500
Age				-0.0052 *	0.0029	0.0690
High income				0.2808 ***	0.0650	0.0000
Dummy West Nusa Tenggara				-0.0002	0.0932	0.9980
Dummy South Sulawesi				0.0248	0.0696	0.7220
Cut 1	-2.1894	0.0897		-2.2956	0.1733	
Cut 2	-1.4805	0.0568		-1.5829	0.1581	
Cut 3	-0.4369	0.0406		-0.5264	0.1535	
Cut 4	1.2601	0.0505		1.1887	0.1583	
N		1281			1281	
Regression Method	Ordered probit robust standard error			Ordered probit robust standard error		
Prob > chi-square		0.0627			0.0001	
Pseudo R-squared		0.0012			0.0089	
VIF		1.00			1.09	

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table F5b. Household financial decision-making authority and life satisfaction: Regressions' results using higher education sub-sample

Variable	Life satisfaction					
	Coefficients	Robust standard error	P> z	Coefficients	Robust standard error	P> z
Financial decision-making authority	-0.0793	0.0706	0.2610	-0.0818	0.0713	0.2520
Woman				-0.0117	0.0687	0.8650
Age				0.0016	0.0037	0.6600
High income				0.2310 ***	0.0691	0.0010
Dummy West Nusa Tenggara				0.2863 ***	0.0946	0.0020
Dummy South Sulawesi				0.0785	0.0749	0.2950
Cut 1	-2.2172	0.1050		-1.9893	0.1798	
Cut 2	-1.3556	0.0598		-1.1268	0.1627	
Cut 3	-0.5919	0.0461		-0.3534	0.1613	
Cut 4	1.1807	0.0540		1.4422	0.1664	
N		1077			1077	
Regression Method	Ordered probit robust standard error			Ordered probit robust standard error		
Prob > chi-square		0.2610			0.0010	
Pseudo R-squared		0.0004			0.0090	
VIF		1.00			1.09	

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table F6a. Household financial decision-making authority and life satisfaction: Regressions' results using lower cognitive ability sub-sample

Variable	Life satisfaction					
	Coefficients	Robust standard error	P> z	Coefficients	Robust standard error	P> z
Financial decision-making authority	-0.1670 ***	0.0616	0.0070	-0.1451 **	0.0623	0.0200
Woman				-0.0261	0.0576	0.6510
Age				-0.0048 *	0.0027	0.0710
High education				0.0824	0.0587	0.1600
High income				0.3367 ***	0.0579	0.0000
Dummy West Nusa Tenggara				0.1916 **	0.0807	0.0180
Dummy South Sulawesi				-0.0672	0.0616	0.2760
Cut 1	-2.1297	0.0779		-2.1866	0.1559	
Cut 2	-1.3990	0.0492		-1.4496	0.1439	
Cut 3	-0.4488	0.0366		-0.4823	0.1420	
Cut 4	1.2888	0.0465		1.2933	0.1475	
N		1576			1576	
Regression Method	Ordered probit robust standard error			Ordered probit robust standard error		
Prob > chi-square		0.0067			0.0000	
Pseudo R-squared		0.0019			0.0159	
VIF		1.00			1.11	

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table F6b. Household financial decision-making authority and life satisfaction: Regressions' results using higher cognitive ability sub-sample

Variable	Life satisfaction							
	Coefficients		Robust standard error	P> z	Coefficients		Robust standard error	P> z
Financial decision-making authority	-0.0265		0.0840	0.7520	-0.0225		0.0850	0.7920
Woman					0.0837		0.0822	0.3080
Age					0.0041		0.0039	0.3030
High education					-0.0187		0.0853	0.8270
High income					0.1692	**	0.0824	0.0400
Dummy West Nusa Tenggara					0.0244		0.1187	0.8370
Dummy South Sulawesi					0.2608	***	0.0875	0.0030
Cut 1	-2.4307		0.1503		-2.0700		0.2401	
Cut 2	-1.4809		0.0758		-1.1153		0.2051	
Cut 3	-0.6367		0.0551		-0.2578		0.2042	
Cut 4	1.1050		0.0616		1.5060		0.2114	
N			782				782	
Regression Method	Ordered probit robust standard error				Ordered probit robust standard error			
Prob > chi-square			0.7524				0.0258	
Pseudo R-squared			0.0001				0.0096	
VIF			1.00				1.09	

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table F7a. Household financial decision-making authority and life satisfaction: Regressions' results using lower financial literacy sub-sample

