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ANALYSIS OF ORGANIZATIONAL AGILITY IN AUTO INDUSTRY & IDENTIFYING IMPROVEMENT STRATEGIES USING QUALITY FUNCTION DEPLOYMENT (Case Study: *Saipa Auto group*)

Kiamars Fathi Hafshajani [1], Mohammad Mehdi Movahhedi [2], Mohammad Hosein Aboee Mehrizi [3]
[1] *Department of Management ,Tehran Branch, Islamic Azad University ,Tehran , Iran*
E-mail: fathi@azad.ac.ir
[2] *Department of Management ,Firozkoh Branch, Islamic Azad University,Tehran, Iran*
E-mail: mmmovahedi@gmail.com
[3] *Department of management and accounting, Qazvin branch, Islamic Azad University, Qazvin, Iran*
E-mail: benika2012@gmail.com

ABSTRACT

In the last decades and modern business environments, agility is advocated as the fundamental characteristics for business competitiveness which aims increasing organizational flexibility in new situations and opportunities. This goal will achieve using a comprehensive insight into high tech and internal capabilities through informational systems. Saipa auto group is a leading company in customer services that there is no research about its agility so, such studies is one of the manager's problem during the time. This study tries to appear agility situation in Saipa group and arrange the best suggestion toward agile organization using a quality function deployment model. Study results show that in general there are 10 service element and 10 KPO in this corporation. Moreover, in four indicators out of ten, Saipa group have a better position relative to competitors but 6 indicators are classified as weal points that have to improve in long term.

Keywords: *Organizational agility, Auto industry, Quality function deployment*

1. INTRODUCTION

The concept of "agility" was introduced by researchers of the Iacocca Institute (1991), and, since the first introduction, it has been receiving an increasing attention by both researchers and industrial communities. From 1990s until recently, many publications on the subject have appeared , which, due to its newness, attempt to provide a definition of agility. Currently accepted definitions relate agility to the ability of companies to respond quickly and effectively to (unexpected) changes in market demand (Brown and Bessant, 2003; Sharifi and Zhang, 2001; Fliedner and Vokurka, 1997), with the aim to meet varied customer requirements, in terms of price, specification, quality, quantity, and delivery (Prince and Kay, 2003). Agile enterprises react quickly and effectively to changing markets, driven by customised products and services. Moreover, agility directly affects company's capability to produce and deliver new products in a cost-efficient way (Swafford et al., 2006). Decrease in manufacturing costs, increased customer satisfaction, removal of non-value added activities and increased competitiveness (Lin et al., 2006) are among benefits that can be achieved through agile strategies. Accordingly, agility, encompassing both companies and the supply chain as a whole (Ren et al., 2001), is recognised as fundamental for survival in turbulent and volatile markets and to help companies to deliver the right product at the right time to the customers (Agarwal et al., 2007; Lin et al., 2006; Yusuf et al., 1999).

Table1: Different definitions of manufacturing agility (ordered by the time of publication)

Reference	Definition
Gunasekaran (1998)	**Capability to survive and prosper in a competitive environment of continuous and unpredictable change by reacting quickly and effectively to changing markets, driven by customer-designed products and services**

Katayama and Bennett (1999)	**Cope with demand volatility by allowing changes to be made in an economically viable and timely manner; abilities for meeting widely varied customer requirements in terms of price, specification, quality, quantity and delivery**
Naylor et al. (1999)	**Using market knowledge and a virtual corporation to exploit profitable opportunities in a volatile market place**
Sharifi and Zhang (1999)	**Ability to cope with unexpected changes, to survive unprecedented threats of business environment, and to take advantage of changes as opportunities**
Yusuf et al. (1999)	**Successful exploration of competitive bases (speed, flexibility, innovation proactivity, quality and profitability) through the integration of reconfigurab1e resources and best practices in a knowledge-rich environment to provide customer-driven products and services in a fast changing market environments**
Christopher (2000)	**Ability of an organization to respond rapidly to changes in demand, both in terms of volume and variety; a business-wide capability that embraces organizational structures, information systems, logistics processes, and mind sets**
Gunasekaran and Yusuf (2002)	**Capability of an organization, by proactively establishing virtual manufacturing with an efficient product development system, to meet the changing market requirements, maximize customer service level, and minimize the cost of goods; ability of a company to effect changes in its systems, structure and organization**
James (2005)	**Ability to respond to change, uncertainty and unpredictability in the business environment, whatever its source-customers, competitors, new technologies, suppliers or government regulation**
Ade1eye and Yusuf (2006)	**Systematic response to pressures imposed by the highest levels of market instability and product complexity; simultaneous emphasis on a wide range of competitive capabilities**
Ismail et al. (2006)	**Ability to respond to, and create new windows of opportunity in a turbulent market environment driven by individual (bespoke) customer requirements cost effectively and rapidly**
Narasimhan et al. (2006)	**Efficiently changes operating states in response to uncertain and changing demands**

It is recognised in literature that agile enterprises are characterised by proper "attributes" (or "capabilities") which allow companies to promptly respond to changes in business environment. Among others, agile attributes include integration of information systems or technologies, people, business processes and facilities (Ren et al., 2001; Christopher and Towill, 2001). However, as suggested by Ren et ai. (2003), different agile attributes would lead to different levels of competitive priorities. Specifically, companies typically compete along several dimensions, such as, for instance, costs or responsiveness (see Yusuf et al., 1999, for a viable list of them), whose relative importance in achieving competitive advantage depends upon the specific market field.

