

**PREDICTING FINANCIAL WELL-BEING USING DEMOGRAPHIC PROFILE: A STUDY  
PROPOSED ON STUDENTS OF PUBLIC UNIVERSITIES IN SABAH, MALAYSIA**

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**ABSTRACT**

*This paper aims to make a specific contribution to the issue of financial well-being among students of public universities in Sabah. The discussion on this paper aims to debate the importance of the policymakers to continue to learn, change and adapt to challenges within the internal and external spectrums of the environment to respond to the expectations of different stakeholders. Therefore this paper tends to seek evaluating the relationship between demographic profile and financial well-being to scrutinize on whether public universities students are prepared and equipped with financial knowledge. First, the literature on financial well-being is reviewed with a view to the identification of useful models and concepts. The paucity of reference to financial well-being in that literature is noted especially here in Malaysia. The discussion will look into issues faces financial well-being among public universities students in Sabah. Finally, nonlinear autoregressive with external (NARX) network is proposed and recommended to be used to examine on how the demographic profile affects financial knowledge and financial well-being. We have developed a conceptual framework for demographic profile, and shown its relationship on financial knowledge and eventually to financial well-being. A key finding of our study is that demographic profile is a multi-faceted construct. The demographic profile measurements permit sharing with policymakers what researchers have learned about successful of financial knowledge that eventually translated into financial well-being. It presents an ideal approach whereby policymakers are confronted with the latest research findings concerning the determinants of financial well-being, how they can applied, how the policymakers can attempt to increase its chances of improving the financial education in Malaysia. In return, it will permit researchers to study "cases" over time and to gain greater depth of knowledge concerning not just the presence of demographic profile success-related characteristics, but also an understanding of how policymakers move the public universities students toward financial knowledge and eventually to financial well-being by adjusting their levels of readiness.*

**Keywords:** Financial well-being, financial knowledge, financial education, public universities, artificial neural network (ANN), nonlinear autoregressive with external (NARX).

## **1.0 INTRODUCTION**

Statistically on average, 68 Malaysians declared bankrupt every day, mostly due to credit card debts (The Star, 2014). These habits are among the shocking revelations on why Malaysian consumers cannot deal with the rising cost of living. Federation of Malaysian Consumers Associations (FOMCA) revealed that many of those declared bankrupt due to credit card debts were below 40 years old (The Star, 2011). In most cases, young people often entangle themselves carrying hefty amounts of student loans or credit card debt, and such early slip-ups can deter their aptitude to accumulate wealth. Thus, it is becoming ever more difficult to ignore that consumers must confront intricate financial decisions at a young age in today's demanding financial environment, and financial mistakes made early in life can be excruciating.

Many young adults risk being declared bankrupt because of credit card overspending and failing to observe basic rules of sound financial management. Sabri, Cook, and Gudmunson (2012); and Leach et al. (1999) mentioned that college students are considered as the high risk group in terms of financial stability as most of them borrowed education loan and carry certain amount of debt into their first job with only entry level salaries. Other forms of commitment from credit cards, car loans, and other consumer debts are not exceptional among these students. Inopportunately, many college students have low levels of financial knowledge (Chen and Volpe, 1998; Henry et al., 2001; Lusardi et al., 2010; Murphy, 2005).

Poor financial knowledge among college students is linked with ineffective financial behaviours, including low savings (Sabri and MacDonald, 2010), poor record keeping (Chen and Volpe, 1998), and more credit card debt (Norvilitis et al., 2006). Norvilitis and Santa Maria (2002) confirmed that many students enter college with no budgeting experience and are liable to use credit unwisely. This combination of high debt, low income, and low levels of financial knowledge adversely affects college student financial well-being (Leach et al., 1999).

## **2.0 PROBLEM STATEMENTS**

Department of Statistics Malaysia (2008) reported Malaysian college students is a lucrative consumer market segment as the number of students enrolled in tertiary education keep increasing each year and between 1999 and 2005 it had gone tripled. National Higher Education Fund Corporation (PTPTN) is one of the most common higher education loan provider and those who wish to further their studies (basically young people) will apply education loan for their higher education study. PTPTN (2012) reported since year 1997, there were about 1.65 millions of education loan borrowers and RM35.87 billion has been released. According to PTPTN, only 2.95 billion or 8.24 percent of the released loans have been paid back which clearly indicates that almost 92 percent of the borrowers were unable to pay back the loans and are in debt.