Variable	Life satisfaction							
	Coefficients		Robust standard error	P> z	Coefficients		Robust standard error	P> z
Financial decision-making authority	-0.1342	**	0.0604	0.0260	-0.1348	**	0.0612	0.0280
Woman					0.0639		0.0572	0.2640
Age					-0.0015		0.0026	0.5720
High education					0.0238		0.0581	0.6820
High income					0.2442	***	0.0573	0.0000
Dummy West Nusa Tenggara					0.1384	*	0.0804	0.0850
Dummy South Sulawesi					0.0993		0.0614	0.1060
Cut 1	-2.1808		0.0805		-2.0505		0.1598	
Cut 2	-1.3880		0.0481		-1.2577		0.1455	
Cut 3	-0.4200		0.0359		-0.2791		0.1444	
Cut 4	1.3110		0.0460		1.4695		0.1507	
N			1635				1635	
Regression Method	Ordered probit robust standard error				Ordered probit robust standard error			
Prob > chi-square			0.0263				0.0000	
Pseudo R-squared			0.0012				0.0081	
VIF			1.00				1.11	

\*, \*\*, \*\*\* indicate that  $p$ -value is significant at 10 percent, 5 percent, and 1 percent, respectively

Source: Author's own work

Table F7b. Household financial decision-making authority and life satisfaction: Regressions' results using higher financial literacy sub-sample

Variable	Life satisfaction						
	Coefficients	Robust standard error	P> z	Coefficients	Robust standard error	P> z	
Financial decision-making authority	-0.0755	0.0881	0.3920	-0.0728	0.0883	0.4100	
Woman				-0.0608	0.0848	0.4730	
Age				0.0000	0.0043	0.9990	
High education				-0.0084	0.0894	0.9250	
High income				0.2461	***	0.0862	0.0040
Dummy West Nusa Tenggara				0.2601	**	0.1194	0.0290
Dummy South Sulawesi				0.0611		0.0964	0.5260
Cut 1	-2.2618	0.1304		-2.1521	0.2213		
Cut 2	-1.5135	0.0801		-1.3938	0.2085		
Cut 3	-0.7258	0.0583		-0.5936	0.2070		
Cut 4	1.0497	0.0629		1.2003	0.2115		
N		723			723		
Regression Method		Ordered probit robust standard error			Ordered probit robust standard error		
Prob > chi-square		0.3918			0.0607		
Pseudo R-squared		0.0004			0.0090		
VIF		1.00			1.09		

\*, \*\*, \*\*\* indicate that *p*-value is significant at 10 percent, 5 percent, and 1 percent, respectively

## Appendix G. Informed consent for survey (English translation)

### Participants' Informed Consent

**Research Title:** Financial Capability among Microfinance Institutions Clients:

**Research Student:** Arief Wibisono Lubis

**Supervisor:** Dr. Flavio Comim

You are asked to participate in this study as part of the doctoral research in Development Studies at the University of Cambridge by Arief Wibisono Lubis. The aim of this research is to understand the nexus among financial literacy, financial capability, and well-being among microfinance institutions' clients. The output of this study will be a doctoral dissertation, and might be published in academic journals and or presented in academic conferences. The participation will take 15-30 minutes.

The procedure is as follow:

You will be required to answer a set of questions from a 11-part questionnaire. The collected data will be anonymous and confidential, and will not be published by stating respondents' identities. The data will be stored for five years for the purpose of this research.

There will not be any risks or discomforts associated with this research.

There is no direct positive / negative effect due to your participation in this research.

If you wish to get more information regarding this research, or have concern on how the collected data and information will be processed, etc, please contact Arief Wibisono Lubis at +62 XX-XXXX-1380.

Your participation in this survey is voluntary. You can cancel your participation at any time and will not be penalised.

Signature \_\_\_\_\_

Printed Name \_\_\_\_\_

Date \_\_\_\_\_

## **Appendix H. Information sheet for survey (English translation)**

### **Participants' Information Sheet**

**Research Title:** Financial Capability among Microfinance Institutions Clients

**Research Student:** Arief Wibisono Lubis

**Supervisor:** Dr. Flavio Comim

You are asked to participate in this study as part of the doctoral research in Development Studies at the University of Cambridge by Arief Wibisono Lubis. This information sheet provides explanations about this study and the expected level of participation from the participants. Please read this explanation thoroughly and do not hesitate to ask questions if you need any further clarification.

