



Ranking the Quality of Work Life Aspects Based on Competitive Advantage Factors by Quality Function Deployment Approach in Foolad Technique Co.

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ABSTRACT

In today's competitive environment, organizations try to achieve sustainable competitive advantage and increase their profitability through it. Thus, in first step, it is importance to recognize cores of competitive advantage in an organization. In second step, its' better to identify and reinforce factors which are under positive effects by competitive advantage cores. Due to this fact that there are intangible assets in organizations such as human capitals that can create a rare, sustainable, controllable, non-copy, non-irreplaceable competitive advantage and guarantee profitability of organization. So, considering work life aspects for these value creator human capitals is one of the ways that in this case is of special importance. Thus, in current research, first we consider cores of competitive advantage that are ranked and recognized by simple weighted mean and TOPSIS methods and then merging them in Isfahan Foolad Technique Co. then we try to use method of quality function deployment, ranking employees work life associated to these competitive advantage factors in term of their importance and effectiveness rate. Accordingly, competitive advantage factors are entered as input to House of quality columns and resultant weight of multi criteria decision technique are assigned as importance factor. Then, based on Walton model, quality of work life aspects are entered to House of quality rows and ranked where growth opportunity and continues security, human capabilities deployment, rule-orientation in organization, fair payment, healthy and secure working environment, total area of life, social dependency of work life and social integrity and solidarity are ranked 1 to 8 respectively.

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1. Introduction

Organization life and personal life can affect together. In fact, the humans create and manage the organizations. So concern and attention to humans' requirement identify their quality of work life factors and also meet their needs play important role in organization success. Sense of satisfaction in employers and workforces can affect on effectiveness and increasing efficiency. So the firms can recovery the performance of their employers by improvement in quality of work life factors.

Background

Hemmat et al (2008), in a research entitled "investigating importance of agronomy and safety role in forming quality of work line in one of the industries of Tabriz " state that only 11% of peoples had excellent quality of work life but it has no meaningful relation to education rate. Analysis of multi-fold rated logistic regression showed that among constitutive indicators of quality of work life, equity in payment, life-work hours and safety and agronomy are most important. So, to have a working environment with higher "quality of work life", we should specially focus on agronomy and safety status."

Pourata et al (2008), in a research entitled "improve and increasing quality of work life" state that "it seems to today's working environments are amazed and boiled more than ever. Obviously, polling shows that more than 50% of employees of organizations are unaware of their organizational mission. 84% of them believe that knowing organizational mission has no effect on their quality of work and 44% believe that there is no emotional relation and empathy between them and higher-level managers in organization." [4]

Shahin et al (2004), in a research entitled " a model for criteria of costumer participation" state that by compiling quality function deployment and costumer relation management, services, processes ,products and functional indicators should be relevant to costumer voice.[27]

Asim et al (2008), in a research entitled " usage of quality function deployment" and study of aerial industries state that customer language is different from engineer languages and quality function deployment with the help of house of quality can be a translator for customer requirements, specially product and services, under a matrix.[16]

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Allameh(1999), in a thesis entitled “development of Walton pattern for quality of work life based on Islamic values (focus on Nahjolbalagheh) and determining its effect on psychological stresses ” state that there is a meaningful relation between open relation in organization, promise keeping of supervisor, evaluating function according to real effort rate and knowledge of employee about performance of managers.[8]

In a research entitled “Gaining competitive advantage through human resources” state that in competition arena, companies are looking for achieving advantages that not only create value for company, also difficult to copy or imitate it for competitors. Among company resources, human resources due to two features; causal ambiguity and path dependency in achieving competition advantage, can be a source for stable competition advantage for company. And consider achieving to competition advantage from two basic consequences i.e. strategic human resource management and resultant innovation and strategies.

Ghadirian(2004) in a research entitled “ modern mechanisms of establish and develop stable competitive advantage for companies”, collect different opinions about learning and present in a integrated unit model form to provide a ground for more effective usage toward creating competitive advantage and in today’s conditions that state intense technological changes and human’s knowledge and science as major factor to create and sustain competition advantage for companies.[10]

Ghadirian et al (2004), in a research entitled ” knowledge management and its role in capabilities synergy to create stable competitive advantage ” state that the role of knowledge management in organization is to create knowledge networks to put together knowledge and employee’s and capabilities synergy so that can make stable an organization in an competitive environment of development.[11]

Nouronesa et al, (2004) in a research entitled “Lean Six-sigma methodology of approach of creating competitive advantage in third millennium” state that implementing lean Six-sigma methodology for processes of minimizing costs of maintaining customer is the factor of gaining competitive advantage.

