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Development of a comprehensive financial literacy scale

Desarrollo de una escala integral de educación financiera

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Abstract
Financial literacy and money management practices are fundamental aspects of economic growth. After developing a literature review, we analyze the most important aspects of the terminology and propose an integral definition of the financial literacy concept. The final goal of this paper is to develop a comprehensive scale to measure financial literacy as defined by the authors according to the evolution of the concept, taking into account related scales to money management found in the literature, and applicable to a wide range of people. The authors develop a structural equation modeling to relate unobserved constructs to observed variables and validate the scale with a divergent and convergent analysis.

Key words: *Financial literacy, scale development, literature review*

Resumen
La educación financiera y la forma de administrar el dinero son aspectos fundamentales del crecimiento económico. Después de desarrollar una revisión de la literatura, analizamos los aspectos más importantes de la terminología y proponemos una definición integral del concepto de educación financiera. El objetivo final de este trabajo es desarrollar una escala integral para medir la educación financiera según la definición de los autores de acuerdo con la evolución del concepto, tomando en cuenta escalas relacionadas con la administración del dinero que se encuentran en la literatura, y aplicable a una amplia gama de personas. Se desarrolló un modelo de ecuaciones estructurales para relacionar constructos no observados con variables observadas, la escala fue validada mediante análisis divergente y convergente.

Palabras clave: *Educación financiera, desarrollo de escala, revisión de literatura*
Códigos JEL: G53, G51, D14, I22, C38.

Introduction

The financial literacy landscape has become more sophisticated over the past few years with the introduction of many new financial products and services (Cull & Whitton, 2011; Deepak et al. 2015), a growing number of workers approaching retirement (Kamakia, et al. 2017), undesired financial and

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economic consequences in the economy (Refera et al, 2016; Cichowicz & Nowak, 2017), high levels of poverty (Nanda & Samantha, 2018) and rising levels of household debt (Cull & Whitton, 2011).

However, several financial problems can be found in the micro-level; people do not have the basic financial knowledge, and when they do, they do not implement it. Financial literacy is remarkably important as it can improve the standard of living (Lindsey-Taliefero et al. 2011), individuals must plan for financial security that extends 20 or 30 years further (Faulkner, 2015). According to Fortuna (2007), Americans have poor financial habits; a large percentage of the population lacks basic financial knowledge and skills to ensure long-term stability for themselves and their families. In Mexico this is not far from true, according to the ENIF (2015), only 41.2 percent of the Mexican population has a financial retirement product to save for the future and only just 36 percent keeps a record of their expenses.

Previous research has looked into different aspects of managing personal finances and money. Stango and Zinman (2009) stipulated that people choose to consume, borrow, or save based on their preferences, their expectations, and the cost and benefits of borrowing and saving. We can find different scales that measure the competences of people toward their financial behavior (Yamauchi & Templer, 1982; Spinella, Yang & Lester, 2007). However, the objective of this paper is to introduce a comprehensive approach to this discussion of financial literacy: the application of the knowledge on every day's lives. We aim to assess if the origins of bad financial practices are in the lack of knowledge of how to manage money or at the stage of application of the knowledge. Therefore, we seek to develop a scale that integrates the level of personal financial knowledge and its application to manage their money.

Financial literacy reflects the development of an economy. Therefore, it is important to realize the impact that good management of the financial resources can make in people's lives overall. Remembering the 2008 crisis, it was personal mortgages defaults which originated the biggest financial crisis since the Great Depression (Mian and Sufi, 2009).

Building on this, the present study attempts to develop a comprehensive financial literacy scale with the objective to explore the financial knowledge applicable to a more general population than previous financial literacy scales or related matters used in early studies (Atikson & Messy, 2011) and other related personal finance scales (Spinella, Yang & Lester, 2007). The implementation of this scale is made in the Mexican population from 24 to 38 years old with recurrent income. Nevertheless, the present measurement instrument can be applied in other regions and ages.

The remainder of the paper is structured as follows. First, we develop a literature review of the financial literacy concept and discuss the findings classified separated by five major areas. Then we searched for scales related to personal finances to base our scale development. Building on this, we present the elaboration of a comprehensive scale. The next section describes the data and methods, we detail our findings on the development of the scale. The final section provides the conclusion and future research directions.

Literature Review of Financial Literacy

To provide an overview of the relevant and current research literature that defines the concept and subject areas analyzed under this terminology, an integrative literature review was conducted by the authors following the methodology of Torraco (2005; 2016). The concept Financial Literacy was determined as the relevant research topic, determined as the jointed keywords.

For this search, we used databases of academic literature such as EBSCO, ProQuest, Scopus, Web of Science and Google Scholar. We focused the research on works published in the English language and it does not cover books or non-academic research papers. This methodology yielded 26 research articles in total. The references of the selected articles were then examined, via snowballing technique, to find relevant literature related to the target concept. The final set of articles reviewed was 51. Information was mostly

retrieved from the introduction, discussion and conclusion sections of the works reviewed. We looked mainly for the relevance of the concept, how authors defined it, areas mentioned in the field, factors taken into account when conducting studies, and measurement methods and issues present in financial literacy studies.

Importance of the Financial Literacy Concept

The financial crisis of 2007 shifted attention of the world towards its importance to ordinary and sophisticated investors (Abdullah & Chong, 2014, Kebede & Kuar, 2015). Other aspects that nowadays are attracting attention to the subject matter are the growing number of workers approaching retirement (Kamakia et al. 2017) and the recent shift of retirement responsibility from governments to individuals (Refera & Kaur, 2016).

It has been proven that lack of financial knowledge leads to poor choice and decision making, which can result in undesired financial and economic consequences to the individual, the financial system and the general economy (Refera, et al. 2016). Financial security can only be achieved when the population is considered financially literate (Taylor & Wagland, 2011). Therefore, financial literacy leads to correct financial decision making and independence (Charitha, 2018). It has been found that households with higher levels of financial literacy are better at reacting to a shock like the financial crisis (Bucher-Koenen, T., & Ziegelmeyer, 2011). When people are financially literate their current decisions provide support and prepare them for an uncertain future.

Evolution of the Financial Literacy Concept

There is confusion regarding the definition of the term financial literacy (Faulkner, 2015). According to Remund (2010), a clearer definition would improve future research, as it would provide the basis for the studies in the areas to cover, the measurement aspects and so forth. Differences in the definitions had led to different measurements which in turn have caused mixed results (Kamakia et al. 2017). Selim and Aydemir (2014) proposed that studies should primarily describe financial literacy to set the ground before proceeding to another stage of research.

Even though the definition of the concept has been advancing, the main idea has prevailed. In its origins, in the 1990s, seminal authors in the topic talked about the ability of an individual to make judgements and effective decisions regarding the use of money (Noctor, Stoney & Strading, 1992). More than 10 years later, in the twenty first century, authors were talking about a process by which people acquires knowledge and develop the skills required to make those effective choices in this topic (OCDE, 2005). After 2010, the level of definitions found in the literature increased exponentially, authors started mixing more and more subject areas such as awareness, different types of knowledge (e.g. financial products, concepts, etc), skills, attitudes, and behavior (Cull & Whitton, 2011; Huston, 2010). The latest years, authors highlighted the importance of the application of this basic knowledge to make informed decisions (Amagir, A., Groot, W., Van Den Brink, H., & Wilschut, A., 2018).

