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# A Study to Investigate the Consumer Behavior and Cultural Dimensions of Engineering Students in Pakistan

FARYAL SALMAN\*, AND USMAN ALI WARRAICH\*\*

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## ABSTRACT

The current study compares consumer behavior and Cultural Orientations between engineering and non-engineering students in Pakistan. Engineering students by virtue of their academic background are considered to have more technical know-how, more cognitive skills and can easily learn and adopt a new technology as compared to students from a non-engineering background. Furthermore the researchers were interested to find out that how the thinking skills and choice making of engineering students differ from other students and ultimately effects their consumer behavior and Cultural Dimensions. For this purpose three consumer behavior variables have been selected that are Customer Satisfaction, Customer Loyalty and Customer Switching. Cultural Dimensions are measured using the model proposed by Geert Hofstede. Two technologically sophisticated services are used in this study that is Mobile Phone and Debit Cards. The target population of the study consisted of 5000 students of which approximately 500 respondents were from various engineering universities in Pakistan. The comparison of consumer behavior and Cultural Dimensions differences was made through two group's Discriminant Analysis. Differences in behavior and Cultural Dimensions have been reported among the engineering versus non-engineering students. Mobile Phone services satisfaction and loyalty were high among non-engineering students whereas engineering student's registered higher satisfaction and loyalty in Debit Card services. Another interesting finding is difference in switching behavior. In case of both the services engineering students reported a higher mean score for switching. Score for Cultural Dimensions were also different among the two students type; whereby mean score for Masculinity was higher for engineering students as compared to other professions.

**Key Words:** Engineering Students, Consumer Behavior, Cultural Dimensions, Satisfaction, Loyalty and Switching.

## 1. INTRODUCTION

This study seeks to examine the consumer behavior and Cultural Orientations of students representing various engineering universities within Pakistan. This objective is achieved through a

comparison of behavior of engineering students with non-engineering students belonging to various educational disciplines. The current study uses three most widely cited consumer behavior variables that are Customer

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\* Department of Management Science, Shaheed Zulfiqar Ali Bhutto Institute of Science & Technology, Karachi.

\*\* Department of Business Administration, Indus University, Karachi.

Satisfaction, Customer Loyalty and Customer Switching. Apart from this Hofstede model of Cultural Dimension is used that comprises of six dimensions; Power Distance, Collectivism, Individualism, Uncertainty Avoidance, Masculinity and Femininity [1].

Culture plays a key role in shaping consumer behavior and henceforth a nexus is created between these two conceptual frameworks to study the impact these two have on the behavior of engineering students as consumers. The two services selected for this study are Debit Card services and Mobile Phone Services. Services sector has been selected on the premise that it has made the most substantial contribution in overall economic growth of Pakistan. The share of services sector has augmented to 58.12% over last two years [2]. Another major reason behind selecting services is the profile of target market which is the youth who not only forms 60% of population but is highly tech savvy and fond of using innovative products. Engineering students especially have more technical know-how, more cognitive skills and can easily learn and adopt a new technology and henceforth we base our proposition on the fact that there is significant difference in consumer behavior and Cultural Orientation between engineering and non-engineering students. Researchers have found that engineering profession is highly masculine, individualistic and function oriented [3]. These traits may set them apart from students of other discipline. Based on this premise the current study seeks to understand that how the thinking skills and choice making of engineering students differ from other students and ultimately effects their consumer behavior and cultural dimensions. In addition to this the purpose of this research was to check validity and reliability of Hofstede Cultural Dimensions scale on various academic disciplines and report how cultural mapping

is done on different engineering majors. Based on the mean scores it was found that engineering profession was more masculine, individualistic and highly function oriented [3].

