

Measuring Financial Intelligence of Malaysian Gen-Y: A Preliminary Study

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The purpose of this preliminary study was twofold: first to measure the reliability and validity of the instrument; second, to develop a financial intelligence (FI) logit ruler aimed at identifying Gen Ys' classification in terms of their level of FI which, was determined by financial knowledge, financial attitude, level of trust and financial behaviour. To achieve these, Rasch analysis was employed after distributing 30 questionnaires to the working Gen Ys in Klang Valley, Malaysia. The results proved the reliability of the instrument. Further, the four different groups of Gen Ys were also identified with different level of FI. Implications of the findings were also discussed with respect to body of knowledge, practitioners and policy makers.

JEL Codes: G020

1. Introduction

The household debt in Malaysia rose to 86.8% of gross domestic product (GDP) in 2013 from 80.5% in 2012, which is the highest among developing Asian countries (Bank Negara 2013). According to the Department of Statistics, in 2012, Gen Y comprised 34 percent of the labour market in Malaysia. Studies show that Gen Y tends to struggle to save money and have very little understanding of financial planning.

Rising household debt could create risk to an economy's financial stability. In relation to this, this study attempts to investigate the financial behaviour of Gen Y and whether they have the financial intelligence that includes not just financial knowledge, but also positive attitude and behaviour on finance which includes financial management and planning and make decisions concerning savings and investment.

This study aims to be a pioneering work on Gen Y's financial intelligence and behaviour in Malaysia. This is because previous researchers (Idris et al., 2013; Huston, 2010; Hwee et al., 2013; Dowling et al., 2009; and Shih and Ke, 2014; Ibrahim and Alqaydi, 2013; Zakaria et al., 2012; Idris et al., 2013; Mien & Thao, 2015) focused on financial management and behaviour, addressing mostly the factors contributing to poor financial management or behaviour of Gen Y. However, none of these studies investigated the level of financial intelligence of Gen Y which indicate the critical and need to be monitored. By understanding which level of financial intelligence is critical, this could help the government to take appropriate action of monitoring the situation. Therefore, a study on measuring the level of financial intelligence of Gen Y is necessary. Two major outputs are expected of this study: 1) the reliability and validity of the

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constructs that are used to measure financial intelligence; 2) the classifications of Gen Y and their level of financial intelligence. The outputs could potentially be used as tools that provide input for financial and training institutions, and for policy makers as part of risk management to address any build-up of emerging risks and threats to the domestic financial stability. The paper is divided into 7 sections. The first section is an introduction, followed by literature review in the second section. The third section is the explanation for research methodology. Data analysis and discussion are in section 4 and 5, respectively. Section 6 and 7 will discuss the implication of the study and the conclusion.

2. Literature Review

Many research conducted in the past looked at the characteristics of youths which comprise of Generations X and Y. A study by Eisner (2005) and Hwee, Hen and Sellapan (2010) revealed that Generation Y is the most recent cohort that has participated in increasing numbers from the working sector category. Generation Y was born and grew up amid a prosperous growing economy. They are characterized as having more opportunities and a better quality of life compared to previous generations. They are also believed to be more confident in themselves, tend to take risks, and have different values about wealth and value of money. Although many would agree that Generation Y has a higher level of education, talent and technology skills, the study by Hwee et al. (2010) found that in most cases, protective upbringing has led this group to become indecisive in life, including the financial aspects. Despite the fact that Generation Y grew up in an era of prosperous economy, they have higher credit loads compared to the previous generation. Additionally, the concept of savings for retirement purposes is still not easily understood by this generation (Idris, Sarojani, Krishnan & Azmi, 2013).

To support further, the study of US Generation Y (Generation Ys: Fearful of Wall Street and Not Saving for Retirement, 2014) reported that majority of Generation Y lack the financial education to help them understand how to invest for their own retirement. As a result, they lack financial literacy or do not know the direction needed to survive through today's volatile market and unique economic environment. All these happen despite the fact that this generation has spent half of their lives in between the dot com crash and real estate crash. They are also very wary of Wall Street.

When scrutinizing the situation of youths in Malaysia, most of today's youths have a short-term orientation and in many cases, they are protected from the realities of the real world challenges (Hwee et al., 2010). In these respects, the situation is worrying because it is feared that youths are unable to assess the real situation. This can be seen from the increase in purchases on credit. In fact, the report also cited that Goi and Lee (2008) highlighted the evidence for cases of bankruptcy due to credit card use which has increased three-folds between 2006 and 2007. In fact, there is evidence that many graduates violated the contracts of The National Higher Education Loan Fund (PTPTN). These trends, coupled with lack of job security due to various factors are certainly worrisome because this can lead to lack of financial security, deterioration of quality of life and social problems in the future that can inhibit the process of national development (Idris et al. 2013).