Based on this integrative research we propose the following definition:

"Financial literacy encompasses the basic knowledge of concepts and products related to their usage of money throughout a person life, the skills to apply this knowledge and look for direction when requiring specialized guidance, their attitude and behavior towards the different areas that they should take into account when planning for their future".

Areas of the Financial Literacy Concept

The concept encompass several areas about finance, according to the research a broad array of elements integrate the financial literacy concept: planning or budgeting (Taylor & Wagland, 2011; Vieira, 2012; Totenhagen et al. 2015; Amagir, et al. 2018), savings (Chen & Volpe, 1998; Lusardi, 2006; Fortuna, 2007; Lindsey-Taliefero, et al. 2011; Taylor & Wagland, 2011; Vieira, 2012; Totenhagen et al. 2015; Refera, et al. 2016; Amagir, et al. 2018), investing (Chen & Volpe, 1998; Lusardi, 2006; Fortuna, 2007; Lindsey-Taliefero, et al. 2011; Taylor & Wagland, 2011; Cull & Whitton, 2011; Deepak et al. 2015; Totenhagen et al. 2015; Amagir, et al. 2018), spending (Taylor & Wagland, 2011; Vieira, 2012; Amagir, et al. 2018), borrowing (Chen & Volpe, 1998; Fortuna, 2007; Lindsey-Taliefero, et al. 2011; Refera, et al. 2016), insurance (Chen & Volpe, 1998; Fortuna, 2007; Refera, et al. 2016; Amagir, et al. 2018), and planning for retirement or superannuation (Lusardi, 2006; Taylor & Wagland, 2011; Cull & Whitton, 2011; Collins & O'Rourke, 2012; Vieira, 2012; Deepak et al. 2015). Finally, few point out to areas as money management (Lindsey-Taliefero, et al. 2011; Refera, et al. 2016) which may encompass all the previous areas.

Some authors argue that all basic education should include a varied of topics pointing to planning or budgeting, saving, spending, investing and credit (Totenhagen et al. 2015; Amagir et al. 2018) being saving and investing the ones that need the greatest improvement (Lindsey-Taliefero, 2011).

Factors considered in Financial Literacy Studies

Ratna et al. (2018) provides a long list of factors that influence the financial literacy. Some can be summarized as demographic factors (e.g. gender, education, age, among others.) additionally, there are some others that can be comprised as previous experience on the subject (money attitude, perception and opinion, and so on). Deepak et al. (2015) highlights the importance of identifying predictors of financial literacy and establishes that the most important are financial education, cognitive ability, maturity and family background.

Deepak et al. (2015) have conclude that the major factors of financial literacy are financial knowledge, financial behavior and financial attitude.

Measurement methods and issues in Financial Literacy Studies

Researchers commonly employ questionnaires to test the financial literacy of individuals (Fortuna, 2007; Lindsey-Taliefero et al. 2011; Charitha, 2018). The questionnaires often encompass financial literacy areas (e.g. saving, investing, borrowing, etc.) questioning mainly about knowledge, as well as, demographic factors. The processing of the data extracted from the surveys has primarily been done by cross-sectional or longitudinal methods with regression analysis (Lindsey-Taliefero et al. 2011).

However, Financial literacy has been measured in several different ways (Selim & Aydemir, 2014), a unified financial literacy conceptualization is urgent to unify its measurement (Kimiyaghalam & Safari, 2015) and compare among studies to provide generalizable findings.

Scales related to money management

An additional research was done to discover scales in subjects related to financial literacy to identify the ways of how questions in the subject are done. For this search, we used the database of academic literature EBSCOhost. We selected academic articles that fit the specific keywords: "personal finance scale", "personal attitudes towards money", "attitudes toward managing money" and "personal money management scale". In this search, these keywords have been considered for the complete research articles, i.e. title,

abstract and text. These keywords fulfill the task to keep the focus on relevant scales concerning the measurement of attitudes toward managing money.

Out of the papers identified based on these keywords, in a second step, we look through the complete articles searching for the scales mentioned or based their research on. This methodology yielded five scales in total. We searched for the articles that developed the scales founded to assess their objectives and content. A brief description of the scales, the authors, and item examples are shown in Table 1.

Table 1
Scales measuring attitudes towards money

Scale	Authors	Description	Item Example
Money Attitudes Scale	Yamauchi & Templer, 1982	The scale provides a reliable assessment of five factors of money attitudes.	I do financial planning for the future.
Compulsive Buying Scale	Faber & O'Guinn, 1992	Unidimensional scale to identify compulsive buyers.	If I have any money left at the end of the pay period, I just have to spend it.
Material Values Scale	Richins & Dawson, 1992	Materialism scale with three components.	The things I own say a lot about how well I'm doing in life.
Executive Personal Finance Scale	Spinella, Yang & Lester, 2007	Self-rating of executive aspects of personal money management.	When I see something I want, I have a hard time not buying it.
Perceptions of payment mode scale	Khan, Belk & Craig-Lees, 2015	Captures consumers perceptions in 19-item four dimensions.	If I had a 100 note in my wallet... I would feel confident.

Source. Elaborated by the authors

The Money Attitudes Scale (Yamauchi & Templer, 1982) provides a reliable assessment of five factors of money attitudes: Power-prestige, Retention-time, Distrust, Quality, and Anxiety. The response format of the scale is a 7-point Likert scale, constituted by 29 items. This scale can be utilized to identify irrational and problematic attitudes and behaviors with money. Further research has applied this scale to measure compulsive buying in young Mexican adults (Roberts & Sepulveda, 1999). Other authors have tested the consistency of undergraduates and community residents (Yang & Lester, 2002; Spinella, Lester & Yang, 2005).

The Compulsive Buying Scale (Faber & O'Guinn, 1992) is a unidimensional scale composed by seven items to identify compulsive buyers by represented behaviors, motivations, and feelings associated with buying significantly. It is stated that compulsive buying becomes very difficult to stop and ultimately results in harmful economic, psychological and societal consequences. This scale has been applied to analyze the severity concept of compulsive buying in a sample of 44 subjects considered compulsive buyers. Results have come to the conclusion that compulsive buyers with lower incomes had greater illness severity and were less likely to have incomes above the median (Black, Monahan, Schlosser & Repertinger, 2001). An additional study has compared the scale with another two compulsive buying scales in an Italian sample, concluding that this scale has a better validity measuring compulsive buying in survey research. (Tommasi & Busonera, 2012).

Material Values Scale (Richins & Dawson, 1992) is a scale to measure materialism among individuals with three components. Acquisition centrality, when people places possessions and their acquisition at the

center of their lives; acquisition as the pursuit of happiness, when the pursuit of happiness is through acquisition rather than through other means; and possession-defined success, when people judge their own and others success based on the number and quality possessions accumulated.