#### **1. Researcher and sources of funding**

This is an individual study conducted by Arief Wibisono Lubis, funded by Lembaga Pengelola Dana Pendidikan (LPDP), Wolfson College, and University of Cambridge. The topic of his Ph.D thesis is the nexus between financial literacy, capability, and subjective well-being among microfinance clients in Indonesia. Currently Arief is a Ph.D student in Development Studies in the University of Cambridge, the United Kingdom. In addition, he is also a staff member at the Faculty of Economics and Business, Universitas Indonesia.

#### **2. Scope of study**

This study attempts to discuss the issue of financial literacy in Indonesia, and is divided into three main parts. The first part tries to develop a measure of financial literacy that is appropriate in the context of Indonesia, and use this measure to determine whether there is a significant difference between the level of financial literacy of women who are the clients of a microfinance institution and those who are not. The second part will identify the psychological factors that might explain variations in the financial literacy level, while the last part examines how financial literacy impact people's capability and subjective well-being.

As a part of the data collection activities, this study involves interviews, focus group discussions (FGDs), and survey. The planned sequence in using these methods is starting with interviews and focus group discussions (FGDs) with various parties, including policy makers, financial sectors representatives, microfinance institutions' management team, and microfinance clients. Afterwards, inputs received from these FGDs and interviews are used in constructing the questionnaire.

Participants in this study might not received a direct benefits of their participation. However, the result of this study is expected to identify how financial literacy and financial capability might enhance other spectrum of capabilities and subjective well-being, and whether being a client of a microfinance institution can improve someone's financial literacy, capability, and subjective well-being.

### **3. Participants**

This study is conducted in Indonesia, with sources of interviews ranging from policy makers, microfinance institutions management team and clients, and other relevant stakeholders.

### **4. Expected level of participation**

You will be asked to answer a set of questions in the questionnaire that consists of 11 parts. The data will be kept for a period of 5 years for this research. It is expected that you will answer all of the questions within 15-30 minutes.

### **5. Risk potential**

There will not be any risks or discomforts associated with this research.

### **6. Privacy and confidentiality**

The information you provide for purposes of this research is confidential and neither you nor any individual mentioned by you will be identified by name without your permission.

### **7. Data protection and archive**

All of the data from FGDs will remain confidential. Only the researcher has access to all data, and all data will be stored in a password and code protected place. All physical and electronic data will be demolished 10 years after the completion of this study.

### **8. Dissemination**

The main output of this study is doctoral thesis. The result will be most likely presented in academic conferences and published in academic journals.

For further information, please contact:

**Arief Wibisono Lubis**

Email : awl25@cam.ac.uk

Thank you for your attention and participation.

## Appendix I. Questionnaire (English translation)

### Questionnaire

My name is Arief Wibisono Lubis and I am a doctoral student in Development Studies at the University of Cambridge, United Kingdom. I am conducting a study to understand how the clients of sharia based microfinance institutions' clients deal with their financial matters, in which several information will be collected using this questionnaire. In addition to provide a contribution to the academic literature on related topics, the results of this study are expected to be useful for the government of Indonesia in managing their national financial inclusion strategy.

The data that will be collected consists of:

- Socio-demographic information
- Financial knowledge
- Attitudes towards financial related matters
- Cognitive and non-cognitive characteristics

We expect that the survey will take no longer than 20 minutes and your answer will be kept confidential.

#### A. Demographic Profile

Circle the appropriate answer or fill in the blanks.

No	Question	Answer				
A01	Gender	1. Male	2. Female			
A02	Age	..... year				
A03	Do you receive any monthly salary?	1. Yes	2. No			
A04	What is your monthly salary	1. Under IDR 1,5 mio	2. IDR 1,5 mio-IDR 2 mio	3. IDR 2mio – IDR 6 mio	4. IDR 6mio – IDR 17 mio	5. More than IDR 17 mio
A05	In which province do you currently live?	1. Nusa Tenggara Barat		2. Daerah Istimewa Yogyakarta	3. Sulawesi Selatan	
A06	Are you the head of the family?	1. Yes		2. No		
A07	How many generations of your family have lived in the current location?	1. 0-3		2. >3		
A08	How many years of formal education do you have?	1. None		2. 1-6 years	3. 7-9 years	4. >9 years
A09	How many children under 13 y.o. do you have?	1. 0-2		2. 2-5	3. >5	
A10	How many family members currently live with you?	1. None		2. 1-3	3. >3	

## B. ISLAMIC MICROFINANCE INVOLVEMENT

Circle the appropriate answer.