2.1 Relationship between Financial Intelligence and Financial Behaviour

In search for definitions of financial intelligence (FI), the terms mostly discussed were financial literacy (FL) and financial knowledge (FK). These two terms were found to be used

interchangeably by many researchers. For instance, Lusardi and Mitchell (2007) defined FL as FK or familiarity with the basic concepts of economics needed to make sensible savings and investment decisions. Similarly, National Council in Economic Education (NCEE) (2005) defined it as familiarity with economic principles, knowledge about the US economy, and understanding of some key economic terms. Huston (2010), in her review of literature on the definitions of financial intelligence, differentiated the components of financial knowledge and financial literacy. Huston argued that financial knowledge is knowledge acquired through education and/or experience specifically related to essential personal finance concepts and products. Meanwhile, literacy involves the ability and confidence to effectively apply or use knowledge related to personal finance concepts and products. She went on to explain that financial literacy leads to personal financial behaviours, which in turn have an impact on financial well-being.

The crux of the matter is that a lack of financial literacy can have a very harmful effect on financial well-being. This is supported Moore (2003) who defined financial literacy similar to that of Hutson (2010). The best description of financial intelligence or also known as financial IQ was provided by Robert Kiyosaki (1997). He described financial intelligence as the ability to solve money problem and interpret/evaluate financial statements for better financial decision and position. On this basis, financial intelligence seems to reflect the attitude of someone to improve his or her financial knowledge so that he or she has the ability to solve money problems for better financial position or condition. In the theory of planned behaviour (Ajzen, 1991), attitude is one important component to explain planned behaviour. Therefore, we believe that attitude should be considered as one important component of financial intelligence.

The review of the literature on Gen Y's characteristics and behaviours are made from 2000-2015. However, only few studies were found to be relevant. The hot global issue tapped by the literature review is Gen Y's ineffective money management. For instance, as reported by Roberts and Jones (2001) that students today grew up in an era that supported more lenient attitudes towards debt which resulted in ineffective financial management. This is supported by Dowling et al. (2009) and Shih and Ke (2014). Shih and Ke (2014) claimed that financial attitudes play an important role in determining a person's financial management. This is because financial attitudes shape the way people spend, save, hoard and waste money (Furnham, 1984). Another important factor found to be important was financial knowledge (Ibrahim and Alqaydi, 2013; Zakaria et al., 2012; Idris et al., 2013; Mien & Thao, 2015). They agreed that consumers who were financially knowledgeable were more likely to manage in financially responsible way.

A report in CAI (2011) indicated that Gen Y may be the most educated generation in American history. This generation consists of 40% of the population worldwide; hence ignoring this problem might bring bad implication to economy's financial stability.

3. Research Method

This study is a cross sectional causal study. Thus the data was collected once. Gen Y employees aged between 20 and 32 years old working in the private or public sector in the Klang Valley were the targeted population in this survey. 30 questionnaires were distributed to the samples that were selected randomly by a human resource manager of a few private and public companies. Only 30 were selected because for Rasch analysis, 30 samples were adequate for a preliminary study (Conrad, 2009). Since the study investigated Gen Y's commitment, the unit of analysis was an individual Gen Y. The study employed Rasch

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analysis because a ruler can only be produced from Rasch analysis. The data was analysed in two stages. The first stage of analysis involved the analysis of the goodness fit of the data collected. The second stage of analysis involved identifying groups of Gen Y from the Person Item Map output.

3.1 Measurement

There were four variables involved in the study: financial knowledge, financial attitude, trust and financial behaviour. Each variable was measured using instruments that were adopted and adapted from previous research. The reliability and validity of the items were tested using Rasch Measurement Model.

4. Analysis and Results

For the first stage of analysis, in order to determine the goodness fit of the data, several tests were conducted. This includes the identification of the reliability of the items and persons under study, the consistency of category response, misfit items, and unidimensionality of the construct used. The following section discussed the interpretations of the analysis.

4.1 The First Analysis

In Rasch Model, items and persons reliability were tested in order to ensure that the items are good enough to differentiate persons' ability and to ensure there are enough right persons to differentiate item difficulty level. Table 1 illustrates the results.

Table 1: Statistics Summary

| | Item (73 items) in logit | Person (30) in logit |
|------------------------|--------------------------|----------------------|
| Reliability | .95 | .80 |
| Separation | 4.58 | 2.03 |
| Mean | .00 logits | -1.57 logits |
| Standard error of mean | .22 | .09 |
| Max | 2.08 | -.64 |
| Min | -3.48 | -2.60 |
| Cronbach Alpha (KR-20) | .88 | |

Valid responses: 94.9% (approximate)

Person raw score-to-measure correlation = .70 (approximate due to missing data)

