

Centre for Global Finance



Working Paper Series

No.3 / 2019

A survey of literature on financial literacy and financial behaviour: Is there a gender gap?

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A survey of literature on financial literacy, financial behaviour and financial education: Is there any gender gap?¹

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Abstract

Since the 2008 global crisis, financial literacy has come into the spotlight, but the available definitions are of theoretical nature addressing major issues appeared in specific economies, as presented here through an in-depth analysis of the literature. While the common focus has been on the United States, the economic infrastructure of other parts of the world is very diverse. Despite the global epidemic of the crisis, its pattern was not globally the same. Utilising the current definitions without considering their validity has caused a misconception for inspecting emerging problems. Therefore, a new definition of financial literacy is proposed, which can be universally applied to various types of economies. The approach is to find the appropriate perspective for tailoring the framework of financial literacy for specific environments. Applying this definition to typical cases revealed that some of the key problems discussed in the literature are not indeed the critical issues, while major problems are usually neglected. The best example is the case of the gender gap where we might need to find new solutions as most of the previous studies have been based on inappropriate (or at least less practical) premises.

Keywords: Financial literacy, Financial inclusion, Gender Gap, Financial behaviours, Measuring financial literacy, Financial education.

Subject classification codes: D14, G40, J16, I20

¹ We acknowledge, without implications, financial support from the DEGRP Research Grant (ES/N013344/2), funded by DFID and ESRC, on “Delivering Inclusive Financial Development and Growth” and the AXA Research Fund.

1 Introduction

It is sensible to debate that many people do not have appropriate access to financial services. Even in the case of existing access, awareness is not satisfactory to exploit the available services. As a result, making the wrong financial decision is prevalent among people, and women are more at the risk of financial problems because of the disparity in financial inclusion and awareness.

After the 2008 financial crisis, concern about the level of financial literacy among consumers increased (Atkinson and Messy 2011; Lusardi and Mitchell 2014). Some researchers developed different models to predict the process of financial decision making, and some reviewed different pieces of literature to find the determinants of this process. Almost all of them agreed that there is a significant impact of financial literacy on financial behaviours such as saving and payments. Hence, governments and organisations have aimed to enhance the level of financial literacy.

Since the implementing schemes for financial literacy are expensive, time-consuming, and required strong collaboration at the institutional levels, most of these projects were operationalised in the developed countries. Nonetheless, in order to enhance financial literacy, a comprehensive definition is required to facilitate a meaningful measurement. As a result, there were many efforts to (i) define financial literacy, (ii) assess the level of financial literacy, (iii) analyse its relationship with financial behaviour, (iv) and Investigate if there is any disparity.

Different researchers took various approaches; some just defined it, some defined and proposed a measure, and some study its impact on financial behaviours, and so on. Atkinson and Messy (2011) measured it through a questionnaire after defining financial literacy. Lusardi and Mitchell (2011) even took a step further and studied its impact on wealth accumulation. Moreover, some researchers, such as Nanziri and Leibbrandt (2018), constructed an index to measure financial literacy. Notwithstanding, financial literacy builds the basis of financial inclusion, and aims to improve it. Although financial inclusion is a practical development, financial literacy has been mostly defined from the theoretical perspective far from pragmatic frameworks. Considering the fact that financial inclusion is geographical-dependent, a universal definition of financial literacy is ineffective. Nevertheless, the available definitions of financial literacy are not pragmatic in every context. So much the worse, the prime target of financial inclusion and financial literacy is developing countries in which these definitions are less applicable due to the lack of availability of financial services and political demarche. As a result, defining financial literacy while considering the context is of utmost importance.

The previous studies on financial literacy not only emphasised on the low level of financial literacy but also proved that a higher level of financial literacy would bring prosperity (Lusardi and Mitchell 2011), more secure retirement (Lusardi and Mitchell 2007), and wiser financial behaviour. However, in measuring the level of financial literacy in order to assess the gender in gender and age groups, there were some arguments since some scholars concluded that the definition of financial literacy is context-specific (Carpena and Zia 2017). Hence, the fact that women have a lower level of financial literacy or financial literacy has an inverted-u shape relationship with age should be placed under scrutiny.

Most of the existing definitions and measurements of financial literacy, nevertheless, have been tailored for developed countries. Although financial literacy and financial behaviour are usually assessed at the household level, the gender dimension of household agents is less explored which may overshadow the women's low level of financial literacy. This study is aiming to analyse the existing literature on financial literacy where the focus is on four main issues, namely. the conceptual framework for financial literacy and financial inclusion, the relationship between financial literacy and financial behaviour, the impact of gender on financial behaviour, and financial education. More than a hundred papers were reviewed and around twenty definitions and measures were analysed.

On the basis of a thorough literature review, this paper identifies research gaps in each of the four main dimensions. The identified gaps are used to formulate four promising research ideas (PRIs). Specifically, the PRIs seek to: propose a new definition for financial literacy; review previous studies on analysing the relationship between financial literacy and financial behaviour; investigate the gender disparity and propose a novel method for financial training.

The first part of this paper is about the conceptual framework with regards to financial inclusion and financial literacy in order to have a clearer understanding of the following debates. This part is sought to identify the existing conceptual and practical definitions of financial literacy/financial inclusion and adopt the most relevant. The relationship between financial literacy and financial behaviour was then analysed. Does investing in financial literacy enhance access/usage of financial services? Does financial literacy influence by personal characteristics such as gender? Does financial literacy empower women? These are the critical questions that the corresponding section attempts to answer.

The relevance of gender to financial behaviours has been widely discussed in the literature (Fisher 2010). There is now clear evidence that the level of

financial literacy is lower among women than men (Lusardi and Mitchell 2007). It believed that women do not pay enough attention to financial matters, and since they live longer, and their work life is shorter, the possibility of encountering financial crises is higher. In general, women are less likely to have a plan for the old ages as opposed to men (Lusardi and Mitchell 2007). Hence, probing the roots of this difference, in order to eliminate it, is the primary way to secure the financial future of women, especially in underdeveloped countries.

In this context, the forthcoming part of this discussion paper is going to review the existing literature on gender inequality in financial literacy and financial behaviours, and its causes. If there is any gap, how to close it? How to improve the level of financial literacy among women? It seems that financial training could assist with solving this problem; hence, the last part will be focused on financial interventions. Does improving the level of financial literacy have any impact on people's economic wellbeing? This session will discuss the effect of financial training on financial behaviour. The final section is a conclusive outlook of all concepts thoroughly covered in this manuscript.

2 Conceptual framework

2.1 *Financial literacy*

2.1.1 Validity of available definitions

What is financial literacy? Despite the existence of numerous academic papers on financial literacy, there are no commonly accepted terms and criteria for this concept among scholars. Some scholars even argued that the concept of "financial literacy" overlaps with the concept of "financial capability". Johnson and Sherraden (2007) stated that financial capability consists of financial awareness and access to financial services, but what kind of financial services, and at which level? More importantly, what is the proper explanation for financial literacy?

It is noteworthy that there are different terminologies on financial literacy used by different authors which all of them fall within the broad category of financial literacy. The main issue in defining the framework of financial literacy is the availability of financial services. Mason and Wilson (2000) pointed out in their book that the effectiveness of financial products and services depends on their availability. In other words, there is no 'one size fits all.' Country by country, accessibility of financial services varies, and based on that, the required level of financial literacy differs. Some found it easier to describe as a skill and ability to read and understand statements (McDaniel et al., 2002).

