

PalArch's Journal of Archaeology of Egypt / Egyptology

DETERMINANTS OF FINANCIAL BEHAVIOR AND FINANCIAL WELLBEING IN DISTRICT KOHAT

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Babar Hussain, Kifayat Ullah, Sajjad Haider, Shenaz. Determinants Of Financial Behavior and Financial Wellbeing in District Kohat -- Palarch's Journal of Archaeology of Egypt/Egyptology 18(18), 1667-1690. ISSN 1567-214x

Key Words: Financial Behavior, Financial Wellbeing, Principal Component Analysis,

ABSTRACT

The study proceeded with the objective to construct principal components for Financial Behavior (FB) and Financial Well Being (FW). Also, the study wants to find out the determinants of FB and FW in District Kohat. A survey comprises of different measures of FB, subjective FW, cognitive, non-cognitive, external determinants and demographic variables, was circulated among 306 individuals in District Kohat. Creating Principal Component for the determinants, OLS method was applied to estimate the stated relationships. Furthermore, GMM was applied to get the robust results. All the three types of determinants were monotonically associated with FB and boost it up. Financial literate and optimistic individuals feel less anxious and have better future security, while culturalism promotes financial stress in current financing. Also, the GMM results are in coherence to OLS estimates with little variations.

JELL Classification: D01; D11; D15; D91

INTRODUCTION

The highly dynamic structure of financial markets and increasing participation of individuals in financial markets evoke researcher's attention to explore the determinants of FB¹ and FW² (Hilton, 2001; Barasinska, 2011).

Depending upon different natures, individuals decide differently. There are people who consume more and regret later (Sotiropoulos and Astous 2013),

¹ Human's behavior that is specifically related to management of monetary assets: Hand Book of Research on Behavioral Finance and Investment Strategies,

² level of security and satisfaction, a person attain as per his financial behavior: Consumer Financial Protection Bureau

while other do not and are not much anxious about finances (Lim et al. 2014)]. This variation in behavior is an outcome of abilities one acquires in childhood. As per Piaget (1976) and Cram and Ng (1999) findings, a new born baby acquires his financial skills from the society, in which he lives. Cognitive abilities³ i.e. financial literacy mold FB and also alters the FW(Xiao and Porto 2017). Non cognitive abilities⁴ i.e. self control enable an individual to mold one's own habits and deal with first impulses (Baumeister, 2002; Fujita et al., 2006; and Stromback et al., 2017). More importantly, the brought-up system and surrounding culture of the society also affect the FB (Dawson 1991).

A district wise analysis of poverty profiles of Pakistan by National Socio Economic Registry (NSER) 2010-2011⁵, conducted by Benazir Income Support Program (BISP) in collaboration with United Nations International Children's Emergency Fund (UNICEF) grouped the districts in to five categories; least poor, vulnerable, poor, very poor and `extremely poor. It was found that almost 27.8% of the total households in Pakistan are poor. Furthermore it is found that almost 33% of the total population in district Kohat is below poverty line and District Kohat lies in the category of Poor Districts of Pakistan. Relating FB and condition of society, NBUD⁶ report 2015 stated that, Poor financial decisions can have a long-lasting impact on individuals, their families and society as a whole. Hence, this FB as a strong influential of the situation of people in District Kohat acts as a stimulus to ponder about the FB and ultimately the FW of the citizens of District Kohat.

Aim of the Research

The study proceeded with objectives to construct principal components for FB and FW. Also the study will find out determinants⁷ of FB and FW in District Kohat. The study will evoke the reasons responsible for the financial behaviors that drag district Kohat into the category of poor districts. This study would try to find answers to following questions:

- Do cognitive abilities control Financial Behavior and Financial Wellbeing?
- Do non-cognitive abilities mold Financial Behavior and Financial Wellbeing?
- Does culturalism impact Financial Behavior and Financial Wellbeing?

³ Mental abilities

⁴ learning strategies

⁵ BISP report: an analysis of NSER 2010-11

⁶ Nibud and the Money Wise platform (2015). Advies aan het Platform Onderwijs 2032.

⁷ cognitive, non cognitive and external determinants

Cognitive Abilities

Cognitive abilities and financial decision making has a strong association (Carpena et al., 2011 and Kadoya and Khan 2017). This association of cognitive abilities and FB is evident from Piaget theory of Cognitive Development by Piaget (1976). The theory stated that mental abilities evolved with time and based on these abilities individual later on develop certain financial behavior. Those with good cognitive abilities are less likely to observe bad financial decisions (Agarwal and Muzamdar 2013). Financial literacy, one of the key cognitive ability, has a positive impact on general saving behavior (Gale et al., 2012 and Junobi and Abad 2013). Women's financial literacy is lower as compare to men. To compensate the gape women seek financial advisors for financial decisions (Koenin et al, 2017). Improving financial literacy would act as a key to prepare retirement plan and promoting financial security.

Analyzing the portfolio impact Chu et al., (2017) contributed that financially educated individuals apply cost and benefit analysis before directly investing in the stock. Also the households comprises of financially literate individuals had a higher chance of receiving a positive investment return and will improve financial well being.

Along with financial literacy, numerical skill is another key cognitive ability. Numeracy being the stronger forecaster of the financial literacy (Jayaraman et al., 2018) affects the FB and FW (Lusardi and Mitchel 2007; and Nye and Hilyard 2013). Also financial literacy and numerical skills reduce individual's anxiety in financial matters (Skagerlund et al., 2018). Those having low level of numeracy are highly vulnerable to bad FB (Lusardi 2012).

Non-Cognitive Abilities

Non cognitive abilities have potential to control FB and well being of individuals. Thaler and Shefrin (1981) extended the agency theory to the Economic Theory of Self Control and disclosed the role of non cognitive abilities in determination of financial behavior. The theory explained that based on self control of the individual, an individual is always in conflict with oneself to decide between today's and tomorrow's consumption. Similarly Behavioral Life Cycle Theory (Thaler and Shefrin 1988) also supported that non cognitive and mental abilities play an important role in decision making.

Self-control is individual's ability to mold habits and control desires (Baumeister, 2002). Those who are more able to overcome first impulses are likely to have higher ability to handle problems (Mischel et al., 1989) while others having low self control ability are likely to confront bad decisions in life (Moffitt et al., 2011). Furthermore, Moffitt et al., (2013) revealed that self control in early age is a key determinant of success in later age.

Saving behavior is highly dependent upon self control (Awais 2014). Almost 33% of the total variation in FB is captured by self control (Cronqvist and Siegel 2015). Individuals with good self control are less inclined towards debt accumulation (Achtziger et al., 2015). Also they hold a better level of financial anxiety and financial security. (Stromback et al., 2017).