The summary statistics in Table 1 shows the goodness fit of the overall data. The table shows person (Gen Y) and item reliability index of the construct. Acceptable respondents' reliability index was 0.80 to 1.00 which indicates there are enough good items to differentiate person ability level. As shown in Table 1, the person reliability index of .80 is within the range indicative of acceptable level of reliability. The respondents' separation index of 2.03 (2 if round it up) denotes the separations of the respondents by 2 separate lines to form 3 groups (as shown in Figure 1). This means there were three groups of Gen Y with different levels of financial intelligence. Table 1 also shows that the highest logit measure (highest level of financial intelligence) was measured at -.64 logit compared to the lowest logit (lowest level of financial intelligence) at -2.60 logits with the person mean of -1.57 logits. Gen Ys who were above the mean item of -1.54 logit indicate that their financial intelligence was moderate. This is because the range of 1 logit to 2 logits was considered high level. Gen Ys who were below the mean person of -1.54 logit, indicate very low level of financial intelligence because

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the negative score 0 indicates incompetence. The person mean of -1.54 logits indicates that Gen Ys generally have low level of financial intelligence.

4.2 Consistency of Category Responses

According to Bond and Fox (2007), categories with low frequencies are problematic because they do not provide enough observations for an estimation of stable threshold values. Such infrequently used categories often indicate unnecessary or redundant categories. Winstep Rasch program assesses these with two outputs, namely threshold (calibration structure) and response category curves.

4.2.1 Threshold

A good measurement and well functioned 5 category rating scale (4 thresholds) would be achieved when the average measure and thresholds (calibration structure) function as expected, that is, these two should increase monotonically across the rating scale. The threshold should be ordered in line with the ordering of the response categories and observed average. The monotonicity of the measures reflect that those with higher ability/good financial behaviour endorse the higher categories, whereas, those with lower attitudes/behaviour endorse the lower categories. When this pattern is violated, as indicated by a lack of monotonicity in the average measures, collapsing categories is a possibility. Thresholds that do not increase monotonically across the rating scale are considered disordered. In addition, threshold distance should indicate that each step defines a distinct position on the variable. That is, the estimate should be neither too close together nor too far apart, on the logit scale. As shown in Table 2, the observed averages increased monotonically and the thresholds were ordered, thus meeting the good measurement of response category. Moreover, the difference between thresholds (1 and 2; 2 and 3; and 3 and 4) were within 1.4, indicating good measures.

Table 2: Summary of Category Structure

| CATEGORY | | OBSERVED | | OBSVD SAMPLE | | INFIT OUTFIT | | STRUCTURE | CATEGORY | |
|----------|-------|----------|----|--------------|--------|--------------|------|-----------|----------|---|
| LABEL | SCORE | COUNT | % | AVRGE | EXPECT | MNSQ | MNSQ | CALIBRATN | MEASURE | |
| 1 | 1 | 58 | 7 | -2.52 | -3.06 | 2.05 | 1.77 | NONE | (-4.56) | 1 |
| 2 | 2 | 211 | 24 | -1.37 | -1.06 | .74 | .78 | -3.42 | -2.05 | 2 |
| 3 | 3 | 284 | 32 | .41 | .33 | .74 | .68 | -.55 | .03 | 3 |
| 4 | 4 | 295 | 34 | .94 | .92 | .97 | 1.02 | .61 | 2.05 | 4 |
| 5 | 5 | 32 | 4 | 1.38 | 1.36 | 1.03 | 1.03 | 3.36 | (4.51) | 5 |

4.2.2 Item Misfit

Misfit items mean items that are not measuring the variable accordingly. Thus keeping these items will not provide any weightage to the variable, and can result in low responses from the respondents. During pilot analysis, an identification of misfit items is important so that items that are not measuring the variable can be removed and leave only relevant items that measure the variables.

In Rasch Model, there are 3 indicators to indicate misfit items: mean square (MNSQ), Z standard (Zstd), and Point to Measure Correlation (Pt Mea Corr). The items are considered

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misfit when the 3 indicators fulfil the criteria below (if it is below or above the value specified). According to Bond and Fox (2010) each indicator should be within the range of, the following:

- Outfit MNSQ – item should be accepted if it is within .5 – 1.5
- Outfit Zstd – item should be accepted if it is within the range of +/- 2
- Pt Mea Corr – item should be accepted if it is within the range of .24 - 0.84

With reference to Table 3, items that were highlighted are considered as ‘misfit’. However, since all items highlighted were indicated to be beyond the range of only one indicator (Zstd), the items were considered to be included for the full survey. Table 2 highlighted the items with the highest logit values (in a range of +2). Since the values were within the range of 2, these items were accepted.