We have found that Richins (2002) developed a short form of the Material Values Scale (MAS), with 15 items that improve the dimension properties. This scale has been tested in a cross-cultural study measuring consumers among Eastern and Western Europe, concluding that a new instrument is needed to measure equivalent materialism in a cross-cultural context (Griffin, Babin, Christensen, 2004). Moreover, adaptations of this scale have been performed to be applied in children developing the scale MVS-c (Opree SJ., et al, 2011).

Executive Personal Finance Scale (Spinella, Yang & Lester, 2007) is a self-rating of executive aspects of personal money management. Twenty items are grouped into 4 factors: impulse control, organization, planning, motivational drive. The scale showed to had correlations with compulsive buying and money attitudes. The study is based on ample evidence that executive functions, and the prefrontal systems of the brain that mediate them, play a role in managing personal finances. This allows the behavior of goal-oriented, flexible, and autonomous. Authors analyze demographic influences, one variable was education, and it had no apparent impact on the total score, it is important to declare education as years of general education, not financial education. Items were created to reflect different domains of finances, organization, financial planning, and impulse control over spending.

Additional publications about the previous scale performed an analysis using 138 college students, concluding that the planning subscale appeared to consist of two distinct components, investment, and saving behavior (Lester, Spinella, 2007). Recently, a validity study of the scale was performed in 93 undergraduate students obtaining results that support the Executive Personal Finance Scale (Yang & Lester, 2016).

The Perceptions of payment mode scale (PPM) (Khan, Belk, & Craig-Lees, 2015) captures the cognitive and emotional associations with payment modes. Composed of 19 items, this scale represents four dimensions: emotions relating to cash payment, emotions related to card-based payment, social and personal gratification and money management. According to the authors, the scale can aid researchers to know how cognitive and emotional associations affect spending behavior. Thus far, we have not found any adaptations to this scale in the literature or applications in different contexts, the scale is relatively new and has six citations according to ScienceDirect.

A comprehensive financial literacy scale

Based on these previous developments, we aim to create a scale that integrates the key aspects of our proposed concept: financial literacy. The scale will examine the existing scales to analyze if there items that can be extracted to their implementation in the comprehensive financial literacy scale. Additionally, it will integrate new items to measure financial literacy based on theoretical approaches and advice from experts in the field.

Following the proposed definition of financial literacy and with guidance from experts in the personal finance field, we establish the following dimensions for the construction of the comprehensive financial literacy scale. The following dimensions are proposed from the literature and have been used in some money management scales.

Expenditures. In this dimension Keown et al. (2003), explain that is important for every individual to have a financial plan. Kapoor et al. (2009) establish the importance of detailing your living expenses and other financial obligations in a spending plan.

Credit Card. For Keown et al. (2003) the most dangerous debt is right in your pocket, your credit card. When people use them most of the times, they do not think through, as they do not need to exchange cash. Also, they may become addicted to spend with this resource. However, the authors point the benefits of

owning a credit card if used smartly; they facilitate online purchases, they assist in tracking spending for budgeting purposes, and some of them provide insurances in travels and personal accidents.

Investment. Investment has been a dimension when evaluating personal finance knowledge in several studies related to money management (Chen et al. 2002). Nissenbaum et al. (2004) proposed investment planning as a strategy to build wealth through the understanding of investment vehicles and financial markets. Kapoor et al. (2009) recognize that there are many types of investment vehicles available and people should select them according to their financial needs.

Savings. The savings dimension has been included in related personal-finance scales (Chen et al. 2002). Kapoor et al. (2009) signaled that previous research indicates that people with a financial plan had significantly higher amounts in savings than those who did not have a plan.

Retirement. Lusardi et al. (2011). Conducted a research focused on retirement plans, they assure that people fail to plan for retirement and conclude that people with good financial practices are more likely to plan and to succeed in their planning, they rely on formal methods such as retirement calculators, retirement seminars, and financial experts, instead of family, relatives, and co-workers.

Insurance. Adequate insurance coverage is an important component of personal financial planning Kapoor et al. (2009). Nissenbaum et al. (2004) stated that a way to protect your family and assets fundamental in financial planning is through insurances, they proposed life, health, property/causality, disability, and auto insurance.

Model development

As previously mentioned, we establish that financial literacy in general population can be measured by obtaining information about money practices in six areas; how do people implement their knowledge on the subject matter in their daily lives. The initial areas proposed for the construction of this scale were expenditures, savings, insurance, credit cards, retirement and investments. Proxy statements were used to code these variables using a Likert scale response for each statement. A total of 69 items were developed for revision submission with experts. After the expert's recommendations a total of 29 items were considered to collect information in a pre-test exercise.

Sample for the data collection were obtained from general population over 18 years old with no specific characteristics. Principal sampling sources were author's personal network. Secondary sources include firefighters' station, graduate schools, parks and coffee shops. For the pretest analysis a sample of 72 participants were used, feedback from participants included changes in the composition of statements, rearrangement of the options in the answer section and the introduction statement to questionnaire.

Final distribution of questionnaire included a total sample of 172 respondents, from which 16 were deleted because either were under 18 years old or didn't answered all sections of the questionnaire. The principal channel of distribution was online, only the application for the pretest sample were done in person. Because the sensitive of the information provided the authors were prohibited from identifying the respondents by name or generating a mailing list.

We execute a factor analysis to determine how many factors were necessary to group the 29 items. In our first analysis, nine factors were obtained reaching a Cronbach's alpha of 0.76 and an explained variance of 51.37%, factor loads are shown in Appendix 1. After this analysis, we obligated the execution of 6 factors with the complete number of items. The results from the second factor analysis is shown in appendix 2.

We observed items developed for a specific dimension grouped in other dimensions, the six factors grouped items not related to a specific domain in the literature. Our first goal was to arrange the factors that group the items in a manner that make sense according to our six dimensions. We executed a reliability analysis and examine items that if deleted from the model increase the Cronbach's alpha, also those that showed a factor load less than 0.60 and those that were grouped in a wrong dimension. The items that did not accomplished the required criteria were deleted (i.e., Q15RC, Q4RC, Q24RC, Q6RC, Q9RC, Q11RC).

As we can notice, all deleted items were reverse code. After this process, we executed the factor analysis to determine how many factors were necessary to group the 23 items left. The analysis resulted in seven factors reaching a Cronbach's alpha of 0.829 and an explained variance of 63.94%, reaching a better model, the factor loads are shown in Appendix 3.

Results show that item Q27 is grouped alone in factor number seven. The rest of the factors, from one to six, grouped all of the items according the dimension they belong to. Then, we executed the model with the restriction of six dimensions, the grouping of items did not make sense again. The reliability analysis showed that if item Q27 were deleted from the model, the Cronbach's alpha would increase from 0.829 to 0.833. Based on these results we decided to remove item Q27 to reach our first goal. We run a factor analysis with the 22 items left, reaching a 61.11% of explained variance. The factor loads are shown in Appendix 4.

Our second goal is to improve the model by eliminating items with low load to improve the model (i.e., Q18 and Q28). Then we executed factor and reliability analysis to obtain the loads and Cronbach's alpha for our improved model with 20 items that explain the 62.36% of the variance. Loads for this final model are shown in Table 2.

