

Psychological factors effects on Propensity towards Indebtedness by applying the Behavioural Economic Theory: Evidence in Malaysia



Monica Selvaraja, Amalina Abdullah

Abstract: This study objectifies to construct a model of propensity towards indebtedness through the application of psychological factors from 172 respondents in Malaysia. A questionnaire which consist of 57 questions was administered. The questionnaire addressed four psychological factors (emotion, risk perception, myopia and overconfidence). The finding indicated negative emotion, high risk perception, myopic, and overconfidence consumers results to high propensity to indebtedness. By using the Structural Equation Modelling (SEM), all two hypotheses are confirmed with two new ones inserted. Thus, since propensity to indebtedness are often detrimental to consumers' insolvency, it is appropriate for interested parties to invest time and effort to diagnose the influence psychological factors have on the propensity to indebtedness, hence, this model will prove valuable. This conceptual model provides an insightful foundation for the analysis of multidimensionality of psychological factors on the propensity to indebtedness.

Keywords: Behavioral Economic, Propensity to Indebtedness, Psychological factors

I. INTRODUCTION

An individual's consumption behaviour transformation started in the early nineteen centuries, in which, the primary consumption mechanizes of cash disinvestment changed into capitalization through credit attainment. This transformation is due to the present of a better money cycle in the economic, owing to an increase in efficiency of the financial market, thus this activated the credit consumption concept. But, the present of debt financing is much earlier than the nineteen centuries, however, its role was insignificant in a consumers' consumption decision making unlike the present time (Calder, 2009). Thus, use of credit to meet the current wants and needs, drastically shift a consumers' consumption decision making behaviour. However, little to no focus were given to the

financing cost involved in the attainment of credit financing. The lack of transparency by credit provides and awareness accretion by the credit attainer resulted into unnecessary use of credit financing by consumers that eventually lead to over capitalization or over indebtedness. Thus, despite the higher repayment been required for a specific form of credit attainment, its popularity is prevalent because it's used to meet their desired lifestyle, and due to a surplus of credit provider (Dickson, 2017). Next, such influx in money cycle among the demander and supplier of funds complements the economic theory. In which, as consumers demand fund their spending increases and this creates economic growth, however, excessive demand (i.e. borrowing) creates debt unsustainability (Devarajan et. al., 1996; Barba & Pivetti, 2008). Thus, it's important to note that, according to Tee (2016) Malaysia household debt to GDP ratio is at 89.1% in 2019, and the primary debt were used to attain real asset for long-term wealth creation (i.e. real estate and financial assets). The ratio of 89.1% mentioned earlier is relatively a high value, since Malaysia carries a developing status. Comparatively, the household debt to GDP of America a developed economic was at 130% in Q4 2007, caused credit unsustainability (Shanmugan, 2014). Conformed by Yellen (2009), a massive credit crunch been experienced by financial institutions due to unserved credit owing, mainly caused by decrease in spending resulted from the increase in unemployment. Thus, the occurrence of credit crunch served as a factor towards Americans' 2008 economic recession. Thus, the lesson learned is an inability of a consumer in serving their credit facilities during an adverse life events (i.e. unemployment) could contribute to the economy's unsustainability. However, consumers' inability to service their credit commitments is not limited to their adverse live events, additionally, it could cause by their inability to channel cash inflow for a more significant use (Lea et. al., 1995). Thus, to serve due debt, creditors engages into debt-roll-over which ultimate toward higher interest charges. This inability to comprehend their actions is termed as an irrational consumption decision making behaviour (Katona, 1975). Hence, in this study consumers' irrational behaviour is viewed as psychological factors. Next, the Malaysian household debt epidemic is further conformed by the latest debt to service ratio for the year 2012 is at 43.5%, recorded way above the recommended trash hold of 30%. In which, it translates that Malaysian spend close to half of their income to serve their debt obligations (Betti et al., 2007).

Manuscript published on November 30, 2019.

* Correspondence Author

Monica Selvaraja*, pursuing a Ph.D. (Business Economics), Faculty of Economics and Management, University Putra Malaysia (UPM), Malaysia and Lecturer, Faculty of Business Economics and Management, HELP University, Malaysia.

Dr. Amalina Abdullah, Senior Lecturer, Faculty of Economics and Management, University Putra Malaysia (UPM), Malaysia.

© The Authors. Published by Blue Eyes Intelligence Engineering and Sciences Publication (BEIESP). This is an [open access](https://creativecommons.org/licenses/by-nc-nd/4.0/) article under the CC-BY-NC-ND license <http://creativecommons.org/licenses/by-nc-nd/4.0/>

Psychological factors effects on Propensity towards Indebtedness by applying the Behavioural Economic Theory: Evidence in Malaysia

Thus, comprehension into primary psychological factors to consumers' propensity (tendency or likely hood) to indebtedness is needed. Thus, this study could add to the existing body of knowledge form regional demission. Apart from that, it brings relevance to, among others, financial institution and policy advisor. The remainder of the paper is structures as follows: literature review on the significance of various psychological construct and the propensity to indebtedness. Next, a comprehensive conceptual framework is developed to depict the relationships among psychological factor and the propensity to indebtedness in **Fig. 1**, followed by the formulation of the propositions. This paper finishes with implications from both practical and theoretical perspectives, as well as a general conclusion.