No	Question	Answer		
B01	How far is the nearest microfinance institution?	1. 0-2 km	2. >2 km	
B02	How long have you been the client of the microfinance institution?	1. 0-2 year	2. 2-5 year	3. >5 year

## C. INCOME AND EXPENDITURE

No	Question	Answer
C01	On average, how much is your monthly sales (in IDR)?	
C02	On average, how much is your monthly profit from your sales (in IDR)?	
C03	On average, how much is your monthly meal expenditure (in IDR)?	
C04	On average, how much is your non-meal expenditure (in IDR)?	
C05	On average, how much is your health expenditure (in IDR)?	
C06	On average, how much is your children's education expenditure (in IDR)?	

## D. FINANCIAL MANAGEMENT

For each question, circle the appropriate answer

No.	Question	Always	Sometimes	Seldom	Never
D01	Do you have plans in using the money that you receive?	1	2	3	4
D02	If yes, do you stick to the plan?	1	2	3	4
D03	In the past 1 year, do you and your household ever run short of money for food or other necessary items?	1	2	3	4

Have you ever done the following to fulfill your needs?

No.	Question	Answer	
D04	Borrow from friends, family, or colleagues	1. Yes	2. No
D05	Cash gifts from families and or friends	1. Yes	2. No
D06	Borrow from employers / salaries in advance	1. Yes	2. No
D07	Borrow from local moneylenders	1. Yes	2. No
D08	Borrow from banks	1. Yes	2. No
D09	Borrow from others	1. Yes	2. No
D10	Use savings	1. Yes	2. No
D11	Find extra work / extra hours	1. Yes	2. No
D12	Sell something	1. Yes	2. No
D13	Spend less on essentials	1. Yes	2. No
D14	Spend less on non-essentials	1. Yes	2. No

To what extent do you think that formal financial planning for the future of these goals is important?

No.		Very not important	Not important	Neutral	Important	Very important
D15	Children's education	1	2	3	4	5
D16	Housing (renovation, improvement, etc)	1	2	3	4	5
D17	Hajj / small hajj pilgrimage	1	2	3	4	5

Do you currently have / have had formal financial planning for the future of these goals:

No.	Question	Answer	
D18	Children's education	1. Yes	2. No
D19	Housing (renovation, improvement, etc)	1. Yes	2. No
D20	Hajj / small hajj pilgrimage	1. Yes	2. No

#### E. FINANCIAL PRODUCTS AWARENESS

Are you aware of these financial products / services:

No.	Question	Answer	
E01	Microfinance products (including from Koperasi)	1. Yes	2. No
E02	ROSCA (Arisan)	1. Yes	2. No
E03	Informal credit / loan sharks	1. Yes	2. No
E04	Pawn shops	1. Yes	2. No
E05	Bank savings	1. Yes	2. No
E06	Bank credits (including credit card)	1. Yes	2. No
E07	Insurance	1. Yes	2. No
E08	Mutual funds	1. Yes	2. No
E09	Stocks	1. Yes	2. No
E10	Bonds	1. Yes	2. No

#### F. FINANCIAL PRODUCTS / SERVICES OWNERSHIP / PARTICIPATION

Do you participate / invest in these financial products / services within the past 5 years:

No.	Question	Answer	
F01	Microfinance products (including from Koperasi)	1. Yes	2. No
F02	ROSCA (Arisan)	1. Yes	2. No
F03	Informal credit / loan sharks	1. Yes	2. No
F04	Pawn shops	1. Yes	2. No
F05	Bank savings	1. Yes	2. No
F06	Bank credits (including credit card)	1. Yes	2. No
F07	Insurance	1. Yes	2. No
F08	Mutual funds	1. Yes	2. No
F09	Stocks	1. Yes	2. No
F10	Bonds	1. Yes	2. No

Circle the appropriate answer

No	Question	Answer
F11	Who has the highest authority on the above decisions regarding financial matters?	1. Myself
		2. Spouse (husband / wife)
		3. Co-decision
		4. Other family member
		5. Other