Table 2

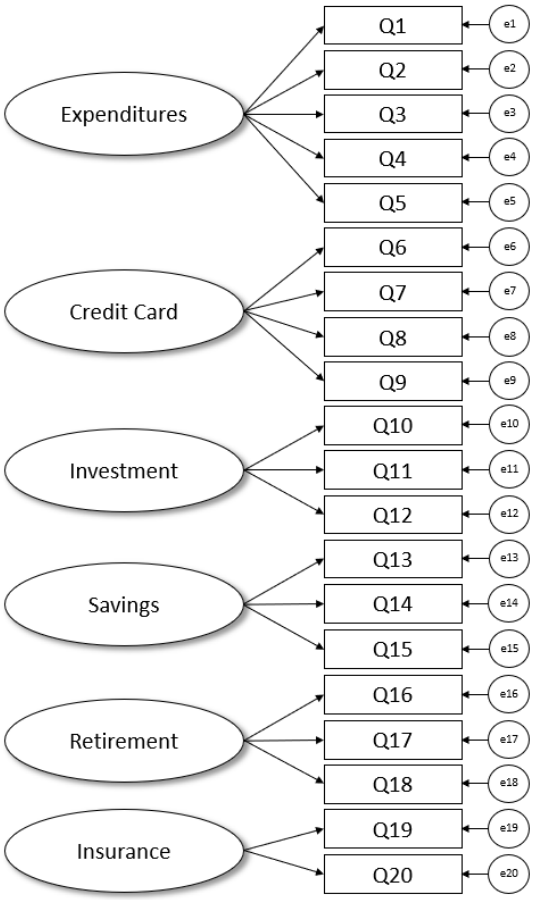
Factor Analysis. 20 items. 6 Factors

Item	Factor Number					
	1	2	3	4	5	6
Q3	0.800	0.138	0.087	0.200	-0.113	0.022
Q1	0.798	0.098	0.010	0.159	0.128	0.126
Q5	0.730	-0.180	-0.014	0.221	0.145	-0.051
Q17	0.457	0.357	0.271	-0.145	0.146	0.305
RC Q19	0.024	0.736	0.095	0.072	-0.115	-0.102
RC Q20	0.062	0.708	-0.213	0.168	0.024	0.120
RC Q21	-0.094	0.652	-0.385	0.177	0.162	0.023
Q16	0.220	0.582	0.220	0.043	0.092	0.408
Q2	0.391	0.392	0.012	0.042	0.323	-0.045
Q23	-0.032	-0.097	0.761	0.141	0.129	0.120
Q22	-0.081	0.086	0.753	0.279	0.113	-0.061
Q25	0.250	-0.082	0.727	0.036	0.100	0.099
Q7	0.084	0.019	0.326	0.716	0.021	0.150
Q8	0.231	0.217	0.087	0.698	0.097	0.068
Q10	0.256	0.181	0.057	0.627	0.124	0.079
Q13	0.110	0.153	0.117	-0.098	0.776	0.157
Q12	0.069	0.006	0.107	0.443	0.684	0.057
Q14	0.058	-0.235	0.365	0.315	0.536	-0.048
Q26	-0.092	0.187	-0.047	0.092	0.011	0.800
Q29	0.200	-0.153	0.172	0.173	0.137	0.730

Source. Elaborated by the authors

When we assessed the best model available from the information obtained, the developed model was introduced into AMOS, to run a structural equation model analysis. Items were renamed for simplicity. The

introduced model is shown in Figure 1, relations between constructs and the observable variables can be identified.



Source. Elaborated by the authors
Figure 1.Structural Model 1

To validate our model, we estimate the Goodness of Fit Index (GFI) by running the default model in AMOS. The GFI obtained is of 0.848, a desirable value for GFI is of 0.90 (Revuelta, J., & Kessel, D., 2007), meaning that our model can be improved. Other valuation parameters that we use to determine if our model is well adjusted to measure the constructs are the RMSEA, the obtained value was 0.071, a desirable value is 0.05 (Steiger & Lind, 1980). We calculate the Comparative Fit Index (CFI) to obtain a value of 0.835, a desirable value is 0.90 or more (Bentler, P. M.,1990), this bring us to the same conclusion, our model can be improved.

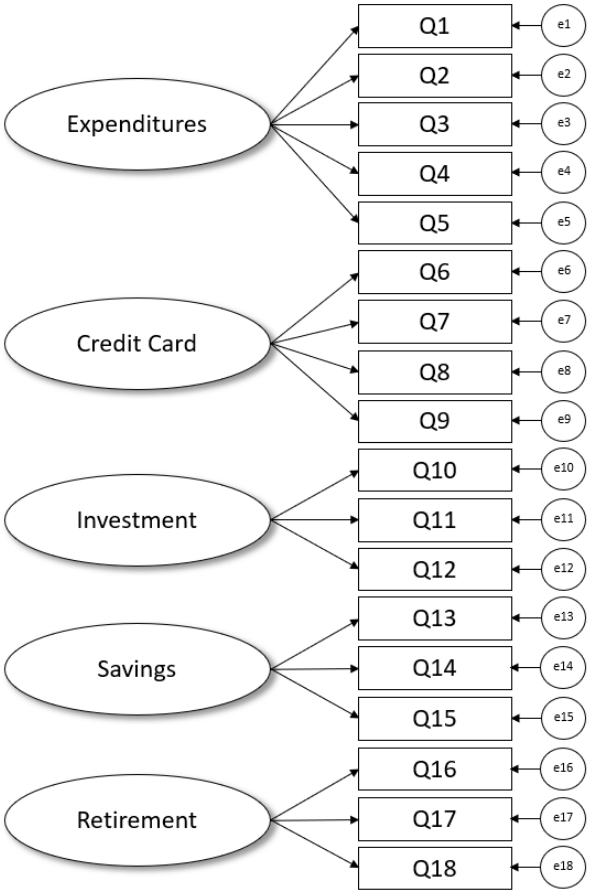
We execute a convergent analysis to determine that the observed variables are measuring the determined constructs (Fornell & Larker, 1981). The estimations of the structural equation model for each relation between variable and construct are shown in Appendix 5.

As we can see the variable Q20 has a low estimate of 0.484; the construct “Investment” is only measured by Q20 and Q19, if we delete Q20 the construct will be measured directly from Q19 and no estimation can

be done. Then, we calculate the Average Extraction (AVE) for each construct, a desirable value is more than 0.5, results are shown in Appendix 6.

As we can see, no value is more than 0.5; the construct “Insurance” has the lowest value with 0.371. Then we proceed to calculate the, results are shown in Appendix 7.

The desirable value for Composite Reliability is 0.70 or more. In our model the constructs “Credit Cards” “Savings” and “Insurance” have a lower Composite Reliability than 0.70. The value that brings our attention is “Insurance” with 0.53. Based on this, we decide to eliminate the construct of “Insurance” and leave 5 dimensions measured by 18 variables. The final model is shown in Figure 2.