II. THEORETICAL BASIS

Psychological is a study of mental processes, consisting memory, perception, problem-solving, creativity and thinking (Gerrig & Zimbardo, 2002). It is defined as an individuals' irrational decision-making behaviour been bounded by their unconscious reflexes, skills and habits and they may also be influenced by their perception of a given situation, events and circumstance (Thaler, 2005; Schwartz, 1998). In the modern multidisciplinary research, integration between economic and psychological is termed as behavioral economics. The economic and psychology factors are effective complements, since humans' behaviour undergoes changes during an adverse economic circumstance therefore exploring a consumers' consumption decision making is useful (Frydman & Camerer, 2016; Anand & Lea, 2011). This study renders its usefulness by viewing at the influence of psychological factors towards consumers' consumption decision making (i.e. propensity to indebtedness). The propensity to indebtedness is defined as subjective measure of debt been consumed, or debt consumption decision-making (Flores & Vieira, 2014) which advocates this study. And, this study would be observing at the main factors that influence individuals' consumption behaviours leading to propensity to indebtedness. The underpinning theory used is behavioural economic theory (BET), it's a sub-field of behavioural finance. The BET combines descriptive and normative model of human's behaviour, where their tendency to violate economic rationality by underestimation and overestimation is highlighted. To elaborate, an individuals' decisions to consume in the present time are based on anticipated further income, individuals tend to overestimate their future income and underestimate their future expenditure, which would cause them financial incapacity (Thaler, 1980, 1994, 2005; Bazerman, 2005). Therefore, for the purpose of this study, psychological factors (i.e. emotion, risk perception, overconfidence, myopia) effecting an individuals' consumption decisions-making or consumers' propensity to indebtedness is observed. And, subsequently before observing in depth into the empirical papers for the development of the conceptual model that was partly adopted from the empirical papers mentioned above, in the next section the empirical concepts of perceived indebtedness are observed. Schwartz (1998) defined emotion (i.e. positive or negative) has a biases cognitive affective effecting individual under a risky or in an uncertain situation (i.e. high on debt). The three main categories of emotion are background emotions (i.e. long-lasting), primary emotions or positive (i.e. apathy are

expressed), and social emotions or negative (i.e. jealousy, embarrassment and pride) (Vikan et al., 2009). Flores & Vieira (2014) by the utilization of structural equation modelling found negative emotion results into low level debt accumulation. Thus, justifies shame, pride and nervousness disengage an individual from the attainment of higher debt. The study by Miltenberger et al. (2003), found negative emotion (i.e. i.e. sad/depressed, tense/anxious, bored, self-critical and angry) mediated trough compulsive buying behaviour would lead to high debt attainment. Next, Achtziger et al. (2015) found compulsive buying has a direct positive relationship with debt attainment. However, it contradicts with Flores & Vieira (2014), whom which has indicated, various other negative social emotions would reduce the propensity to indebtedness. Thus, as for the relationship between emotion and levels of debt, based on various pervious research works, it's evident that negative social emotions and negative primary emotions, would contradictorily decreases and increases the levels of debt respectively, and also, positive social emotions found to increase the levels of debt. Next, risk perception is defined as risk a consumer believes exists in the purchase of goods or services (i.e. excessive borrowing), whereby, risk is generalized as uncertainty or change of a given situation from the norm, and, perception is the judgement of an individual (Solvic, 1987). Study by Bauer (1960) as cited in Mitchell (1999), a renowned consumer behaviourist, initialled the concept of perceived risk in the perspective of consumer financial decision making. Thus, consumers' consumption behaviour would involve risk due to the uncertainty in the result of consumption decisions, since it is possible to be pleasant or otherwise. Emprically, Bernstein (1996), has conceptualized risk perception and decision making in a volatile environment (i.e. attainment of credit), by which it overcome an individual's uncertainty to further attain credit, or vice-versa. Apart from that, Sjoberg (2000), found a relationship between attitude and perceived risk. Thus, it further justifies that, cognitive psychology constructs as an interacting effect. Next, Keese (2010) reported the insignificance in relationship between risk perception and level of debt. However, Garling et al. (2009), states that issues of risk has an essential component on respondent's decision making and found a significant relationship between risk perception and level of debt. Lastly, Fellner & Maciejovsky (2007), analyst the influence of risk perception and individuals' investment behaviour into the trade market (i.e. binary lottery choices). The study found, high risk perception leads to lower market activity (i.e. consumption) and women were found to have lower risk perception compared to men. Thus, lower risk perception leads to lower propensity to indebtedness. Subsequently, overconfidence is derived from the behavioural economic theory (i.e. heuristic biases). This study would focus on two heuristic biases factors (i.e. overconfidence and myopia). It is defined as individuals' resistance to request for assistances (information search, planning and calculating) and spends lesser duration in their decision-making process (Perry & Morris, 2005). This study conforms to define overconfidence as per the previous researchers (Smith & Barboza, 2013;