Ali Ahmadi et al (2003) in a research entitled “Internal research and development activities for success in global competition scenes in new era and recommending strategies to achieve competition advantageous” refer to the role of research and development activities to create strength and competitive advantage for businesses and finally, approaches to create competitive power.[7]

O’cass et al. (2012) in a research entitled” creating superior customer value for companies through productive companies” state that market-orientation is not sufficient to create value and increasing market advantageous by-itself and believe that it is efficient in creating competitive advantageous, market-orientation, innovation and market capabilities.[15]

Also, state that the ability of marketing innovation is mediation, making relation between market-orientation and value creation.

Roland et al. in a research entitled” looking for learning and understanding quality of work life” by study and assisting 137 management student from U.S.A university, state that employees should change their learning direction and through developing learning strategies, improve their current working status and say to managers of organization how some textual stimulants can increase personnel readiness to learn and improve their life through direct redesigning and enriching job[23].

Ming Yang et al.(2011) in a research entitled “ roughness of setting QFD method, based on function quality to evaluate of environmental function for a case of Oil&Gas operation” introduce QFD through setting quality function, as a developed method to determine key indicators for evaluating environmental function.[21]

Mudambi et.al in a research entitled “competency and knowledge lever throughout the space: new boundary for international business” state that access to innovation systems are more effective for sharing knowledge and merging them to create new competencies. And manager in functional levels should consider integrating knowledge from different geographical places, technology and private networks. [24]

Samisnar et.al(2010) in a research entitled “ relation between conflict of working family and quality of life: studies related to role of social support” through study on a comprehensive model of “conflict of working family” and “quality of work/non-working life” found that conflict of working life related to quality of work life.[26]

Joes et al.(2010) in a research entitled” regulatory role of technological properties: competitive strategies and function of company” by considering 253 Spain IT company, regulate the relation between competitive strategies and function and technologic capabilities and believe that technologic capabilities have more effects on high function quality and gaining competitive advantage.[20]

Akgun et al.(2009) in a research entitled ”empirical analyzing: organizational sentiment, abilities, product and innovation process and company function ” through study on 163 Turkey companies show that encouraging company and raising sentimental capabilities can increase innovation capability of product and thereby, financial ability.[14]

Cheng et al. (2009) in a research entitled “exploiting of and transferring knowledge assets that are presented in organization” study on role of knowledge assets management in organization and consider it as a lever for better cognitive learning, improving production delivery and knowledge evolution, where these factors can be effective in gaining advantages and raising organizational capabilities.[25]

2. theoretical basics

2.1 quality of work life

Quality of work life is the amount of employee perception about their physical (body) and psychological (soul) health in working environment (Cassio, 1995)[18]. Aspects of quality of work life are classified as follows based on components of Walton model: fair and sufficient payment, healthy and safe environment, providing growth opportunity and continues security, rule-orientation in organization, social dependency of work life, total space of life, social solidity and integrity and developing human capabilities (Fallah, 2006).[9]

2.2 competitive advantage

Competitive advantage is a number of core competencies that distinct organization from other competitors. (Ahmadi et al.2001) .[3]

Approaches to gaining competitive advantage

There are three approaches regarding to gain competitive advantage: asset-process-function approach, capability-base approach ,market-base approach. In the first one, competitiveness includes a mix of assets and processes. Second approach regards to effect of organization local factors on competitive power include financial, technologic and human inputs. Third approach recommends that business should be costumer-oriented, market-oriented, innovative and entrepreneur and tend to learning(sayyed Javadayn et al.2009).[5]