Optimism, being an important non cognitive ability increased future financial security. The moderate optimistic respondents work harder, save more, and have proper retirement plans (Puri and Robinson 2007), live happy and are less anxious about their finances (Strunk et al., 2006). These living standards on an individual are highly dependent upon thinking mechanism. Individuals who like to analyze the problem and think deliberately before taking decisions are less likely regret upon their decisions (Lichtenstein et al. (1982), and Klaczynski and Gordon 1997). The one who think deliberately is less likely to make heuristic decisions Thomas et al., (2015).

Culturalism

Culture also measures saving behavior: Paule et al., (2016). The association is also evident from Consumer Economic Socialization Theory by Cram and Ng (1999). The theory stated that children acquire financial and economical skills from the surrounding environment that is society, culture and educational system. Hence individual FB is a result of these skills acquired during childhood. Also ***Theory of Planned Behavior*** by Ajzen (1991), states that individual attitude towards behavior is a measure of optimistic/pessimistic feelings towards actions. Saving rate among the households is not the same for all (Awad and Elhiraika 2003). The dowry culture prevails since ages, stronger the concept of dowry, higher was the saving rate (Anukriti et al., 2017). Priego and Rios (2018) subsequently, contributed that cultural beliefs effect the purchasing behavior of individuals.

RESEARCH METHODOLOGY

Sample and Procedure

A well organized questionnaire tailored from Kadoya and Khan (2017) and Stromback et al., (2017) was circulated among adult population from 2 union councils⁸ of district Kohat. Using snowball sampling technique a sample of 306 respondents was investigated. The sample was a representative of both genders in terms of age, number of dependants and income level. Figure 01 shows the distribution of sample and characteristics of sample are given in Table 01(appendix). Almost coherence

⁸ Kohat city and Nusrat khail

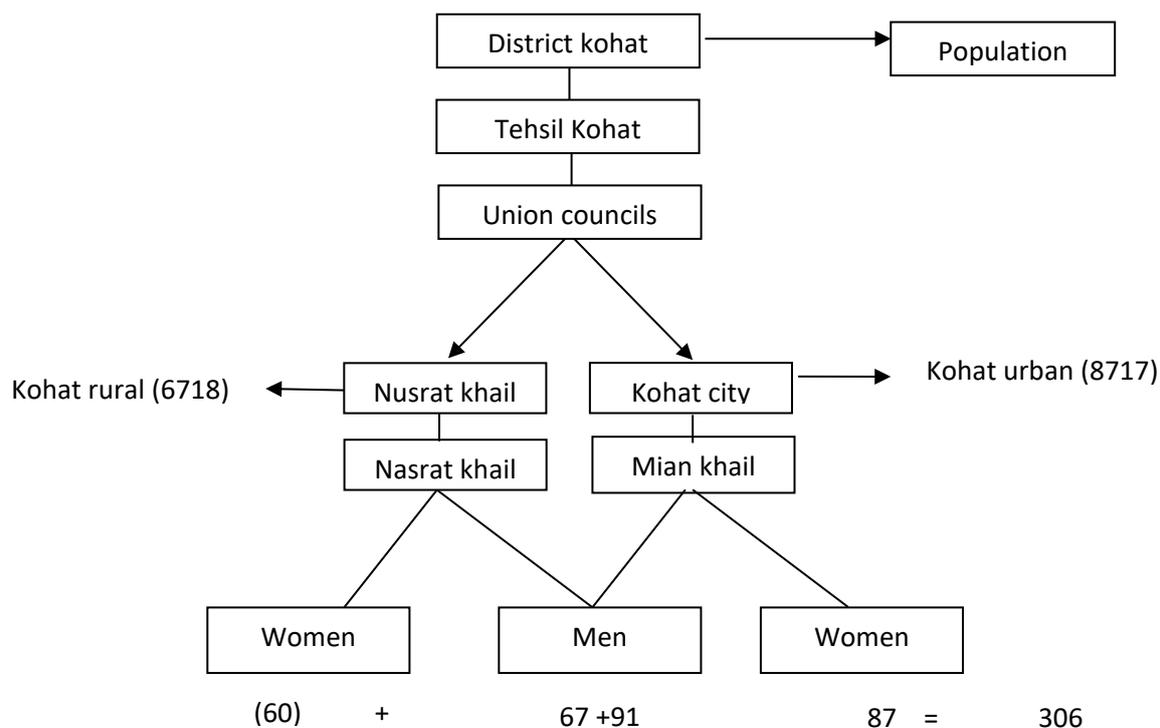


Fig 1: Distribution of Sample

Questionnaire:

The questionnaire created is an amalgamation of cognitive and non cognitive dimension from Kadoya and Khan (2017) and Stromback et al., (2017). Furthermore the external factors are added on the basis of “*Consumer Economic Socialization Theory*” by Cram and Ng (1999). The questionnaire comprises of Likert Scaled items and is divided in to 3 parts: Descriptive variables, Dependant variables, and Independent variables. First part of the questionnaire contains descriptive variables such as gender of the respondent, age of the respondent, income level, and number of dependants. The second part of the questionnaire is designed for dependant variables i.e. FB and FW. FB is determined through saving behavior of the respondent by asking 10 questions about the engagements of individual in stated behavior during last six months. FW is determined by financial anxiety and financial security. It contains four questions from Fünfgeld and Wang (2009) about how an individual is concerned about financial decisions and uncertainties involved in financial decision and three questions about how certain respondent is feeling secure in future finances.

The third part of the questionnaire includes independent variables. It is further more divided in to three factors: cognitive, non cognitive and external factors Two proxies cognitive variables are used in the study: financial literacy and numerical skills. Financial literacy was analyzed through 9 different questions, while numerical skills were determined through three different numerical questions (easy, moderate, and difficult). The study used self control, deliberative thinking, and optimism as proxies for no cognitive abilities

questionnaire comprised of 09 different questions asked for self control, four for optimism, and two questions for deliberative thinking. All the questions were subject to 5 point scale ranged from 1(not at all) to 5(always). Moreover the study hand also added culturalism as an external determinant of FB and well being. The questionnaire included 7 questions related to individual's association with cultural activities.

Chronbach alpha test is applied to check the scale reliability of data. It measures the internal association of items as a group. The value of chronbach alpha ranges from 0 and 1. Any value above 0.5 confirms the reliability and consistency of the data.

Principal Component Analysis

To avoid redundancy in the data collected Principal components analysis (PCA) is suggested by Pearson (1901) and Hotelling (1933). PCA reduce the vast pool of variable to a smaller fundamental set of variable (Keho 2012). The very basic objective of PCA is to extract the factor responsible for maximum variance in data. The variance and correlation both are very important in PCA as they help to identify the most essential factors in data collected. Variance of a variable is mathematically defined as bellow:

$$\sigma_x^2 = \frac{1}{n} \sum_{i=1}^n (x_i - \bar{x})^2$$

Where σ_x^2 is the variance of variable X defined as, average distances from square of mean value of X.