## **2. LITERATURE REVIEW**

This section reflects on the theoretical definitions and explanations for the key variables of the study. Furthermore it also discusses the linkage between Cultural Dimensions and consumer behavior. The term 'Customer Satisfaction' has gained utmost importance for marketers and business practitioners as it not only promises higher economic returns but also customer revisit, repeat purchase and a long term loyal relationship. In case of services sector satisfaction has been defined as a "short term emotional reaction" [4]. Satisfaction has been defined as a feeling of acceptance, contentment, delight, respite and enthusiasm culminating in fulfilment of a particular desire or a need [5]. It normally results in when a products or a services' perceived performance matches buyer's expectations and excel leads to customer delight [6]. Satisfaction is considered as an antecedent of loyalty and marketing literature highlights the facts that satisfaction inevitably leads to loyalty [7]. The literal meaning of loyalty is fidelity, commitment or devotion [7]. In business context Customer Loyalty has been defined as customers' long term patronage, re-buy and favourable comments and recommendations about the product or service to friends or acquaintance [4]. The authors also assert that customer loyalties are not just about behaviour, but determine affinity, predilections and future intentions [4]. Customer Switching and Loyalty lowers Switching which is normally known as customer defection [7]. Understanding these concepts from perspective of engineering students is important because of their more rational approach and logical reasoning in decision-making [8]. A study conducted on system engineer's decision-making ability identified that mostly

their decisions and choices are based on objectivity, rationality and facts [8]. In another study conducted on individuals with high technical skills identified that rational consumers have varied cognitive abilities and skills can envisage normatively loftier, more logical and consistent judgments and decisions [9]. This is more applicable in case of risky decisions. Researchers have found that individuals that have high cognitive and numeracy skills are more thorough in their decision-making processes, which ultimately affects their buying behavior [11]. These findings may be applicable to engineers as their number processing ability is considered better as compared to individuals with other academic background.

As suggested by the literature cultural orientation of engineering students are compared with other education type to measure the differences [1,12,21]. These Cultural Orientations are; (a) Individualism-Collectivism; (b) Power Distance; (c) Masculinity versus Femininity and; (d) Uncertainty Avoidance. These dimensions have been derived from a global study conducted on the employees of IBM in 76 countries whereby factors were espoused based on cultural values and beliefs of employees and a cross cultural comparison was conducted [12]. Individualism and Collectivism refers to the relationships that prevail among persons and other members of the community [12]. These concepts are based on bonding between the group members. Pakistani society is high on Collectivism as per the index score suggested by Hofstede. This means that people have tightly knitted bonding, are strongly connected and subject to unquestionable loyalties. The second dimension proposed by Hofstede is Power Distance where Pakistan is characterized as a country with a moderately high score on this variable. Power distance refers to the distribution of power within a society whereby inequalities are accepted based on social hierarchies. All members of the societies adhere to this hierarchal structure with no justification required for unequal distribution of power. Next dimension of culture is Masculinity versus

Femininity, where Pakistan is again moderately high on being Masculine. Individuals in masculine cultures have a priority for achievement, heroism and cherish material reward for success. Competition, aggression, challenge seeking approach is norms of such society. Feminine cultures on the other hand are more humble and nurturing. The fourth dimension is Uncertainty Avoidance in which Pakistan has a very high score. This reflects society's orientation for little tolerance towards ambiguity, nebulosity and having a fear of unknown. The approach is more rigid towards adopting new ways and there is a less forbearance towards unconventional ideas and behavior.

The Cultural Dimensions proposed by Hofstede characterize national culture and thus represents behavior of individuals at aggregate level. It is important to understand the linkage between Cultural Dimensions and consumer behavior because the cultural tenets are more tenacious and do not evolve gradually thus they considerably inspire consumer behavior whereby individuals belonging to a similar culture may share common thought process, language and choice of criteria [13]. Scholars assert that cultural values impact individual traits that affect their purchase behavior; product choice and decision making [14]. Cultural Orientations of engineering students was examined in a study conducted earlier [3].

### **3. STRATEGY OF RESEARCH**

The current study is based on survey methodology that provides quantitative data. This approach aids in the depiction of trends, beliefs and attitudes of the target population of the study; in this case engineering students. Discriminant Analysis which is multivariate tool is used to draw inferences and generalization about the population. Nomothetic explanations are attained that helps in accretion and summarization [15].