Verma, 2017; Malmendier & Tate, 2005), which states that overconfidence is the biases human nature on their self-measure of financial knowledge versus the actual financial literacy level. Empirically, Verma, 2017, states self-assessed financial knowledge could render into irrationality (i.e. negative impact) on individual which could positively impact their financial behaviour. However, irrationality towards financial literacy level lead to higher debt or propensity to indebtedness (Smith & Barboza, 2013; Verma, 2017). Next, Graham, et al. (2009) found overconfidence (i.e. knowledgeable) causes into engagement of negative trading behaviour results to negative financial decision making (i.e. investment and consumption decision-making). The study by Perry & Morris (2005) states overconfidence affects saving, spending and planning behaviour which translates to consumption decision-making or propensity to indebtedness, also supported by (Fernandes, et al., 2014; Huston, 2010). Thus, self-comprehension of one's financial acquaintance would reduce overconfidence, which would constitute to a greater control in their spending decisions (i.e. consumption financial decision-making). In other words, overconfidence of an individual results into higher debt accumulation. Lastly, myopic is a heuristic bias under the behaviour economic theory and defined as individuals' excessive risk-taking behaviour. Empirically, greatly been emphasis on effect of myopic behaviour on fiscal or government debt and lesser been focus on the private or public toward excessive debt accumulation (i.e. propensity to indebtedness) (Ru & Schoar, 2016; Wenzel, 2014; Gabaix & Laibson, 2006; Shanmugam et al. 2019a, 2019b; Shanmugam & Nadesan 2019). The study by Kosfeld & Schuwer (2017), myopic behaviour causes inability in comprehending additional cost. Thus, lack of cost comprehension results into, the unawareness in absorption of additional product cost. Hence, such consumers purchase base on initial product cost, but failing to observe the subsequent cost of the product purchased, and it leads consumers into high debt accumulation. Therefore, Wenzel (2014) found firm that presented a more transparent information about the additional cost, the myopic consumer easily repeats against specific consumption due to higher add-cost. Literature also states, business competes into exploiting an imperfect consumer (i.e. myopic). The study by Spiegler (2006); Piccione and Spiegler (2012) found, business use multiple price elements, which require evaluation to infer into total price. However, in such situations consumers significantly makes decision based on single price element. The study by Ru & Schoar (2016) mentioned credit card issuers rely on back load fees, that targets myopic consumers, charging low annual payment rates but high late and over limit fees. The four factors emotion, risk

perception, overconfidence, myopia is applied to represent the psychological construct in this study. As for the dependent variable, propensity to indebtedness is examined in this study, shown in Fig. 1.

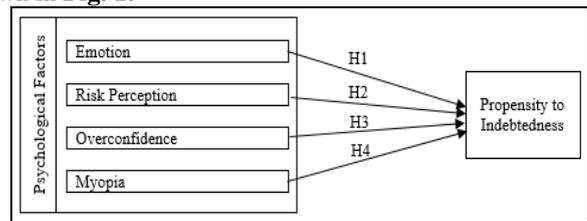


Fig. 1: Theoretical model and associated hypotheses.

This study represents confirmatory research. According to Hair et al. (2010), the confirmatory approach to research is geared towards confirmation of model which aims to test specific research hypotheses. A theoretical model is developed to investigate the influence of psychological factors in debt situations. Thus, in total four hypotheses refer to the above described model (Figure 1), which describe the relations among the constructs considered. Regarding the theoretical model, it appears that the first hypothesis established a relation between emotion and propensity to indebtedness (Table 1). This finding is based on (Vikan et al., 2009; Flores & Vieira, 2014 and Ahtziger et al., 2015), who show that individuals negative emotions are exposes to higher levels of propensity to indebtedness. The second hypothesis refers to risk perception. Based on (Garling et al., 2009 and Fellner & Maciejovsky, 2007), we attempt to determine whether risk perception inversely impact propensity towards indebtedness. The third hypothesis of the theoretical model attempts to identify the impact overconfidence have on their propensity towards indebtedness. In these relations, it is notable that the higher confident individuals tend to underestimate their future expenditure and overestimate their further income. Thus, this results to overconfidence individuals to attain high debt or propensity to indebtedness (Perry & Morris, 2005; Fernandes, et al., 2014; Huston, 2010). The final hypothesis of the theoretical model aims to measure the relation between myopic and propensity toward indebtedness. Based on (Wenzel, 2014 and Ru & Schoar, 2016), myopic individuals fail to comprehend the hidden expenditure which predominately occur after purchases. Thus, myopic individuals are found to have higher propensity to attain debt. From these hypotheses, a theoretical model is set forth in Table 1.

Table 1: Hypotheses and research relations with bibliographic references.

Hypotheses/relations	References
H1: Negative emotions impacts propensity towards indebtedness	Vikan et al., (2009); Flores & Vieira (2014); Ahtziger et al. (2015)
H2 :Higher risk perception impacts propensity towards indebtedness	Garling et al. (2009); Fellner & Maciejovsky (2007)
H3:Overconfidence impacts propensity towards indebtedness	Perry & Morris (2005); Fernandes, et al. (2014); Huston, (2010)
H4:Myopic behavior impacts propensity towards indebtedness	Wenzel (2014); Ru & Schoar (2016)

Psychological factors effects on Propensity towards Indebtedness by applying the Behavioural Economic Theory: Evidence in Malaysia