The correlation in data is defined as the interrelation among different variables in a given dataset. The value for correlation between two variables can be derived as:

$$\rho(x, y) = \frac{\frac{1}{n} \sum_{i=1}^n (x_i - \bar{x})(y_i - \bar{y})}{\sigma_x \sigma_y}$$

While, $\sigma_x \sigma_y$ represent the standard deviation of variable x and y correspondingly. The value of $\rho(x, y)$, lies between +1(perfect positive correlation) and -1(perfect negative correlation) and shows the level of duplication in the data. Data having sufficient amount of positive correlation could be proceed with PCA.

Kaiser-Meyer-Olkin (KMO) Test is widely acceptable criteria for sample adequacy for analyzing components. The value for KMO test lies between 0-1⁹. Any value equal or above 0.5 affirms the presence of correlation among variables. This affirms that the sample is acceptable for creating components. (See Table 2 appendix)

⁹ IBM knowledge center: using factor analysis for structure detection.

PCA for Dependant Variables

The questionnaire included 10 questions based on 5 point Likert scale, to analyze the FB of individuals. The scale ranged from 1 (not at all) to 5 (always). Financial well is measured in two dimensions: **current** financial anxiety and future financial security. Respondents were asked **4** questions allied to anxiety related to money affairs **and** 3 questions related to secured feelings about future finances. All the questions were subject to 4 point scale ranged from 1 (not at all) to 4 (always).

Table 2.1: Dependant Variables

Financial Behavior (Saving Behavior) $a=0.72$		
Eigen value: 3.02493 % variance explained: 30.25	Comp loading	Range
1. Payment of bills on time	0.1537	1-5
2. Keeping record of monthly expenses	0.2818	1-5
3. Expending budget according to need	0.3738	1-5
4. Staying within budget plan	0.3221	1-5
5. Paying for credit card monthly	0.2058	1-5
6. Maintaining emergency fund	0.3667	1-5
7. Saving from monthly earnings	0.4341	1-5
8. Contributing to retirement account	0.3677	1-5
9. Purchase of bond, stock or mutual fund	0.2988	1-5
10. Savings for long term goals	0.2525	1-5
Financial Anxiety , $a=0.55$		
Eigen value: 1.78422 % variance explained: 44.61		
1. Understanding of language of financial experts	0.4706	1-4
2. Nervousness about financial and money affairs.	0.5990	1-4
3. Postponing financial decisions.	0.5511	1-4
4. Confidence over decisions taken.	0.3407	1-4
Financial Security , $a=0.87$		
Eigen value: 2.4133 % variance explained: 80.45		

5.	Current financial security	0.5793	1-4
6.	Confidence about future finances	0.5837	1-4
7.	Confidence about post retirement finances	0.5689	1-4

Table 2.1 shows the component loading for the index of FB and FW, based on the component qualifying to Kaiser's (1960) criteria¹⁰ for Eigen¹¹ value. The positions of all the eigen values can also be analyzed through scree plot (Appendix Fig 2.1(a), (b) and (c)). Following is the method for generating PCA.

Index of financial behavior = Bills on time $\times (0.1537)^2$ + electronic record of monthly expenses $\times (0.2818)^2$ + expansion of budget according to needs $\times (0.3738)^2$ + staying within budget plan $\times (0.3221)^2$ + Paying for credit card monthly $\times (0.2058)^2$ + emergency saving funds $\times (0.3667)^2$ + savings from monthly earnings $\times (0.4341)^2$ + contribution to retirement account $\times (0.3677)^2$ + purchase of bonds, stocks, and mutual funds $\times (0.2988)^2$ + savings for long term goals $\times (0.2525)^2$ (01)

Index of financial anxiety = understanding of language of financial experts $\times (0.4706)^2$ + nervousness about financial affairs $\times (0.5990)^2$ + postponing financial decision $\times (0.3407)^2$ + confidence over decisions $\times (0.3407)^2$ (02)

Index of financial security = current financial security $\times (0.5793)^2$ + confidence about future $\times (0.5837)^2$ + 7. Confidence about post retirement finances $\times (0.5689)^2$ (03)

PCA for Independent Variables

Additionally, the survey contained a number dimensions measuring differences in terms of cognitive, non cognitive and external factors.

Two proxies: Financial literacy and numerical skills are used to determine the cognitive abilities of individual. The non cognitive factors include: optimism, self control and deliberative thinking. Together, these three variables represent non cognitive factors effecting FB and FW. The external factors include culturalism that represents the respondent's dedication to culture and spending behavior on cultural events.

Based on the component, qualifying Kaiser criteria, Table 2.2 shows the components for all the proxies of cognitive, non cognitive and external variables.

¹⁰ component to be retained in PCA, must be higher than 1

¹¹ The Eigen value for certain component measures the variance in all the variables, accounted by that certain component

Table 2.2: Independent variables

Financial Literacy, $\alpha=0.81$		
Eigen value: 3.77892 % variance explained: 41.99	Comp loading	Range
1. Do you consider yourself a financially literate person?	0.3275	1-3
2. Do you use a credit card?	0.2457	1-3
3. Do you have knowledge of insurance?	0.3480	1-3
4. Do you have knowledge of taxes?	0.3774	1-3
5. Do you have knowledge of saving and saving accounts?	0.4063	1-3
6. Do you have information about prize bonds?	0.3395	1-3
7. Are you aware of the concept of inflation?	0.3552	1-3
8. Are you aware of the concept of interest?	0.2229	1-3
9. Do you know why prices increase?	0.3356	1-3
Numerical Skills, $\alpha=0.5$		
Eigen value: 1.37456 % variance explained: 68.73		
10. Numerical questions	0.7071	1-3
11. Use of calculator	0.7071	1-3
Self Control, $\alpha=0.65$		
Eigen value: 2.67439 % variance explained: 29.72		
12. Breaking bad habits.	-0.0281	1-5
13. Distraction about financial decisions.	0.2029	1-5
14. Resisting temptations.	0.1802	1-5
15. Regrets over things done.	0.3054	1-5
16. Thinking about alternatives	0.4148	1-5
17. Focus on the short term.	0.4757	1-5
18. Care about future.	0.4364	1-5
19. Living in today.	0.4617	1-5
20. Importance of convenience.	0.1743	1-5
Optimism, $\alpha=0.506$		
Eigen value: 1.68696 % variance explained: 42.17		

21.	Expecting good in uncertainty	0.5506	1-5
22.	Opmtimism.	0.5874	1-5
23.	Pessimism.	-0.5433	1-5
24.	Counting on good things happening to me.	0.2381	1-5
Deliberative thinking $a=0.72$			
Eigen value: 1.56641 % variance explained: 78.32			
25.	Developing clear plan	0.7071	1-5
26.	Analyzing the problem	0.7071	1-5
Culturalism, $a=0.77$			
Eigen value: 3.03101 % variance explained: 43.30			
27.	Do you value culture?	0.3911	1-3
28.	Do you believe in cultural values?	0.4330	1-3
29.	Do you celebrate cultural events?	0.4043	1-3
30.	Do you save separately for cultural events?	0.3346	1-3
31.	Do you spend money on cultural events?	0.3563	1-3
32.	Do you get out of budget during cultural events?	0.3832	1-3
33.	Do you change budget plan during cultural events?	0.3321	1-3