As fresh graduates start working, they need to start repaying their education loan (such as PTPTN) and achieve some societal comforts like car and house. These will further push the fresh graduates or the youth to the world of debt. According to Credit Counselling and Debt Management Agency (2008), Malaysian individual net wealth accumulation dropped significantly right after graduation. This phenomenon happens due to increase of education fees, living expenses as well as individual materialism desire. Easy and simple application of credit card lead to misuse of credit cards even makes the condition worse. By the time the individual has

finished repaying their debt, he or she merely near to their retirement age. Thus, financial knowledge education is a critical component to financial decision-making, and many young people desperately desire they had more financial knowledge. Previous studies indicated that people who possess higher education levels will relatively have higher level of financial knowledge, although ironically that many studies conducted explicitly targeting at university students have actually discovered that the level of financial knowledge is still surprisingly low (Chen and Volpe, 1998).

In view of increasing bankruptcy problem of the young generation, Bank Negara Malaysia (BNM) in 2004 proposed financial education being absorbed as part of the school curriculum in view of its importance in the nation's economic activities and the setting up of Credit Counselling and Debt Management Agency (AKPK) to provide financial education on responsible use of credit and basic money management skills. Ironically, despite BNM efforts bankruptcy continue to rise each year 2008 (13,855), 2009 (16,228), 2010 (18,119), 2011 (19,167), 2012 (19,575), 2013 (21, 987), and 2014 (22,305) (The Star, 2014).

### **3.0 SIGNIFICANCE OF THE STUDY**

Understanding financial well-being among young people is thus of critical importance for policymakers in several areas; investigate the reasons for why policies on financial education introduced by government through BNM are currently less effective thus could suggest which policies is significant and relevant to be implemented. Hopefully, it can aid those who wish to devise effective financial education programs targeted at young to protect these younger consumers so that bankruptcy cases could be reduced through improving financial education. Therefore, financial knowledge among public university students cannot be taken for granted. These students need help to make sound financial decisions in future and at the same time the authority needs to realize that a "one-time or one-size-fits-all" financial education program is unlikely to be effective in stimulating financial well-being for future financial security for Malaysian context.

There is considerable evidence that many college students were lack of sufficient knowledge to effectively manage their personal finances (Avard et al., 2005; Chen and Volpe, 1998; Murphy, 2005; Norvilitis et al., 2006). Despite numerous studies that have examined the relationship between financial knowledge and financial behavior (Chen and Volpe, 1998; Cude et al., 2006; Hilgert, Hogarth, and Beverly 2003; Robb and Sharpe, 2009), there is relatively little previous research that links financial knowledge and financial well-being among college students. Surprisingly, some studies have not found a relationship between financial knowledge and financial well-being among college students (Shim et al., 2009). The limited research on this topic and the mixed results make it difficult to draw conclusions about the relationship between financial knowledge and financial well-being especially here in Sabah, Malaysia.

## **4.0 LITERATURE REVIEW**

### **4.1 Introduction**

People with low financial knowledge are more likely to have problems with debt (Lusardi and Tufano, 2009), less likely to participate in the stock market (van Rooij et al., 2007), less likely to choose mutual funds with lower fees (Hastings and Tejada-Ashton, 2008), less likely to accumulate wealth and manage wealth effectively (Hilgert et al., 2003; Stango and Zinman, 2007), and less likely to plan for retirement (Lusardi and Mitchell 2006, 2007, 2009). This study is primarily focusing on the undergraduate student's personal financial well-being with intention to inform the policymakers on how to assist them to protect their future financial security.

### **4.2 Financial Knowledge**

Financial knowledge is defined as ones' "knowledge of facts, concepts, principles, and technological tools that are fundamental to being smart about money." (Garman and Gappinger, 2008). Mason and Wilson (2000) defined financial knowledge as a "meaning-making process" in which individuals use a combination of skills, resources, and contextual knowledge to process information and make decisions with knowledge of the financial consequences of that decision.

### **4.3 Financial Well-Being**

"A state of being financially healthy, happy, and free from worry" that is based on a subjective assessment of one's financial situation (Joo, 2008) is how we intent to delineate financial well-being in this study. On the other hand, overall satisfaction with one's financial situation is how financial well-being had been measured in other studies (van Praag et al., 2003). Most previous studies on financial well-being however have been focused on among adults or employees and few studies involved college students (Joo, 2008; Malone et al., 2010; van Praag et al., 2003). The author decides to follow Joo and Grable's (2004) recommendation that the determinants of financial well-being incorporate objective, subjective, and behavioural to be measured in a single empirical test of individual financial satisfaction.