#### 4. DATA COLLECTION & ANALYSIS TECHNIQUE

Primary data has been collected from different universities located in provincial regions of Pakistan through a personally administered questionnaire. Over all sample size of the study was 5000 which was 5% of the total population of students enrolled in HEC recognized universities all across Pakistan. The target population consisted of both engineering and non-engineering students. Of the total students sample 500 belonged to engineering discipline from HEC recognized universities. Details of data collection points for sample engineering students are mentioned in Table 1. Of the distributed forms 4202 were returned, thus the response rate was 84%. However, the actual number of questionnaires that were deemed useful after replacing for the missing values was 3663. The target population represents regional sub-cultures.

In order to achieve generalizability it was important that the data should be close to the overall trend [16]. Henceforth the pattern and relationship among missing values was identified and a procedural test was run to identify duplicate cases and unusual data. The missing data was replaced with median values. As noted by eminent scholar's blank response to the interval scaled data can be replaced by midpoint [17]. The research instrument was conducted on a five point Likert scale

TABLE 1. DATA COLLECTION POINTS FOR ENGINEERING STUDENTS

Data Collection Points	Sample Size
Mehran University of Engineering & Technology, Jamshoro	100
University Engineering College, Taxila	100
Hazara University Mansehra	100
COMSAT Institute of Information Technology	100
Quaid-e-Awam University of Engineering, Science & Technology, Nawahshah	100
Kohat University of Science and Technology	100

where '3' which was a neutral point and was inserted for all missing values. As a general rule for multivariate analysis the missing values under 10% for an individual case or observation can be ignored [16]. Pretesting of questionnaire was done before the actual field work. Cronbach alpha was computed to check the reliability of the scales and all the constructs had an alpha score of above 0.6 which is deemed acceptable by researchers [18]. Validity checks were also conducted ensuring content and criterion validity. The basic objective of this study was a comparison of consumer behavior and Cultural Dimensions between engineering and non-engineering students. For this purpose the hypotheses of the study were based on all independent variables. Each hypothesis tested significant difference in independent variable between engineering and non-engineering students. Hypothesis testing was done through Discriminant Analysis. This is a multivariate technique and is used when dependent variable is categorical and independent variables are metric. In this case dependent variable is type of education background which is engineering and non-engineering having two categories. Independent variables are consumer behavior and Cultural Dimensions variables. In order to validate the discriminant function authors have suggested the use of split sample validation through a hold out sample [16]. The analyzed sample size was 2566 which was 70% of the total sample size. Hold out sample was 1097 which was 30% of total sample size.

#### 5. DATA ANALYSIS

Data was analyzed using two group discriminant analysis. In order to achieve discrimination variate weights of independent variables were calculated. This also helps in maximizing between group variance relative to within group variance. A weighted combination of all the scales of consumer behavior and Cultural Dimensions are used to predict differences in students according to their type of education. The results are shown in Table 2. The first

table illustrates group statistics. The mean scores are calculated for all independent variables between non-engineering and engineering students. Mobile Phone Satisfaction is high in non-engineering students with a mean score of 3.29 as compared to engineering students that have a mean score of 3.11. Debit Card Satisfaction was high for engineering students with mean score of 2.97 as compared to non-engineering students score of 2.81. As far as Mobile Phone Loyalty was concerned non-engineering students were more loyal with a score of 3.25 versus engineering student's score of 3.23. Engineering students had a high mean score Debit Card Loyalty 3.03 as compared to non-engineering students score of 2.82. Mean score for Mobile Phone Switching was 3.25 for engineering students versus a score of 3.16 for non-engineering students. Debit Card Switching score was also high for engineering students having a mean score of 3.02 as compared to non-engineering students score of 2.83. Different mean scores were calculated for Cultural Orientations for both education types. Power distance score for non-engineering students was 3.14 and was 3.19 for engineering students. Collectivism score was high for engineering students with a value of 3.60 as compared to non-engineering students score of 3.51. Mean score for Uncertainty Avoidance for both education types was not very different; 3.28 for engineering students and 3.25 for non-engineering students. Same was the case with Masculinity, and Femininity scores between engineering and non-engineering students.