The positions of all the eigen values for all the variables on table above can also be analyzed through scree plot (Appendix: Fig 2.2a, b, c, d, e, and f. Following is the method for generating PCAs.

$$\begin{aligned} \text{Index of financial literacy} = & \text{self literacy} \times (0.3275)^2 + \text{use of credit card} \\ & \times (0.2457)^2 + \text{knowledge of insurance} \times (0.3480)^2 + \text{knowledge of taxes} \\ & \times (0.3774)^2 + \text{knowledge of saving accounts} \times (0.4063)^2 + \text{information about} \\ & \text{prize bonds} \times (0.3395)^2 + \text{concept of inflation} \times (0.3772)^2 + \text{concept of interest} \\ & \times (0.2229)^2 + \text{knowledge of increase in prices} \times (0.3356)^2 . \end{aligned} \quad (04)$$

$$\text{Index of numerical skills} = \text{numeric} \times (0.7071)^2 + \text{use of calculator} \times (0.7071)^2 \quad (05)$$

$$\begin{aligned} \text{Index for self control} = & \text{Breaking bad habits} \times (-0.0281)^2 + \text{distraction in} \\ & \text{financial decision} \times (0.2029)^2 + \text{resisting temptation} \times (0.1802)^2 + \text{regrets over} \\ & \text{things} \times (0.3054)^2 + \text{thinking about alternatives} \times (0.4148)^2 + \text{focus on short} \end{aligned}$$

$$\text{term} \times (0.4757)^2 + \text{care about future} \times (0.4364)^2 + \text{living for today} \times (0.4617)^2 + \text{importance of convenience} \times (0.1743)^2 \quad (06)$$

$$\text{Index for optimism} = \text{Expecting the best} \times (0.5506)^2 + \text{optimism} \times (0.5874)^2 + \text{pessimism} \times (-0.5433)^2 + \text{count on good things} \times (0.2381)^2 \quad (07)$$

$$\text{Index for deliberative thinking} = \text{Developing clear plan} \times (0.7071)^2 + \text{analyzing the problem} \times (0.7071)^2 \quad (08)$$

$$\text{Index for Culturalism} = \text{value culture} \times (0.3911)^2 + \text{believe in cultural values} \times (0.4330)^2 + \text{celebration of cultural events} \times (0.4043)^2 + \text{savings for cultural events} \times (0.3346)^2 + \text{spending on cultural events} \times (0.3563)^2 + \text{getting out of budget during cultural events} \times (0.3832)^2 + \text{changing budget plan during cultural events} \times (0.3321)^2 \quad (09)$$

Estimation Strategy

In order to look into the determinants of FB and FW the study has examined three dimensions of said relationship i.e. cognitive, non cognitive and external determinants of FB and FW. A series of regression were run to achieve the stated objectives. The main econometric model is specified bellow:

$$y = f(\text{Cog}_i + \text{NonCog}_i + \text{Ext}_i + X_i)$$

Where, y is the focus variable, financial behavior, or FW (security or anxiety). Cog represents cognitive abilities which means it can be financial literacy or numerical skills. NonCog represents the non cognitive abilities that may be self control, optimism or deliberative thinking. The term Ext represents the culturalism that is used an external determinants of financial behavior and well being. While X is representative of all control variables.

At first the study begins with a regression by the Ordinary Least Squares (OLS) method. At second step Generalized Moment's Method (GMM) is applied to acquire robust association of the subject parameters. GMM approach allows to examine the results with higher reliability and to recognize the determinants of FB and financial well being. The GMM approach, first introduced by Karl and Pearson (1894) is considered superior to OLS as it controls the problem of endogeneity in the data. The detailed description of models is given section A (appendix).

RESULTS

Determinants of Financial Behavior

To test if FB is somehow dependent upon cognitive, non cognitive and external factors, FB is first divided into good and bad financial behavior. A cut point is added to the sample at medium level of FB i.e. 2.996. Following Stromback et

al., (2017) the respondent for whom the value of FB index is above 2.996 posses good FB while the others i.e. having index value ≤ 2.996 posses bad financial behavior. The Fig 02 given bellow shows the FB scale for good and bad financial behavior.

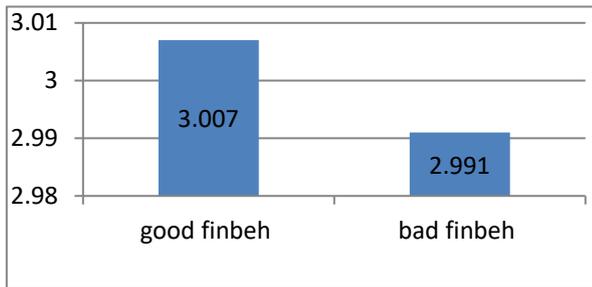


Fig 02: Financial Behavior Scale

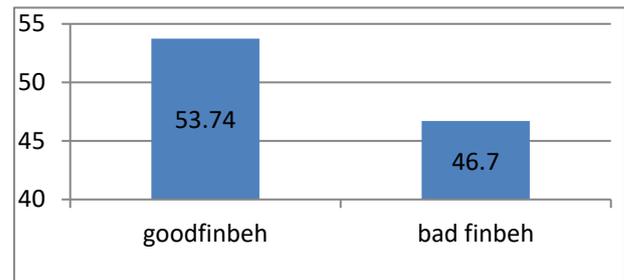


Fig 03: Percentage ratio of Financial Behavior

While the Fig 03 given above represents the percentage ration of respondents having good or bad financial behavior. It is shown that 53.74% of the total respondents from District Kohat posses good FB while the remaining 46.7% lies below the cutoff point for good financial behavior.

Table 3(see appendix) shows the association between FB and its determinants. The study estimated the relationship between FB and its cognitive, non cognitive and external determinants in three different ways. All the three models estimated through OLS as well as GMM consecutively. The first model, Finbeh1 uses self control as non cognitive variable, financial literacy as cognitive variable and culture as external variable. The second model, Finbeh2 estimated the FB depending on numerical skills as cognitive factor, deliberative thinking as non cognitive factor and culture as external factor. The third model, Finbeh3 used all the proxies of cognitive, non cognitive and external factors at once. The series of regressions are run to catch the robust association of the subject variables. All the models also includes control variable i.e. age of the respondents, number of dependants of the respondent and income level in rupees per month of the respondent.

Determinants of Financial Wellbeing

FW in the current study is measured in two ways: financial anxiety¹² and financial security¹³. The Fig 04 given below shows the FW scale. A cut point is added to index of financial anxiety at 2.28. Any value bellow the average value of 2.28 shows low level of financial anxiety hence showing high financial wellbeing. For financial security the cut point is added at 2.817, above which every value predicts the high FW of the individual.