Source. Elaborated by the authors
Figure 2. Final Structural Model

To validate our new model, we estimate the Goodness of Fit Index (GFI). The GFI obtained improved to 0.866, closer to 0.9. The value for RMSEA also improved to 0.069, closer to 0.05. We calculate the Comparative Fit Index (CFI) to obtain an improved value of 0.866, closer to 0.90, this bring us to the same conclusion; our model was improved by excluding the insurance dimension.

We execute a convergent analysis for our new model to determine that the observed variables are measuring our constructs. The estimations of the structural equation model for each relation between variable and construct are shown in Table 3.

Table 3
Convergent Analysis

Observed Variable		Unobserved Construct	Estimate
Q1	<---	E	0.817
Q2	<---	E	0.403
Q3	<---	E	0.767
Q4	<---	E	0.609
Q5	<---	E	0.422
Q6	<---	CC	0.49
Q7	<---	CC	0.542
Q8	<---	CC	0.731
Q9	<---	CC	0.6
Q10	<---	I	0.661
Q11	<---	I	0.754
Q12	<---	I	0.655
Q13	<---	S	0.623
Q14	<---	S	0.718
Q15	<---	S	0.63
Q16	<---	R	0.749
Q17	<---	R	0.465
Q18	<---	R	0.592

Source. Elaborated by the authors

As we can see, the variables Q2, Q5, Q6, Q7, Q9, Q10, Q12, Q13, Q15, Q17 and Q18 have a low estimate; less than 0.7. Then we calculate the Average Extraction (AVE) for each construct, a desirable value is more than 0.5, results are shown in Table 4.

Table 4
AVE

Unobserved Construct	AVE
E	0.3934
CC	0.3571
INV	0.4782
S	0.4335
R	0.3759

Source. Elaborated by the authors

As we can see, all values are less than 0.5. We then calculate the Composite Reliability, results are shown in Table 5.

Table 5
Composite Reliability

Unobserved Construct	Composite Reliability
E	0.7502
CC	0.6846
INV	0.7324
S	0.6956
R	0.6353

Source. Elaborated by the authors

The desirable value for Composite Reliability is 0.70 or more. In our model, the constructs “Credit Cards” “Savings” and “Retirement” have values of Composite Reliability close to 0.7; concluding that for all the model the observed variables are measuring the unobserved construct.

We develop a divergent analysis (Anderson & Gerbing, 1988) to prove that the constructs are different from each other. First, we calculate the Chi-square for the default model and for every subsequent model placing a constraint of total correlation between two constructs. Results are shown in Table 6.

Table 6
Chi-square

Correlation	Chi square	P-Value
Default Model	217.12	
E & CC	289.99	3.8501E-49
E & I	304.00	5.0073E-65
E & S	262.30	4.4314E-68
E & R	262.20	5.4098E-59
CC & I	301.40	5.6882E-59
CC & S	268.70	1.6322E-67
CC & R	270.30	2.1789E-60
I & S	266.10	9.7617E-61
I & R	241.40	8.0338E-60
S & R	238.30	1.9474E-54

Source. Elaborated by the authors

The results show that all hypothesis of correlation equal to one are rejected; concluding that the constructs are different from each other. An additional analysis is carried out according to Fornell & Larker (1981) to prove that given any pair of constructs, one explains more variance with the items that constitute it, than the other construct. To compute the analysis, we need the correlations of each pair of constructs, shown in Table 7.

Table 7

Construct correlations

Construct 1		Construct 2	Correlations
E	<-->	CC	0.297
E	<-->	I	0.221
E	<-->	S	0.538
E	<-->	R	0.369
CC	<-->	I	-0.162
CC	<-->	S	0.411
CC	<-->	R	0.096
I	<-->	S	0.446
I	<-->	R	0.568
S	<-->	R	0.632

Source. Elaborated by the authors

We based the analysis in the following criteria to validate divergence:

$$Min\{AVE_1, AVE_2\} > [Corr(\eta_1, \eta_2)]^2$$

It can be observed in Table 8, that for any pair of construct, the correlation of the constructs present a lower value than the minimum AVE of each construct, except for the pair of savings and retirement, where the square of correlation is higher than the minimum AVE of both constructs. This can be explained analyzing the nature of the constructs, where one person need to save money for retirement, nevertheless, the minimum AVE has a value close to the correlation.

Table 8

Divergence validation

Construct 1	Construct 2	(Corr)^2	Min AVE
E	CC	0.09	0.36
E	I	0.05	0.39
E	S	0.29	0.39
E	R	0.14	0.38
CC	I	0.03	0.36
CC	S	0.17	0.36
CC	R	0.01	0.36
I	S	0.20	0.43
I	R	0.32	0.38
S	R	0.40	0.38

Source. Elaborated by the authors

The final scale is composed by 18 items and can be found in Appendix 1.

Discussion

The final goal of this paper is to develop a comprehensive financial literacy scale that evaluates the practices of people in their finances. A structural equation model was proposed to specify weightings for eighteen variables that significantly contributed to value the five principal dimensions on financial literacy allowing to distinguish those persons that take wrong decisions in money management. These dimensions include practices in expenses, savings, retirement, credit cards and investments.

This research was focus on financial literacy on the general population, distinct as past studies in personal finances where the primary focus was a specific population with unique characteristics (i.e. executives, students). The study's intension is to help other researchers assess in a reliability manner the level of good practices in personal finances that a specific population presents, and relate this findings to other characteristics.

Conclusion

The study present limitations that need to be acknowledged. While the results are encouraging, unfortunately, no assessment of stability was feasible in the study because of the single contact required by the confidentiality restriction. Another factor that need to be exposed is the resources limitation for obtaining the sample. The authors tried to collect the most variability in the characteristics of the individuals included in the sample, nevertheless the time limitation caused that the most part of the sample were from author's personal networks.

Future Research

In the study the developed scale was validated by a convergent and divergent analysis. We encourage for future research to validate the scale by applying it into two groups of samples. First sample including individuals that had demonstrated good personal finance practices, and second sample including individuals that had demonstrated bad personal finance practices. The study can utilize a proxy like credit score to evaluate individuals. The validation expectative would be that the screened groups resembled the results in the scale. The Personal Finance Scale developed in this study consist in eighteen items, which brings the possibility to adequate a new study to develop a small version of the scale.

References

Abdullah, M. A. and Chong, R. (2014). Financial Literacy: An Exploratory Review of the Literature and Future Research. *Journal of Emerging Economies & Islamic Research, 2*(3).

Amagir, A., Groot, W., Maassen van den Brink, H. and Wilschut, A. (2018). A review of financial-literacy education programs for children and adolescents. *Citizenship, Social and Economics Education, 17*(1), 56-80.

Anderson, J. C. and Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological bulletin, 103*(3), 411.

Atkinson, A. and Messy, F. A. (2011). Assessing financial literacy in 12 countries: an OECD/INFE international pilot exercise. *Journal of Pension Economics & Finance, 10*(4), 657-665.

Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin, 107*(2), 238-246.

Black, D. W., Monahan, P., Schlosser, S. and Repertinger, S. (2001). Compulsive buying severity: an analysis of compulsive buying scale results in 44 subjects. *The Journal of nervous and mental disease, 189*(2), 123-126.