III. RESEARCH METHOD

A. Sample and data collection

The setting for this research is the city of Klang Valley located in Kuala Lumpur, Malaysia. According to the pension fund data 2018, available from the Department of Statistic of Malaysia, there are approximately 6.4 million active pension fund contributors. Pension fund data is use since the focus respondent group is, Malaysian working adults. The sample size is based on G-Power by Faul et al (2007) suggested by Hair et al. (2010) applicable with the utilization of Structural Equation Modelling (SEM) using the Path Least Square (PLS), software SmartPLS3.0 by Ringle et al. (2015). The sample is characterized by the confidence level of 95%, and effect size of 0.3 is at 120 respondents. This study uses non-probability sampling method. For example, an email invitation, containing the embedded URL link to the website hosting the survey has been sent to each of the potential respondents (colleagues and acquaintances) by employing a snowball sampling technique. From which, a total of 172 respondents were successfully gathered. The data collection instrument is a structured questionnaire with open and closed questions, divided into three sections. The first section addresses the profile, whereas the second section considers aspects relating to expenses. The final section is to conform the influence of psychological factors to propensity to indebtedness by adoption of scales from past studies.

B. Measures

The study establishes the posting of four dimensions as elaborated in the conceptual model, Figure 1. The psychological factors are measured based on the following references: emotion, using the scale of Disney & Gathergood

(2011); risk perception, using the scale of Caetano et al. (2011); overconfidence using the scale of Kanhneman & Tversky (1996); Willis (2008); Perry (2008) and finally, myopic, using the scales of Hodgson, (2003); Ekelund et al. (1995); Krusell and Smith (2003). A five-point Likert scale for four factors is used: emotion; risk perception, overconfidence and myopic—strongly disagree to strongly agree. Thus, the model estimation and validation employ structural equation modelling. And, the structural model has many multivariate equations which have been used to predict and explain a set of endogenous and exogenous constructs.

IV. DATA ANALYSIS AND RESULTS

The research model is tested by application of Partial Least Squares (PLS) which is a multivariate analysis technique for testing structural models (Wold, 1985). And, usage of structural equation modeling (SEM) tool, PLS its able to concurrently asses the reliability, validity of the constructs measured in a theoretical model, in addition to estimation of the relationships among these constructs (Barclay, Higgins, &Thompson, 1995). Since, Wold (1979) went on to state that PLS is main use for causal-predictive analysis, which elaborates to complex studies with lack of past. theoretical knowledge. Thus, predominantly the utilization of PLS in found a theory development study context, such as this. Apart from that, such technique also allows for the use of both formative and reflective measures, which is generally not achievable with covariance-based SEM techniques, such as LISREL or AMOS (Chin, 1998a). Therefore, the current design in this study employs the use of Smart-PLS version 3.0(Ringle et al., 2015).

Table 3: Items for measuring antecedents and outcomes of PID dimensions

Construct/dimension/item descriptions	Lambda Loading	Composite reliability	Average Variance Extracted	Inner VIF
(EM)Emotion		0.973	0.838	1.163
I would feel ashamed in the case of being unable to service my debt.	0.949			
I would feel nervous in the case of being unable to service my debt.	0.939			
My sleep will be affected in the case of being unable to service my debt.	0.888			
My dietary habits would be affected in the case of being unable to service my debt.	0.915			
My family relationship would improve in the case of being unable to service my debt.	0.874			
My professional income would decrease in the case of being unable to service my debt.	0.92			
(RP) Risk Perception		0.835	0.517	1.888
I spend a great amount of money on speculative investments.	0.669			
I would be a guarantor for someone, if asked.	0.85			
I spend my money buying my desired items, without thinking of its consequences.	0.787			
I am willing to invest in business that has high chances of not performing well.	0.827			
(OC) Overconfidence		0.832	0.512	1.567
I completely understand the terms and conditions of my current credit facilities.	0.701			
Although, I am currently having financial instability, I would take on additional debt, been given the chance.	0.716			
I practice inquiring about the credits interest charges on a financial debt that I would	0.858			
I don't practice inquiring about the relevant information on a financial debt that I would	0.911			
(MY) Myopic		0.775	0.543	1.784
I am willing to take on more debt given the opportunity	0.909			
I am optimistic that I will be able to service my total loan amount the following month, although my current months' bills are overdue by one month or more.	0.709			
I am not willing to acquire a loan to help my friends or family, if required.	0.710			

A. Structural Model

This study has employed bootstrapping (500 resamples) to test the dimensions of PID, which generates standard errors and t-statistics (Chin,1998b). And, the bootstrapping is a non-parametric approach which help

estimate the precision of PLS in assessing the statistical significance of the path coefficients. **Table 5** illustrates all possible relationships between the propensity to indebtedness and their antecedents, And, this help identify the possible existence of a relationship based on the formulated hypothesis (Seiders et al., 2007).

Table 4: Discriminant validity coefficients for PSC.

	EM	MY	OC	RP	Mean	SD
EM	0.916				0.245	0.058
MY	0.062	0.736			0.187	0.08
OC	0.346	0.412	0.786		0.404	0.063
RP	0.153	0.654	0.458	0.786	0.257	0.084

Table 5: Structural model results for antecedents.