¹² level of concern about many decisions and uncertainties involved in financial decision making

¹³ the peace of mind a person feels when he have secured future finances.

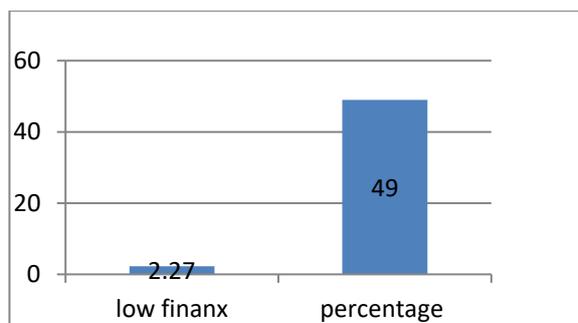


Fig04: Low Financial Anxiety

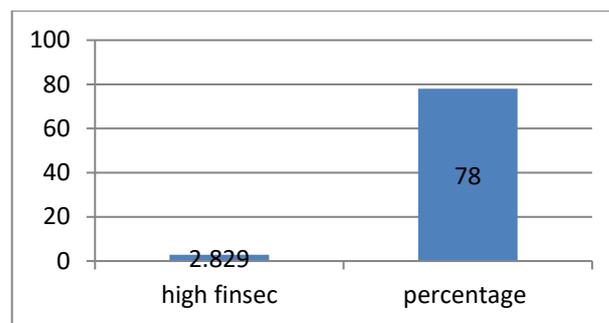


Fig05: High Financial Security

Figures given above, show that the 49% of the total sample size face low financial anxiety, 78% of the total respondents stands above the cut point for high financial security, hence showing high financial well being.

To investigate the differences in financial well being, the impact of cognitive, non cognitive an external variables on financial anxiety and financial security is modeled. The table 4 (appendix) provides the level of both dimensions of FW investigated through OLS and GMM. The model included financial literacy, optimism, and culturalism as cognitive, non cognitive and external determinant of financial well being. Along with these determinants income level and age of the respondent are also included in the regression.

DISCUSSION

Do cognitive abilities control Financial Behavior and Financial Wellbeing?

It is evident from the Table 3(appendix), that cognitive ability: financial literacy and numerical skills are associated positively to FBof people from District Kohat. An up gradation of cognitive abilities would leads to better FB(Nye and Hilyard 2013, and Agarwal and Muzamder 2013). Furthermore the persistence of parallel relations of financial literacy and numerical skills with FB is independent of the influence of non cognitive and external variables. The financial literacy as an encouraging determinant for FBis also supported by Hilgert, et al., (2003), Roij et al., (2007) , Mandell and Klein (2009), and Carpena et al., (2011).

Also financial literacy helps in enhancing FW through increasing financial security and decreasing financial anxiety. The Table 4 (appendix), shows that an upward movement along the index of financial literacy would shift down the index of financial anxiety and shift up the index of financial security. In District Kohat, the more financially literate a person is, the less financially anxious he is and feels more secure, about future expenses,. Kadoya and Khan (2017), affirms the relation and stated that financial literacy helps people to opt better financial choices regarding assets accumulation and increasing current income, which in result reduces financial anxiety. Furthermore the robust results acquired through GMM are also supporting the encouraging relationship

Also results show that financially literate respondents also stand above the cut point value for financial behavior. In the same way, individuals having good numerical skills are also having good financial behavior. Furthermore it is shown that financial literate individuals confront low financial anxiety and achieve high financial security. {See appendix: Fig 4.1(a), (b), and (c)}

Do non-cognitive abilities mold Financial Behavior and Financial Wellbeing?

Supported from Thaler and Shefrin (1981) and Thaler and Shefrin (1988) it is shown in Table 3 that the relation between non cognitive measures: self control and deliberative thinking and FBis positive. An improvement in self control would raise the level of financial behavior. (Holtfreter et al. 2008; Stromback et al, 2017). Also Thoma et al. (2015) described FBas a reflection of analyzing the situation deliberately. The study stated that respondents, who like to analyze all the aspects of certain problem, turn out to produce fruitful financial decisions.

Optimism is used as a non cognitive variable (see Table 4) and it has a positive impact of financial well being. The association is aligned with Stromback et al., (2017) who stated that optimistic people portray better financial behavior, expect good things in life and are not much anxious about their current financial situation and are more secure in terms of future financing. Expecting the element of biasness in the results acquired through OLS, the relationship is also analyzed through GMM and it is found that the relationship described earlier is robust.

Analyzing the non cognitive abilities of the sample investigated it is shown that individual those have a good self control ability, also portray a financial behavior. Similarly individuals those are more interested to analyze any problem carefully are more inclined towards better decisions making. The findings are in coherence to Behavioral Life Cycle Theory by Shefrin and Thaler (1988). Also the optimistic individuals have a lower level of financial anxiety and higher level of financial security. {See appendix: Fig 4.2 (a),(b) and 9c)}

Does culturalism impact Financial Behavior and Financial Wellbeing?

Theory of consumer socialization by Cram and Ng (1999) stated that Individual acquires financial and economical skills from the surrounding environment that is society, culture and educational system. The results shown in Table 3 depict positive relationship between cultural involvement of individual and FBof people of District Kohat. This shows that the individuals those are more involve in cultural activities are more inclined towards saving properly for cultural activities and avoid over spending. Diener et al., (2003), stated that culture create certain type of positive gestures in the personality .According to Piaget (1976) culture plays a significant role in developing cognitive behavior and attaining certain level of well being. Table 4 shows that people those are highly involve in cultural activities feel very anxious about current financial situation. In order to save and spend on cultural events, people try to postpone certain

financial spending, hence adversely affect this dimension of well being. Those who are more inclined toward cultural activities are likely to have high financial anxiety. This might be due to manage saving for cultural activities and expenses on cultural activities. {see appendix: Fig 4.3 (a) and (b)}

CONCLUSION

Consumer behavior has always been an interesting dimension of researchers. Based on behavioral life cycle theory and many other researches it is clear that people are usually unable to maintain a balance between current and future consumption. The result of this study is evident that cognitive and non cognitive variables are supporting better financial behavior. Financially literate individuals are less likely to regret upon their decisions. Individual having good self control presented better financial behavior. Also those who like to analyze the problem deliberatively and avoid heuristic decisions, displayed good financial behavior. It is also shown that individual who are more involved in cultural activities are more inclined towards saving. In this way the study accepted the first hypothesis of positive association of FB and all the three types of determinants.

FW is measured in two ways: financial anxiety and financial security. It is shown that the more financially literate a person is, the less financially anxious he is. Hence they feel more secure about their future. Also it is shown that optimistic people stay at higher level of financial well being. These people feel less anxious about their financial situation. However individuals who are highly involved in cultural activities feel more anxious about financial matters and are more inclined towards saving behavior. In this way the second hypothesis of the study is partially accepted. Based on the findings it is recommended that course of financial literacy should be introduced into the syllabus at high schools. What is learned in childhood stay dormant in mind and one can recall it at a stage when the implementation of subject knowledge is required (Mandell 2008). Government should take initiative to conduct psychological training and workshops to make people aware of the importance of non cognitive abilities.