Bucher-Koenen, T. and Ziegelmeyer, M. (2011). Who lost the most? Financial literacy, cognitive abilities, and the financial crisis. *ECB,1299*.

Charitha, K. L. (2018). Review of Impact of Financial literacy and Self-confidence on Customer Decision of Accepting Financial Advisory Services.

Chen, H. and Volpe, R. P. (2002). Gender differences in personal financial literacy among college students. *Financial services review, 11*(3), 289-308.

Cichowicz, E. and Nowak, A. K. (2017). Review of research on financial literacy and education of Poles. *Journal of Insurance, Financial Markets and Consumer Protection, 26* (4/2017), 3-18

Collins, J. M. and O'Rourke, C. (2012). Still holding out promise: A review of financial literacy education and financial counseling studies. *Network Financial Institute: Working Paper Series.*

Cull, M. and Whitton, D. (2011). University students' financial literacy levels: obstacles and aids. *The Economic and Labour Relations Review, 22*(1), 99-114.

Deepak, C. A., Singh, P. and Kumar, A. (2015). Financial literacy among investors: theory and critical review of literature. *International Journal of Research in Commerce, Economics & Management, 5* (4).

ENIF (2015). *¿Cómo estamos en Educación Financiera? CONDUSEF*. Retrieved from https://www.condusef.gob.mx/Revista/PDF-s/2016/197/enif.pdf

Faber, R. J. and O'guinn, T. C. (1992). A clinical screener for compulsive buying. *Journal of consumer Research, 19(*3), 459-469.

Faulkner, A. E. (2015). A systematic review of financial literacy as a termed concept: More questions than answers. *Journal of Business & Finance Librarianship, 20*(1-2), 7-26.

Fornell, C. and Larker, D. (1981). Structural equation modeling and regression: guidelines for research practice. *Journal of Marketing Research, 18*(1), 39-50.

Furtuna, F. (2007). College students' personal financial literacy: Economic impact and public policy implications. *Undergraduate Economic Review, 4*(1), 1.

Griffin, M., Babin, B.J. and Christensen, F. (2004). A cross-cultural investigation of the materialism construct: Assessing Richins and Dawson's materialism scale in Denmark, France and Russia. *J Bus Res*.,

57(8), 893–900. http://doi.org/10.1016/S0148-2963(02)00290-4

Huston, S.J. (2010). Measuring financial literacy. *The Journal of Consumer Affairs, 44*(2), 296-316.

Kamakia, M. G., Mwangi, C. I. and Mwangi, M. (2017). Financial Literacy and Financial Wellbeing of Public Sector Employees: A Critical Literature Review. *European Scientific Journal, ESJ, 13* (16), 233.

Kapoor, J. R., Dlabay, L. R. and Hughes, R. J. (2009). *Personal finance (9th edition)*. Irwin.

Kebede, M. and Kuar, J. (2015). Financial Literacy and Management of Personal Finance: A Review of Recent Literatures. *Research Journal of Finance and Accounting, 6*(13), 92-106.

Keown, A. J. and Hanna, S. D. (2003). Personal Finance: Turning Money Into Wealth. *Journal of Financial Counseling and Planning* (2), 93-94.

Khan, J., Belk, R. W. and Craig-Lees, M. (2015). Measuring consumer perceptions of payment mode. *Journal of Economic Psychology, 47*, 34-49.

Lester, D. and Spinella, M. (2007). The executive personal finance scale: Item analyses. *Psychological Reports, 101*(3), 722-722. http://doi.org/10.2466/PR0.101.3.722

Lindsey-Taliefero, D., Kelly, L., Brent, W. and Price, R. (2011). A Review of Howard University's Financial Literacy Curriculum. *American Journal of Business Education, 4*(10), 73-84.

Lusardi, A. (2006). Financial literacy and financial education: Review and policy implications. *NFI Policy Brief,* (2006-PB), 11.

Lusardi, A. and Mitchell, O. S. (2011). *Financial literacy and planning: Implications for retirement wellbeing* (No. w17078). National Bureau of Economic Research.

Mian, A. and Sufi, A. (2009). The consequences of mortgage credit expansion: Evidence from the US mortgage default crisis. *The Quarterly Journal of Economics, 124*(4), 1449-1496.

Nanda, A. K. and Samanta, S. (2018). Mainstreaming tribals through financial literacy–a review of literature. *International Journal of Social Economics, 45*(2), 437-444.

Nissenbaum, M., Raasch, B. J. and Ratner, C. L. (2004). *Ernst & Young's personal financial planning guide.* John Wiley & Sons. John Wiley & Sons

Noctor, M., Stoney, S. and Stradling, R. (1992). Financial Literacy: A Discussion of Concepts and Competences of Financial Literacy and Opportunities for its Introduction into Young People’s Learning. *National Foundation for Education Research*.

Opree, S.J., Buijzen, M., van Reijmersdal, E.A. and Valkenburg ,P.M. (2011). Development and validation of the Material Values Scale for children (MVS-c). *Pers. and Indiv Diff.*, *51*(8), 963–968. <a

href="http://doi.org/10.1016/j.paid.2011.07.029" target="_blank"> http://doi.org/10.1016/j.paid.2011.07.029

Organization for Economics Co-Operation and Development (2005). *Improving Financial Literacy: Analysis of Issues and Policies.* Paris, France.

Ratna, D., Al-shami, S. S. A., Rahim, B. R. A. and Setya, M. F. (2018). Factors That Influence Financial Literacy On Small Medium Enterprises: A Literature Review. *Opción, 34*(86), 1540-1557.

Refera, M. K., Dhaliwal, N. K. and Kaur, J. (2016). Financial literacy for developing countries in Africa: A review of concept, significance and research opportunities. *Journal of African Studies and development, 8*(1), 1-12.

Remund, D. L. (2010). Financial Literacy Explicated: The Case for a Clearer Definition in an Increasingly Complex Economy. *The Journal of Consumer Affairs*, *44*(2), 276-295.

Revuelta, J. and Kessel, D. (2007). Application of the pi* goodness-of-fit index to latent structure models. *Psicothema, 19*(2), 322-328.

Richins, M. L. and Dawson, S. (1992). A consumer values orientation for materialism and its measurement: Scale development and validation. *Journal of consumer research, 19*(3), 303-316.

Roberts, J. A. and Sepulveda C. J. (1999). Demographics and money attitudes: a test of Yamauchi and Templers (1982) money attitude scale in Mexico. *Personality and individual Differences, 27*(1), 19-35.

Selim, A. and Aydemir, S. D. (2014). A literature review on financial literacy. *Finansal Araştırmalar ve Çalışmalar Dergisi, 6*(11). http://doi.org/10.14784/JFRS.2014117326

Spinella, M., Lester, D. and Yang, B. (2005). Consistency of the Yamauchi/Templer money attitude scale. *Psychological reports, 97*(3), 962-962.

Spinella, M., Yang, B. and Lester, D. (2007). Development of the executive personal finance scale. *International Journal of Neuroscience, 117*(3), 301-313.

Stango, V. and Zinman, J. (2009). Exponential growth bias and household finance. *The Journal of Finance, 64*(6), 2807-2849.