Antecedents	Hypothesis suggested effect	Path coefficients (β)	t-Value (bootstrap)	Support	R2	f2	Q2
H1: EM→PID	+	0.24	3.866**	Supported	0.619	0.13	0.331
H2: MY→PID	+	0.181	2.354**	Supported		0.048	
H3: OC→PID	+	0.404	6.321**	Supported		0.273	
H4: RP→PID	+	0.237	3.046**	Supported		0.078	

Note: ***pb0.001, **pb0.01, *pb0.05, ns: not significant (based on t (171), one-tailed test)

1) Hypothesized outcome

As Table 5 and Fig. 2 shows, the findings support all four hypotheses regarding antecedents since these surpass the minimum level indicated by t-distribution with one tail and n-1 (n=number of resamples) degrees of freedom. The study confirms Hypothesis H1, H2, H3 and H4 in full. A positive association exists between emotion (EM) and propensity to

indebtedness. With respect of the risk perception (RP), this variable relates positively to propensity to indebtedness. In passing, overconfidence (OC) has a significant relationship to propensity to indebtedness. Lastly, there is a positive relationship between myopic (MY) and propensity to indebtedness.

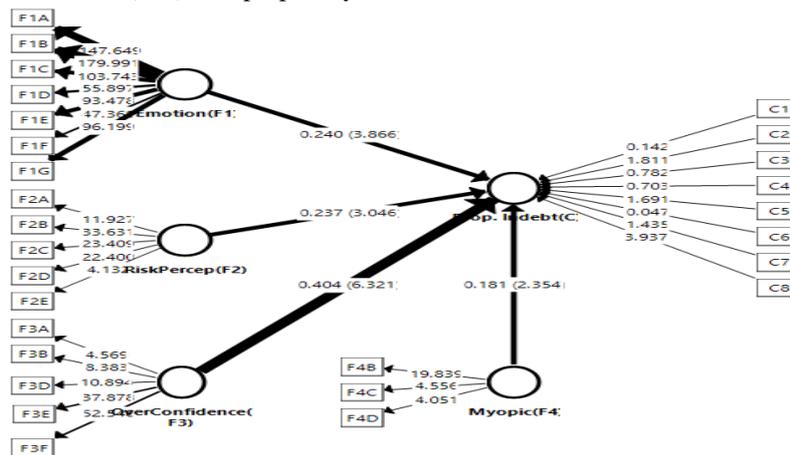


Fig. 2. Results of the proposed model.

V. DISCUSSION

The findings confirm that (PI) propensity to indebtedness is effect by the four psychological antecedents mentioned in this study. Thus, given to the different sets of antecedents and outcomes among each of the four first-order dimensions and that no multicollinearity exists among them, the findings confirm the multi-dimensional and formative conceptualization of the PI construct. In addition, the results show that all four of the first-order dimensions make a positive contribution to the formation of PI. Thus, it is possible to consider emotion, risk-perception, overconfidence and myopia as positive propensity towards individual's indebtedness because they represent valued factors that increase customers' attainment of debt the intervention on its relationship help control their propensity to attain more debt. The results confirm that all proposed relationships between PI with theoretically-related constructs are statistically significant and consistent with their hypothesized directions—apart from those relating to 'propensity for indebtedness'. This variable was a significant antecedent only

for the four main psychological dimensions of emotion, risk-perception, overconfidence and myopia. Thus, these dimensions made only a modest contribution to the formation of the PI construct. The present study has established the dimensions do not all have the same outcomes (nor always in the same direction), model fit (R2) cannot be expected (for example, with respect to future behavioural intentions debt attainment). This is one of the main criticisms of the use of formative constructs (Wilcox, Howell, & Breivik, 2008). However, the value of R2 in the other two outcome variables, and the fact that the relationships between the psychological factors and the PI construct stand out as significant. Its external validity is thus confirmed.

VI. CONCLUSIONS, IMPLICATIONS, AND LIMITATIONS

The findings of this study have both theoretical and practical implications.

Psychological factors effects on Propensity towards Indebtedness by applying the Behavioural Economic Theory: Evidence in Malaysia

Firstly, in terms of application of behavioural economic theory, this study as successes fully conceptualized the four earlier mention antecedents on the PI construct which reveals its importance in a regional dimension. In particular, the study established that emotion, risk-perception, overconfidence, and myopic contributes to the formation of the PI construct. In addition, the formative nature of the construct reflects the heterogeneous nature of the PI concept and further justifies the fact that causality can be either positive or negative. In terms of practice, this analysis signifies that relationship between individual's irrational behaviour trough the study of psychological factors does influences their tendency to accumulate debt. This study shows that psychological intervention can alter the decision to accumulate debt. Thus, negative emotion can lead an individual into non-linear debt attainment; which is justified by its significant relationship between emotion and propensity to indebtedness. Further justified, when an individual happens to experience a negative emotion (i.e.; nervous, depressed, and anxiety) due to their debt obligations; thus, they will find ways to lessen their existing debt attainment and avoid further attainment of debt. Next, individual with higher risk-perception will tend to accumulate higher debt; thus, their propensity to indebtedness will be higher. This is due to the fact, that there are overestimating their potential increase in salary and underestimate their presided expenditure in the future. However, the further expenditure can be altered due to a sudden financial and consumption shock (i.e. illness and job loss). Therefore, underestimating expenditure and overestimating income can result into the higher tendency of debt accumulation. Subsequently, high overconfidence can lead to propensity to indebtedness. Thus, when an individual fail to gather significant information about their debt could be incurred with additional cost form the choice of financing method employed. Finally, a myopic individual will unintentionally fail to observe the possible additional cost incurred from an expenditure made. Thus, myopic behaviour can lead to propensity to indebtedness. Therefore, financial institutions need to be transparent in their delivery of financial products. In summary, emotion, risk perception, overconfidence and myopia represent the positive reason that influence the future propensity to indebtedness of an individual. Financial institutions and government should therefore dedicate more resources to developing policies and strategies to influence individual psychological factor because they are the main reasons for individual propensity to indebtedness (Flores & Vieira, 2014)). In contrast, the focus on external factors associated with debt accumulation could be equally monitor and maintained in order to monitor and lower the debt accumulation among individuals.

