

The Moderating Effect of System Quality Management on the Relationship between Organizational Knowledge Based and Retention Equity in Banking Industry

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Abstract

Knowledge based is the critical innovative and competition factors in today business environment where successful market performance depends heavily on it. The purpose of this study is to examine the effect of system quality management (SQM) on relationship between organizational knowledge based (OKB) and retention equity drivers (REQD) within banking industry. Survey data from senior marketing managers in Sudan banking industry demonstrate that the effect of system quality management on the relationship between organizational knowledge based and retention equity drivers is a pure moderator and also indicate that the items of (OKB) is positively and significantly associated with (REQD). This study contributes to the rare empirical investigation of the OKB, SQM and REQD. The paper provides detail discussion, Imitations and directions for future research.

Keywords: System quality management, Organizational knowledge based, Retention equity drivers

1. Introduction

In new economy, knowledge acquisition and use are valuable resource to sustain a competitive advantage. Both the knowledge and the learning economies require organizational capabilities to anticipate and manage the dynamics of change (Eisenhardt and Martin, 2000). (Galbreath, (2006; Kohli and Jaworski, 1990; Narver and Slater, 1990) a firm needs to gain keen knowledge about its market, turn that knowledge into a customer value proposition that is superior to its competitors while at the same time continuously adapting to market changes. This is because organizational resources lead to a sustained competitive advantage when they are valuable, rare, inimitable, and have no substitute (Barney, 1991). Organization knowledge is the collective sum of individual knowledge assets (Carayannis, 1999), which is embedded in people, product, process and structure (Laudon and Laudon, 2007).

With reference to system quality Delone and McLean, (2004), system quality is one of the major antecedents positively associated with system use. A part of his study Domegan, (1996) argued that, there is a direct positive correlation between the exploitation of IT in customer service and the degree of information orientation. The current study uses a sample of senior marketing managers from Sudanese Banking industry to clarify the effect of system quality management on relationship between organizational knowledge based and retention

equity drivers. Also, the study proposes that organizational knowledge based influence retention equity drivers. The remainder of the study is organized as follows: Section two reviews literature review and develops the research hypotheses on the relationships among the adoption of the system quality management, the organizational knowledge based and retention equity drivers. Research methods and data are then presented, followed by analyses and results. The discussion and conclusions are given in the final section.

2. Literature Review and Research Hypotheses

Customer relationships or retention are increasingly studied in the literature (Palmatier *et al.*, 2006). As reported by Blattberg *et al.*, (2001), customer equity has two well-known objectives (i) the economic measurement of customer relationships and (ii) the identification of strategies that build profitable relationships. Customer equity is influenced by three equity drivers which are a customer's perceptions of a firm's value, brand, and relationship efforts, respectively Rust *et al.*, (2004).

All marketing expenditures or drivers of customer equity can be grouped into three main categories—value equity, brand equity, and retention equity (Rust *et al.*, 2000). Retention equity involves factors that increase switching costs that are not subsumed by value equity and brand equity, such as frequent buyer programs and ongoing relationship maintenance activities. Therefore,

retention of customers has a two way advantage stream for a business – revenues increase through higher off takes and costs decline through a variety of savings. Thus, customer retention becomes an important source of long term business success (Rust and Zahorik, 1993).

Vogel *et al.*, (2008) pointed that the value equity and brand equity are the primary drivers for future sales, while retention equity influences the customer intentions to be loyal. In the banking field, customer retention is defined as: “customers' stated continuation to maintain an account relationship with the bank” (Cooil *et al.*, 2007). Therefore, important role of customer retention stems from the increasing costs of acquiring new customers in highly competitive markets and the cost-reducing potential associated with long-term relationships (Hennig-Thurau, 2004).

Regarding knowledge and knowledge based, many researchers stressed the role of Knowledge in an organization is the collection of expertise, experience and information that individuals and workgroups use during the execution of their task (Abecker and Decker, 1999). According to Nonaka, (1994), the core competencies of an organization include tacit and explicit knowledge, and should be conceived as a mix of skills and technologies. According to (Chen *et al.*, 2000), being communicable means knowledge must be explicitly represented in an easily distributed and understandable form. Garud and Kumaraswamy, (2005) argued that knowledge has emerged as a strategically significant resource for the firm. Kevin and Caroline, (2012) argued that a firm with a deep knowledge based benefits from market knowledge acquisition.