ACKNOWLEDGMENT

We do acknowledge and appreciate the cooperation of all the anonymous respondents.

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Appendix

Section A: Description of Model.

$$Finbeh_i = \beta_0 + \beta_1 finlit_i + \beta_2 selfcntrl_i + \beta_3 cult_i + \beta_4 X_i + u_i \quad (1)$$

$$Finbeh_i = \beta_0 + \beta_1 nums_i + \beta_2 dbl_i + \beta_3 cult_i + \beta_4 X_i + u_i \quad (2)$$

$$Finbeh_i = \beta_0 + \beta_1 finlit_i + \beta_2 nums_i + \beta_3 selfcntrl_i + \beta_4 dbl_i + \beta_5 cult_i + \beta_6 X_i + u_i \quad (3)$$

$$Finanx_i = \beta_0 + \beta_1 finlit_i + \beta_2 selfcntrl_i + \beta_3 opt_i + \beta_4 cult_i + \beta_5 X_i + u_i \quad (4)$$

$$Finsec_i = \beta_0 + \beta_1 finlit_i + \beta_2 selfcntrl_i + \beta_3 opt_i + \beta_4 cult_i + \beta_5 X_i + u_i \quad (5)$$

Whereas,

Financial behavior (finbeh) is a kind of human's behavior that is specifically related to management of monetary assets.

Financial Anxiety (Finanx) is level of understandings in monetary matters.

Financial Security (Finsec) is level satisfaction related to future finances.

Financial literacy (finlit) measures exposure and understating to financial matters.

Numerical skill (nums) is a measure of basic and advanced mathematical skills.

Self control (selfctrl) is individual's power to change habits, control temptations and overcome desires.

Deliberative Thinking (dbl) is interests of individuals in prior analysis to a decision.

Optimism (opt) measures the level of positive expectations in uncertain matters.

Culturalissm (cult) measures the involvement and interest in individual in cultural activities.

Table 01	
Descriptive Statistics	(Sample Size:306)
Gender:	
Female	148
Males	159
Age (years)	
30-39	188
40-49	79
Above 49	40
Dependants	
Less than 04	195
5—8	98
More than 8	15
Income in Rs per month	
Below 14000	29
14001- 40000	145
Above 40000	133

Table 2 Kaiser-Meyer-Olkin (KMO) Test

Index	FB	FS	SC	OPT	DBL	CULT	FINLIT	NUMS
KMO value	0.7360	0.7408	0.7042	0.5538	0.5000	0.6815	0.8499	0.555
Any value above 0.5, identify PCA as suitable technique to create an index.								

Table 3: Determinants of Financial Behavior

Variables	Finbeh1		Finbeh 2		Finbeh 3	
	OLS	GMM	OLS	GMM	OLS	GMM
Finlit	0.751*** (0.00)	0.745*** (0.00)	---	---	0.649*** (0.00)	0.645*** (0.00)
Nums	---	---	0.29*** (0.00)	0.288*** (0.00)	0.147** (0.04)	0.145** 0.056
Slfcentrl	0.071** (0.01)	0.070** (0.01)	---	---	0.071*** (0.00)	0.071*** 0.00
Dbl	---	----	0.214*** (0.00)	0.214*** (0.00)	0.171*** (0.00)	0.172*** (0.00)
Cult	0.195** (0.03)	0.19** (0.02)	0.263*** (0.00)	0.253** (0.03)	0.149* (0.09)	0.147* (0.07)
Ageyears	-0.000 (0.96)	0.199** (0.06)	-0.112** (0.03)	-0.10 (0.07)	-0.002 (0.56)	-0.002 (0.609)
Dependants	-0.049*** (0.00)	0.0006 (0.90)	-0.043** (0.02)	-0.04** (0.01)	-0.039** (0.02)	-0.039** (0.02)
Ilrsm	0.017 (0.79)	0.017 (0.81)	0.10 (0.139)	0.10 (0.16)	0.036 (0.585)	0.036 (0.612)
R square	0.2865	---	0.2096	---	0.3385	---
Probability	0.00	---	0.00	---	0.00	---
No. of observation	306	306	306	306	306	306
No. of parameters	--	07	---	07	---	07
Hypothesis	People with good cognitive and non cognitive factors under the conditions of good external factors, acquire better general financial behavior.					

Table 4: Determinants of financial wellbeing

Variables	Finwell1(finanx)		Finwell2(finsec)	
	OLS	GMM	OLS	GMM
Finlit	-0.063* (0.07)	-0.063* (0.08)	0.385*** (0.00)	0.037*** (0.00)
Opt	-0.202*** (0.00)	-0.202*** (0.00)	0.152** (0.06)	0.153** (0.04)
Cult	0.160** (0.04)	0.160** (0.05)	0.130 (0.25)	0.130 (0.23)
Ilrsm	-0.312*** (0.00)	-0.312*** (0.00)	0.208** (0.01)	0.208** (0.01)
Ageyears	0.002 (0.52)	0.002 (0.48)	0.010* (0.08)	0.010* (0.08)
R square	0.15	---	0.34	---
Probability	0.00	---	0.00	---
No. of parameters	---	06	---	06
Num of observation	306	306	306	306
Hypothesis	Positive external factors, better cognitive factors and non cognitive factors contribute positively to financial well being, by reducing financial anxiety and improving financial security			
Note: *=10% significance, **=5% significance, ***=1% significance				