REFERENCES

1. Achtziger, A., Hubert, M., Kenning, P., Raab, G., & Reisch, L. (2015). Debt out of control: The links between self-control, compulsive buying, and real debts. *Journal of Economic Psychology*, 49, 141-149.
2. Amélia, S., Flores, M., & Vieira, K. M. (2014). Propensity toward indebtedness: An analysis using behavioural factors. *Journal of Behavioural and Experimental Finance*, 3, 1-10. Retrieved from www.elsevier.com/locate/jbef
3. Anand, P., & Lea, S. (2011). The psychology and behavioural economics of poverty. *Journal of Economic Psychology*, 32(2), 284-293
4. Anderloni, L., & Vandone, D. (2010). Risk of over indebtedness and behavioural factors. *Working Papers*, 21501(21522), 1-19
5. Aniola, P., & Golaś, Z. (2012). Differences in the Level and Structure of Household Indebtedness in the EU Countries.
6. Barba, A., & Pivetti, M. (2008). Rising household debt: Its causes and macroeconomic implications—a long-period analysis. *Cambridge Journal of Economics*, 33(1), 113-137.
7. Barclay, D., Higgins, C., & Thompson, R. (1995). The Partial Least Squares approach to causal modelling: Personal computer adoption and use as an illustration. *Technology Studies*, 2, 285–309 Special issue on research methodology
8. Bazerman, M. H. (2005). Conducting influential research: The need for prescriptive implications. *Academy of Management Review*, 30(1), 25-31.
9. Bernstein, P. L. (1996). *Against the gods: The remarkable story of risk* (pp. 1269-1275). New York: Wiley.
10. Betti, G., Dourmashkin, N., Rossi, M., & Ping Yin, Y. (2007). Consumer over-indebtedness in the EU: measurement and characteristics. *Journal of Economic Studies*, 34(2), 136-156.
11. Bian, X., & Moutinho, L. (2011). The role of brand image, product involvement, and knowledge in explaining consumer purchase behaviour of counterfeits: Direct and indirect effects. *European Journal of Marketing*, 45(1/2), 191-216.
12. Bradford, R. A., O'Sullivan, J. J., Van der Craats, I. M., Krywkow, J., Rotko, P., Aaltonen, J., ... & Schelfaut, K. (2012). Risk perception—issues for flood management in Europe. *Natural hazards and earth system sciences*, 12(7), 2299-2309.
13. Brown, S., & Taylor, K. (2008). Household debt and financial assets: evidence from Germany, Great Britain and the USA. *Journal of the Royal Statistical Society: Series A (Statistics in Society)*, 171(3), 615-643.
14. Caetano, G., Palacios, M., Patrinos, H.A., 2011. Measuring aversion to debt: experiments among student loan candidates. *Social Science Research Network Jul. Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1895966* (accessed 03.02.12).
15. Calder, L. (2009). *Financing the American dream: A cultural history of consumer credit*. Princeton University Press.
16. Carlin, B., 2009. Strategic price complexity in retail financial markets? *Journal of Financial Economics* 91 (3), 278–287.
17. Carmines, E. G., & Zeller, R. A. (1979). *Reliability and validity assessment* (Vol. 17). Sage publications.
18. Carvalho, M. & Hamdan, N. (2015). *Becoming bankrupt before 35. The Star, June, 2015. Retrieve from: <http://www.thestar.com.my/news/nation/2015/06/22/becoming-bankrupt-before-35-worrying-trend-of-about-25000-gen-y-msians-in-debt-over-the-last-five-ye/>*
19. Chin, W. (1998a). Issues and opinion on structural equation modelling. *MIS Quarterly*, 22(1), 7–15.
20. Chin, W. (1998b). The partial least squares approach to structural equation modelling. In G. A. Marcoulides, & N. J. Mahwah (Eds.), *Modern methods for business research* (pp. 295–336). Publisher: Lawrence Erlbaum Associates.
21. Collier, J., & Bienstock, C. (2006). Measuring service quality in e-retailing. *Journal of Service Research*, 8(3), 260–275.
22. Dickson, P. G. M. (2017). *The Financial Revolution in England: a study in the development of public credit, 1688-1756*. Routledge.
23. Devarajan, S., Swaroop, V., & Zou, H. F. (1996). The composition of public expenditure and economic growth. *Journal of monetary economics*, 37(2), 313-344.
24. Ekelund, R.B., Mixon, F.G. and Ressler, R.W. (1995), "Advertising and information: an empirical study of search, experience and credence goods", *Journal of Economic Studies*, Vol. 22 No. 2, pp. 33-43.
25. Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G* Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior research methods*, 39(2), 175-191.
26. Fellner, G., & Maciejovsky, B. (2007). Risk attitude and market behavior: Evidence from experimental asset markets. *Journal of Economic Psychology*, 28(3), 338-350.
27. Fernandes, D., Lynch Jr, J. G., & Netemeyer, R. G. (2014). Financial Literacy, Financial Education, and Downstream Financial Behaviors. *Management Science*, (June 2015), 1-23.
28. Frydman, C., & Camerer, C. F. (2016). The psychology and neuroscience of financial decision making. *Trends in cognitive sciences*, 20(9), 661-675.
29. Gabaix, X., & Laibson, D. (2006). Shrouded attributes, consumer myopia, and information suppression in competitive markets. *The Quarterly Journal of Economics*, 121(2), 505-540.