In addition, trade-off exists between competitive priorities, being recognised that companies cannot excel in all them simultaneously (Burgess et al., 1998). Consequently, agile attributes to be enhanced may vary depending on the competitive bases the companies are willing to excel in (Ren et al., 2003). Moreover, according to several conceptual models of agile enterprises available in literature (e.g., Lin et al., 2006), companies can exploit several leverages (i.e., agile "enablers") to achieve the agile capabilities. Enablers include, among others, con-current engineering practices or rapid prototyping tools (Gunasekaran, 1998).

In this situation, car industries see no way to survive but to find an approach to manage and evaluate their agility. In addition, as a result of evolutions in IT and communication technologies, recent years are characterized with emergence of new concept of agility, which has been considered as an important approaches in business. Its objective is to return to personal marketing era. This looks a bit simple which implies different

clients prefer different products, so instead of mass marketing, it is better off trying personal marketing to increase agility through applying IT. In this way, car industries have managed to achieve new level of organizational agility. Saipa Car Industries Group has been always considered as one most innovative in Iran's car industries for offering modern services to its clients. However, there is absence of a research to measure agility and its necessity to improve and keep current position is quite clear for the managers. In this regard, this work tries to evaluate agility status of Saipa Car Industries Group in Tehran city, and investigate critical factors of organizational agility failure to preset solutions to improve it using QFD model.

2. LITERATURE REVIEW

2.1. Agile attributes

The concept of agility introduced by the Iacocca Institute (1991) mainly refers to agile manufacturing. More recently, agility concepts have been extended to the entire supply chain, based on the assumption that companies cannot be truly agile by themselves (Christopher, 2000: Van Hoek et al., 2001). A comprehensive review of agile manufacturing literature was performed by Sanchez and Nagi (2001). The authors examined 73 papers focusing on nine main research topics of the subject, such as "product and manufacturing systems design", "process planning", "production planning, scheduling and control", "facilities design and location", "handling and storage systems", "information systems", "supply chain", "human factors", "business practices and processes". Results ofthe review confirm that first studies related to agility focused on agile manufacturing, rather than on agile supply chain, since only nine papers examined refer to supply chain agility. Accordingly, agile attributes, hereafter defined as the elements which constitute the underlying structure of an agile organisation (Ren et al., 2003), were originally conceived as core concepts of agile manufacturing. Agile attributes have been widely investigated in literature. Kidd (1994), suggests that agility can be achieved through the integration of organisation, highly skilled and knowledgeable people and advanced technologies. A similar view is expressed by Goldman et ai. (1995), and Gunasekaran (1998), who presents "enriching the customer", "co-operation", "organising to master change and uncertainty" and "leveraging the impact of people and information", as the four main dimensions of agility. Flexibility is also advocated as the basis of agility by Dove (1996), and, more recently, by Swafford et ai. (2006). A comprehensive taxonomy of agile attributes was proposed by Yusuf et al. (1999), which identified 32 attributes characterising an agile enterprise, ranging from "concurrent execution of activities", up to "employees satisfaction": attributes were grouped into 10 decision domains, according to the scheme shown in Table 2.

The set of agile attributes defined by Yusuf et al. (1999), has been exploited for many subsequent studies. For instance, Ren et al. (2003), examined the impact ofthe above attribute on six competitive priorities, such as "speed", "flexibility", "cost", "quality", "innovation" and "proactivity", which were derived from Yusuf et al. (2000). Similarly, Lin et al. (2006), developed a fuzzy agility index (FAI) which assesses supply chain agility of a company as the fuzzy weighted average of the rating of agile attributes proposed by Yusuf et al. (1999).