### **4.4 Demographic Profile**

In this study, model of financial well-being contain a set of demographic control variables such as gender, age, ethnicity, work experience, family background, and place of origin that are known to be associated with financial knowledge. Few researchers discovered that female scored poorly in the financial knowledge compared to the male counterpart. Based on age, younger respondents tend to have lower financial knowledge due to the fact that they do not have enough experiences or knowledge in such age (Murphy, 2005).

On the other hand, Hira and Mugenda (1999b), Joo and Grable (2004), and Leach et al. (1999) in their studies whether socio economic and demographic factors such as gender, ethnicity, age, income, education, and marital status influence financial well-being concluded financial well-being is positively related to age, income, and education. Later, studies by Xiao et al. (2009), and Shim et al. (2010) on the financial well-being of college students found gender, age, ethnicity, and parental income also indeed were positively related to financial well-being.

#### 4.5 Gender

Previous researches have commonly agreed that male college students had higher levels of financial knowledge than their female counterparts (Chen and Volpe, 1998, 2002; Markovich and DeVaney, 1997). There were other researches affirmed this claim on that had been carried out to test on the difference between the gender and their financial knowledge. These studies include Danes and Haberman (2007), Manton et al. (2006), Micomonaco (2003), and Peng et al. (2007).

Nonetheless, there was no difference between the level of financial knowledge between males and females students according to Ibrahim et al. (2009) which was pretty contradicting to the previous finding. More "Don't know" answer than incorrect answer on nine out of the 20 questions by male respondents whereas the females responded "Don't know" rather than given incorrect answer on thirteen out of the 20 questions. The nine questions for the males were common to the thirteen questions for the females. Manton et al. (2006) discovered there was a higher percentage of "don't know" response by the females than males on all of these 9 questions, especially on investment, insurance and personal loans questions (Micomonaco, 2003).

#### 4.6 Age

There were a positive relationship between the age and the college students' financial knowledge indicated by the previous researches. Young adults usually have a higher degree of demographic diversity and instability, with many living away from home for the first time when they reach 18 to 24 years. In fact, many of these groups experience a new independence and a greater sense of financial responsibility as the acquisition of knowledge seems to increase with age and experience. Chen et al. (1996), Chen and Volpe (1998), and Micomonaco (2003) found that the younger the age, the lower the financial knowledge the results generally showed.

#### 4.7 Ethnicity

A need to understand the impact of ethnic background on public universities students' financial knowledge are necessary due to Malaysia's ethnic diversity and potentially related differences in family experiences. Ethnicity is treated as predictor variable because that attribute may characterize different family cultural practices and market orientations that influence financial knowledge.

Ethnicity inclusion helps to regulate for other imperceptible attributes that are linked with aspects of family background or experience prior to and during college. For example, Sabri, Cook, and Gudmunson (2012) found that in Peninsular Malaysia, Chinese ethnicity were less likely to learn financial knowledge from peers compared to Malay respondents. Perchance, this explains why they learned less from peers compared to their Malay counterparts as Chinese students were more likely to learn financial knowledge from their parents. Obviously, Chinese students were more likely to learn from their parents than friends when it comes to financial matters.

#### 4.8 Work Experience

We cannot deny based on previous studies did mention majority of students gained their knowledge, attitudes, and behaviours about finances come from their parents (Jorgensen and Savla 2010; Shim et al. 2009). However, Borden et al. (2008) suggested that work experience has also influenced students on their financial knowledge. According to Chen and Volpe (1998), Students who work while at the same time attending school may experience positive as well as negative outcomes. For example, they discovered students who worked more hours per week had better financial knowledge than students who did not work.

Ironically, the study by Chen and Volpe (1998) also noticed that college students with more extensive work experience carried higher levels of debt. Borden et al. (2008) explained this situation (increased debt) may resulted from college students who worked while in school and who have less parental financial support; thus, getting a job while attending school may be a student's only option. The present study is one of the first to examine how years of work experience impacts financial knowledge and financial well-being among college students, when measured with the other variables in the study.