The capability to share and transfer knowledge within a firm more speedily than one's competitors is widely believed to be a major source of competitive advantage (Reagans and McEvily, 2003; Davenport and Prusak, 2000). On the other hand, management and organizational theorists (Winter, 1987; Nonaka, 1994) treated organizational knowledge as a valuable strategic asset. March, (1997) argued that the management of intellectual capitals (knowledge) has become a central topic in modern business literature and a commonly cited source of competitive advantage. Other researchers such as (Inkpen and Tsang, 2005; Wasko and Faraj, 2005) emphasized the important role of knowledge for inter-organizational learning and innovation.

Knowledge generation and sharing is a part of the learning process and therefore, without knowledge application, individuals, groups and organizations would not be capable of fully taking advantage of the collective knowledge and learning capability to achieve superior performance (Janz and Prasarnphanich, 2003). Therefore, it is important to fit between the existing knowledge based and the way a firm integrates its knowledge Kevin and Caroline (2012). Firms' knowledge bases are the codified and tacit knowledge embedded in organizational capabilities, practices, and routines (Grant 1996).

To valuation the system quality, most studies' tests consider engineering-oriented performance characteristics (Kalliopi and Christos, 2010; Bailey and Pearson, 1983). Systems have demonstrated the ability to gather, filter, and analyze data and subsequently communicate information (Frolick, 1997). Suitable computer-based systems can assess managers to learn about strategic concepts, facilitate strategic thinking, and validate their strategies (Li and Calantone, 1998).

System database is found in marketing employed for market segmentation, customer responsiveness and feedback, and company prospective (Petrison and Wang, 1993). O'Brien *et al.*, (1995) argued that the well-known format of information systems are needed to develop and implement the marketing information system effectively. Based on the above arguments, the following hypotheses were generated:

Hypothesis H1: There is a positive relationship between organizational Knowledge based KNB and retention equity drivers REQ.

Hypothesis H2: The effect of organization knowledge based KNB on retention equity drivers REQ is stronger when system quality management SQM is higher.

3. Research Method

3.1 Data and procedures

In order to collect the data, the chosen scale items were translated from English into Arabic language to avoid translation errors and minimize loss or dilution of meaning. Further, a senior marketer with a good understanding of the aim of the study refined the construct measurements to suit with the banking industry. Pretests were conducted to ensure the specificity and precision of the questionnaire. A five-point Likert scale was used, with 1 indicating strongly disagree and 5 indicating strongly agree. The questionnaire approach and purposive sampling were chosen so that a larger group from senior marketer could be reached, thereby achieving a wider understanding of the matter. Finally, both the Arabic version and English version were combined in the questionnaire used 22 items to measure the scale.

The survey sample consisted of 150 senior banking marketing managers in Sudanese banking industry. A total number of 117 useable responses were returned, representing a return rate of 78 percent. The questionnaire contains three sections: section one deal with the firm's perception of organizational knowledge based, while section two deals system quality management, and finally with retention equity drivers.

3.2 Measures

All the measurements of variables used in this study were drawn from literature and were adapted for the context

of this research. Organizational knowledge based **is** refers to the ideas, perspectives, approaches, theories, and methods used in the creation of new knowledge in a given scientific domain Kevin and Caroline, (2012). Thus, organizational knowledge-based is measured on six items adopted from (Chanopas *et al.*, 2006). In measuring system quality, the research used the criteria employed by (Kalliop *et al.*, 2010; Hendrickson, Massey and Cronan, 1993; Bailey and Pearson, 1983), where system quality is defined in terms of accuracy, process speed, quick response time, easy access, easy use, and friendly working environment (Delone and McLean, 2004).The scale included six items. Retention equity is defined as the tendency of the customer to stick with the brand, above and beyond the customer's objective and subjective assessments of the brand (Rust *et al.*, 2000, p.57). The ten items performed to measure retention equity drivers are adopted from Rust *et al.*, (2004).

4. Analyses and results

The data were analyzed in five phases. Firstly, descriptive analysis of the senior marketer characteristics. Secondly, goodness of measures was conducted to determine whether the multi-item information derived from the questionnaire could be condensed into a smaller set of factors underlying in the data. Thirdly, Reliability Analysis and validity. Fourthly, the descriptive statistics and correlations between the observed variables were calculated. Finally, hypotheses testing.