Table 3: Misfit Orders

| ENTRY NUMBER | TOTAL SCORE | TOTAL COUNT | TOTAL MEASURE | MODEL | | INFIT | | OUTFIT | | PT-MEASURE | | EXACT MATCH | | Item | G |
|--------------|-------------|-------------|---------------|-------|------|-------|------|--------|-------|------------|------|-------------|------|---------------------|---|
| | | | | S.E. | MNSQ | ZSTD | MNSQ | ZSTD | CORR. | EXP. | OBS% | EXP% | | | |
| 68 | 3 | 30 | 2.65 | .60 | 1.08 | .3 | 1.61 | 2.1 | A | -.48 | .11 | 90.0 | 90.2 | D3DontKnowToFind | A |
| 4 | 19 | 30 | .29 | .30 | 1.79 | 2.8 | 1.16 | 2.0 | B | -.25 | .25 | 13.3 | 51.0 | A10CC | A |
| 2 | 14 | 30 | .77 | .32 | 1.41 | 1.6 | 1.12 | 2.4 | C | -.05 | .22 | 60.0 | 57.2 | A10Current | A |
| 3 | 4 | 30 | 2.33 | .53 | 1.03 | .2 | 1.06 | 1.8 | D | -.30 | .13 | 86.7 | 87.0 | A10FixedDeposit | A |
| 41 | 96 | 30 | -1.94 | .24 | 1.94 | 3.4 | 1.02 | 2.2 | E | .25 | .32 | 43.3 | 44.9 | C110LiveComfortably | B |
| 12 | 12 | 30 | .99 | .34 | 2.01 | 3.1 | 1.82 | 2.2 | F | .35 | .21 | 66.7 | 62.2 | A10TH | A |
| 32 | 118 | 30 | -3.48 | .29 | 1.88 | 2.6 | 2.01 | 2.1 | G | .03 | .30 | 66.7 | 63.5 | C11SaveIncome | B |
| 46 | 66 | 26 | -.83 | .27 | 1.86 | 2.7 | 1.98 | 2.0 | H | -.36 | .27 | 30.8 | 47.6 | C3Savings | B |
| 14 | 2 | 30 | 3.08 | .73 | 1.97 | 1.4 | 1.28 | .6 | I | .23 | .10 | 96.7 | 93.4 | A100thers | A |
| 35 | 81 | 29 | -1.21 | .25 | 1.86 | 3.1 | 1.82 | 2.0 | J | .18 | .31 | 51.7 | 45.5 | C14CCMinAmount | B |
| 9 | 12 | 30 | .99 | .34 | 1.77 | 2.5 | 1.59 | 1.9 | K | .37 | .21 | 63.3 | 62.2 | A10PersonalLoan | A |

4.2.3 Unidimensionality

Unidimensionality is crucial in ensuring the objectivity of the instrument. Rasch analysis applies the principal component analysis (CPA) of the residuals, i.e. how much variance is the instrument in measuring what it was meant to measure. With reference to Table 4, the raw variance explained by measures of 66% has met the unidimensionality requirement of 40% (Reckase, 1979; Conrad et al., 2011). Nevertheless, the unexplained variance in the first contrast of 3.4% as tabulated in Table 3, exhibited that the instrument was considered to be very good (Rasch Rating Scale). This means that the 73 item-instrument used for this study met the unidimensional trait; hence was able to measure what it was meant to measure.

Table 4: Item Unidimensionality (Table of standardized residual variance (in eigenvalue units))

| | Empirical | Modeled |
|--------------------------------------------------|-----------|---------|
| Total raw variance in observations | 100% | 100% |
| Raw variance explained by measures | 66.9% | 66.2% |
| Unexplained variance in 1 st contrast | 3.4% | |

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Therefore, with the overall results of the pilot test carried out, it is concluded that the construct used to measure financial intelligence of Gen Y was overall good and no further improvements should be made for the full survey.