#### 4.9 Family Background

Family background (Lusardi, Mitchell, and Curto, 2009) also quite important and related to the personal financial knowledge. Family with higher income and better educated are tend to have better financial knowledge. Murphy (2005) assessed the influence of race, gender, age and parental education level on the financial knowledge of undergraduate students in the USA. The survey was conducted among 277 students, and the analysis of variance results showed statistical differences in the mean personal financial knowledge scores for all the previously mentioned variables except race.

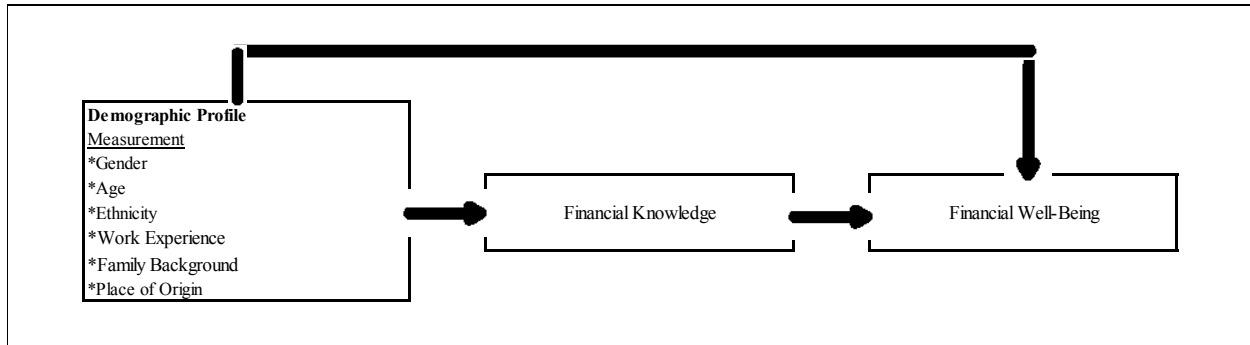
#### 4.10 Place of Origin

Sabri, Cook, and Gudmunson (2012) in their study reported students who come to college from the city were more satisfied with their perceived financial well-being than those students from rural areas. The reason could be that those students are from families that are more financially well off. Definitely, well-off parents could afford their children with more financial support compared to less well-off parents. This could be justified as past research shows that individual well-being is interdependent within a family; well-being reported by children, for example, is strongly correlated with parents' well-being (Winkelmann, 2005).

In our study, we will look into the university students' origin and examine whether their origin would somehow have some effect on their financial knowledge level as here in Sabah, Malaysia. We will then segregate the students into three groups. First group belong to those who come from the urban area, second group are those who reside at sub-urban area, and the third group belong to those who come from rural area.

## 5.0 RESEARCH METHODOLOGY

### 5.1 Research Framework



### 5.2 Research Design and Analysis of Data

The study will use primary data by distributing self-administered questionnaires and the sample consist of university students and the target population of the study is students of public universities in Sabah. The focus of this paper will be based on Tung and Comeau (2014) generational cohort known as the Developers referring to Malaysians who were born in 1983 to 2004. Sukirno (2004) described this period as the Golden Years of Malaysian Development. This generation enjoys greater spending power more than double as compared to the previous generations and at the same time, relatively, this generation enjoys comfortable economy and had better standard of living compared to their previous two generations.

### 5.3 Data and Collection Methods

The data collection will consist of primary data which the researcher will conduct interview using questionnaires to students chosen from random sampling technique. For the purpose of this research, Likert Scale is recommended in the questionnaires. Apart from that, secondary sources from Malaysia Department of Insolvency and Department of Statistics Malaysia will also be consulted to assist in this research.

### 5.4 Data Analysis and Estimation Procedure

Artificial Intelligence Approaches using Neural Network (ANN) together with Matlab will be used to analyze the measurement and structural models. Therefore, NARX model provide some human characteristics to problem solving that are difficult to simulate using the logical, analytical techniques of expert systems and standard software technologies. Furthermore, NARX model is particularly effective at solving problems whose solutions are difficult, if not impossible, to define. This opened up a new range of decision support applications formerly either difficult or impossible to computerize. Finally, NARX model is proposed and recommended to be used to examine on how the demographic profile affects financial knowledge and financial well-being. NARX can be employed using the data from questionnaires and will be converted into numerical values.