30. Gardarsdóttir, R. B., & Dittmar, H. (2012). The relationship of materialism to debt and financial well-being: The case of Iceland's perceived prosperity. *Journal of Economic Psychology*, 33(3), 471-481.
31. Gärling, T., Kirchler, E., Lewis, A., & Van Raaij, F. (2009). Psychology, financial decision making, and financial crises. *Psychological Science in the Public Interest*, 10(1), 1-47.
32. Gathergood, J., & Disney, R. F. (2011). Financial literacy and indebtedness: new evidence for UK consumers. Available at SSRN 1851343.
33. Gathergood, J. (2012). Self-control, financial literacy and consumer over-indebtedness. *Journal of economic psychology*, 33(3), 590-602
34. Grable, J. E., Park, J. Y., & Joo, S. H. (2009). Explaining financial management behavior for Koreans living in the United States. *Journal of Consumer Affairs*, 43(1), 80-107
35. Grubb, Michael D. (2015). "Failing to choose the best price: Theory, evidence, and policy." *Review of Industrial Organization* 47, no. 3 (2015): 303-340
36. Gu, Y., Wenzel, T., 2013. Strategic obfuscation and consumer protection policy. *Journal of Industrial Economics* (forthcoming).
37. Hair, J.F., Black, W.C., Babin, B., Anderson, R.E., Ronald, L.T. (2010). *Multivariate Data Analysis*, 7th ed. Prentice-Hall, PTR, New Jersey, US.
38. Hodgson, G. (2003), "The hidden persuaders: institutions and individuals in economic theory",
39. *Cambridge Journal of Economics*, Vol. 27 No. 2, pp. 159-75.
40. Hsu, S. (2018) China's Household Debt A Growing Concern Amid Rising Home Prices.
41. <https://www.forbes.com/sites/sarahsu/2018/02/26/chinas-household-debt-a-growing-concern-amid-rising-home-prices/#7cfff8180d3>
42. Huston, S. J. (2010). Measuring Financial Literacy. *Journal of Consumer Affairs*, 44(2), 296-316.
43. Joyce, J. P. (2011). Financial globalization and banking crises in emerging markets. *Open Economies Review*, 22(5), 875-895
44. Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, 47(2), 263-292. Retrieved from <http://www.jstor.org/stable/1914185>
45. Katona, G. (1975). *Psychological Economics*. Elsevier, New York.
46. Keese, M. (2010). Who feels constrained by high debt burden? Subjective vs. objective measures of household indebtedness. *Social Science Research Network*, Available at: [http://papers.ssrn.com/sol3/results.cfm?npage=2&\(accessed08.05.11\)](http://papers.ssrn.com/sol3/results.cfm?npage=2&(accessed08.05.11))
47. Kleinbaum, D., Kupper, L., & Muller, K. (1988). *Applied regression analysis and other multivariate analysis methods*. Boston: PWS-Kent Publishing Company.
48. Kosfeld, M., & Schüwer, U. (2017). Add-on pricing in retail financial markets and the fallacies of consumer education. *Review of Finance*, 21(3), 1189-1216
49. Krusell, P., & Smith, Jr, A. A. (2003). Consumption-savings decisions with quasi-geometric discounting. *Econometrica*, 71(1), 365-375.
50. Lea, S. E., Webley, P., & Walker, C. M. (1995). Psychological factors in consumer debt: Money management, economic socialization, and credit use. *Journal of economic psychology*, 16(4), 681-701.
51. Lusardi, A. (2011). Americans' financial capability (No. w17103). National Bureau of Economic Research.
52. Mackenzie, S., Podsakoff, P., & Jarvis, C. B. (2005). The problem of measurement model misspecification in behavioral and organizational research and some recommended solutions. *Journal of Applied Psychology*, 90(4), 710-730.
53. Malmendier, U., & Tate, G. (2005). CEO overconfidence and corporate investment. *The Journal of finance*, 60(6), 2661-2700.
54. Miltenberger, R. G., Redlin, J., Crosby, R., Stickney, M., Mitchell, J., Wonderlich, S., ... & Smyth, J. (2003). Direct and retrospective assessment of factors contributing to compulsive buying. *Journal of behavior therapy and experimental psychiatry*, 34(1), 1-9.
55. Mitchell, V. W. (1999). Consumer perceived risk: conceptualisations and models. *European Journal of marketing*, 33(1/2), 163-195.
56. Perry, V. G., & Morris, M. D. (2005). Who is in control? The role of self-perception, knowledge, and income in explaining consumer financial behavior. *The Journal of Consumer Affairs*, 39(2), 299-313.
57. Piccione, M., Spiegler, R., 2012. Price competition under limited comparability? *Quarterly Journal of Economics* 127 (1), 97-135.