Table1, shows the demographic data of the respondents, most of the respondents age set (40 less than 50) years, majority are post graduated with experience of 20 years and more. The results of analyses are described as follows:

Table1 General Characteristics of the Respondents (N=117)

variable	Category	frequency	percent
Age	less than 30	9	7.2
	30 less than 40	29	23.2
	40 less than 50	59	47.2
	50 less than 60	28	22.4
Educational level	secondary	2	1.6
	graduate	52	41.6
	postgraduate	71	56.8
	10 less than 15 year	34	27.2
Experience	15 less than 20 year	38	30.4
	20 and more	53	42.4

4.1 Goodness of measures

To ensure the goodness of measures, Factor Analysis was conducted, following the assumptions recommended by Hair *et al.*, (2010). First, there must be sufficient number of statistically significant correlations in the matrix. Secondly, Kaiser-Meyer-Olkin measure of sampling adequacy should be at least 0.6. Thirdly, Bartlett's test of

sphere-city should be significant at 0.05. Fourthly, communalities of items should be greater than 0.50. Fifth, the minimum requirement of factor loading should be 0.50 based on a 0.05 significant level, with value of cross loading exceeds 0.50. Also to provide a simple structure column for interpretation, the factors were subjected to varimax rotation. Finally, eigenvalues should be more than one for factor analysis extraction.

Factor analysis was done on six items, which was used to measure organizational knowledge based construct. Table2 shows the summary of results of factor analysis on organizational knowledge based and the items of organizational knowledge based are shown in appendix Q1. In the first run of factor analysis, all the items were found to have communalities more than 0.50 and all assumptions were satisfactory fulfilled, therefore remaining items had more than recommended value of at least 0.50 in MSA with KMO value of 0.86 (above the recommended minimum level of 0.60), and Bartlett's test of sphericity is significant (p<.01). Thus, the items confirm that the factor analysis was appropriate.

Table2 also, shown that the factor loading on one factor with eigenvalues exceeding 1.0. This factor explains 74% of variance in the data (above the recommended level of 0.70). All the remaining items also had the factor loading values above the minimum of 0.50. The factor captures all the items and the items ranged from 0.789 to 0.888. So, the original name of this factor was retained as it is.

Also, it can be seen that all the items reliability and correlation are significant with means and standard deviations ranged "between" (3.57 to 3.98), and (.81 to .96) respectively. Thus, this study found that the organizational knowledge based consists of six items.

Table 2 Rotated factor loading for organizational knowledge based

Organization al knowledge based items:	Component matrix	Mean	St. D	Cronbach's Alpha if item deleted	Corrected items- total correlation
KNB2	.888	3.91	.89	.91	.83
KNB1	.882	3.98	.81	.91	.82
KNB4	.873	3.57	.92	.91	.83
KNB3	.865	3.81	.96	.92	.79
KNB5	.844	3.66	.88	.92	.77
KNB6	.789	3.69	.93	.93	.74
Eigenvalues					4.41
Total Variance Explained (%)					74%
Kaiser-Meyer-Olkin (KMO)					.84
Bartlett's Test of Sphericity					616.09

N= 117, Variables loaded significantly on factor with coefficient of at least 0.789

Factor analysis was done on six items, which was used to measure system quality construct. Table3 shows the summary of results of factor analysis on system quality and the items of system quality are shown in appendix

Q2. In the first run of factor analysis, items (SySQ6, SySQ4) were found to have communalities less than 0.50. Item (SySQ6) was dropped in the subsequent run. A close inspection on communalities table show that item (SySQ4) still had communalities value less than 0.50, and was dropped in the next run and finally, all assumptions were satisfactory fulfilled, therefore remaining items had more than recommended value of at least 0.50 in MSA with KMO value of 0.79, and Bartlett’s test of sphericity is significant (p<.01). Thus, the items confirmed that the factor analysis was appropriate.

Table3 shows that the items of system quality loaded on one factor with eigenvalues exceeding 1.0. This factor explains 75% of variance in the data. So, this factor still holds the first name with four items captured. As shown in Table3 factor loading of system quality items ranged from 0.825 to 0.930. Also, it can be seen that all the items reliability and correlation are significant with means and standard deviations ranged “between” (3.77 to 4.03), and (.93 to 1.08) respectively. Thus, this study found that the system quality consists of four items.