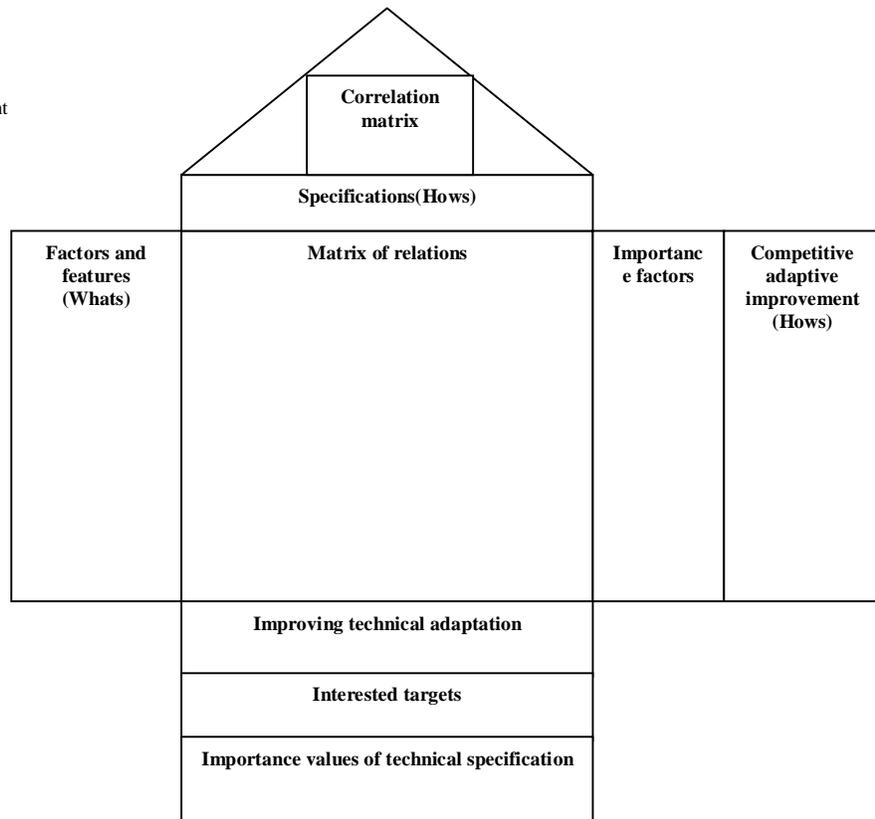
It should be noted that competitive advantageous also can be stable for a long time. Resources which have potential of creating stable competitive advantage, should be rare, non-copy, irreplaceable and sustainable (Barney et al.,1991).[17] In the questionnaire of this research, these five indicators are considered as scoring criteria for components(based on Hamel & Perahalad model 1990).[22]

2.3 Quality function deployment (QFD)

QFD approach is the way of designing product and services based on costumer's needs and expectations through prioritizing needs according to Matrix of House of quality (Mottaghi, H. Operation Managment.P88)[12] that, of course, identify improvement path for certain parameters, but is not able to show exact value of improvements or values (Bouchereau,V,Rowlands,H, 2000).[23]

House of quality matrix (HOQ): prioritization method for aspects of quality work life, priorities from costumer view point and changing them to product design-specific aspects (Mottaghi.2008)[12]

Figure 2.1.
House of quality in quality function deployment



This approach is a unique and powerful quality guarantee tool and designed for carefully listen to internal/external customer voice and following it in development of product and services in such areas as (Lee,S,F ,Ko,A·2000)[19]: (1) Costumer's needs ;(2) Information of competitive environment;(3) Using team working ;(4) Providing flexible plans;(5) Changing qualitative needs to measurable goals

2.4 simple weighted mean method

Simple weighted mean method belongs to Multi criteria decision techniques where giving Ws (weights of indicators importance) select most proper option.

First values of decision matrix should be descaled linearly. Considering that in this study, all used indicators have positive aspects, we use following formula to de-scale:

$$n_{ij} = a_{ij} / \text{Max } a_{ij}$$

Then by multiply the de-scaled matrix to indicators' weights, we will rate options according to calculated values in descending order (Asghar Pour,2008).[2]

2.5 TOPSIS technique

This method is present by Hwang & Yoon in 1982.in this method,' m' options are evaluated by 'n' indicators. This technique is based on this concept that selected option should have minimum distance to positive ideal solution(best state A*)and maximum distance to negative ideal solution(worst possible state A)(Azar,2010)[1].

3. Research methodology

This study is functional from deployment aspect, also regarding to information gathering time is of surveying and segmenting type and according to data nature is quantitative-qualitative.

3.1 step 1

Provide some experts with a questionnaire that measure the competitive advantage of Isfahan Foold technique Co. based on Saati spectrum with five indicators: rareness, sustainability, controllability, non-copy and irreplaceable, to do score.