After calculating the group statistics next was reported the test of equality of group means. Table 3 illustrates the Wilks lambda and univariate ANOVA to gauge the significance between means of independent and dependent variables. In case of this study the purpose was to check difference between Customer Switching, Loyalty, Switching, Cultural Orientations with education type. The test score indicates that five variables are the only variables with significant univariate difference between engineering and non-engineering students. These variables are Mobile Phone Satisfaction which is significant for non-engineering students. The computed  $F$  value is 18.96 with a sig value less than 0.05. Debit Card

Loyalty was second significant variable for engineering students with  $F$  value of 10.50 and significant value less than 0.05. Followed by this was Debit Card Switching score for engineering students. The  $F$  value was 7.63 and significant value less than 0.05. Debit Card Satisfaction was significant for engineering student with an  $F$  value of 6.89 and significant value less than 0.05. Mobile Phone Switching was also significant at 90% confidence interval. Amongst the Cultural Dimensions only Collectivism was significant for engineering students having an  $F$  value of 3.67 and significant value less than 0.05.

Table 4 illustrates structure matrix which reports discriminant loadings and it is ordered from highest to lowest according to the size of loadings. These scores are useful for interpretation as they less affected by multicollinearity. Structure matrix also shows correlation between discriminate score and predictors. In the matrix below loadings of Mobile Phone Satisfaction is highest followed by Debit Card Loyalty, Debit Card Switching, Debit Card Satisfaction and Collectivism in order of loadings. An important point to note is that there is no difference in the scores of Structure matrix and Wilks Lambda. This does not violate the assumption of multicollinearity.

Table 5 illustrates over all model fit through canonical correlations. This depicts that overall discriminant function is significant. The overall model results are deemed acceptable based on statistical significance.

The final step in discriminant analysis is addressing the internal and external validity of the discriminant function. Validity checks are reported in Table 6. For this purpose we will use the hold out sample and assess how accurately it predicts. Validity of the model is attained when the discriminant function performs at a level closer to classifying observations that were reserved and not used in the analysis process [16]. The hold out sample is 30% from the original sample size of 3663. From the table below it is evident that the hit ratio is 86% whereas predictive validity of holdout sample is 88%.

TABLE 2. GROUP STATISTICS

Engineering		Mean	Standard Deviation	Valid N (Listwise)	
				Unweighted	Weighted
Non-Engineering	Mobile Phone Satisfaction Score	3.2911	0.69820	2216	2216.000
	Debit Card Satisfaction Score	2.8114	1.12347	2216	2216.000
	Mobile Phone Loyalty Score	3.2592	0.76960	2216	2216.000
	Debit Card Loyalty Score	2.8242	1.17093	2216	2216.000
	Mobile Phone Switching Score	3.1640	0.84755	2216	2216.000
	Debit Card Switching score	2.8360	1.22105	2216	2216.000
	Power Distance Score	3.1415	0.78345	2216	2216.000
	Collectivism Score	3.5153	0.77177	2216	2216.000
	Individualism Score	3.0526	0.79558	2216	2216.000
	Uncertainty Avoidance Score	3.2539	0.75373	2216	2216.000
	Masculinity Score	3.1889	0.71933	2216	2216.000
	Femininity Score	3.3768	0.74719	2216	2216.000
Engineering	Mobile Phone Satisfaction Score	3.1163	0.69596	350	350.000
	Debit Card Satisfaction Score	2.9767	0.88255	350	350.000
	Mobile Phone Loyalty Score	3.2349	0.67509	350	350.000
	Debit Card Loyalty Score	3.0360	0.88474	350	350.000
	Mobile Phone Switching Score	3.2507	0.80460	350	350.000
	Debit Card Switching score	3.0250	0.96440	350	350.000
	Power Distance Score	3.1949	0.72014	350	350.000
	Collectivism Score	3.6005	0.77999	350	350.000
	Individualism Score	3.1267	0.73253	350	350.000
	Uncertainty Avoidance Score	3.2810	0.70854	350	350.000
	Masculinity Score	3.1552	0.74772	350	350.000
	Femininity Score	3.3520	0.76618	350	350.000
Engineering	Mobile Phone Satisfaction Score	3.2673	0.70033	2566	2566.000
	Debit Card Satisfaction Score	2.8340	1.09506	2566	2566.000
	Mobile Phone Loyalty Score	3.2559	0.75733	2566	2566.000
	Debit Card Loyalty Score	2.8531	1.13833	2566	2566.000
	Mobile Phone Switching Score	3.1759	0.84219	2566	2566.000
	Debit Card Switching score	2.8617	1.19092	2566	2566.000
	Power Distance Score	3.1488	0.77520	2566	2566.000
	Collectivism Score	3.5270	0.77329	2566	2566.000
	Individualism Score	3.0627	0.78755	2566	2566.000
	Uncertainty Avoidance Score	3.2576	0.74765	2566	2566.000
	Masculinity Score	3.1843	0.72321	2566	2566.000
	Femininity Score	3.3734	0.74970	2566	2566.000