Table 3 Rotated factor loading for system quality management

System quality items:	Component matrix	Mean	St. D	Cronbach's Alpha if item deleted	Corrected items- total correlation
SYSQ2	.930	3.88	.94	.82	.86
SYSQ1	.886	3.88	1.00	.85	.78
SYSQ3	.826	3.77	1.08	.88	.70
SYSQ5	.825	4.03	.93	.87	.70
Eigenvalues					3.01
Total Variance Explained (%)					75%
Kaiser-Meyer-Olkin (KMO)					.79
Bartlett's Test of Sphericity					300.31

N= 117, Variables loaded significantly on factor with coefficient of at least 0.825

Factor analysis was also done on the 10 items, which was used to measure retention equity. Table4 shows the summary of results of factor analysis on retention equity and the items of retention equity are shown in appendix Q3. In the first run of factor analysis, all the items were found to have communalities more than 0.50. Also to provide a simple structure column for interpretation, the factor were subjected to varimax rotation. Finally, all assumptions were satisfactorily fulfilled. Table4 also shows that items of retention equity loaded on one factor. This one factor explains 71% of variance in the data and captures all the items. However, the original name of this factor was retained. As shown in Table4 factor loading of retention equity items ranged from 0.746 to 0.889. Also, it can be seen that all the items reliability and correlation are significant with means and standard deviations ranged “between” (3.34 to 3.72), and (.90 to 1.06) respectively. Thus, this study found that retention equity drivers consists of ten items.

Table 4 Rotated factor loading for retention equity

Retention equity items:	Component matrix	Mean	St. D	Cronbach's Alpha if item deleted	Corrected items- total correlation
REQ3.4	.889	3.72	1.00	.949	.861
REQ3.5	.884	3.60	1.06	.949	.850
REQ3.3	.871	3.57	.99	.949	.833
REQ3.1	.864	3.55	.95	.950	.828
REQ3.7	.861	3.34	.90	.950	.825
REQ3.6	.860	3.59	.94	.950	.820
REQ3.2	.855	3.42	.94	.950	.823
REQ3.8	.821	3.43	.95	.951	.783
REQ3.10	.773	3.49	.99	.954	.727
REQ3.9	.746	3.37	.93	.955	.702
Eigenvalues					7.12
Total Variance Explained (%)					71%
Kaiser-Meyer-Olkin (KMO)					.92
Bartlett's Test of Sphericity					1157.34

N= 117, Variables loaded significantly on factor with coefficient of at least 0.74

4.2 Reliability Analysis, validity and Descriptive Statistics

The scales used in this study were subjected to reliability (Cronbach’s alpha) and validity checks. According to Hair *et al.* (2010), the lower limit for Cronbach’s alpha is 0.70. The results of the reliability analysis summarized in Table5 shows that the reliability coefficient for organizational knowledge based, system quality and retention equity were (.930, .888, .955) respectively, which confirms that all the scales display a satisfactory level of reliability (Cronbach’s alpha exceeded the minimum value of 0.70). Therefore, it can be ended that the measures have acceptable level of reliability. On other hand this Table 5 shows the validity for organizational knowledge based, system quality and retention equity were (.982, .942, .977) respectively. Moreover, this result agree with the pretest subjects which indicated that the content of the construct was well viewed by the measurement items employed.

Table 5 Reliability, validity and descriptive analysis for study variables

Variables	Mean	St. d	Number of items	Reliability	Validity
Knowledge based	3.77	.76	6	.930	.982
System quality	3.88	.86	4	.888	.942
Retention equity	3.53	.75	10	.955	.977

Also, Table 5 shows the Means and standard deviations of the organizational knowledge based, system quality and retention equity. The table shows that the Sudanese

banking industry emphasized more on system quality (mean=3.88, standard deviation=0.86) followed by organizational knowledge based (mean=3.77, standard deviation=0.76) and finally retention equity (mean=3.53, standard deviation=0.75). A long side all means value above the assumed mean which equals (3.00).

4.3 Correlation Analysis

Table 6 presents the results of the intercorrelation between the variables. The correlation analysis was conducted to see the initial picture of the interrelationships between the variables under the study. Table6 represents the correlation matrix for the constructs operationalized in this study. The table shows that no correlations near 1.0 (or approaching 0.8 or 0.9) were detected, which show that multicollinearity is not a significant problem in this particular data set.

Table 6 shows that organizational knowledge based is positively and significantly correlated with system quality and retention equity ($r = .436$, p -value < 0.01), ($r = .645$, p -value < 0.01) respectively. Also, system quality is positively and significantly correlated with retention equity ($r = .469$, p -value < 0.01). This table provides a strong indication of association, to undertake a more complete examination of the proposed relationship and to evaluate whether such links are direct or indirect, simple and hierarchical regression analysis were conducted. The next section of the analysis is testing the hypotheses.