3.2 Step 2

Also, a number of experts provided with pair compare matrix to determine importance weight of 5-fold indicators of above competitive advantage factors, to scoring, where by taking geometric(numeric) mean of them, total weight is obtained. Then weight of each factors of competitive advantage determined through three simple weighted mean and TOPSIS.

3.3 Step 3

Competitive advantage factors are entered to columns of house of quality matrix as independent variables, and total weight obtained from geometric mean of resulted weights of each three methods in step2, are assigned to them as importance factor.

3.4 Step 4

Quality of work life' aspects of personnel entered as a variable into rows of house of quality and after calculating, score of each aspect is determined, then we obtain prioritized aspects of quality of work life.

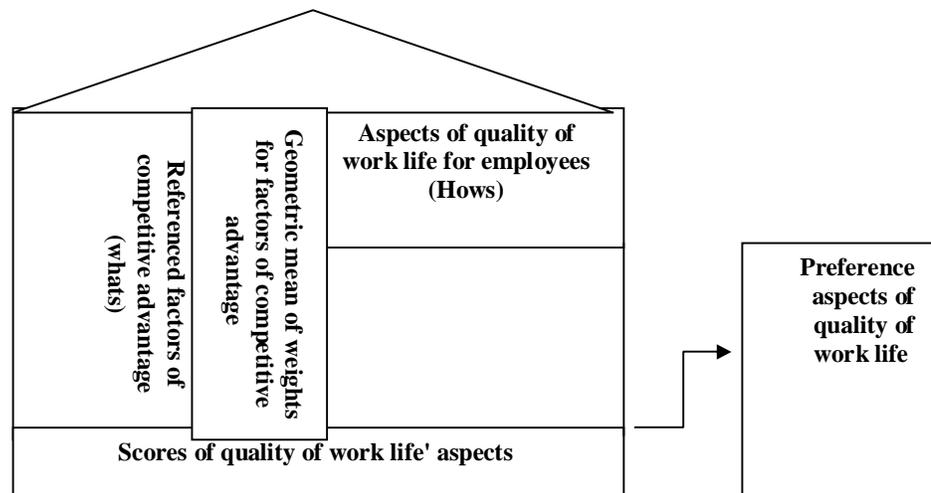


Figure 3.1. Proposed research model

4. Finding

Table 4.1. Total weights of indicators importance

Total importance weight (after geometric mean of pair compare matrix for experts)	Indicator name
0.31	rareness
0.186	sustainability
0.159	Under organization control
0.201	Non-copy
0.144	irreplaceable

In this research, after determining weight of competitive advantage factors for Foolad Technique Co. through three methods : Adaptive, TOPSIS and Simple Weighted Mean, according to following table, then we obtain total weight of each by calculating geometric mean of weights and importance factor of each is put into the input columns of house of quality matrix.

Table 4.2. Total weight of competitive advantage factors based on SAW,TOPSIS methods

Component	Weight of simple weighting mean	Weight of TOPSIS method	Total weigh(importance factor of input column of house of quality)
flexibility	1.145	0.126	0.379
Fast response	1.158	0.36	0.645
Strategic thinking	1.22	0.283	0.345
Customer relation management	1.157	0.51	0.768
Continuous quality control	1.104	0.314	0.588
New and superior technology	1.187	0.276	0.573
Research and development activities	1.19	0.045	0.224
Competency-based training	1.152	0.34	0.625
Emotional strength of organization	1.176	0.212	0.499
Number of experts	1.172	0.273	0.32
Idea and creativity	1.185	0.419	0.704
Attracting/maintaining customer	1.134	0.98	1.054