## G. FINANCIAL LITERACY

G01	Imagine that the interest rate on your savings account was 7% per year and the inflation rate was 8% per year. After 1 year, would you be able to buy (Fernandes et al., 2014):						
	1	More than today with the money in this account					
	2	Exactly the same as today with the money in this account					
	3	Less than today with the money in this account					
	4	Do not know					
	5	Refuse to answer					
G02	Considering a long time period (for example, 10 or 20 years), which asset described below normally gives the highest return? (Fernandes et al., 2014)						
	1	Savings account	4	Do not know			
	2	Stocks	5	Refuse to answer			
	3	Bonds					
G03	Do you think that the following statement is true or false? "A 15-year mortgage typically requires higher monthly payments than a 30-year mortgage, but the total interest paid over the life of the loan will be less" (Fernandes et al., 2014)						
	1	True	4	Do not know			
	2	False	5	Refuse to answer			
G04	When an investor spreads his money among different assets, does the risk of losing a lot of money (Fernandes et al., 2014):						
	1	Increase	4	Don't know			
	2	Decrease	5	Refuse to answer			
	3	Stay the same					
G06	True or false: All children in one family are covered by BPJS-kesehatan (Indonesian specific)						
	1	True	2	False	3	Do not know	4
G07	Besides health, BPJS also offers retirement and accident coverage (Indonesian specific)						
	1	True	2	False	3	Do not know	4

## H. COGNITIVE ABILITY

H01	What is today's date	J01A Day		J01B Month		J01C Year	
H02	In a game, the chance of winning a motorcycle is 1 in 1,000. What percent of tickets of the event win a car?	1	0.001%	5	1.1%		
		2	0.01%	6	None of the above		
		3	0.1%	7	Do not know		
		4	1%				
H03	If it takes 5 machines 5 minutes to make 5 widgets, how long	1	1 minute	5	1,000 minute		
		2	5 minute	6	1 day		

would it take 100 machines to make 100 widgets	3	10 minute	7	None of the above
	4	100 minute	8	Do not know

### I. NON-COGNITIVE TRAIT

To what extent do you agree with the following statement

No.		Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
I01	I am confident in my ability to recognize a good financial investment	1	2	3	4	5
I02	I have the skills required to make sound financial investments	1	2	3	4	5
I03	I know the right sources to consult to make wise financial decisions	1	2	3	4	5
I04	I try to consider how my actions will affect other people in the long term	1	2	3	4	5
I05	I try to spend my money wisely.	1	2	3	4	5
I06	I cannot be trusted with money.	1	2	3	4	5
I07	In this village, I have to be alert or someone is likely to take advantage of me.	1	2	3	4	5
I08	I would be willing to ask my neighbours to look my house if I leave for a few days.	1	2	3	4	5
I09	Say you lost a wallet or a purse that contained IDR 200,000 and your identity card, and found by a complete stranger who lives close by. Is it likely or unlikely that it will be returned to you with the IDR 200,000?	1	2	3	4	5

### J. LIFE SATISFACTION

	Not satisfied at all	Not satisfied	Neutral	Satisfied	Very satisfied
Overall, how satisfied are you with life as a whole these days?	1	2	3	4	5

### K. HEALTH, FOOD, HOUSING

Circle the appropriate answer

No.	Question	Answer	
K01	Do you know where to go to get any medical assistance (doctor / PHC)?	1. Yes	2. No
K02	In the past 12 months, have you had any health checkup?	1. Yes	2. No
K03	Does your health in any way limit your daily activities compared with most people of your age?	1. Yes	2. No
K04	Have you had any problem to fulfill your food needs in the past 12 months?	1. Yes	2. No

No	Question	Answer
K05	Have you ever diagnosed with the following chronic disease:	1. Physical disabilities
		2. Brain damage
		3. Vision problem
		4. Hearing problem
		5. Speech impediment
		6. Mental retardation
		7. Heart problem
		8. Depression
		9. Autism
		10. Other chronic disease
K06	Do you eat fresh meat, chicken or fish at least twice a week?	1. Yes
		2. No, I cannot afford
		3. No I do not like eating fresh meat chicken or fish that often
		4. No I do not have time to prepare fresh food
		5. No, for some other reason
K07	Status of house	1. Self-owned
		2. Occupying (including family owned)
		3. Contracted
		4. Other
K08	Total house area	..... meter <sup>2</sup>
K09	What is the main water source for drinking in this household?	1. Aqua / mineral water
		2. Pipe water
		3. Well (electric / hand)
		4. Other
K10	Where do the majority of householders go to the toilet?	1. Own toilet with septic tank
		2. Own toilet without septic tank
		3. Shared toilet
		4. Without toilet
K11	Is your current accommodation adequate or inadequate for your current needs?	1. More than adequate
		2. Adequate
		3. Inadequate
		4. Very inadequate
K12	How many times in a week you usually read news (newspaper, online news, magazine, etc)	1. 7 or more
		2. 4 – 6 times
		3. 1 – 3 times
		4. Never

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