Table 6: Person’s correlation coefficient for the variables

Variables	Knowledge based	System quality	Retention equity
Knowledge based	1	.436**	.645**
System quality		1	.469**
Retention equity			1

** Correlation is significant at the 0.01 level (2-tailed). N= 117

4.4 Hypotheses Testing

4.4.1 The Relationship between knowledge based and Retention Equity

The results in Table7 for simple regression model show that 68.7% of the observed variability in REQ is explained by the KNB variable ($R^2=0.368$, Adjusted R^2 0.363). Also the value of the F ratio of 68.7 ($p<0.01$) indicates that it is safe to accept H1, that there is a positive relationship between organizational knowledge based and retention equity ($\beta=0.607$, $p<0.01$). The beta value shows that KNB (0.607) is relatively stronger in explaining the changes in REQ. Therefore, these results provide support for the assertion that the effort to become knowledge based leads to the retention equity.

Table 7 Simple Regression: The relationship between organizational knowledge based and retention equity

Variables	Retention equity (Beta coefficient)	Sig
organizational knowledge based	.607***	.000
R ²	.368	
Adjusted R ²	.363	
F change	68.74***	

Note: Level of significant: *** $p<0.01$.

4.4.2 System quality management moderates the relationship between knowledge based and retention equity drivers

To test these hypotheses a three-step hierarchical regression analysis was conducted (Sharma *et al.*, 1981) for the moderator. In the first step, the predictor variables entered in the regression equation. In the second step, moderating variable was entered into the regression equation to test its isolated effect on the criterion variable. While in step three, the process requires the introduction of a multiplicative interaction term into the regression equation. Accordingly, one multiplicative interaction terms were created by multiplying the values of knowledge based by the value of hypothesized system quality variable.

Table 8 shows that the F change was significant in the first and second steps. The results show that system quality moderates the relationship between organizational knowledge based and retention equity drivers ($\beta= -0.109$, $p<0.10$). The introduction of the interaction terms in step three increase R square about 3% and the model as a whole is significant ($F=32.81$, $p<0.01$). To establish whether moderator is a pure or a quasi. Further inspection reveals that the coefficient of the system quality effect was not significant and the predicted interaction term was significant, which indicated that it is a pure moderator (Sharma *et al.*, 1981). Henceforth, H2 is full supported.

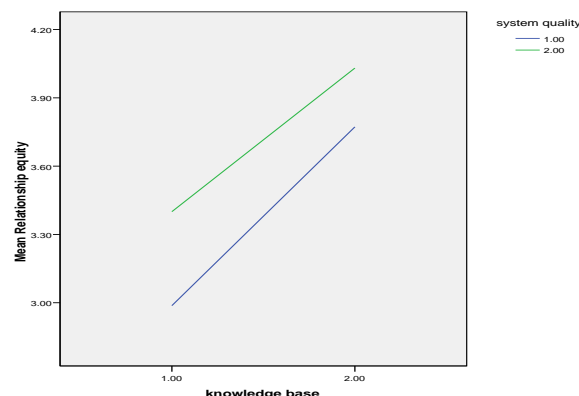


Figure1: Moderating effect of system quality on the relationship between knowledge based and retention equity

Table8: Moderating effect of system quality

Moderating effect of system quality on the relationship between organizational knowledge based and retention equity		DV: Retention equity Drivers	
	Step 1 Std. Beta	Step 2 Std. Beta	Step 3 Std. Beta
Predictor variables:			
Organizational knowledge based	.645***	.544***	.609*
Moderating variable:			
System quality		.232***	.298
Interaction term:			
Knowledge based*system quality management			-.109*
F value	83.32***	49.60***	32.81***
R2	.416	.461	.461
Adjusted R2	.411	.452	.447
R2 change	.416	.045	.000
F change	83.32***	9.70***	.034

Note: Level of significant: *p<0.10; **p<0.05; ***p<0.01

On the other hand, in order to illustrate the nature of moderator effect, a graphical representation was carried out. Figure1 shows the moderating effect of system quality on the relationship between knowledge based and retention equity at high and low level of system quality. Under high levels of system quality conditions, knowledge based is positively highly stronger related to retention equity compared with under low levels of system quality conditions, knowledge based is positively less strong related to retention equity.