## **6.0 RESULTS**

We will develop a conceptual framework for demographic profile, and shown its relationship on financial knowledge and eventually to financial well-being. An expected key finding of our study may suggested that demographic profile is a multi-faceted construct. Through analyzing content, we expect different sets of variables will serve as effective predictors for each of the six types of demographic profiles. For instance, the demographic profile could be found to be positively related to financial knowledge and significantly associated with financial well-being. We believe similar results will be observed parallel with Fox and Bartholomae (1999) finding that revealed higher levels of financial knowledge are expected to correlate with improved financial decisions.

The demographic profile measurement will permit sharing with policymakers what researchers have learned about successful of financial knowledge that eventually translated into financial well-being. It presents an ideal approach whereby policymakers are confronted with the latest research findings concerning the determinants of financial well-being, how they can applied, how the policymakers can attempt to increase its chances of improving the financial education in Malaysia. In return, it will permit researchers to study "cases" over time and to gain greater depth of knowledge concerning not just the presence of demographic profile success-related characteristics, but also an understanding of how policymakers move the public students' universities toward financial knowledge and eventually to financial well-being by adjusting their levels of readiness. Results would potentially help to validate activities, in a quantitative and neural network analysis by today's knowledge base. Therefore, it is expected that they could catch a rich new opportunity for research in our exploration of financial well-being.

## **7.0 DISCUSSION**

Understanding financial well-being among young people is thus of critical importance for policymakers in several areas; investigate the reasons for why policies on financial education introduced by government through Bank Negara is currently less effective thus could suggest which policies is significant and relevant to be implemented. It can aid those who wish to devise effective financial education programs targeted at young to protect younger consumers so that bankruptcy cases could be reduced through improving financial education. Therefore, financial knowledge among public university students cannot be taken for granted. These students need help to make sound financial decisions in future and at the same time the authority needs to realize that a "one-time or one-size-fits-all" financial education program is likely to be ineffective in stimulating financial distress for future financial security for Malaysian context.

As discusses earlier, there is considerable evidence that many college students were lack of sufficient knowledge to effectively manage their personal finances (Avard, Manton, English, and Walker, 2005; Chen and Volpe, 1998; Norvilitis et al., 2006) despite several studies that have examined the relationship between financial knowledge and financial behavior (Chen and Volpe, 1998; Hilgert, Hogarth, and Beverly 2003; Robb and Sharpe, 2009). More research needs to be done to investigate the links between financial knowledge and financial well-being among college students. Surprisingly, some studies have not found a relationship between financial knowledge and financial well-being among college students (Shim et al., 2009). Few studies, inconsistent and mixed results make it difficult to draw conclusions about the relationship



between financial knowledge and financial well-being. This study intends to fill the gap especially here in Sabah, Malaysia.

The sample consists of students of public universities in Kota Kinabalu, Sabah. Sabah is chosen due to its unique background with over 30 ethnics with diverse culture (Sabah Tourism, 2014). It will be interesting to know the findings with such diverse culture and ethnicity as previous studies such in western countries did not incorporate multi culture and ethnicity as in Sabah. Studies by Sabri (2010) also only involved the Malay, Chinese, and Indian in Peninsular Malaysia. The limitation of this study will be smaller sample but more focus location that would be in Sabah and also sampling will be the students of public higher education institutes namely Universiti Teknologi Mara (UiTM), and Universiti Malaysia Sabah (UMS) that are located at the heart of Kota Kinabalu, Sabah.