Later on, Xu and Zia (2012) stated that financial literacy could contain different concepts such as financial knowledge and awareness, financial skills, and financial competency. Although these concepts seem to be different notions, they constantly overlap in practice. After analysing financial literacy around the world, authors recited that in Sub Saharan Africa "...a large proportion of the population in countries such as Mozambique, Malawi, and Nigeria lack awareness of basic financial products and concepts such as savings accounts, interest on savings, insurance, and loans" (p.9).

In another literature review, Remund (2010), after re-examining papers from 2000 to 2010, found that the definition of financial literacy in previous researches composed of five categories; conceptual knowledge, ability to communicate about it, skill to manage personal finance and making a right financial decision, ability to plan for a financially secured future. Therefore, he stated that " Scholars, policy officials, financial experts, and consumer advocates have used the phrase loosely to describe the knowledge, skills, confidence, and motivation necessary to manage money effectively. As a result, financial literacy has varying conceptual definitions in existing research, as well as diverse operational definitions and values." This statement clearly shows that one standard definition for financial literacy is far to reach and every context required its criteria.

The Organisation for Economic Co-operation and Development (OECD 2011) interpreted financial literacy as "a combination of awareness, knowledge, skill, attitude, and behaviour, which are necessary to make sound financial decisions and ultimately achieve individual financial well-being." Even in this definition, the issue of defining the ranges and limits of components could add to its complexity.

In a recent study, Carpena and Zia (2017) broadened the definition of financial literacy by adding numeracy skills, financial awareness, and attitudes towards personal finance, to the concept of financial literacy. They explained that estimating and calculating different rates related to financial products would present the numeracy aspect. This aspect of financial literacy would assist in comparing various services to choose the best option. Differentiating between different financial concepts and products is linked to awareness, which subsequently supports further usage of available products. Moreover, the third dimension, financial attitude, has a crucial effect on financial practices since it is determined by the perceived benefit or cost of financial services.

Their definition of financial literacy is detailed and simple to understand, nonetheless, separating these three dimensions is not an easy task. Numeracy could enhance awareness and attitude by facilitating the process of

understanding the concepts and the benefits of financial services. However, awareness could be a motivation to improve numeracy skills in order to exploit potential opportunities in the finance world.

From the perspective of this study, financial literacy is defined by the awareness and knowledge of exploiting the available financial services for from essential financial needs to potential financial inclusion. In the quest for understanding the nature of financial literacy, it appeared that the time factor plays a crucial role in developing countries. A financially literate person could become an illiterate just in a few years; hence, the learning process should be an ongoing process. This concept is characterised by demand and supply sides, awareness and need are related to the demand side while supply side encompasses the availability of financial services. Studies which purported to document financial literacy generally have indicated that financial literacy is beneficial, but people need to have a higher level of it. Thus, there should be some plans or program to improve the level of financial literacy.

In these studies, through financial literacy, credit access for the house mortgage was more feasible (Courchane et al., 2008), planning for retirement was easier (Lusardi and Mitchell, 2007), and in case of young adults was related to happier and overall life satisfaction (Shim et al., 2009). All of these were pointed at a more financially inclusive society and emerging this idea that financial literacy could hinder financial exclusion (Jones, 2008). There were other scholars working on other aspects of financial literacy. Grohmann et al. (2018), identified different implications for financial literacy depending on the level of development and income. In the early stages of financial development, literacy could act as an alternative for financial infrastructure to increase access, while at more advanced stages, a higher level of financial literacy is necessary to boost the usage of financial services and products. Previous studies also acknowledged the different roles of financial literacy in various economic situations. In high-income countries, the goal of financial literacy is customer protection, while in low-income countries, the aim is to increase access and take-up services (Xu and Zia, 2012).

2.1.2 Measuring financial literacy

Although it is challenging to define financial literacy, its measurement is very crucial. For measuring financial literacy, different elements, such as the country's economic situation, people characteristics, and the availability of services, should be held accountable. Lusardi and Mitchell (2011) stated that although evaluating the level of financial literacy, and people characteristics are vital, examining how people process financial knowledge and make a financial decision is not an easy task. Therefore, measuring financial literacy is not just a quantitative matter.

Since financial literacy includes many different concepts from knowledge to financial skills and financial capability, considering all of these notions in a survey would be difficult. However, Lusardi and Mitchell (2011) adopted the questionnaire of American Health and Retirement Study (HRS) for measuring financial literacy, which has been regularly used by other researchers since then. This questionnaire includes three questions on the interest rate compounding, inflation, and risk diversification. The first two questions would also capture the numeracy skill, and the third one would assess the knowledge on the stock market and mutual funds.

Nevertheless, there were other empiricists who argued these three big questions might need to be modified, particularly in the case of developing countries where lack of basic knowledge and skills are widespread (Carpena and Zia, 2017). Therefore, modifying the current models or adding more criteria could help the researcher to collect more accurate data. Carpena and Zia (2017) used their own set of questions to measure financial literacy in India to investigate the causal mechanisms between financial education and financial behaviour. They focused on three distinguished aspects of financial literacy; numeracy, awareness, and attitude.

2.1.3 Towards a new definition

Measuring the level of financial literacy is a challenging task, yet important due to its vital role in enhancing the level of wellbeing. In the previous studies, different dimensions had equal or arbitrary weights, and this results in an unrealistic outlook of the emerging issues in developing countries. Hence, constructing a new index which reflects priorities and order of the components is essential. The proposed definition of financial literacy composed of the awareness and knowledge of exploiting the available financial services for from essential financial needs to potential financial inclusion. It reflected both the demand and supply sides and its components differ based on the context of the study. Considering the macro and microeconomics factors will add to the accuracy and reliability of measurement.

2.2 Financial inclusion

2.2.1 How to define financial inclusion

What is financial Inclusion? Before answering this question, it is essential to distinguish between financial inclusion and financial development. The simplest explanation could be the access to financial services which diverges from consumer to consumer. However, the most detailed definition belonged to Atkinson and Messy (2013). They described financial inclusion as "the process of promoting affordable, timely and adequate access to a wide range of regulated financial products and services and broadening their use by

all segments of society through the implementation of tailored existing and innovative approaches including financial awareness and education with a view to promote financial well-being as well as economic and social inclusion" (Atkinson and Messy, 2013).

While the version of the World Bank differs a bit and puts more weight on the actual users of financial services, "financial inclusion is defined here as the proportion of individuals and firms that use financial services" (World Bank, 2014). In a more recent description, they described financial inclusion as a state in which "... individuals and businesses have access to useful and affordable financial products and services that meet their needs – transactions, payments, savings, credit, and insurance – delivered in a responsible and sustainable way" (World Bank, 2018).

In another study, Chibba (2009) explained financial inclusion, "...within the broader context of inclusive development, is viewed as an important means to tackle poverty and inequality, and to address the millennium development goals (MDGs)". Moreover, the Consultative Group to Assist the Poor (CGAP, our mission, <https://www.cgap.org/about>) aimed to build "a world where poor people are empowered to capture opportunities and build resilience through financial services" (CGAP, 2018).