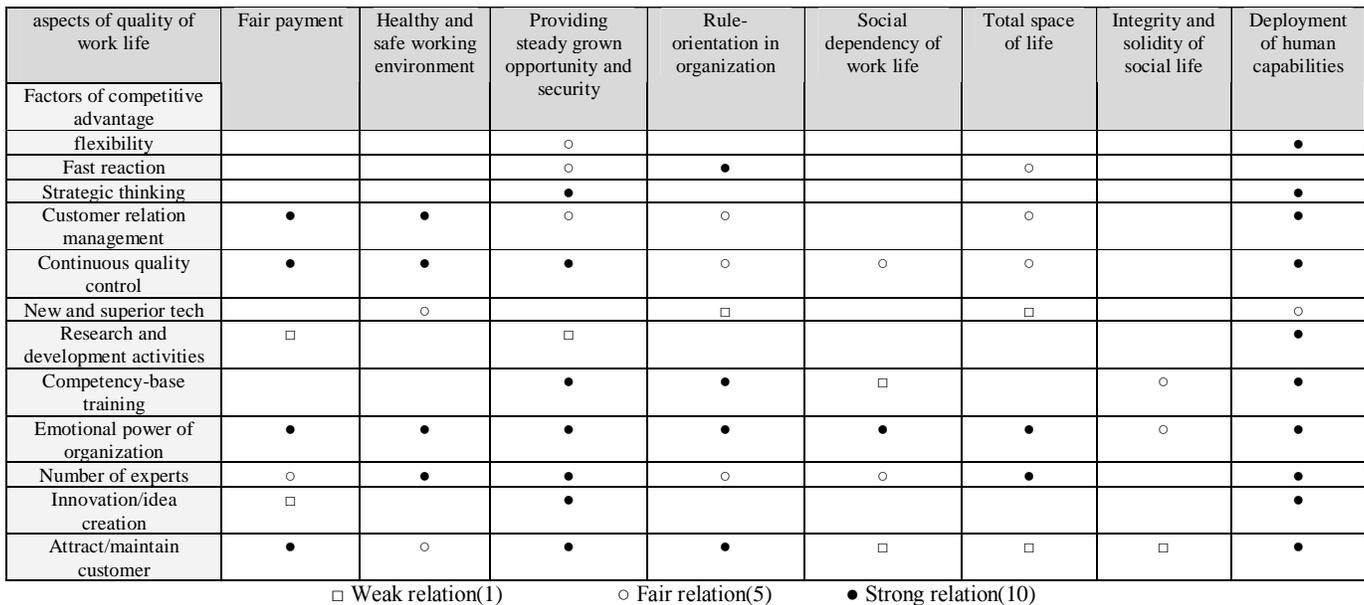


Figure 4.2. House of quality matrix

Weight of each column factor from table4.2 from final weigh is assigned to each factor and multiply in score of each cell according to guide of house of quality, then through summing up the column of numbers in house of quality, determine each factors of Walton model's quality of work life, and considered as rating basis.

Table 4.3. scores of quality of work life's factors

aspects of quality of work life	Fair payment	Healthy and safe working environment	Providing steady grown opportunity and security	Rule-orientation in organization	Social dependency of work life	Total space of life	Integrity and solidity of social life	Deployment of human capabilities
Score from house of quality	31.618	21.885	53.534	37.183	11.209	19.882	6.674	52.045
rank	4	5	1	3	7	6	8	2

5. Conclusion

According to what is said about importance and necessity of human resources role in raising productivity and effectiveness level, organizations are looking some ways that can maintain these non-copy and innovative assets through them and provide proper condition for raising growth and efficiency, because there is a relation between reinforcing human capabilities and holding these human resources in the organization, and factors of quality of work life. In other hand, organization can attain better productivity by recognizing their core competitive advantage and improving/holding it simultaneously. Therefore, in this research we tried to rating quality of work life's factors of employees, based on identified cores of competitive advantage in Foolad Technique and their importance rate and degree, according to 8-fold Walton model. This is to show which of the life factors has direct/indirect effect on holding competitive advantage factor of organization. Because personnel of each organization are people who can be effective by using other factors and promoting productivity in profitability of organization through competitive advantage factors, and considering their quality of work life and providing a proper environment is a way to realizing this demand. In this research according to house of quality from approach of developing quality function, such that factors of competitive advantage are put into cells of matrix column and their computed weight is assigned to them through simple weighting mean, TOPSIS and geometric mean as importance coefficient of each factor. Factors of work life making rows of house of quality where are ranked by using house of quality technique, as follows:

Providing grows opportunity and continuous safety, deploying human capabilities, rule-orientation in organization, fair payment, safe and healthy environment, total life space, social dependency of work life and social solidity and integrity are ranked from 1 to 8, respectively.