5. Discussion

The discussion covered the moderating effect of system quality management on the relationship between organizational knowledge based and retention equity drivers as well as covered the relationship between organizational knowledge based and retention equity drivers. The results show that the management of system quality plays a pure moderating role in the influence of organizational knowledge based on retention equity. The highly management of system quality in banks will strengthen the link between the knowledge based and retention equity.

Overall, our findings are consistent with the existing literature, in which David and Quanglinh, (2014), found that the adoption of the quality management system in business plays a moderating role in the relationship between the implementation of knowledge management and organizational performance. In addition, Zakuan *et al.*, (2010), suggests that adopting of the system quality management results in improved organizational performance. Thus, the perceived quality of the system leads executives to choose and adopt it (Kalliopi and Christos, 2010). Firms are need to design system that serve to maximize organizational knowledge sharing effectiveness Amarvadi *et al.*, 1995; Barabba, 1983).

Regarding, the positive and significant relationship between organizational knowledge based and retention

equity drivers. This result aligns with previous empirical studies revealed that knowledge-based system checks the method implemented by company to communicate the importance of customer satisfaction to all employees through the rules based Mohammed and Dermawn, 2008). Also, Huynh and Lin, (2013), offered evidence on the positive relationship between implementing knowledge management and organizational performance.

The possible philosophy behind this result is that organizational knowledge based infrastructure consisting of (technology, structure, culture, conversion, application and protection) can simplify the using of customers information and benefits in making proper marketing relationship policies. Moreover, these policies strength banks customers retention programs.

5.1 Implications of the Study

The present study has supported the current knowledge on services marketing knowledge based within the field of banking industry. The first, theoretical contribution focus on the positive relationship between knowledge based and retention equity drivers.

The second, theoretical contribution this research set up that system quality management moderates the relationship between knowledge based and retention equity drivers. For managers’ practice, these results have showed the managers how to share knowledge based information through system quality management to achieve successful retention equity drivers in banking industry.

5.2 Limitations and Directions for Future Research

This study also has some limitations that future studies can address. First, we did not have a test of the other customer equity drivers (brand and value). Therefore, future research is needed to investigate the role of organizational knowledge based and system quality

management in this research field. Moreover, this paper determined the moderating effects across one factor (system quality management). However, other factors in competition environment are likely to have significant moderating impacts as well. Finally, the R^2 value in this study is ranged (0.36- 0.41) for the direct relationship between organizational knowledge based and retention equity drivers. Further studies could explore more dimensions, as well as other marketing information systems. Also, future studies can replicate this research using larger sample size and different contexts such as different industry and cross countries.

5.3 Conclusions

The aims of this work was to examine effect of system quality management on relationship between organizational knowledge based and retention equity drivers. On the other hand, this study tried to test the relationship between organizational knowledge based and retention equity drivers, and adds to the growing set of research findings the role organizational knowledge based and system quality management plays in that retention equity. This research provided empirical evidence that organizational knowledge based and system quality management can leads Sudanese banking industry to sustainable competitive and innovative advantages in terms of retention equity drivers and relationship marketing.