## 6. DISCUSSION

The above study aimed at comparing consumer behavior and Cultural Orientation of engineering versus non-engineering students. This comparison was done to assess any differences among the variables according to the education type of students. The data has been collected from engineering students in universities located in different regions of Pakistan. The analysis has been done through Discriminant Analysis and the overall model was

significant accepting the alternate hypotheses that there is significant difference in consumer behavior and Cultural Dimension variables between engineering and non-engineering students. The findings of the study suggest six variables were significant. Others had a *p* value greater than the significant level. Mobile Phone Satisfaction score was significant among non-engineering students. The other five variables Debit Card Satisfaction, Debit Card Loyalty, Debit Card Switching, Mobile Phone Switching

TABLE 3. TESTS OF EQUALITY OF GROUP MEANS

Consumer Behavior and Cultural Dimension Variables	Wilks' Lambda	F	df1	df2	Significant
Mobile Phone Satisfaction Score	0.993	18.963	1	2564	0.000
Debit Card Satisfaction Score	0.997	6.896	1	2564	0.009
Mobile Phone Loyalty Score	1.000	0.312	1	2564	0.576
Debit Card Loyalty Score	0.996	10.504	1	2564	0.001
Mobile Phone Switching Score	0.999	3.205	1	2564	0.074
Debit Card Switching score	0.997	7.635	1	2564	0.006
Power Distance Score	0.999	1.431	1	2564	0.232
Collectivism Score	0.999	3.667	1	2564	0.056
Individualism Score	0.999	2.672	1	2564	0.102
Uncertainty Avoidance Score	1.000	0.395	1	2564	0.530
Masculinity Score	1.000	0.656	1	2564	0.418
Femininity Score	1.000	0.331	1	2564	0.565

TABLE 4. STRUCTURE MATRIX

Consumer Behavior and Cultural Dimension Variables	Wilks' Lambda	F	df1	df2	Significant
Mobile Phone Satisfaction Score	0.993	18.963	1	2564	0.000
Debit Card Satisfaction Score	0.997	6.896	1	2564	0.009
Mobile Phone Loyalty Score	1.000	0.312	1	2564	0.576
Debit Card Loyalty Score	0.996	10.504	1	2564	0.001
Mobile Phone Switching Score	0.999	3.205	1	2564	0.074
Debit Card Switching score	0.997	7.635	1	2564	0.006
Power Distance Score	0.999	1.431	1	2564	0.232
Collectivism Score	0.999	3.667	1	2564	0.056
Individualism Score	0.999	2.672	1	2564	0.102
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and Collectivism were significant for engineering students. Engineering students have a more rational approach in decision-making and this is reflected in their Debit Card usage behavior. Furthermore, Debit Card usage involves financial and numerical literacy, which is high among engineers as compared to students from other education type. Collectivism score was high in engineering students due to the nature of sample as the data has been collected from regions of concentrated culture where collectivistic values prevail. Overall it is concluded that most evident difference occurs in Debit Card services. One reason may