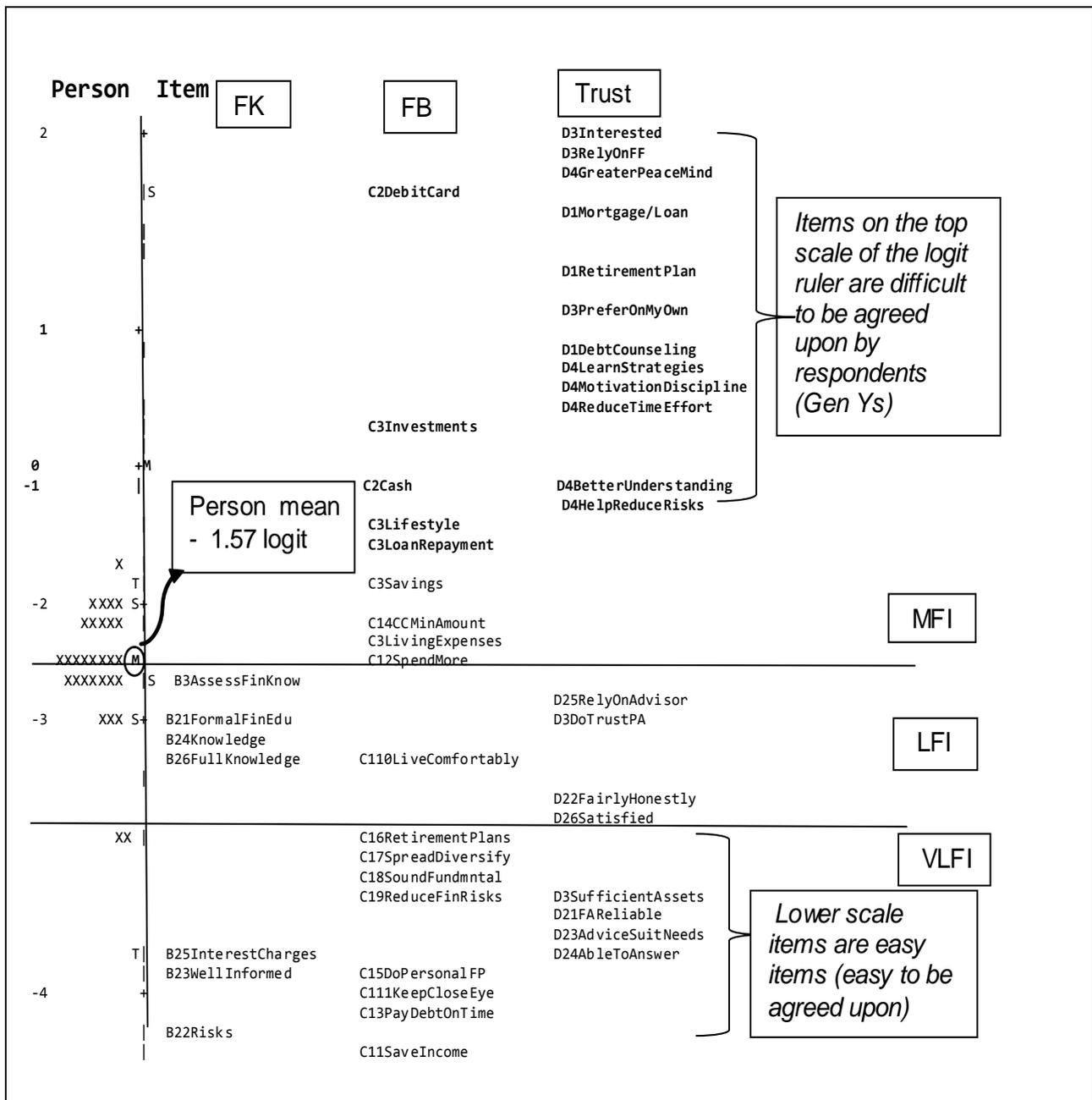
4.3 The Second Analysis

The second analysis was to determine the classifications of working Gen Y based on their financial intelligence level. In this study, financial intelligence was measured by financial knowledge (FK), financial behaviour (FB) and trust (Trust). The variables were chosen based on the explanation provided by Robert Kiyosaki (1997). According to him, financial intelligence is the art of solving money problem through their decision in increasing financial knowledge (financial knowledge), getting advice from the expert (trust) and making the right decision with regards to investment and savings (financial behaviour). For this purpose, the output of Winsteps 3.72.3 was selected to produce Person Item Map. Figure 1 illustrates the output.

Figure 1 is the logit ruler for financial intelligence. The ruler measures the level of financial intelligence of Gen Y based on the variables (FI, FB and Trust) where the unit of scale is logit. The scale ranged from -2.60 logits to 2.08 logits. The ranking of respondents (Gen Ys) with moderate level of financial intelligence (easily agree with most items) was above the scale of -1.57 logits, while the ranking of the lowest level of financial intelligence (difficult to agree) was at -2.60 logits. The ranking of Gen Y with low level of financial intelligence was at the middle scale (-2.40 logit to -1.57 logit). The items which were the most difficult to be agreed upon by Gen Y was *D3Interested (Interested to employ financial agent)* to be agreed was 2.08 logit on the top scale, while the simplest item of financial intelligence was *C11SaveIncome (I save some amount of my income)* with the difficulty to be agreed was -3.4 logit on the lowest scale.

These items describe the characteristics of each group of Gen Y. This is because items that were located above the location of persons on the map indicated disagreement of the persons with the items, while items located below the location of persons indicated agreement. This means that the higher the location of an item away from a person, the stronger the person agrees with the item. On the other hand, the lower the location of an item away from a person location on the map, the stronger the person disagrees with the item.

Figure 1: Financial Intelligence Logit Ruler



As shown in Figure 1, the classifications of Gen Y into 3 groups were identified by the two separation lines drawn across the map horizontally. The first line was drawn at the person mean (-1.57 logits) to separate the first group from the second group. Therefore, the first group was Gen Ys who were located above person mean. This group was labelled as MFI which indicates Moderate financial intelligent. Their financial intelligence was described as moderate because they agreed to all items located below the person mean score of -1.57 logits, but at the same time they disagreed with 17 items (37% of items) above them (items at the higher scale which were written in bold text as shown in Figure 1). The group with low level of financial intelligence was the second group, which was labelled as LFI. Their financial intelligence was considered low because they disagreed with 46 % of the items measuring financial intelligence. Lastly, the group with the lowest level of financial intelligence was the third group and was indicated by VLFI intelligence. This group was separated from the