The notion of capturing the opportunity quoted above in the CGAP definition points at the access dimension of financial services, which in the case of poor households in developing countries might be constrained by various barriers, for example, the lack of income to open a bank account. Access is one dimension of financial inclusion, but without usage, inclusiveness would not occur. Unfortunately, in the case of many emerging markets, the provided access is not feasible and does not motivate or facilitate usage. Hence, in every inclusion-oriented program, determinants of financial inclusion should be identified and specified for that region.

Nonetheless, based on the index of financial inclusion (IFI) (Sarma, 2011), even in developed countries, part of the societies is still financially excluded. The index of financial inclusion measures the level of inclusiveness of the financial sector in a country (Sarma, 2011). Sarma, through this index, computed three fundamental aspects of financial inclusion, accessibility, availability, and usage of banking services.

2.2.2 Determinants of financial inclusion

Overall, there are two types of factors which influence financial inclusion; those related to the demand side and those of the supply side. From the demand side, socio-economic factors (include age, gender, income, education,) and geographic variables (such as living

in the urban or rural area) affect the access and usage of financial services and products.

Allen et al. (2016), in their recent assessment of ownership and use of formal financial services, reasoned that both individuals and country characteristics associated with financial inclusion. Demirguc,-Kunt et al. (2013) also confirmed that women are more vulnerable to be excluded from financial services. However, in an earlier study by Devlin (2009) on financial exclusion, gender did not have a significant impact on exclusion in his sample of over 15,000 UK households. Instead, he put more stress on the level of education, the status of employment and income, the financial arrangement of their accommodation, and age. From that study, the importance of considering the level of development and context of the study, in general, could be observed.

Concerning the age and education, Zins and Weill (2016) assessed the determinants of financial inclusion in Africa and found that more educated older men with higher income usually are more included compared to women and older generations. They additionally provided some evidence that African women are less likely to have a formal saving. Their findings were along with the previous studies. Meanwhile, in Western Africa, the results of investigating the determinants of financial inclusion over a heterogeneous sample of 1000 Ghanaians showed that the literacy rate has a significant impact on financial inclusion (Akudugu, 2013). Their study also named long distance from a bank as a reason for exclusiveness; this factor was among the first five barriers to having an account, mentioned in the global Findex database 2017.

The level of income, proximity to the bank or branches, and marital status also enhance financial practices. A higher level of income and wealth would probably facilitate the availability of financial services (Fungacova and Weill, 2015). Besides, psychological traits like emotional impulses and paying more attention to short-term gain could affect certain behaviours such as borrowing (Shah et al., 2012).

Concerning the supply side, the cost of opening an account in formal financial institutions is a heavy burden for poor individuals, as Allen et al. (2016) suggested that low-cost banking services and proximity to the banks or branches have a positive impact on access and usage of financial services. More enabling regulations (low-cost banking services, closeness to bank branches) and a robust legal system with regard to customer protection would improve the access and usage of financial services. Hence, in designing inclusive-oriented policies, greater consideration should be allocated to gender and age (Allen et al., 2016).

In a recent study by Owen and Pereira (2018), it appeared that the structure of the banking industry has a relationship with financial inclusion of individuals. They applied collected data from an unbalanced panel of 83 countries from 2004 to 2013, and financial inclusion (here access to either loan or deposit accounts) controlled for financial depth, GDP per capita and banking industry concentration. Findings posed that higher concentration in the banking industry would increase accessibility to deposit and loan accounts, also enabling, and more extensive regulation with regards to banking activities would enhance the level of financial inclusion. They concluded that in a competitive market, big banks are harmonious with greater financial inclusion. However, a less concentrated banking market would increase the competition which has a positive impact on access to financial services.

In another research on the impact of the legal system on financial inclusion, Yermak (2018) argued that the countries with common law legal system could have a more enabling environment for FinTech as an instrument to improve the level of financial inclusion compared to those with civil law. They reasoned that in common law countries, the legal system provides stronger protection and higher liquidity for investors which coupled with lower capital cost. Hence, investing in the infrastructure to prevalent the usage of FinTech is facilitated. Nonetheless, strict rules and regulation would constrain innovative movements. The conclusions made by Owen and Pereira research (2018) were in contrast with the previous study conducted by Dong et al. (2016). They debated that competition among banks enhance welfare to some extent by increasing the aggregate lending. However, in a highly competitive market, the cost of lending would grow, and banks have to decrease the lending; as a result, the welfare is going to be depressed. Although the conclusions might seem controversial, each of them has its validity in the corresponding context.

2.2.3 Financial literacy and financial inclusion

In response to the question on whether financial literacy has an impact on financial inclusion, Grohmann et al. (2018) did a cross-country research on the demand side variables such as financial literacy and supply side of financial services. Since previous studies noted that factors such as level of education, GDP per capita, and the level of financial development could influence financial inclusion (Allen et al., 2016), controlling these variables was required in examining the relationship between financial literacy and financial inclusion. Hence, they applied ordinary least squares (OLS) to study the causal effect of financial literacy on financial inclusion, and for the robustness of their resulted used numeracy as a conventional external instrument. The required data to instruct the financial literacy variable was collected by surveying 143000 adults from 143 countries in 2014.

They presented evidence on the positive impact of financial literacy on access and usage of financial services and showed this effect performs independently from that of infrastructure. The authors stated that financial literacy has a positive effect on access to, usage and quality of financial services and products. They also suggested that financial literacy could act as a complementary element for infrastructure and increase the usage in the case of more developed financial systems. However, in less developed systems, financial literacy acts as an alternative for financial infrastructure in order to improve access. Their results related to the gender and level of financial literacy exhibited that women are scored less than men, and the gender gap for owning a debit card and for formal saving is around 10 %.

2.2.4 Pragmatic outlook

Yet, is financial literacy sufficient by its own? Even in underdeveloped countries, youngsters absorb financial knowledge and skills, and it has a little impact on their economic-wellbeing unless they have appropriate access to financial institutions and services (Johnson and Sherraden, 2007). Hence, it is fair to say; knowledge is helpful to lead a fulfilling life but not enough. There should be skills and abilities to act based on that knowledge, and there should be possibilities to use it. Nevertheless, in societies where are financially excluded, the availabilities and access to financial services are limited. As a result, the possibility of using financial skills and knowledge is low.

3 Financial literacy and financial behaviour: Turning knowledge into the action.

Does financial literacy have a role in financial wellbeing? Is our financial behaviour influenced by financial literacy? If so, what are the mechanisms? This part is going to review previous studies on the relationship between financial literacy and financial behaviour and suggests some promising research ideas.

3.1 The theoretical framework

The conventional microeconomic theory on saving declares that financially aware individuals spend less and save more in a prosperity period in order to be financially more resilience in time of financial shock. Lusardi and Mitchell (2014) posited that various microeconomics models on saving and consumption assumed that individuals have a good level of financial literacy in order to have sound financial behaviour. Nonetheless, due to the change in financial situation, age, education and earning (life cycle), proving a causal link between financial literacy and financial behaviour is challenging.

3.2 The relationship between financial literacy and financial behaviour

The recent Findex dataset on saving, borrowing, payment and risk management unveiled

a new wave of financial services usage, especially in developing countries. The proportion of account ownership at financial institutions in Sub-Saharan Africa from 23% in 2011 raised to 33% in 2017, but only 1% growth, from 14% to 15%, in the formal saving was observed at the same period. Figures for making/receiving digital payments were more hopeful and 34% of people in this region made/received digital payment in 2017 which was 7% more than 2014 (Findex, 2017).