be the inherent risk involved in financial services and usage of cognitive skills by engineers to select the right service provider. Debit Card services involve more risk as compared to Mobile Phone services. Engineering student's differences in financial services reflects on the fact that such individual have a better understanding of probabilities and 'what ifs' due to variation in their knowledge regarding risky decisions [19]. Moreover, the numerical literacy of engineers enables them to have a better understanding of potential risks and tradeoffs in financial offerings such as Debit Cards. Debit Card usage behavior is purely an economic choice and as noted by researcher's cognitive skills such as numeracy has greater bearing on decisions in economic context [10].

**TABLE 5. OVER ALL MODEL FIT: CANONICAL DISCRIMINANT FUNCTIONS**

Consumer Behavior and Cultural Dimension Variables	Function
	1
Mobile Phone Satisfaction Score	-0.605
Debit Card Loyalty Score	0.450
Debit Card Switching score	0.384
Debit Card Satisfaction Score	0.365
Collectivism Score	0.266
Mobile Phone Switching Score	0.249
Individualism Score	0.227
Power Distance Score	0.166
Masculinity Score	-0.112
Uncertainty Avoidance Score	0.087
Femininity Score	-0.080
Mobile Phone Loyalty Score	-0.078
Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions . Variables ordered by absolute size of correlation within function.	

The distinctions between student's belonging to two distinct education types may have both theoretical and managerial implications. Theoretically the results of this study highlights the fact that discipline of education may lead to a discrimination between consumers groups especially for those who possess higher cognitive and numeracy skills. Marketers need to understand that cognitive reflections and numeracy skills affects consumers choice and decision-making. Such consumers are more logical and quantitative in their decision-making and as noted in an earlier study these types of consumers have a more profound and detailed information processing behavior which produces higher number of optimal choice [10]. The discernment between consumers of two education types calls for careful marketing strategies as consumers with high cognitive skills have a better selection and product choice mechanism [10,19,20]. Customer Loyalty and retention programs should be more objective, rendering them meaningful for such consumer groups. Moreover, such consumers are likely to make a

**TABLE 6. CLASSIFICATION RESULTS**

Function	Eigenvalue	% of Variance	Cumulative (%)	Canonical Correlation	Wilks' Lambda	Chi-Square	df	Significant
1	.020a	100.0	100.0	0.141	0.980	51.213	12	0.000



more advantageous choice as they are more meticulous in decision-making. Differences in Cultural Dimension scores among engineering versus non engineering students is supported by the literature that societal culture influence vary accordingly in different professions particularly in technology sector [3,21].

## 7. CONCLUSION

The key aim and objective of this paper was to understand consumer behavior and Cultural Orientations differences among engineering and non-engineering students belonging to university sector. This paper uses a quantitative technique and point of differentiation between the two students type was understood through Discriminant Analysis which is a popular technique in multivariate analysis. The sample students belonged to both engineering and non-engineering students. From the findings of this study we conclude that as far as consumer behavior is considered engineering students are more rational and logical in their choice making. Their cognitive skills make them informed consumer. Difference between the Cultural Orientations were not so meaningful except for collectivism which points to the fact that engineering students share a similar thought process in decision-making. Engineering students had a more acumen in registering their consumer behavior towards financial products. The findings of this study will be helpful to the marketers who can customize their offering keeping in mind the more logical and rational consumer group.