References

- [1]. Abecker, A. and Decker, S. (1999), "Organizational memory: knowledge acquisition, integration, and retrieval issues", in Pope, F. (Ed.), *Knowledge Base Systems: Survey and Future Directions*, Proceedings of the 5th German Conference on Knowledge Base Systems, Lecture Notes in Artificial Intelligence, Vol. 1570, Springer-Verlag, Berlin.
- [2]. Bailey, J.E. and Pearson, S.W. (1983), "Development of a tool for measuring and analyzing computer user satisfaction", *Management Science*, Vol. 29 No. 5, pp. 530-45.
- [3]. Barney, J. B. (1991), "Firm resources and sustained competitive advantage", *Journal of Management*, Vol. 17, March No. (1), pp. 99-120.
- [4]. Blattberg, R.C. Getz, G, and Pelofsky, M. (2001), *Want to build your business? Grow your customer equity*. Harvard Management Update, pp. 4-5.
- [5]. Carayannis, E.G. (1999), "Fostering synergies between information technology and managerial and organizational cognition: the role of knowledge management", *Technovation*, Vol. 19, pp. 219-31.
- [6]. Chanopas, A., Krairit, D. and Khang, D. (2006), "Managing information technology Infrastructure: a new flexibility framework", *Management Research News* Vol. 29 No.10, pp. 632-651.
- [7]. Chen, K.L., Blendinger, J. and McGrath, V. (2000), "Job satisfaction among high school assistant principals", paper presented at the Annual Meeting of the Mid-South Educational Research Association, Bowling Green, KY, November 15-17.
- [8]. Cooil, B., Keiningham, T.L., Aksoy, L. and Hsu, M. (2007), "A longitudinal analysis of customer satisfaction and share of wallet: investigating the moderating effect of customer characteristics", *Journal of Marketing*, Vol. 71, January, pp. 67-83.
- [9]. Davenport, T. H., and Prusak, L. (2000), *Working knowledge: How organizations manage what they know*. Boston, Mass: Harvard Business School Press.
- [10]. David Han-Min Wang and QuangLinh Huynh1. (2014), "The relationships among quality management system, knowledge management and organizational performance: An application of the Heckman Two-step Method" *Journal of Applied Economics and Business Research JAEBR*, 4(4): 235-245.
- [11]. DeLone, W.H. and McLean, E.R. (2004), "Measuring e-commerce success: applying the information systems success model", *International Journal of Electronic Commerce*, Vol. 9 No. 1, pp. 31-47.
- [12]. Deshpande, R. (1983), "Paradigms lost on theory and method in research in marketing", *Journal of Marketing*, Vol. 47, fall, pp. 101-10.
- [13]. Galbreath, J. (2006). Does primary stakeholder management positively affect the bottom line? Some evidence from Australia, *Management Decision* Vol. 44 No. 8, pp. 1106-1121.
- [14]. Garud, R. and Kumaraswamy, A. (2005), "Vicious and virtuous circles in the management of knowledge: the case of Infosys technologies", *MIS Quarterly*, Vol. 29 No. 1, pp. 9-33.
- [15]. Grant, Robert M. (1996), "Prospering in Dynamically-Competitive Environments: Organizational Capability as Knowledge Integration," *Organization Science*, 7 (4), 375-87.
- [16]. Hair, J.F., Anderson, R. E., Tatham, R.L. and Black, W.C. (2010). *Multivariate Data Analysis (7th Ed.)*. Prentice Hall Inc., Upper Saddle River, NJ.
- [17]. Hendrickson, A.R., Massey, P.D. and Cronan, T.P. (1993), "On the test-retest reliability of perceived usefulness and perceived ease of use scales", *MIS Quarterly*, Vol. 17 No. 2, pp. 227-30.
- [18]. Huynh QL, Lin YL. 2013. Employing Heckman Two-Step Sample Selection Method to Investigate Effect of Knowledge Management Adoption on Firm Performance. *International Journal of Business and Management Invention* 2:3, 64-71.
- [19]. Janz, B.D. and Prasarnphanich, P. (2003), "Understanding the antecedents of effective knowledge management: the importance of a knowledge-centered culture", *Decision Sciences*, Vol. 34, pp. 351-384.
- [20]. Inkpen, A.C. and Tsang, E.W.K. (2005). "Social capital, networks, and knowledge transfer", *Academy of Management Review*, Vol. 30 No. 1, pp. 146-65.
- [21]. Kalliopi C. Chatzipanagiotou, and Christos D. Coritos. (2010), "A suggested typology of Greek upscale hotels based on their MrkIS: Implications for hotels' overall effectiveness", *European Journal of Marketing* Vol. 44 No. 11/12, pp. 1576-1611.
- [22]. Kevin Zheng Zhou and Caroline Bingxin Li 2012), "Research notes and commentaries how knowledge affects radical innovation: knowledge base, market knowledge acquisition and internal knowledge sharing" *Strategic Management Journal Strat. Mgmt. J.*, 33: 1090-1102.
- [23]. Kohli, A. K. and Jaworski, B. J. (1990), "Market orientation: the construct, research propositions, and