The share of women in the formal account ownership (financial institutions) in 2011 was 21% which became 27% in 2017. Formal saving among male residences of SSA showed a negative growth and from 12% in 2011 went down to 11% in 2017. Digital payments with a 7% increase, followed the general trend and reached 30% in 2017 (Findex, 2017). Although figures are promising, disparities still could be observed.

The percentage of formal account ownership might have shown a significant raise, but the proportion of dormant accounts has been increased as well, which in the case of Sub-Saharan Africa, around 49% of the total accounts were dormant (Bull, 2018). Moreover, with a rise in the account ownership, an increase in formal saving was assumed, which based on the 2017 Findex data. Nonetheless, it did not keep the pace with the rate of account ownership, and this difference was more notable from 2014 to 2017.

Rhyne and Kelly (2018) have shown that there is a positive relationship between different usage cases, especially between formal saving and others. Consequently, motivating individual to save more would result in using other services such as using a debit card. However, is there any exception? The authors have confirmed that saving has a negative correlation with remittance.

Hence, the question remains unanswered: what is the best indicator of financial inclusion? On borrowing, there is no common ground among experts since a higher value does not necessarily mean a better condition. The answer to this question could be digital payments. People for making or receiving digital payment do not need to have a blooming account, and they can transfer money easily with low fees. Greta Bull from Centre for Financial Inclusion described the digital payment as a real indicator of financial inclusion where the gap between the developing world and developed ones are significant compared to saving and borrowing (Bull, 2018).

Saving and payments, as mentioned before, could be good indicators of the usage but factors with significant impact on these indicators are numerous, from socio-economic factors (demand side) to weak infrastructures and strict financial rules and regulation (supply sides). Age, education, income, and gender are the main players of the demand side.

There is a growing body of literature on financial literacy and financial behaviours, but most of them focused on developed countries. Among the fundamental principles of a financially secured future, financial literacy and the skill to use this knowledge are of vital importance (the importance of access to financial services should not be neglected). There are different microeconomic models on the positive relationship between financial literacy and saving behaviours. However, this awareness comes at a price, and not everyone could be able to engage in a complicated economic formula. Although, there are many theoretical and empirical work on the benefits of financial literacy, only a few of them are on how to acquire and deploy it.

Many theoretical models are describing the impact of financial literacy on financial behaviours, but the results of experimental research are controversial. On the one hand, empirical evidence suggests that a higher level of financial literacy would improve financial practices such as savings, budgeting, and spending; however, the availability of financial resources also has an important role to play (Perry and Morris, 2005). Moreover, literate individuals try to plan for their retirement (Lusardi and Mitchell, 2007) and seek a lower credit rate (Lusardi and Tufano, 2015).

On the other hand, a research group from the United States (Cole and Shastry, 2014) found that financial literacy has a little impact on saving and investment by using a large dataset. Also, there are indications that in low-income families, a higher level of education and financial awareness would not certainly improve the financial management of family (Loke, 2016).

Fernandes et al. (2014) presented a metaanalysis study on the relationship of financial literacy and behaviours in 168 papers which comprised 201 earlier studies. They divided previous studies into two categories; “manipulated financial literacy” and “measured financial literacy”. The first group included those studies evaluating the impact of the financial intervention in which applying techniques such as RCTs or double differences were prevalent. While the second category encompassed correlational and econometrics studies which aimed to measure financial literacy.

The result of “measured financial literacy” studies reported stronger impact on financial behaviours compared to those of “manipulated financial literacy”. The authors also emphasised on psychological traits that have been omitted in the earlier studies. They argued that psychological features such as self-control and impulse control could be partially responsible for certain financial behaviours. Furthermore, they reasoned that the effect of financial education on financial practice could get weaker over time, thus, considering the concept of the teachable moment could increase the efficiency of the intervention.

The way that Fernandes et al. (2014) analysed the effect of psychological characteristics was highly detailed, however, they were not the only researchers who focused on this issue. Perry and Morris (2005) previously remarked that the locus of control (LOC) could be a channel in which financial knowledge influence financial behaviours. In other words, perceived control would improve saving, budgeting, and spending.

We know that financial literacy and financial access have interaction, now the question is how to separate them from each other. This problem here is like the identification problem in the economy in case of entangling the supply and demand effects on each other. Therefore, applying a proper method, such as RCTs, to measure and entangle the impact of financial literacy and financial access is crucial.

Concerning saving behaviours, many researchers attempted to pinpoint the drivers of saving behaviours. For instance, Deaton (1989) proved different factors such as interest rate and the quality of financial institutions as the determinants for saving. He proposed the theory of saving in developing countries which was based on people precautionary native. Berry, Karlan, & Pradhan (2018) concluded that financial literacy supports saving accumulation after conducting an RCT in Ghana to study the impact of financial education for Ghanaian students. However, they failed to provide any evidence on the short-term effect of these types of program. Hastings and Mitchell (2011), in their research in Chile, marked illiteracy and present-bias (impatience) as the possible explanations for poor financial decisions. All of these studies support the positive role of financial literacy on access to and usage of financial services and products.

3.3 Mechanism

According to the financial practice index constructed by Hilgert, Hogarth, and Beverly (2003), financial literacy seems to be positively related to financial behaviours such as cash management, credit management, saving, and investment, but what is the link? They have stated that an increase in knowledge could enhance the financial practices; however, this causality could follow in other direction as well.

In a very different study performed by Huis et al. (2017), the reverse causal chain between their measure of financial literacy and financial inclusion among women was assessed. They studied the effect of women microfinance programs on their social status and suggested that providing microfinance would increase their financial literacy and empower women, especially in households budget management.

The difference between these two types of methods, direct causal and reverse causal chain, is the way that financial literacy is provided. It seems that the reverse method is more practical, and there are reasons to choose it over the direct one, namely, first, not all individuals are motivated nor have access to attend a training program. Second, absorbed knowledge through the experience is less forgettable compared to learnt materials from the direct method. Moreover, the reverse method induces a change in financial behaviours such as saving, but the other often does not.

3.4 The value of practical learning

Altering financial behaviour could easily change the level of financial literacy. This dimension of the relationship between financial literacy and financial behaviour is not considered in the available definitions. Nevertheless, the suggested definition put more weight on the availability of financial services which implies the reverse mechanism could enhance the efficiency of financial training programs.

In high-income countries, to emphasise the importance of financial awareness and provide equal opportunities, financial management responsibilities such as pension and mortgage from the public sector to individuals (both men and women) have been transferred. In contrast, in low-income countries, sophisticated financial services and products could be available only for the elite minority, especially men. Consequently, the importance of financial literacy in enhancing the level of access and usage of financial services attracts strong attention.

4 Gender gap and its drivers

Financial literacy and financial behaviour have a close relationship, however, this link during the time and change of circumstances would change. As a result, the disparity in the level of financial literacy among different groups of the community could be observed, especially in those with regards to gender.

4.1 Problem statement

In financially underdeveloped countries, gender difference is bolder than developed ones, and rules and norms do favour men more as compared to women. The lower financial literacy, higher life expectancy and rapid changes in the financial markets have made women more vulnerable as compared with men. Inequality in provided resources for financial literacy is the main cause of the gender gap. Finding a solution to facilitate women's access to financial services and enhance their financial knowledge could improve financial behaviour.