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## REFERENCES

- [1] Hofstede, G., Hofstede, G.J., and Minkov, M., "Cultures and Organizations: Software for the Mind", 3<sup>rd</sup> Edition, McGraw Hill, USA, 2010.
- [2] Economic Survey of Pakistan, 2014 (Retrieved from: [www.finance.gov.pk/survey/chapter\\_12/highlights.pdf](http://www.finance.gov.pk/survey/chapter_12/highlights.pdf))
- [3] Murzi, H., Martin, T., McNair, L., and Parerti, M., "A Pilot Study of the Dimensions of Disciplinary Culture Among Engineering Students", IEEE Conference on Frontiers in Education, pp. 1-4, 2014.
- [4] Lovelock, C, Wirtz, J., and Chatterjee, J., "Services Marketing People Technology Strategy", 7th Edition, Dorling Kindersley, New Dehli, India, 2011.
- [5] Hoyer, W.D., and MacInnis, D.J., "Consumer Behaviour", 2nd Edition, Boston, Mifflin Company. <http://scholarworks.gvsu.edu/orpc/vol4/iss4/3>, 2001
- [6] Kotler, P., Armstrong, G., Agnihotri, Y.P., and Haque, E., "Principles of Marketing: A South Asian Perspective", Dorling Kindersley, New Dehli, India, 2011.
- [7] Boora, K.K., and Singh, H., "Customer Loyalty and its Antecedents: A Conceptual Framework Understanding e-Marketing–Optimization of Resources", Asia Pacific Journal of Research in Business Management, Volume 2, No. 1, pp. 151-164, 2011.
- [8] Rindermann, H., Baumeister, A.E., and Gröper, A., "Cognitive Abilities of Emirati and German Engineering University Students", Journal of Biosocial Science, Volume 46, No. 2, pp. 199-213, 2014.
- [9] Kelley, C.M., "Cognitive Abilities and Superior Decision Making Under Risk: A Protocol Analysis and Process Model Evaluation", Judgment and Decision Making, Volume 4, No. 1, pp. 20-33, 2009.
- [10] White, B.E., "Systems Engineering Decision Making May be More Emotional than Rational!", INCOSE International Symposium, [doi: 10.1002/j.2334-5837.2012.tb01344.x], Volume 22, No. 1, pp. 386-400, 2012.
- [11] Graffeo1, M., Polonio, L., and Bonino, N., "Individual Differences in Competent Consumer Choice: The Role of Cognitive Reflection and Numeracy Skills", Frontiers in Psychology, [doi: 10.3389/fpsyg.2015.00844] Volume 6, 2015.

- [12] Hofstede, G., "Culture's Consequences: International Differences in Work-Related Values", Sage, Beverly Hills, 1980.
- [13] Nayeem, T., "Cultural Influences on Consumer Behaviour", International Journal of Business and Management, Volume 7, No. 21, pp. 78-91, 2012.
- [14] DeMooij, M.K., "Consumer Behavior and Culture: Consequences for Global Marketing and Advertising", 2nd Edition, Sage, California, 2011.
- [15] Babbie, E., "The Basics of Social Research", 3<sup>rd</sup> Edition, Thomson Wadsworth, Canada, 2005.
- [16] Hair, J.F., Black, W.C., Babin, B.J., Anderson, R.E., and Tatham, R.L., "Multivariate Data Analysis", 7th Edition, Macmillan Publishing Company, New York, 2009.
- [17] Sekaran, U., "Research Methods for Business", John Wiley & Sons, New York, 2000.
- [18] Nunnally, J., "Psychometric Theory", McGraw Hill, New York, 1978.
- [19] Peters, E., Slovic, P., Västfjäll, D., and Mertz, C.K., "Intuitive Numbers Guide Decisions", Judgment Decision Making, Volume 3, pp. 619-635, 2008.
- [20] Burks, S.V., Carpenter, J.P., Goette, L., and Rustichini, "A Cognitive Skills Affect Economic Preferences, Strategic Behavior, and Job Attachment", Proceedings of National Academic of Science, [doi:10.1073/pnas.08123 60106], Volume 106, pp. 7745- 7750, USA, 2009.
- [21] Twati, J.M., "The Influence of Societal Culture on the Adoption of Information Systems: TheCase of Libya", Communications of the IIMA 8.1, 2014.