58. Podsakoff, N., Shen, W., & Podsakoff, P. (2006). The role of formative measurement models in strategic management research: Review, critique, and implications for future research. *Research Methodology in Strategy and Management*, 3, 197-252.
59. Ringle, C. M., Wende, S., and Becker, J.-M. (2015). "SmartPLS 3." Boenningstedt: SmartPLS GmbH, <http://www.smartpls.com>.
60. Ru, H., & Schoar, A. (2016). Do credit card companies screen for behavioral biases? (No. w22360). National Bureau of Economic Research.
61. Seiders, K., Voss, G. B., Godfrey, A. L., & Grewal, D. (2007). SERVCON: Development and validation of a multidimensional service convenience scale. *Journal of the Academy of Marketing Science*, 35(1), 144-156.
62. Shanmugam, M. (2014). What if the household debt to GDP Hits 100%? The Start Online. <https://www.thestar.com.my/business/business-news/2014/03/22/what-if-the-household-debt-to-gdp-hits-100/>
63. Slovic, P. (1987). Perception of risk. *Science*, 236(4799), 280-285.
64. Smith, C., & Barboza, G. A. (2013). The role of trans-generational financial knowledge and self-reported financial literacy on borrowing practices and debt accumulation of college students.
65. Tee, L. S (2016). Household debt on the rise. The Star Online. <https://www.thestar.com.my/business/business-news/2016/04/02/household-debt-on-the-rise/>
66. Thaler, R. (1980). Toward a positive theory of consumer choice. *Journal of Economic Behavior & Organization*, 1(1), 39-60.
67. Thaler, R. (1985). Mental accounting and consumer choice. *Marketing science*, 4(3), 199-214.
68. Thaler, R. H. (Ed.). (2005). *Advances in behavioral finance* (Vol. 2). Princeton University Press.
69. Schwartz, A. (1998). A contract theory approach to business bankruptcy. *The Yale Law Journal*, 107(6), 1807-1851.
70. Shanmugam, L. & Nadesan, G. 2019. An Innovative Module for Learning Computational Thinking Skills among Undergraduate Students. *International Journal of Academic Research in Progressive Education & Development* 8(4): 116-129. doi:10.6007/IJARPE/v8-i4/6440
71. Shanmugam, L., Yassin, S. F. & Khalid, F. 2019a. Incorporating the Elements of Computational Thinking into the Mobile Application Development Life Cycle (MADLC) Model (5): 815-824.
72. Shanmugam, L., Yassin, S. F. & Khalid, F. 2019b. Enhancing Students' Motivation to Learn Computational Thinking through Mobile Application Development Module (M-CT) (5): 1293-1303.
73. Simon, H. A. (1997). Models of bounded rationality: Empirically grounded economic reason (Vol. 3).
74. Sjöberg, L. (2000). Factors in risk perception. *Risk analysis*, 20(1), 1-12.
75. Spiegler, R., 2006. Competition over agents with boundedly rational expectations? *Theoretical Economics* 1 (2), 207-231.
76. The World Bank, (2017). Policy Report. <https://data.worldbank.org/country/malaysia>
77. Tong, A. (2018). Restructuring our household debt. The Star Online.
78. <https://www.thestar.com.my/business/business-news/2018/02/10/restructuring-our-household-debt>
79. Vandone, D. (2009) *Consumer Credit in Europe*, Contributions to Economics, DOI: 10.1007/978-3-7908-2107-7_5, #Springer-Verlag Berlin Heidelberg 2009
80. Verma, R. (2017) Role Of Self Deception, Overconfidence And Financial Aliteracy In Household Financial Decision Making.
81. Vikan, A., Maria da Graça, B. B., & Roazzi, A. (2009). Rating emotion communication: Display and concealment as effects of culture, gender, emotion type, and relationship. *Interamerican Journal of Psychology*, 43(1), 77-83.
82. Wenzel, T. (2014). Consumer myopia, competition and the incentives to unshroud add-on information. *Journal of Economic Behavior & Organization*, 98, 89-96.
83. Werts, C., Linn, R., & Jöreskog, K. (1974). Interclass reliability estimates: Testing structural assumptions. *Educational and Psychological Measurement*, 34, 25-33.
84. Wilcox, J. B., Howell, R. D., & Brevik, E. (2008). Questions about formative measurement. *Journal of Business Research*, 61(12), 1219-1228.
85. Willis, L. (2008). Against Financial Literacy Education. *Iowa Law Review*, 94(March), 197-285. Retrieved from http://papers.ssrn.com/sol3/Papers.cfm?abstract_id=1105384
86. Wold, H. (1985). Systems analysis by Partial Least Squares. In P. Nijkamp, H. Leitner, & N. Wrigley (Eds.), *Measuring the unmeasurable* (pp. 221-251). Dordrecht: Martinus Nijhoff Publishers.
87. Yellen, J. L. (2009) Issues Raised by the Credit crunch and Global Rec <https://www.frbsf.org/our-district/press/presidents-speeches/yellen>