In fact, inequalities are the common characters in all the societies and fighting against them is the unique symbol of the new era. In this sense, the gender difference in access and usage of financial services has become debatable among researchers. Though many efforts have been made to eliminate this inequality, it is not reduced significantly and persistently observed. Unfortunately, this gap is striking in financially underdeveloped countries, and women are denied education because of socio-economic factors.

In general, managing money has become a common problem for everyone, given the raising the complexity and diversity of financial services, especially for women from under-developing countries. Although there are numerous works on financial literacy and its importance in the literature, the function of gender in this field has been neglected or at least has not received the attention this imperative matter requires.

What about financial literacy, is there any evidence on the difference between men and women with regard to financial literacy? In other words, does gender influence financial literacy? Many different organisations, through surveying, measured financial literacy around the world and revealed that women are less financially literate compared to men (Bucher et al., 2017). Various reports on measuring financial literacy have shown that women were aware of their scarcity in financial literacy (Bucher-Koenen et al., 2017). But to the best of our knowledge, there is no work focusing on the assessment of their willingness to learn more. Instead, some postulated that women brought their financial concerns to their workplace. Lusardi and Mitchell (2011) suggested that age and gender influenced the level of financial knowledge, as women and older generations had lower financial literacy compared to other groups. They also found out that having a plan for retirement was closely related to the level of financial literacy, and as a result, the level of wealth among families is considerably different.

There are a few research teams who tried to root out the gender disparity in financial literacy. For example, an American team (Fonseca et al., 2012) used the collected data from the RAND American life panel and tried to explain the gender gap in financial literacy through the Blinder–Oaxaca decomposition method. Their within-country study represented a new perspective in this field. They argued that the channel in which women absorbed financial literacy had more effect on the gender gap in comparison with an individual's traits. For instance, financial decision-making in the household could increase the level of financial literacy for men; however, there is no such certainty in the case of women. The way that they tried to explain the gender gap and its causes was novel and innovative; however, in the argument, the assumption of homoskedasticity was not maintained.

4.2 *Roots of gender disparity in financial literacy*

Lusardi et al. (2017) showed that the root of differences in the level of financial literacy was related to its benefits which varied from person to person and is influenced by gender. Normally, women in developing or even developed countries, suffer from inequality in provided resources for financial literacy because of different stereotypes and beliefs (Driva et al., 2016).

For the social and political factors, Cupak et al. (2018) decomposed the gender gap in financial literacy in 12 countries to determine its drivers. They applied the revised version of Blinder–Oaxaca (B–O) counterfactual decomposition method (Blinder, 1973; Oaxaca, 1973) over the more than 12000 observations from OECD/INFE (International Network for Financial Education) survey of adult financial literacy competencies. This method, which previously was practiced by Fonseca et al. (2012) to assess gender disparity in financial literacy, disintegrated this gap into two parts: explainable part and unexplainable one.

The formula for gender decomposition:

$$R = (XM - XW) \beta^* + \{XM (\beta_M - \beta^*) + XW (\beta^* - \beta_W)\}$$

R is the gender gap, and M represents males while W represents females' group. X is the vector of socio-economic individuals' indicators. β_W and β_M are the coefficient vectors for females and males. And β^* is a coefficient vector estimated from a pooled regression over the two groups M and W. First part of formula, $(XM - XW) \beta^*$, represents explainable disparity in financial literacy and the remaining is about unexplainable part (Cuapk et al., 2018).

Their results implied that around 70% of the gap in their data was related to the unexplainable part which could be associated with social and economic factors. For example, in the more developed countries, the gender gap was more extensive compared to previously communist countries, which pointed at the social and political structure of the country. The explainable part was related to personal characteristics such as education age and level of income. Although, they enhanced the Blinder–Oaxaca (B–O) method of the decomposing gender gap, yet, due to the different sub-samples and variances, comparing the coefficients is not straightforward.

As for the context of the research, it is a well-known fact that there is fewer empirical data focus on women from developing or underdeveloped countries. While there are recent works in the literature recording the lack of financial knowledge among women and gender gap, most of them are at the cross-country level or evaluated gender disparity in the affluent countries. There are

a few studies on socio-economic factors which cause inequality in financial literacy and access/usage of financial services within a country. Mainstreaming tribals through financial literacy by Nanda and Samanta, (2018) is a good example. They reviewed the available literature and concluded that mismanaging money was the result of financial illiteracy and social exclusion.

In 2011, Mastercard Worldwide surveyed an index of financial literacy for women in 24 countries from Asia, the Middle East, and North Africa, and Sub-Saharan Africa. They covered three basic notions of financial literacy in the survey: (i) basic money management, (ii) financial planning, and (iii) investment. Their results revealed the level of income was not necessarily related to the level of financial literacy; for instance, women from Thailand (i.e., a developing country) had a higher level of financial literacy as compared to Korean females (i.e., a developed country). With regards to the gender gap in financial access/usage, they reported that women and men from middle east markets had relatively equal financial literacy, except for Saudi Arabia where women scored higher than men in money management and planning. In Africa, although women scored less than men, they were more or less similar in term of financial literacy.

Considering the fact that men hold more power than women in the group-based social hierarchies (Sidanius & Pratto, 2001) and recognising that power is gendered (Pratto et al., 2011), women would inevitably suffer from inequality. The longer life expectancy, shorter employment period, and lower income or benefits (Weir and Willis, 2000) made women more vulnerable to have financial difficulties.

In this context, a group of researchers from the University of Southern California (Zissimopoulos et al., 2008) stated that marital status had a significant impact on economic well-being by using the data from the RAND American life panel. They showed that unmarried, especially divorced women, had considerably lower capital as compared to married couples and unmarried men. Allen et al. (2016) in their work confirmed that those poor women who lived in remote areas were more likely to be excluded from financial services. Ghosh and Vinod (2017) found similar evidence which attested women were more vulnerable to be excluded.

In 2012, Behrman and Mitchell (2012) probed the relationship between financial literacy and wealth accumulation. They implied that investments in financial literacy probably would increase the level of economic wellbeing. Bulte et al. (2016) presented similar results and showed that the business training for females had a significant effect on their inclusiveness and promoted entrepreneurship among them and increased the profits.

4.3 New perspective on gender gap

In many developing countries, women are the breadwinner of the households yet, based on the standard definitions, it concluded that they are financially illiterate. The proposed definition has three dimensions: financial needs, financial awareness, and availability of financial services. If the financial needs and availability of services are considered, this assumption might change. Change in general assumptions such as this could be a game changer for women who fight for social inclusion.

Although, in some places such as South Africa, because of different wellbeing schemes, the gender gap was positive, yet, due to the political and cultural limitation, women showed a lower level of financial literacy compared to men.

Hung, Yoong, and Brown (2012) suggested that the gender gap in financial literacy staged major problems for social balance. If the human capital is considered as the primary input for social and economic growth, the participation of women will accelerate this process. Because of a significant increase in the number of educated women and changing patterns in their social position, paying attention to their social and economic rights as active members of society is of utmost importance. In these circumstances, the emerging financial markets could be viewed as a place to provide fair opportunities for women to engage in economic and social activities equally.