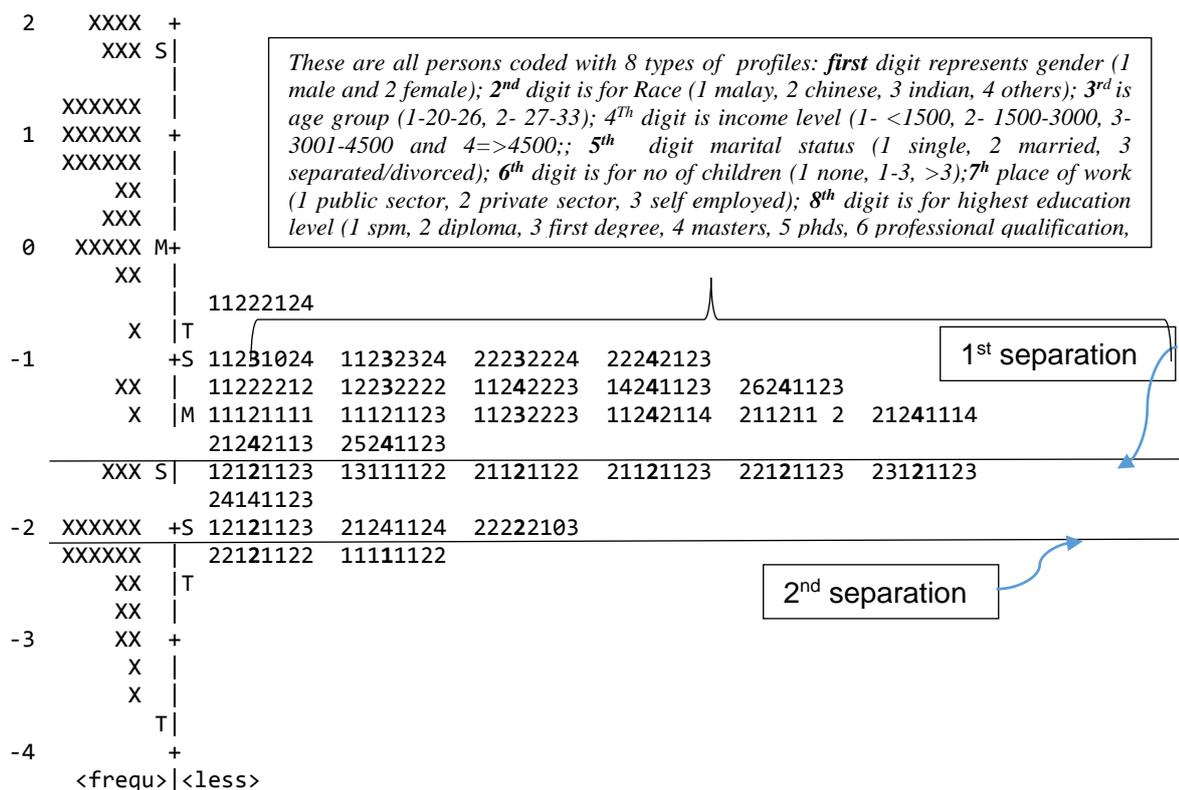
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second group by the line which was drawn at -2.6 logits. This is where the lowest ability persons are located. They disagreed with 75 % of the items. This shows that their level of agreement on most items were very low, indicating less knowledge; least to trust financial agents; and lack of savings and investment.

Based on the Item Person Map, persons are arranged on the right side of the map, while items are arranged on the left side of the map. The persons are reported in code system with 8 digits. The first digit represents gender. This is followed by race, age, income, marital status, number of children, place of work and education levels. For instance, if a respondent is coded as 13241313, this means that the respondent is a *male*; Indian; *age* between 27-23; *salary* above RM4500; *married*; *more than* 3 children; working at *public sector*; and a *first degree* holder.

The first group (MFI) were majority of them and were from income level of more than RM4500 (68% of the MFI group). They were mostly the Bachelor's degree and Master's degree holder (77% of MFI group). Majority of LFI were in the income range between 3000-4500 (70% of the LFI group). 70% of them also were the Bachelor's degree holder. Meanwhile, the VLFI group were from the low income level. They were the Diploma holders. These results can be seen in Figure 2 below.

Figure 2: Financial Intelligence Logit Ruler



As expected, MFI had positive financial behaviours. This was indicated by the items of *saving for retirement plan*, *pay debt on time*, *diversify portfolio*, located far below the logit measure of MFI group. On the extreme, items (*saving for retirement plan*, *pay debt on time*, *diversify portfolio*) located above VLFI group indicating disagreement with those items, which reflect their negative financial behaviours.