## REFERENCES

- Agensi Kaunseling dan Pengurusan Kredit (AKPK). (2008). *Money Sense, Getting Smart with Your Money*. Kuala Lumpur: AKPK.
- Avard, S., Manton, E., English, D., and Walker, J. (2005). The Financial Knowledge of College Freshmen. *College Student Journal*, 39(2), pp. 321-338.
- Bankruptcy Cases on the Rise in Malaysia. (2014, April 9). The Star. Retrieved from <http://www.thestar.com.my/News/Nation/2014/04/09/Bankruptcy-on-the-rise-in-Malaysia/>
- Chen, H., Pavlicko, J. J., and Volpe, R. P. (1996). Personal Investment Knowledge among College Students: A Survey. *Financial Practice and Education*, pp. 86-95.
- Chen, H. and Volpe, R. P. (2002). Gender Differences in Personal Financial Knowledge among College Students. *Financial Services Review*, 11(3), pp. 289-307.
- Department of Statistics Malaysia (2008). *Social Statistics Bulletin, Malaysia*. Putrajaya, Malaysia.
- Henry, R. A., Weber, J. G., and Yarbrough, D. (2001). Money Management Practices of College Students. *College Student Journal*, 35, pp. 244-249.
- Hilgert, M., Hogarth, J., and Beverly, S. (2003). Household Financial Management: The Connection between Knowledge and Behavior. *Federal Reserve Bulletin*, pp. 309-322.
- Hira, T. K., and Mugenda, O. (1999b). The Relationships between Self-Worth and Financial Beliefs, Behavior, and Satisfaction. *Journal of Family and Consumer Sciences*, 91(4), pp. 76-82.
- Ibrahim, D., Harun, R., and Isa, Z. M. (2009). A Study on Financial Knowledge of Malaysian Degree Students *Cross-cultural Communication*, 5(4), pp. 9. Retrieved from <http://cscanada.net/index.php/ccs/article/view/1142/1235>
- Joo, S. and Grable, J.E. (2004). An Exploratory Framework of the Determinants of Financial Satisfaction. *Journal of Family and Economic Issues*, 25(1), pp. 162-171.
- Leach, L. J., Hayhoe, C. R. and Turner, P. R. (1999). Factors Affecting Perceived Economic Well-Being of College Students: A Gender Perspective. *Financial Counselling and Planning*, 10(2), pp. 11-23.
- Lusardi, A. and Tufano, P. (2009). Debt Knowledge, Financial Experiences, and Over Indebtedness," *NBER Working Paper*, 14808.
- Malone, K., Stewart, S. D., Wilson, J. and Korsching, P. F. (2010). Perceptions of Financial Wellbeing among American Women in Diverse Families. *Journal of Family and Economic Issues*, 31(1), pp. 63-81.

- Norvilitis, J. M., Merwin, M. M., Osberg, T. M., Roehling, P. V., Young, P., and Kamas, M. M. (2006). Personality Factors, Money Attitudes, Financial Knowledge, and Credit Card Debt in College Students. *Journal of Applied Social Psychology*, 36(6), pp. 1395-1413.
- Perbadanan Tabung Pendidikan Tinggi Nasional (PTPTN). (2010). *Statistic of Borrower*, Retrieved May 10, 2013 from <http://www.ptptn.gov.my/web/guest/anjung>.
- Robb, C. A. & Sharpe, D. L. (2009). Effect of Personal Financial Literacy on College Student's Credit Card Behaviour. *Journal of Financial Counselling and Planning*, 20(1), pp. 25-43.
- Rooij, M. V., Lusardi, A., and Alessie, R. (2007). Financial Knowledge and Stock Market Participation. *National Bureau of Economic Research*, 48. Retrieved from [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1024979](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1024979)
- Sabri, M. F., and MacDonald, M. (2010). Savings Behavior and Financial Problems among College Students: The Role of Financial Knowledge in Malaysia. *Cross-Cultural Communication*, 6(3), pp. 103-110.
- Sabri, M. F., Cook, C. C., and Gudmunson, C. G. (2012). Financial Well-Being of Malaysian College Students. *Asian Education and Development Studies*, 1(2), pp. 153-170.
- Shim, S., Barber, B. L., Card, N.A., Xiao, J. J., and Serido, J. (2010). Financial Socialization of First-Year College Students: The Roles of Parents, Work, and Education. *Journal of Youth and Adolescence*, 39(12), pp. 1457-1470.
- Stango, V. and Zinman, J. (2007). Fuzzy Math and Red Ink: When the Opportunity Cost of Consumption is Not What It Seems. *Mimeo, Dartmouth College*.
- Tung, L. C., and Comeau, J. D. (2014). Demographic Transformation in Defining Malaysian Generations: The Seekers (Pencari), The Builders (Pembina), The Developers (Pemaju), and Generation Z (Generasi Z). *International Journal of Academic Research in Business and Social Sciences*, 4(4), pp. 383-403
- Van Praag, B. M. S., Frijters, P., and Ferrer-i-Carbonel, A. (2003). The Anatomy of Subjective Well-Being. *Journal of Economic Behavior and Organisation*, 51(1), pp. 29-49.
- Winkelmann, R. (2005). Subjective Well-Being and the Family: Results from an Ordered Probit Model with Multiple Random Effects. *Empirical Economics*, 30, pp. 749-761.
- Xiao, J. J., Tang, C., and Shim, S. (2009). Acting for Happiness: Financial Behavior and Life Satisfaction of College Students. *Social Indicators Research*, 92(7), pp. 53-68.