5 Financial literacy and training

As mentioned before, the level of financial literacy is not optimised yet, and there should be a way to enhance it in order to make a sound financial decision. One solution could be financial training. A huge amount of money is invested in financial training and enhancing the level of financial literacy. Nonetheless, awareness is not satisfactory to exploit the available services. As a result, making the wrong financial decision is prevalent among people, and women are more at the risk of financial problems because of the disparity in financial inclusion and awareness. Furthermore, in the underdeveloped and developing countries, although women mostly are responsible for managing the family finance, they are underprivileged with regards to financial education and training.

Financial training is more efficient when it is mixed with daily life. Using financial services such as electricity payment through mobile money could be one way to facilitate paying the electricity bill for households in a remote area. Yet, enhancing the level of financial literacy has any impact on people's economic wellbeing? This part will investigate the effect of financial training on financial behaviour.

5.1 Importance of financial training

There is a common agreement among scholars and policymakers which financial literacy is one of the main components of financial wellbeing, hence, increasing the level of financial literacy would improve financial wellness. According to Brascoupe et al. (2013), "in order to be financially well, one must be healthy, happy, secure and free from worry of financial matters." In their literature review of indigenous financial literacy, Brascoupe et al. (2013) stated that financial wellness composed of two group factors, namely, education/policy factors and motivation factors. The former included financial literacy, financial inclusion, and income security, and the latter encompassed financial behaviour and financial attitude.

However, there were others who argued that financial literacy is not a panacea. Willis (2017), in her essay *Finance Informed Citizens, Citizen Informed Finance*, reasoned that financial literacy, on its own, is not enough for the wellbeing of societies. The author suggested that the aim of financial literacy should "be to foster finance-informed citizens, who have the capacity for civic engagement that can create citizen-informed economic policies and financial regulation". And for financial education, she argued that "financial pedagogy should not only admit that values are implicated in financial policy choices, it should expose how values are implicated in those choices". Her debate on participatory citizens is reasonable though far from reach in developing countries.

Despite the existence of a broad range of works in the literature on financial training, results are uncertain. Some empirical studies (Bernheim and Garrett, 2003) suggested that attending the training program could improve the quality of financial decisions. Cole et al. (2012) found little evidence for the efficiency of the financial training program in Indonesia, and Mullainathan and Shafir (2009) reported mixed results.

With regard to the impact of financial training on economic outcomes, there are mixed results, and there are many debates on whether these types of programs are convenient. In their review of the existing literature up to 2013, Hastings et al. (2013) argued that the current literature was lacking to give guidance on designing the most efficient and cost-effective financial training. They suggested that the best way for evaluating the impact of financial training on financial literacy and economic outcomes, it is better to pair randomised control trials and measures of financial literacy.

The common goal of all researchers in this field is to find a way for helping individuals to take healthier financial actions in order to create a financially secured future. Understanding the way individuals' function around financial decisions should be the centre of designing financial training programs. The

key question here is: what are the characteristics of these types of training? Can a financial education course in high school serve the purpose? Should the dimension of gender be considered or not? What kind of learning strategy would be more effective? What are the preferred sources of financial knowledge? Could the reward mechanism increase the efficiency of training, and if so, what kind of reward?

5.2 Methods and sources of financial training

Many experimental studies showed that family and friend were the first choices for making a financial decision (Bernheim, 1998; Lusardi, 2007; Van Rooij, Lusardi, and Alessie, 2011; Lusardi and Mitchell, 2014). Hilgert, Hogarth, and Beverly (2003) used the University of Michigan's monthly Surveys of Consumers conducted in November and December 2001 to investigate the link between financial knowledge and behaviour. They found that the most favoured and useful source of learning about money management was the media.

They emphasised on the concept of "teachable moment", which refers to the time when the attendee of an educational program has a chance to instantly apply the absorbed information (Miller et al., 2015). In fact, Practical methods of education such as video game or radio are more effective as compared to a formal course (Spader et al., 2009). Afterward, Kaiser and Menkhoff (2017) reviewed 126 studies with regards to the impact of financial education on financial behaviours, and came to the conclusion that, financial education has a positive impact on financial literacy and financial behaviour. However, this impact is different for various financial behaviours for example, improving saving behaviour was more natural than that of borrowing. Furthermore, the level of income influences the effectiveness of financial education, and the characteristics of the educational program such as the nature of the program (mandatory or voluntary), intensity, or considering the teachable moment influenced the outcome.

While, the positive impact of financial literacy on financial behaviours seems to be possible, the long-term effect of financial education is still questionable. In the case of financial education in high school, some found it is not effective (Mandell, 2008), yet others such as Bernheim, Garrett, and Maki (2001) showed mandatory financial education course would increase the level household savings by applying the difference in difference method.

5.3 Mechanisms and determinants

Overall, learning without practicing the acquired knowledge is inefficient. Due to this fact, a researcher from South Africa (Tustin, 2010) put the locus of the study on the mechanism of turning knowledge into the actions. Tustin investigated the impact of financial literacy on saving behaviour in the rural area. That study suggested that training could improve saving, after measuring the difference between the control and treatment

group. Similarly, with a more substantial sample in Mexico, Bruhn et al. (2013) confirmed that short training could have a positive short-term impact on saving behaviours.

Two years later, through a metanalysis study, Miller et al. (2015) reviewed 188 papers on financial education and consumer behaviours. They cited from Global Financial Development Report (2014) that financial education was the most effective policy to improve access to finance among low-income borrowers. The outcomes suggested that financial education could improve certain financial practices such as saving and record keeping. They did not find any evidence on the importance of the program features such as intensity. They argued that the evaluation of the costs and benefits of the interventions in all of the studies dropped.

Furthermore, motivation plays a vital role in translating knowledge into the action. Motivated people gain more from purposeful financial training. Elliehausen et al. (2003) stated that credit counselling would improve borrowing behaviour and creditworthiness.

Mandell and Klein (2007) explained that the lack of motivation to learn and use financial skills in high schoolers could be the main reason for low financial literacy score. Since children do not usually deal with financial matters, they lack the motivation to learn and apply financial knowledge and skills. Hence, in every training program with regards to finance, needs of attendees should be considered to design a more effective program. Adults, in general, have more reasons to be attentive in these types of programs.

If the role of financial literacy is recognised in improving financial behaviours, planning a program in order to enhance financial literacy should be the next step. Furthermore, since the financial world is subject to constant changes, the boundaries of financial literacy should be adjusted. Therefore, the necessity of constant education and training is evident though authors acknowledge that it is difficult to achieve.

But how turn the theory to the practice? Jean Lave (1988) in the introduction of her book mentioned that there is a gap between everyday life and academic one. As a consequence, what can be learnt in schools or universities or any principle-based systems might be subject to forgetfulness if there is no immediate use. Thus, focusing on the "teachable moment" could improve the outcome.

Paying attention to the teachable moment is one part of the plan to resolve the problem of the discontinuity between the academic world and the real world.

Nonetheless, the sources in which financial literacy is acquired have their roles to play. In general, family and friends are the first choices for making a financial decision (Bernheim, 1998; van Rooij, Lusardi, and Alessie, 2011; Lusardi and Mitchell, 2014), and media and social networks are the most favoured and useful source of learning about money management (Hilgert et al., 2003). Thus, social interaction is of higher importance due to its role in diffusing knowledge.

As for social learning, there are indications that social learning has a positive impact on individual behaviour. Hong et al. (2003) found that peer effects would influence financial market participation. They assumed that social interaction would increase stock market participation. Results from assessing the Health and Retirement Study data (conducted by the Institute for Social Research at the University of Michigan) confirmed this theory and revealed that the sociability has a stronger effect in states with a higher rate of stock-market participation. Chua and Camerer (2011) experimentally showed that giving examples of those who did well motivated other participants to do better, especially in spending.