Steiger, J. H. and Lind, J. C. (1980). Statistically-based tests for the number of common factors. *Annual Spring Meeting of the Psychometric Society*. *Iowa City, IA*.

Taylor, S. and Wagland, S. (2011). Financial literacy: A review of government policy and initiatives. *Australasian Accounting, Business and Finance Journal, 5*(2), 101-125.

Tommasi, M. and Busonera, A. (2012). Validation of three compulsive buying scales on an italian sample. *Psychological Reports, 111*(3), 831-844. http://doi.org/10.2466/03.15.20.PR0.111.6.831-844

Torraco, R. J. (2005). Writing integrative literature reviews: Guidelines and examples. *Human resource development review, 4*(3), 356-367.

Torraco, R. J. (2016). Writing integrative literature reviews: Using the past and present to explore the future. *Human Resource Development Review, 15*(4), 404-428.

Totenhagen, C. J., Casper, D. M., Faber, K. M., Bosch, L. A., Wiggs, C. B. and Borden, L. M. (2015). Youth financial literacy: A review of key considerations and promising delivery methods. *Journal of Family and Economic Issues, 36*(2), 167-191

Vieira, E. (2012). What do we know about financial literacy? A literature review. *Marmara Journal of European Studies, 20*(2), 23–38.

Yamauchi, K. T. and Templer, D. J. (1982). The development of a money attitude scale. *Journal of personality assessment, 46*(5), 522-528.

Yang, B. and Lester, D. (2002). Internal consistency of the Yamauchi/Templer money attitude scale. *Psychological reports, 91*(3), 994-994.

Yang, B. and Lester, D. (2016). Validating the executive personal finance scale with financial investments and expectations in university students. *Psychological Reports, 118*(3), 804-809. http://doi.org/10.1177/0033294115625581

Appendix 1

	Completamente de acuerdo 1	2	3	4	Completamente en desacuerdo 5
1. Realizo cuidadosamente un presupuesto o plan de gastos					
2. Asisto al supermercado con una lista de lo que voy a comprar					
3. Evalúo e identifico mis hábitos de gasto con base en mis registros de consumo					
4. Llevo un registro de mis ingresos, gastos, retiros de efectivo, etc. Adicional a lo que proporciona mi banca en línea o estado de cuenta					
5. Antes de recibir el estado de cuenta de mi tarjeta de crédito, sé exactamente cuánt debo pagar para no generar intereses.					
6. Cuando realizo compras a meses sin intereses, analizo que mi compra esté dentro de mi presupuesto					
7. Acostumbro a retirar efectivo de mi tarjeta de crédito					
8. Acepto las tarjetas de crédito que me ofrecen bancos y tiendas					
9. Acostumbro a pagar gastos de comida o despensa a meses sin intereses					
10. Invierto en instrumentos financieros (p. ej. Acciones, fondos de inversión, etc.)					
11. Dedico tiempo a informarme sobre los mejores rendimientos para decidir en cuáles instrumentos colocar mi dinero					
12. Reviso y ajusto mis inversiones en un periodo no mayor a un año					
13. Tengo disponible al menos 6 meses de mi sueldo en ahorros para utilizar ante una emergencia (p. ej. Pérdida de empleo)					

14. El ahorro es un renglón de mi presupuesto, siempre ahorro un porcentaje de mi ingreso	
15. Aparto dinero para mis metas (p. ej. Vacaciones, automóvil, educación)	
16. Tengo un plan de aportaciones para mi pensión	
17. Sé en dónde está mi AFORE y estoy consciente de los rendimientos que me brinda	
18. Realizo periódicamente aportaciones adicionales a mi plan de retiro	

Appendix 1. Personal Finance Scale

Item	Factor Number								
	1	2	3	4	5	6	7	8	9
Q23	0.679	0.008	-0.038	0.054	0.180	-0.259	0.099	0.098	0.195
Q22	0.675	0.100	-0.049	0.125	0.048	-0.094	0.061	0.238	0.295
RC Q9	-0.672	-0.101	-0.104	-0.076	0.017	-0.178	0.074	0.146	0.315
Q14	0.658	-0.117	0.098	0.220	0.023	0.092	0.239	-0.062	-0.180
Q25	0.636	0.130	0.156	0.060	0.079	-0.366	-0.019	0.051	0.022
Q16	0.064	0.758	0.078	0.092	0.207	-0.109	0.083	0.141	-0.064
Q18	0.099	0.665	0.121	0.059	0.332	-0.180	0.063	0.083	-0.142
Q17	0.197	0.569	0.323	-0.021	0.109	-0.116	0.132	-0.176	0.067
RC Q20	-0.348	0.525	0.010	0.356	-0.061	0.038	0.202	0.030	0.339
RC Q19	-0.083	0.507	-0.018	0.101	-0.106	0.324	0.003	0.361	0.275
RC Q21	-0.274	0.496	-0.143	0.309	-0.050	0.485	0.060	-0.044	-0.046
Q2	0.146	0.491	0.310	0.109	-0.114	0.222	0.009	0.046	-0.262
Q3	0.006	0.190	0.778	0.180	0.044	-0.019	-0.095	0.125	0.084
Q5	0.126	-0.044	0.776	0.104	0.025	0.045	0.085	-0.033	-0.106
Q1	-0.027	0.242	0.740	0.239	0.085	-0.216	0.152	-0.120	0.046
Q10	0.117	0.190	0.190	0.725	0.030	-0.139	0.059	0.037	-0.102
Q8	0.157	0.159	0.264	0.635	0.078	0.112	0.028	0.141	0.022
Q7	0.333	-0.023	0.179	0.475	0.301	0.069	-0.001	0.422	0.059
Q29	0.221	0.076	0.233	-0.011	0.769	0.025	0.098	0.072	-0.109
Q26	-0.112	0.319	-0.148	0.107	0.707	-0.010	0.093	-0.132	0.109
Q28	0.345	-0.020	0.060	0.405	0.519	-0.115	-0.195	0.155	-0.117
Q27	0.075	0.084	0.052	0.024	-0.004	-0.736	-0.019	-0.012	0.032
RC Q15	-0.055	-0.183	0.116	-0.077	0.047	0.413	-0.412	-0.271	0.192
Q13	0.112	0.124	0.117	0.013	0.120	-0.050	0.790	0.087	-0.134
Q12	0.336	-0.028	0.114	0.492	0.094	0.080	0.540	-0.055	-0.026
RC 24	-0.118	0.188	-0.012	-0.032	-0.082	0.363	0.457	-0.022	0.300
RC Q4	0.028	-0.044	0.123	-0.227	-0.005	0.159	-0.032	-0.728	0.055
RC Q6	0.229	0.165	0.331	-0.223	0.010	0.234	0.161	0.537	0.000
RC Q11	0.074	-0.088	0.018	-0.068	-0.045	0.019	-0.123	-0.047	0.836

Appendix 2. Factor Analysis, 29 items, 9 factors.