Figures

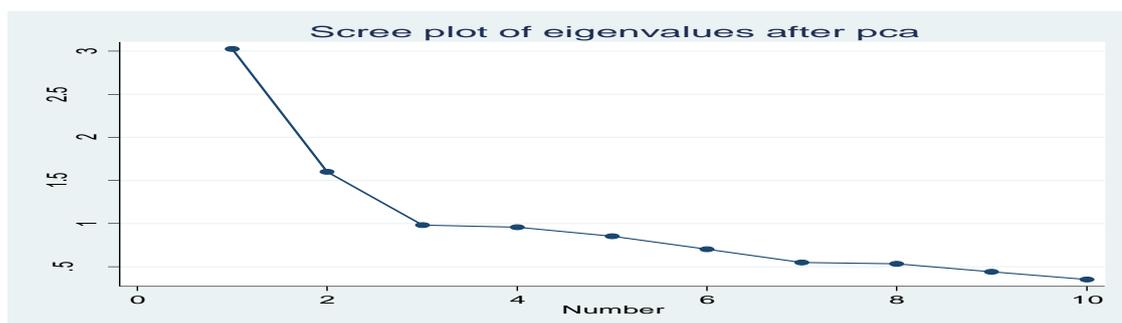


Fig 2.1(a): Financial Behavior

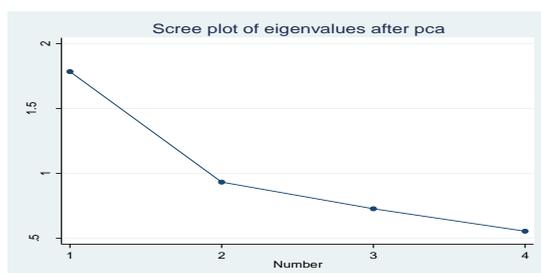


Fig 2.1(b): Financial Anxiety

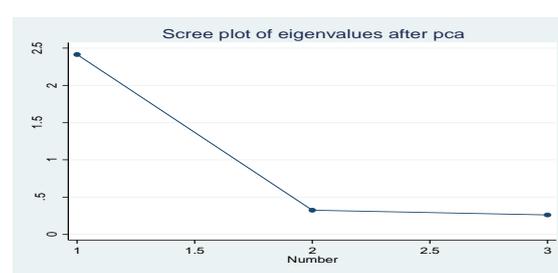


Fig 2.1(c): Financial Security

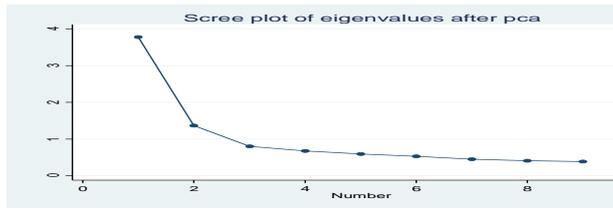


Fig 2.2 (a): Financial Literacy

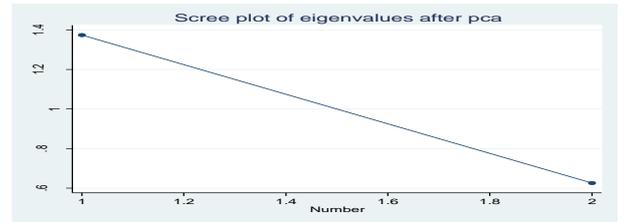


Fig 2.2(b): Numerical Skills

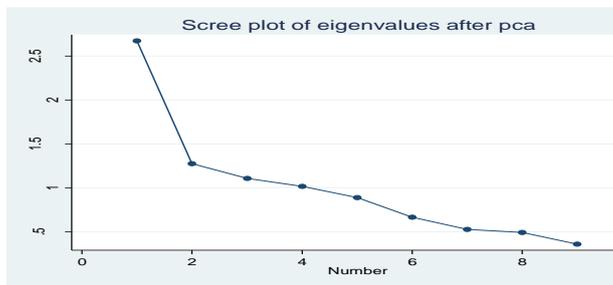


Fig 2.2(c): Self Control

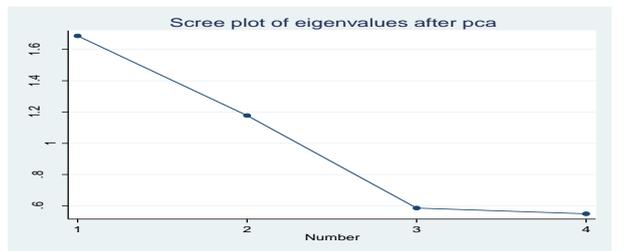


Fig 2.2 (d) Optimism

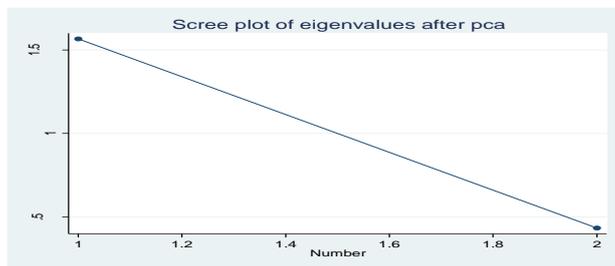


Fig 2.2(e): Deliberative thinking

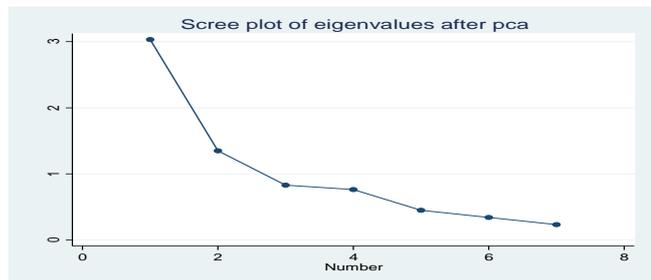


Fig 2.2(f): Culturalism

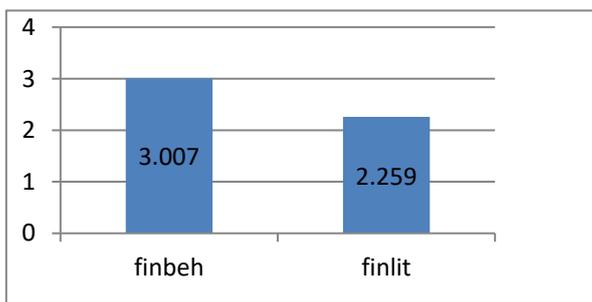