Another study covering the impact of the social network on wellbeing and having a financially secured future is "social networks and the decision to insure" by Cai and Sadoulet (2015). They applied the randomised experiment method to assess the effect of social interactions on adopting weather insurance among Chinese farmers. Farmers, who received information on insurance and its benefits spread the words which boosted the adoption of the new weather insurance. This study demonstrated that the distribution of information through a social network could be more effective than that of the peer's behaviour.

Nevertheless, Beshears et al. (2015) opposed the idea of the positive impact of social interactions and proposed that in low-income societies, presence of peer information would generate an adverse effect. In their empirical research, they evaluated the influence of peer information on saving among low-savings-employees. They documented a decrease in saving among the target group in the presence of peer information. One reason for the finding as mentioned earlier might be related to the fact that information was spreading discouraged low incomes. Such information was indeed highlighted their lower economic class in their financial decision making.

Considering social interactions, some tried to investigate the impact of the group on decision making. Charness and Sutter (2012) compared the individual decisionmaking with group decisionmaking and reasoned that a financial decision made by a group is more rational than that of an individual, though they marked that this type of decision does not always bring social welfare.

Making a practical financial decision in a group requires a reasonable degree of heterogeneity in the group and an enabling environment. The possible mechanism could be explained as the diversity in a group would lead to a different level of financial knowledge which could result in a clearer decision and practice. In contrast to Charness and Sutter (2012) who argued the group members should have a different level of knowledge, recent research on social interaction (Ambuehl et al., 2018) suggested that in peer learning, having an equal level of financial knowledge could improve the process of decision making. They also suggested if group members harmonise the process of making a decision, the caused social welfare would have a beneficial spillover impact on their private decision. Regarding the mechanism of social learning, Mobius et al. (2014) said that theory and empirical works on social learning are different from each other. They argued that each context of social learning has its circumstances, and according to those circumstances, existing social learning model would be adapted. However, assumptions and predictions of theoretical models such as naive learning or rational learning should be empirically tested, before generalising.

A crucial question is: how does this process of learning happen? It is very likely that social learning occurs in two different way: (i) the natural way that happens after introducing a phenomenon in which people try to learn how to deal or use that phenomenon and (ii) intervention in which a learning or training program would be designed to facilitate the process of adaption. In general, the spill-over effect through social network plays a vital role in the effectiveness of social learning.

5.4 Structure

Turning from studies on the benefit of financial training to the structure of these programs, the question of how to design them properly. At this point, it became clear that even in designing financial training programs there are different and sometimes controversial attitudes. For example, some say giving rewards would motivate participants to turn training into action. In 2011, Camere and Chua conducted experimental research in which they studied the effects of giving participants immediate physical rewards (rather than points) in the simulations. They stated tangible and immediate reward would increase the level of saving.

Generally, researches on the FL and financial training or financial education tried to estimate and measure the level of FL, yet standardising the results was a tricky task. In measuring the impact of these training programs, it is noteworthy that they vary with respect to the duration and goals. Therefore, comparing the results might not give an accurate conclusion.

In a recent study, Carpena and Zia (2018) worked on the causal mechanism of financial education and found out that the level of complexity of financial practice plays a critical role in the causal mechanism of financial education.

In their previous study (Carpena et al., 2017), they emphasised on ATE (average treatment effect), and reasoned financial education alone would not significantly improve financial behaviors. Thus, they applied three different treatments in order to investigate the channel in which financial education would improve financial practices. A video-based financial education program was their first intervention, and the second intervention was setting a financial goal to meet in a given period. The last treatment was to give financial counselling.

Following by causal mediation analysis which measured the causal effect of all treatments, they concluded that financial literacy programs have no impact on numeracy, but the level of awareness and attitude notably would improve. They also marked that numeracy has no impact on the household's financial practices, but awareness and attitude mediate the treatment effect on financial practices.

Therefore, the structure and complexity of the programs which aim to improve the level of economic welfare should be harmonised with the needs of individuals and circumstances. Drexler et al. (2014) assessed the effect of two different training programs on financial practices of microentrepreneurs from the Dominican Republic through applying randomised control trial. Individuals assigned to the treatment group received different financial training programmes including standard accounting course and the rule-of-thumb training which varied in structure and complexity. Their results revealed that the standard accounting course had no significant impact on economic behaviours of those who received it as a treatment. On the contrary, the rule of thumb training with more straightforward rules and concepts to follow, remarkably improved the financial management skills of its participants. Hence, designing a financial program to enhance the level of economic welfare is of utmost importance.

Designing a training program, also paying attention to the circumstances, such as the level of development or income, is indispensable. In another metanalysis study over 188 papers on financial literacy and its impact on financial practice, Miller et al. (2015) found that more than half of the training programs, up to 2015, were provided by the community. The target group for these types of programs is low-income individuals or those who are financially vulnerable. Hence, it is not unusual to observe all the training programs in Africa provided by the community.

To improve the financial training programs, Zu and Xia (2012) provided a few suggestions such as, considering social interactions and peer learning to boost the training programs, putting more emphasis on vulnerable groups such as women and the older generations, implementing other interventions to improve the efficiency of the program, designing program based on the available financial services and counting motivation as a main element.

There were other studies which focused on other factors such as program providers/presenters, the duration, neurological/psychological aspects and so forth. For instance, Berg et al. (2014), in Tanzania, implemented business training for local entrepreneurs to compare the effect of internal training and an external one. They stated that participants in the external training program were more satisfied and showed more financial skills in comparison with those who attended the internal training program.

For the factor of duration, Field et al. (2010) documented insignificant changes in financial behaviours from traditional classroom education. On the other hand, Drexler et al. (2014) argued that a heuristic approach to finance is more effective than teaching financial literacy. In the behavioural economics literature, such an intervention viz. RoT which composed of problem-solving, learning, and logical thinking (Nyhus and Webley, 2006).

RoT financial education interventions are trending due to the fact that they are light, more convenience and purpose oriented. These kinds of training programs could show results in the short term (Drexler et al., 2014), hence they are less time consuming compared to other interventions. Bhutoriaa and Vignoles (2018) also studied the effect of RoT intervention on saving behaviours among women.

5.5 Women and financial training

With regards to financial and business training for women, it is interesting to note that social restrictions would prevent their entrepreneurship activities (Field et al., 2010). Even if women could defeat all barriers to become entrepreneurs, they benefit less from business training when compared with male entrepreneurs (Berge et al., 2014). However, such conclusions did not discourage other researchers. In a recent study by Bhutoriaa and Vignoles (2018) on women from poor households showed that even a relatively low-cost financial program could impact financial behaviours.

They chose one-day training over the more expensive traditional classroom interventions. By applying the randomised control trial, Bhutoriaa and Vignoles reported some positive changes in financial behaviours of the control group. Though the results presented some positive effect on saving and some

budgeting behaviours, due to the special structure of the program, women's interest in financial matters did not change. Attaining a considerable sample (1281 individuals) and the ability to reach individuals added to the reliability of their results and increase the generalisability of them. In the end, they concluded training based on behavioural economic such as RoT interventions have a higher rate of success compared to principal-based ones.