Item	Factor Number					
	1	2	3	4	5	6
Q1	0.790	0.251	0.097	0.015	0.033	0.035
Q3	0.783	0.026	0.214	0.087	-0.054	0.078
Q5	0.732	-0.089	0.085	-0.092	0.242	-0.004
Q2	0.393	0.184	0.103	0.261	0.278	-0.150
Q18	0.222	0.703	0.193	0.109	0.054	0.024
Q16	0.203	0.675	0.173	0.296	0.029	0.040
Q26	-0.094	0.550	0.296	0.037	-0.142	-0.120
Q17	0.450	0.468	-0.042	0.141	0.104	0.142
RC Q15	0.128	-0.456	0.046	-0.042	-0.236	-0.170
Q29	0.162	0.385	0.372	-0.223	0.193	0.035
Q27	0.099	0.380	-0.062	-0.337	-0.182	0.344
Q28	0.044	0.188	0.697	-0.285	0.105	0.135
Q7	0.120	0.012	0.690	0.086	0.200	0.259
Q8	0.310	0.027	0.588	0.229	0.168	0.019
Q10	0.276	0.182	0.557	0.090	0.159	-0.023
RC Q4	0.211	-0.132	-0.357	-0.198	0.022	-0.200
RC Q19	0.045	0.098	0.151	0.693	-0.117	0.071
RC Q20	0.146	0.308	0.110	0.635	-0.245	-0.073
RC Q21	-0.018	0.128	0.183	0.606	0.010	-0.454
RC 24	0.003	0.003	-0.193	0.579	0.141	-0.019
RC Q6	0.223	0.015	0.023	0.299	0.276	0.254
Q14	0.080	-0.073	0.234	-0.137	0.663	0.232
Q12	0.114	0.085	0.308	0.154	0.579	0.100
Q13	0.060	0.387	-0.135	0.201	0.563	0.062
RC Q9	-0.149	0.041	-0.195	0.185	-0.559	-0.103
Q22	-0.037	0.054	0.284	0.083	0.256	0.677
Q23	-0.038	0.157	0.218	-0.166	0.278	0.648
Q25	0.191	0.228	0.181	-0.256	0.251	0.549
RC Q11	0.047	-0.282	-0.051	0.235	-0.416	0.524

Appendix 3. Factor Analysis. 29 items. 6 Factors

Item	Factor Number						
	1	2	3	4	5	6	7
Q16	0.730	0.150	0.153	0.058	0.259	0.077	0.045
RC Q20	0.683	-0.301	-0.026	0.304	-0.123	0.041	0.035
Q18	0.608	0.164	0.176	0.070	0.382	0.037	0.192
RC Q19	0.594	0.082	0.032	0.091	-0.134	-0.153	-0.500
Q17	0.513	0.181	0.383	-0.088	0.134	0.156	0.158
RC Q21	0.511	-0.389	-0.096	0.222	0.000	0.111	-0.382
Q22	0.131	0.782	-0.056	0.186	-0.045	0.120	-0.068
Q23	-0.006	0.757	-0.032	0.102	0.124	0.138	0.091
Q25	0.031	0.689	0.215	0.078	0.105	0.072	0.218
Q3	0.154	0.086	0.810	0.175	0.028	-0.116	-0.095
Q5	-0.117	0.033	0.770	0.126	0.022	0.158	-0.007
Q1	0.215	-0.015	0.763	0.179	0.085	0.114	0.197
Q2	0.342	0.006	0.390	0.091	0.027	0.215	-0.197
Q10	0.190	0.030	0.197	0.731	0.038	0.111	0.205
Q8	0.195	0.096	0.236	0.665	0.016	0.152	-0.110
Q7	0.015	0.374	0.114	0.635	0.207	0.050	-0.122
Q29	-0.007	0.167	0.207	0.102	0.781	0.146	-0.005
Q26	0.328	-0.082	-0.115	0.035	0.707	0.041	-0.001
Q28	-0.095	0.345	0.065	0.504	0.517	-0.069	0.046
Q13	0.228	0.089	0.093	-0.083	0.090	0.771	0.020
Q12	0.031	0.131	0.082	0.411	0.056	0.707	-0.005
Q14	-0.208	0.430	0.116	0.207	0.050	0.538	-0.040
Q27	0.101	0.161	0.000	0.058	-0.015	-0.033	0.848

Appendix 4. Factor analysis. 23 items. 7 Factors

Item	Factor Number					
	1	2	3	4	5	6
Q1	0.799	0.090	0.008	0.140	0.159	0.116
Q3	0.798	0.124	0.075	0.201	0.016	-0.108
Q5	0.744	-0.153	-0.001	0.169	-0.047	0.158
Q17	0.453	0.318	0.268	-0.170	0.340	0.141
Q2	0.382	0.346	-0.010	0.099	0.060	0.239
RC Q19	0.029	0.724	0.096	0.065	-0.059	-0.127
RC Q20	0.076	0.714	-0.210	0.107	0.106	0.052
RC Q21	-0.087	0.650	-0.391	0.163	0.060	0.138
Q16	0.223	0.568	0.222	-0.011	0.477	0.084
Q22	-0.065	0.117	0.762	0.235	-0.045	0.148
Q23	-0.038	-0.110	0.742	0.169	0.117	0.148
Q25	0.231	-0.126	0.701	0.112	0.141	0.073
Q7	0.094	0.062	0.313	0.696	0.109	0.076
Q10	0.260	0.204	0.041	0.635	0.087	0.131
Q28	0.040	-0.173	0.281	0.618	0.406	-0.057
Q8	0.258	0.279	0.084	0.615	0.009	0.170
Q26	-0.112	0.151	-0.091	0.105	0.748	0.040
Q29	0.167	-0.210	0.113	0.256	0.700	0.135
Q18	0.245	0.388	0.227	0.025	0.578	0.039
Q13	0.119	0.129	0.111	-0.125	0.184	0.764
Q12	0.094	0.046	0.105	0.382	0.042	0.718
Q14	0.074	-0.209	0.358	0.290	-0.059	0.557

Appendix 5. Factor Analysis. 22 items. 6 dimensions.

Observed Variable		Unobserved Construct	Estimate
Q1	<---	E	0.819
Q2	<---	E	0.403
Q3	<---	E	0.766
Q4	<---	E	0.607
Q5	<---	E	0.424
Q6	<---	CC	0.519
Q7	<---	CC	0.53
Q8	<---	CC	0.714
Q9	<---	CC	0.604
Q10	<---	INV	0.656
Q11	<---	INV	0.76
Q12	<---	INV	0.655
Q13	<---	S	0.623
Q14	<---	S	0.718
Q15	<---	S	0.63
Q16	<---	R	0.752
Q17	<---	R	0.467
Q18	<---	R	0.588
Q19	<---	INS	0.713
Q20	<---	INS	0.484

Appendix 6. Structural equation model results 1

Unobserved Construct	AVE
E	0.3936302
CC	0.35621825
INV	0.478987
S	0.43351767
R	0.37644567
INS	0.3713125

Appendix 7. AVE 1

Unobserved Construct	Composite Reliability
E	0.75038724
CC	0.68510822
INV	0.73290881
S	0.69567347
R	0.6357681
INS	0.53260632

Appendix 8. Composite Reliability 1