Fig 4.1(a): Good FB and High Financial literacy

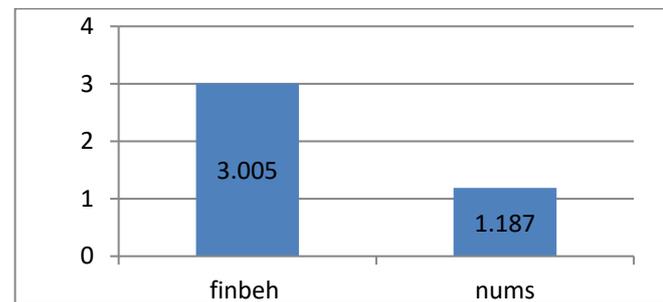


Fig 4.1(b): Good FB and Good Numerical Skills

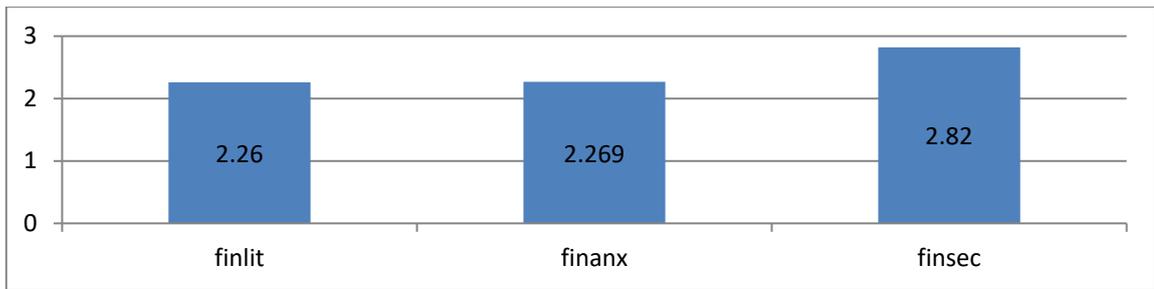


Fig 4.1(c): High financial literacy and high financial well being

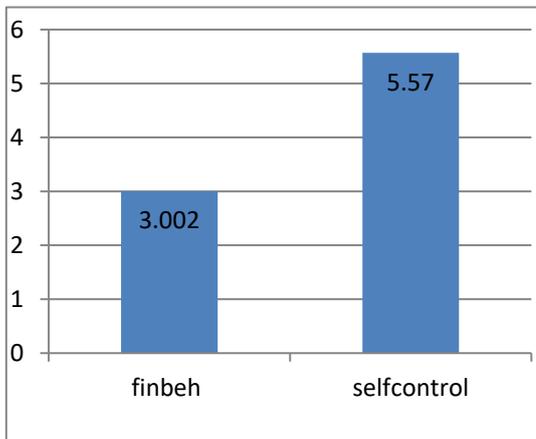


Fig 4.2(a) : FB and high Self Control

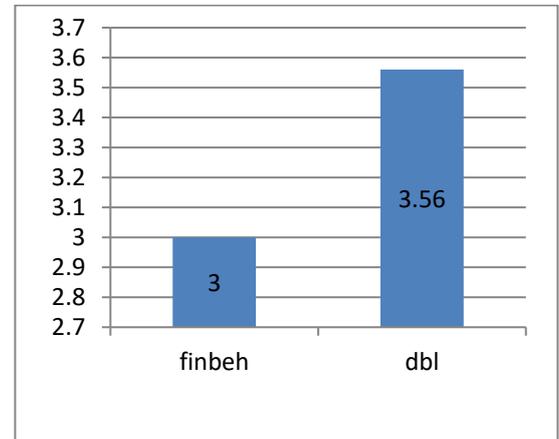


Fig 4.2(b): FB and Deliberative Thinking

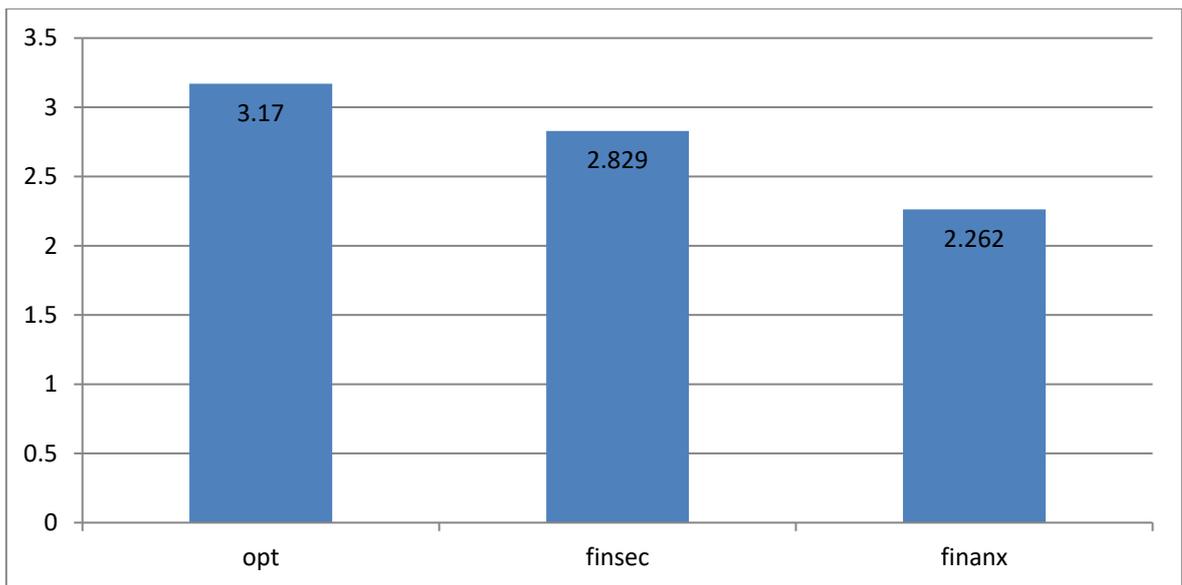


Fig 4.2 (c): Optimism and Financial Well Being

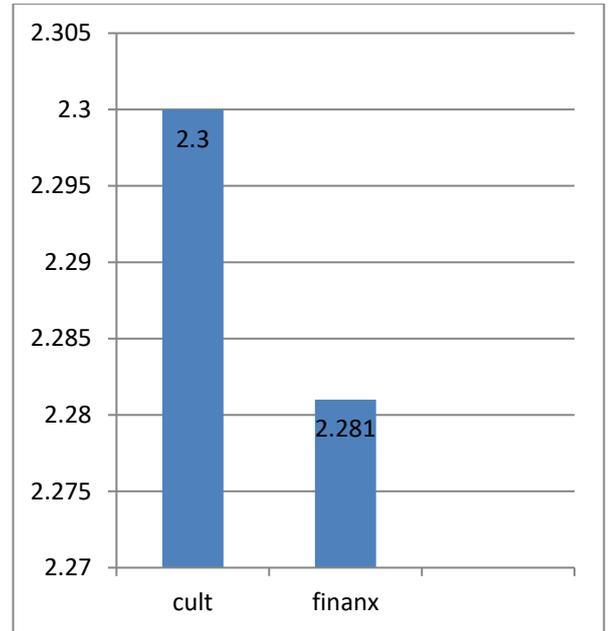
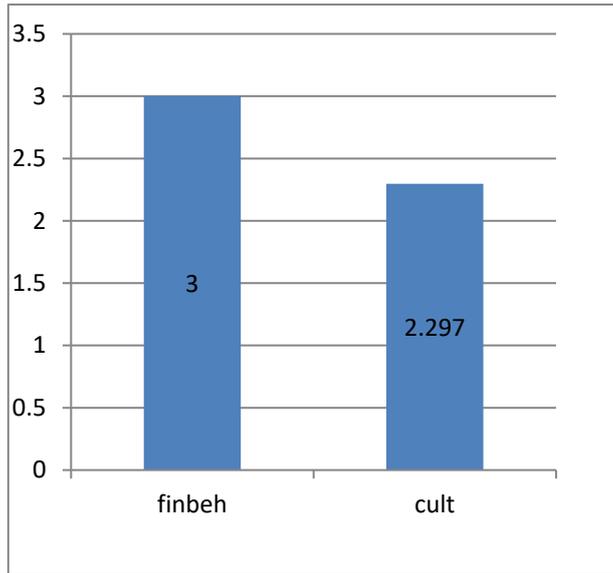


Fig 4.3 (a): Cultural Involvement and Good Financial Behavior

Fig 4.3(b): Culturalism and Financial Well Being