- managerial implications”, *Journal of Marketing*, Vol. 54, No. 2, pp. 1-18.
- [24]. Laudon, K.C. and Laudon, J.P. (2007), “Management Information Systems: Managing the Digital Firm”, 10th ed., Prentice-Hall, Englewood Cliffs, NJ.
- [25]. Li, T. and Calantone, R. (1998), “the impact of market knowledge competence on new product advantage: conceptualization and empirical examination”, *Journal of Marketing*, 62, 13–29.
- [26]. Mohammed Khurshid Khan and Dermawn Wibisono, (2008) “a hybrid knowledge- based performance measurement system”, *Business Process Management Journal*, Vol, 14 No, 2, pp. 129-146.
- [27]. Narver, J. C. and Slater, S. F. (1990), The effect of a market orientation on business profitability, *Journal of Marketing*, Vol. 54, No. 4, pp. 20-35.
- [28]. Nonaka, I. (1994), “A dynamic theory of organizational knowledge creation”, *Organization Science*, Vol. 5 No. 1, pp. 14-37.
- [29]. O’Brien, V.T., Schoenbachler, D.D. and Gordon, G.L. (1995), “Marketing information systems for consumer products companies: a management overview”, *Journal of Consumer Marketing*, Vol. 12 No. 5, pp. 16-36.
- [30]. Petrison, L.A. and Wang, P. (1993), “From relationships to relationship marketing: applying database technology to public relations”, *Public Relations Review*, Vol. 19 No. 3, pp. 235-45.
- [31]. Rust, R. T, Zeithaml, V. A., & Lemon, K. N. (2000), “Driving customer equity: How customer lifetime value is reshaping corporate strategy”. New York: The Free Press.
- [32]. Rust, R. T, Zeithaml, V. A., and Lemon, K. N. (2004), Customer-centered brand management. *Harvard Business Review*, 82(9), pp. 110-118.
- [33]. Rust, R.T. and Zahoric, A.J. (1993), “Customer satisfaction, customer retention, and market share”, *Journal of Retailing*, Vol. 69 No. 2, p. 193.
- [34]. Sharma, S., Durand, M.R. & Gur-Arie, O. (1981). Identification and analysis of moderator variables. *Journal of Marketing Research*, 18(3), 291-300.
- [35]. Vogel, V., Evanshitzky, H., & Ramaseshan, B. (2008), Customer Equity drivers and future sales. *Journal of Marketing*, Vol. 72, pp. 98-108.
- [36]. Wasko, M.M. and Faraj, S. (2005), “Why should I share? Examining social capital and knowledge contribution in electronic networks of practice”, *MIS Quarterly*, Vol. 29 No. 1, pp. 35-57.
- [37]. Winter, S.G. (1987), “Knowledge and competence as strategic assets”, in Reece, D.J. (Ed.), *The Competitive Challenge: Strategies for Industrial Innovation and Renewal*, Ballinger, Cambridge, MA, pp. 159-84.
- [38]. Zakuan NM, Yusof SM, Laosirihongthong T, Shaharoun AM. 2010. Proposed relationship of TQM and organizational performance using structured equation modeling. *Total Quality Management & Business Excellence* 21:2, 185-203.

Appendix Q1

- Q1.1 my bank knowledge based has a knowledge infrastructure consisting of technology.
- Q1.2 my bank knowledge based has a knowledge infrastructure consisting of structure.
- Q1.3 my bank knowledge based has a knowledge infrastructure consisting of culture along with knowledge process architecture of acquisition.
- Q1.4 my bank knowledge based has a knowledge infrastructure consisting of conversion.
- Q1.5 my bank knowledge based has a knowledge infrastructure consisting of application.
- Q1.6 my bank knowledge based has a knowledge infrastructure consisting of protection.

Appendix Q2

- Q2.1 my bank system provides accurate information.
- Q2.2 my bank system is efficient.
- Q2.3 my bank system has quick response time
- Q2.4 my bank system has easy access.
- Q2.5 my bank system has easy use.
- Q2.6 my bank system has friendly working environment.

Appendix Q3

- Q3.1: My bank determines the nature and extent of relationship that our customers would like to have with our bank.
- Q3.2: My bank examines our customers switching costs. What do our customers have to give up to switch to a competitor?
- Q3.3: My bank evaluate whether loyalty programs are important to our best customers.
- Q3.4: My bank determines whether our bank is up to the difficult challenge of developing and implementing a special recognition program for our best customers.
- Q3.5: My bank engages in marketing research to understand our customers' interests and emotional links.
- Q3.6: My bank provides benefits to our customers that link to emotional ties.
- Q3.7: My bank found out whether our customers value the idea of community prior to implementing such a program.
- Q3.8: My bank determines whether our bank has a distinctive" brand personality" that may make it a candidate for community building.
- Q3.9: My bank before engaging in knowledge- building programs can be sure to get customer consent and buy-in for utilizing customer information to customize the relationship.
- Q3.10 my bank utilize information gained from the customer to build a learning relationship and to offer customized benefits.