References

- [1] Azar Adel and Rajabzadeh, Ali (2010). (Application decision by MADM approach . First Edit.4 th published.
- [2] Asghar pour.Mohammad Javad(2008). Multi criteria decision.6th published.Publish Institute of Tehran University.
- [3] Ahmadi.Alireza and Others (2001) . Strategic management. Samt publish Institute.
- [4] Pour Ata.Hamid (2008). Improvement and increasing quality of work life. First Conference of changing and improving in Organisation.
- [5] Sayyed Javadayn and Others(2009). extracting key indicators of competitive advantage among Iran banks: hybrid approach .4th Internatinal Conference of Strategic Management.
- [6] Hemmat et al (2008). "investigating importance of agronomy and safety role in forming quality of work line in one of the industries of Tabriz "
- [7] Ali Ahmadi.Alireza and Akhavayn.Eshrat (2003). internal research and development activities for success in global competition in new era and offering some strategies to achieve competitive advantageous.4th conference of industry and mines R&D centers.
- [8] Allameh.Mohsen(1999). Developing a pattern for Walton's Quality of work life based on Islamic values and determining their effect on relaxing psychological stress. PhD thesis. Tehran Teacher Training university.
- [9] Fallah.Maryam (2006) investigate and analysis of relation between quality of work life and function of personnel of Kosar economical company. Thesis.
- [10] Ghadirian Abbasali(2004). modern learning mechanisms and their effects on create and developing stable competitive advantage for companies. 2th international conference of management
- [11] Ghadirian Abbasali and Asili.Gholamreza (2004). knowledge management and its role in capabilities synergy to create stable competitive advantage.5th international conference of quality managements
- [12] Mottaghi.Haiedeh(2006). production and operation management.6th published.Avaye Patris published Institute.
- [13] Nourones.Rasoul and Others(2004). lean Six sigma methodology of creating competitive advantage approach in third millennium .3th national conference of industry engineering
- [14] Ali E. Akgün, Halit Keskin, John Byrne, (2009) .*Journal of Engineering and Technology Management, Volume 26, Issue 3, September 2009, Pages 103-130*
- [15] Aron O' Cass, Liem Viet Ngo,(2012) .*Industrial Marketing Management, Volume 41, Issue 1, January 2012, Pages 125-135*
- [16] Asim. M ,Rehman.A and Rafique.Kh.(2008)." APPLICATION OF QUALITY FUNCTION DEPLOYMENT (QFD) IN AVIATION INDUSTRY".Proceeding of the9th International conference on Quality Manage
- [17] Barney J. (1991), "Firm Resources and Sustained Competitive Advantage", *Journal of Management*, 17(1), pp.99-120.
- [18] cassio, wayne .F. 1996,"managing human resource productivity, quality of work life , profits" fifth edition ,mc grow hill
- [19] Lee,S.F ,Ko,A (2000),"Building balanced scorecard with SWOT analysis, and implementing" Sun Tzu's The Art of Business Management Strategies" on QFD methodology", *Managerial Auditing Journal*,pp 68-76.
- [20] María José Ruiz Ortega . "*Journal of Business Research*", Volume 63, Issue 12, December 2010, Pages 1273-1281
- [21] Ming Yang, Faisal I. Khan, Rehan Sadiq, Paul Amyotte ,2011."A rough set-based quality function deployment (QFD) approach for environmental performance evaluation: a case of offshore oil and gas operations Original Research Article" *Journal of Cleaner Production, Volume 19, Issue 13, September 2011, Pages 1513-1526*
- [22] C.K Prahalad & Gary Hamel, The Core Competence of corporation, Harvard business review, may-june,1990,pp 71-79
- [23] Roland Yeo, Jessica Li, 2012. "In Pursuit of Learning: Sensemaking The Quality of Work Life". *European Journal of Training and Development Volume: 37 Issue: 2 2012*
- [24] Ram Mudambi, Tim Swift, (2011).*Journal of International Management, Volume 17, Issue 3, September 2011, Pages 186-189*
- [25] Sheng-Tun Li, Won-Chen Chang,(2009) .*Expert Systems with Applications, Volume 36, Issue 1, January 2009, Pages 766-777*
- [26] Samsinar Md-Sidin, Murali Sambasivan, Izhairi Ismail,2010. "Relationship between work-family conflict and quality of life: An investigation into the role of social support".*Journal of Managerial Psychology Volume: 25 Issue: 1 2010*
- [27] Shahin. Arash, Sanayei. Ali and Nikmешan. Peyman(2008)." Integration of CRM and QFD : A Novel Model for Engancing Customer Participation" . Proceeding of the 2th International conference on Management.