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On the aspect of trust for financial agents or advisors, MFI group had shown their agreement on the items of trust for agent; hence had trusted the financial agents. Since the location of these items were about the same level with the location of LFI, their agreement on these items were just 50 percent. This means that they indecisively agreed that financial agents can be trusted; hence did not really put their trust 100 percent on them. The opposite behaviours were found by the group with VLFI. They did not think that the staff could be trusted. However, all these three groups were found to shy away from investment.

To summarize, Gen Y's financial intelligence was generally low. Their financial intelligence level did reflect their education and income level. The 3 classifications of Gen Y did reflect their financial knowledge and financial behaviours.

5. Discussion

The first stage analysis of items reliability and validity has proven that those items constructed to measure the variables were good for further analysis (full survey). The data under study predictably fit the model as all the indicators (Cronbach Alpha, person reliability value, person measure, valid responses, item reliability value, and Standard Error) were in the accepted range. The application of Rasch Model in determining the reliability and validity of the measures was a good decision as it involved a thorough analysis of items and persons location on the logit ruler. This is because in Rasch Model, the items are arranged according to the difficulty level and persons are arranged according to their ability level in a "person item map" so that the location for each item and person can be easily determined by the logit unit. Therefore, each item and person has its logit unit that reflects their level of difficulty and ability. The higher the location, the more difficult is the item or the more able is the person. As long as the items can differentiate the ability level of persons through their endorsement, the construct can be considered valid (Abdul Aziz, 2011). The most important is that each unit has the same scale and is measured by a logit unit. Thus, the instrument can be considered as a valid scale as it has the right unit scale measuring its level of difficulty, which in turn reflects a person's ability. Therefore, this analysis has answered the first objective of the study.

One important finding of the study was the classification of Gen Y based on their level of financial knowledge, level of trust, and their financial behaviours. This has answered the second objective of the study. Interestingly, the logit ruler of financial intelligence derived from Rasch Measurement Model was able to divide Gen Ys in Malaysia into 3 groups: moderate financial intelligence (MFI), low financial intelligence (LFI) and very low financial intelligence (VLFI). These three groups are reported to have different levels of education, where the group with higher financial intelligence hold higher level of education level. This finding does not support the study of Hwee et al. (2010) and Idris et al. (2013) because first, this study identified that different groups of Gen Y with different level of education and different financial literacy would have different financial behaviours. The two studies claimed that all Gen Y are similar in terms of their financial behaviours. Second, Hwee et al. (2010) found that higher levels of education do not determine their saving behaviours. Third, interestingly, this study also does not support the study of Idris et al. (2013) who found that the group could not understand the concept of savings for retirement purposes.

However, this study concurred with Huston (2010) and Mien and Thao (2015) on the impact of financial knowledge on the financial behaviour of Gen Y. Huston (2010) and Mien and Thao (2015) agreed that the lack of financial knowledge can have a very harmful effect on

financial behaviours which later would affect their financial well-being. The present study has supported the study of Mien and Thao (2015), Dowling et al. (2009) and Shih and Ke (2014) on the impact of attitude on financial behavior even though the impact was proven otherwise by the different indications in the present study. The study also supports the findings of Idris et al. (2013) and Generation Y-ers (2014), on the aspects of low financial intelligence level of Gen Y across the globe.

6. Implications

Even though it may be too early to conclude that Gen Y has low financial intelligence as this was just a preliminary study, in Rasch Model, 30 samples are sufficient for a well design pilot study (Abd Aziz, 2011). The sample is almost reflective of the total population that the findings have the potential to be generalized. Based on the findings of this study, there are three important contributions. First, the study has added new knowledge to the theory of financial behaviour with the addition of trust to the explanation of financial behaviour. Previous studies mostly focused on the factors of income, financial knowledge, family background and education to affect financial behaviours of Gen Y. The new discovery of the 3 classifications of Gen Y which are based on financial intelligence would potentially open for constructive debate in the future especially on how the measure of financial intelligence is determined and tested. In the future, the measure should be tested with other statistical tools to ensure and confirm the validity of the construct. Future research should be conducted on larger sample size so that the findings would be more impactful and generalization could confidently be made.

Besides theoretical and methodological contributions, the findings do provide some practical implications, in terms of pedagogical aspects for learning institution; for policy makers; and for the overall financial institutions to learn the whole new model recommended by this study. For instance, since the findings showed that financial knowledge and level of education influence financial behaviours of Gen Y (which reflect their financial intelligence), attention should be given to improve Gen Y's knowledge on financial management, so that their level of savings and loan repayment would improve. In addition, since Gen Ys are IT savvy, financial institutions should improve their appeal on the website if they wanted to attract more Gen Ys to buy their products.

Furthermore, the government could also formulate an education policy enforcing students to take finance as compulsory subject as early as 16 years old. This is because most parents in Malaysia today give their children pocket money at the age of 16 years old.