Concerning the impact of social training on women empowerment, Bulte et al. (2018) tried to measure the impact of a gender and business training on income hiding in order to overcome poverty and raise welfare among Vietnamese women. They applied a randomized controlled trial to study how training could change the bargaining position of women in households. Authors documented the positive effect of the intervention on gender equality. They stated these types of training could encourage women to hide their income in order to improve their role in decision making. But on the downside, the results could discourage NGOs who attempt to improve the level of welfare among rural women by training.

5.6 Tailoring the training for the audiences

To sum up, an effective training program could be characterised as practical, gender oriented, and rewarding, which present in the teachable moment. A program of this kind could satisfy financial needs. It is fair to say that an increase in awareness would result in knowledge based-decision making and change in financial behaviours. Moreover, this change would have a spill-over effect, and financial knowledge would spread beyond the target group.

6 Final remarks

In this selective and systematic analysis, a new definition was suggested, which is composed of financial needs, financial awareness, and availability of financial services. The proposed definition is characterised by both demand and supply sides, where financial awareness and financial needs are related to the demand side while supply side encompasses the availability of financial services. In the available definitions, different dimensions had equal or arbitrary weights. Since the weights might be substantially different from country to country, the current definitions ideally work in the given environment. This impracticality is more significant in developing countries, which are financially far from the given definition's country of origin. On the other hand, since financial literacy and financial inclusion are of great importance to deal with the emerging issues in developing countries, the inaccuracy of such definitions may cause misleading, as it has been partially discussed in the present paper.

Concerning the relationship between financial literacy and financial inclusion, most of the existing literature empirically demonstrated that an increase in the

level of financial literacy could enhance financial behaviour. The proposed definition, which emphasises on the availability of financial services, however, can project the pattern the other way round. This means providing feasible access to financial services could be an effective method to improve the level of financial literacy.

With regards to women and financial literacy, based on experimental results from previous works, it appeared that women suffer from a lower level of financial literacy. Different factors such as cultural barriers and policy demarche cause a disparity in financial literacy and limited access to and usage of financial services among women. The common perception, which underestimates women skills and abilities, might change if the financial needs and availability of services are considered.

Even if there is a gender gap, financial training could be a way out in order to close it, though designing an effective program is still challenging. In designing a financial training programme, paying attention to the financial needs and available services is of utmost importance. The stated definition is well matched with the basic concepts of RoT, which focuses on accessible financial services to meet the present financial needs. RoT is, in general, favourable because of its light, low-cost, and motivative nature.

In the present quest for understanding the nature of financial literacy, we found out that financial literacy has different components. Hence, there are different ways of measuring it. Thus, we need to develop a measure which concentrates upon crucial elements in order to have a practical and useful measurement. First of all, we need to evaluate the macroeconomic situation of the country and determine the level of development. Then, assessing microeconomic factors of the target group such as income level, education, access to financial services, and social status should be considered, and subsequently, a proper method for measuring financial literacy could be designed. All of these tasks are vitally required owing to the fact that financial literacy is a relative term and depends on the financial system of the place where the target group resides (Brascoupe et al. 2013).

Constructing a new index based on the components of the proposed definition is the subject of future research.

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Table 1. Other definitions of financial literacy

Authors (year)	Definition used	Measurement used	My comments
Chen and Volpe (1998)	Personal financial knowledge	Through a questionnaire with 36 multiple-choice items.	Actual and perceived knowledge differ, the former would bring financial skills and behaviours.
Mason and Wilson (2002)	an individual's ability to obtain, understand and evaluate the relevant information necessary to make decisions with financial consequences.		They did not introduce any measure.
Beal and Delpachitra (2003)	the ability to make informed judgements and take effective decisions regarding the use and management of money	By the survey instrument. Responses were marked and the percentage of correct responses for each question calculated.	In designing this questionnaire, target population was selected from university students, hence it is not proper for individuals with lower level of education.
Moore (2003)	"Individuals are considered financially literate if they are competent and can demonstrate they have used knowledge they have learned".	By a three parts questionnaire which covered Financial knowledge, experiences, and behaviours. Responses were marked and the percentage of correct responses for each question calculated	Questions were too long and part of another study on socioeconomic
Hilgert, Hogarth, & Beverley (2003)	Financial knowledge	Through questionnaire and it equals the number of correct answers to a financial knowledge test	Financial literacy is not a single dimension concept. Financial skills and behaviours are part of financial literacy.
FINRA (2003)	"The understanding ordinary investors have of market principles, instruments, organizations and regulations"	Through a false/true questionnaire	Investment was the focus of this definition and its measurement
Mandell (2007)	"The ability to evaluate the new and complex financial instruments".	Through a questionnaire with 31 items, and it equals the percentage of correct answers to a financial knowledge test	Just knowledge aspect was considered.
PACFL (2008)	the ability to use knowledge and skills to manage financial resources effectively for a lifetime of financial wellbeing	This report was not an empirical work, and did not introduce any measure to evaluate the level of financial literacy.	
Hung et al. (2009b)	knowledge and ability to use that knowledge and other financial skills	They used Cronbach alpha (alpha between 0 and 1, .7 is ideal).	They used data dataset provided by RAND's AmericanLife Panel(ALP).
Lusardi and Mitchel (2007) and (2009)	"the most basic economic concepts needed to make sensible saving and investment decisions"	Through questionnaire on three basic concepts; interest rates, inflation, and diversification. Responses were marked and the percentage of correct responses for each question calculated	Level of financial literacy assessed at the household level.
Tayler (2010)	He defined a multidimensional index	He applied factor analysis and regression score on data from the British households panel survey	Collected data was part of the other social study and the scope of study only covered British people.
Atkinson and Messy (2012)	[a] combination of awareness, knowledge, skill, attitude and behavior necessary to make sound financial decisions and ultimately achieve individual financial well being	Through questionnaire and it equals the percentage of correct answers.	This study was a part of a larger research on financial inclusion, and financial literacy was assessed at the household level.
Oanea and Dornean (2012)	Financial literacy implies a persons' minimal knowledge about financial terms such as money, inflation, interest rate, credit and others, but besides this the abilities and skills of that person to use all this information in personal life.	Through questionnaire and it equals the percentage of correct answers.	The sample was drawn from a predetermined population which could reduce the reliability of results.
Zait and Berteau (2015)	In order to operationalise the concept of financial literacy they suggested that it has five aspects; knowledge, communication, ability, behaviours, and instruments, confidence.	By a questionnaire which covered all aspects with minimum 60 items.	Part of the questionnaire is related to personal finance which is private and normally people are not willing to give information about it.
Zia and Carpena (2018)	Financial literacy is a multidimensional concepts includes comprehensive, awareness and attitudes.	Through questionnaire which covers three dimensions; comprehensive, awareness and attitudes. Responses were marked and the percentage of correct responses for each question calculated	Since there is a strong interactions among these three dimensions, separating their impacts is difficult and complicated.
Nanziri and Leibbrandt (2018)	They combined the definitions of financial literacy from Atkinson et al. (2007) and the OECD (2009) to describe financial literacy in South Africa. Their definition had two main dimension; financial knowledge and financial capability.	They constructed a composite index for financial literacy by using the Principal component analysis (PCA). The average score of the index was calculated to measure the level of financial literacy.	Based on the available data (Finscope pooled surveys 2005–2009), financial literacy was measured which could act as a limit.