7. Conclusion

On the whole, the study was able to be completed when the Central Bank was critically looking for solutions to Gen Y's financial behavioural issues. Its originality was beyond doubt as it was the first study of financial intelligence using rasch analysis to produce a standard ruler measuring financial intelligence of Gen Ys. Thus, this has added new advance knowledge to the theory of financial behaviour with the addition of trust to the explanation of financial behaviour. In conclusion, the objectives of the study are successfully achieved. The first objective was achieved by the analysis of items constructed to measure financial intelligence. In addition, the second objective was also achieved by the development of the logit ruler of financial intelligence via the application of Rasch Model using Item Person Map. With the ruler, 3 groups of Gen Y on financial intelligence were identified: MFI, LFI and VLFI.

On top of that, the findings could provide an extension to the body of knowledge of the literature on financial intelligence of Gen Y, particularly with the addition of a new variable of trust, to the theory of financial behaviours. However, since this was a preliminary study, the limitation of small sample size may hinder a production of an accurate ruler of behaviour even though Rasch analysis could handle well the 30 samples. In the future, the same research should be conducted using a bigger scale of sample size. In conclusion, this research has added valuable theoretical, practical, and methodological ramifications to the body of knowledge in the respective fields.

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References

- Abdul Aziz, A 2011, *Rasch Model Fundamentals: Scale And Measurement Structure*. Advance Planning Sdn Bhd..
- Ajzen, I, 1991. 'The theory of planned behavior', *Organizational Behavior and Human Decision Processes*, vol. 50, pp. 179-211.
- Akben-Selcuk, E 2015, 'Factors influencing college students' financial behaviour in Turkey: evidence from a national survey', *International Journal of Economics and Finance*, vol 7, no. 6, pp. 87-94, viewed 1 January, 2016, <<http://dx.doi.org/10.5539/ijef.v7n6p87>>.
- Bank Negara Malaysia 2013, *Financial Stability and Payment Systems Report 2013*. Bank Negara Malaysia, Kuala Lumpur.
- Bond, T G, & Fox, C M 2007, *Applying The Rasch Model: Fundamental Measurement in the Human Sciences*. NJ, London: LEA, Publishers.
- Community Associations Institute (CAI), 2011, *Community Association Impact Survey*. Viewed 27 October 2015, <<http://dev.caionline.org/about/press/Documents>>.
- Dowling, N A, Corney, T, Hoiles, L, 2009, 'Financial management practices and money attitudes as determinants of financial problems and dissatisfaction in young male Australian workers', *Journal of Financial Counseling and Planning*, vol. 20, no. 2, pp. 5-13.
- Furnham, A, 1984, 'Many sides of a coin: The psychology of money usage', *Personality and Individual Differences*, vol. 5, no. 5, pp. 95-103.
- Generation Y-ers 2014. 'Fearful of Wall Street and Not Saving for Retirement', viewed 27 Oct 2015, <<http://www.fpanet.org/ToolsResourcesArticlesBooksChecklists/Articles/Investments/GenerationYersFearfulofWallStreet/>>.
- Hwee JK, Lin LH, Sellapan RD 2010, 'Financial planning and youth: Implications in educating generation Y'. *The 4E Journal*, vol 10. No. 2. pp. 18 - 20.
- Huston, S J 2010, 'Measuring financial literacy', *Journal of Consumer Affairs*, vol. 44, no. 2, pp 296-316.
- Idris, F, Krishnan, K S D, Azmi, N 2013, 'Relationship between financial literacy and financial distress among youths in Malaysia - An empirical study', *Malaysian Journal of Society and Space*, vol. 9, no. 4, pp 106-117.

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- Ibrahim, ME, Alqaydi, FR, 2013, 'Financial Literacy, Personal Financial Attitude, and Forms of Personal Debt among Residents of the UAE', *International Journal of Economics and Finance*, vol. 5, no. 7, pp. 126 – 138.
- Leclerc, K 2012, 'Influential factors contributing to college student spending habits and credit card debt', *University of New Hampshire's Undergraduate Sociology Journal*, pp. 149-159.
- Mien, NT, & Thao, T P. 2015, 'Factors affecting personal financial management behaviors: evidence from vietnam', *Proceedings of the Second Asia-Pacific Conference on Global Business, Economics, Finance and Social Sciences AP15, Danang-Vietnam*, pp. 1-16..
- Moore D 2003, *Survey of financial literacy in washington state: Knowledge, behavior, attitudes and experiences*. Washington State University, Washington.
- Robb, CA, Woodyard, A, 2011, 'Financial knowledge and best practice behavior', *Journal of Financial Counseling and Planning*, Vol. 22, No. 1, pp. 60-70.
- Shih, TY, Ke, SC, 2014, 'Determinates of financial behavior: insights into consumer money attitudes and financial literacy"', *Service Business*, vol. 8, no 2, pp. 217-238.
- Zakaria, RH, Jaafar, NIM, & Marican, S, 2012, 'Financial Behavior and Financial Position: A Structural Equation Modeling Approach', *Middle-East Journal of Scientific Research*, vol. 12, no. 10, pp. 1396-1402.