Table2: List of agile attributes and taxonomy in decision domains(Yusuf et al.,1999)

Decision domain	Related agile attributes
Integration	Concurrent execution of activities
	Enterprise integration
	Information accessible to employees
Competence	Multi-venturing capabilities
	Developed business practice difficult to copy
Team building	Empowered individuals working in teams
	Cross functional teams
	Teams across company borders
	Decentralised decision making
Technology	Technology awareness
	Leadership in the use of current technology
	Skill and Knowledge enhancing technologies
	Flexible production technology
Quality	Quality over product life
	Products with substantial value-addition
	First-time right design

	short development cycle times
Change	**Continuous improvement**
	Culture of change
Partnership	**Rapid partnership formation**
	Strategic relationship with customers
	Close relationship with suppliers
	Trust-based relationship with customers/suppliers
Market	**New product introduction**
	Customer-driven innovations
	Customer satisfaction
	Response to changing market requirements
Education	**Learning organisation**
	Multi-skilled and flexible people
	Workforce skill upgrade
	Continuous training and development
Welfare	**Employees satisfaction**

2.2. Agile enablers

One of the first attempts to provide a definition, as well as a comprehensive set, of agile enablers was made by Gunasekaran (1998). According to the author, agile enablers are enabling technologies which are critical to successfully accomplish agile manufacturing. The author discusses seven agility enablers, namely "virtual enterprise formation tools/rnetrics", "physically distributed teams and manufacturing", "rapid partnership formation tools/rnetrics". "concurrent engineering", "integrated product/production/business information system", "rapid prototyping tools", and "electronic commerce". This taxonomy was derived from several previous studies related to agility (among others, Cho et al., 1996; Gehani, 1995; Burgess, 1994). Specifically, Burgess (1994), suggests computer and information technology, and thus IT enabled processes, as viable tools for achieving agility. Gehani (1995), states that six actions are required for the implementation of an agile strategy, namely "crossfunctional team sharing", "empowerment for front-line decision making", "modular integration of available technologies", "delayed design specification", "product planning" and "enterprise-wide integration of learning". The adoption of cross-functional teams and concurrent engineering practices, as viable means to achieve time compression, is also supported by Kumar and Motwani(1995). Subsequent works also confirm the correctness of the set of enablers proposed by Gunasekaran (1998) in many industrial cases. For instance, McCullen and Towill (2001), argue that partnership arrangements and close relationships with suppliers, JIT production, and advanced information technologies are important enablers of agile manufacturing.

Recently, a thorough review of agile strategies and technologies was performed by Gunasekaran and Yusuf (2002). As a result of their review, many enablers were added to the original ones: the authors identify about 60 viable leverages to implement agile manufacturing, which were categorised into four main sets, namely "strategic planning", "product design", "virtual enterprise", and "information technology".

2.3. Methodologies to achieve agility

As mentioned, it is recognised in literature that agility should be achieved in practice by exploiting and integrating viable methods and tools (Zhang and Sharifi, 2000). Nonetheless, several scientific works mainly suggest theoretical models of agility, while only few of them provide integrated methodologies suitable to be adopted to enhance agility by identifying agile enablers starting from the company's competitive bases.

Focusing on methodological papers, a first integrated framework to achieve agility has been proposed by Gunasekaran (1998). The framework illustrates how the main capabilities of agile manufacturing, such as "co-operation", "value-based pricing strategies", "investments in people and information" and "organisational changes", should be supported and integrated with appropriate agile enablers to develop an adaptable organisation. Although the author provides a number of references to discuss the impact of agile enablers on agile attributes, the model is mainly conceptual, and it does not fully provide a practical tool that companies can exploit to achieve agility.

Zhang and Sharifi (2000), and Sharifi et al. (2001), developed a 3-step approach to implement agility in manufacturing organisations, whose structure reflects the conceptual model described in the introduction section. The model links agility "drivers" (i.e., changes or pressures from the business environment that lead companies to embrace the agile paradigm) to four essential agile capabilities (i.e., company's capability required in order to become agile). In the last step, a set of viable tools (agile "providers") by which capabilities can be achieved, is described, and linked to the previously mentioned capabilities. Relationships between both drivers and capabilities, and capabilities and enablers, are discussed by the authors, and an appropriate network model is proposed for their quantification.

A 3-step model is also suggested by Jackson and Johansson (2003), to analyse agility of production systems. The starting point is the assessment of the degree of market turbulence, to determine the relevance of agility in the specific context. Then, the strategic view of the company is examined, with a particular focus on potentials to enhance flexibility and change as viable strategies to achieve competitive advantage. The third step is to analyse agile capabilities required in the future. To this extent, company's performance against four main agile capabilities, such as "product-related change capabilities", "change competency", "co-operation" and "people", are examined to identify the required improvements.

Some authors (Cil and Evren, 1998; Naik and Chakravarty, 1992) proposed methodologies for linking manufacturing strategies with marketing requirements; however, none of the works directly relates to agility issues. Specifically, Cil and Evren (1998) aim at exploring the impact of manufacturing capabilities on the manufacturing/marketing interface; this is a general aim, which could be only partially translated to the agility environment. Similarly, Naik and Chakravarty (1992) suggest a framework for evaluating the acquisition of new technologies; the framework is based on three phases, namely "strategic evaluation", "operational evaluation" and "financial evaluation". In that context, an approach similar to QFD is suggested as a possible tool to link competitive strategy with marketing requirements, system attributes and appropriate manufacturing technology. However, the application proposed is not based on QFD, but only on the computation of a weighted sum.

3- RESEARCH METHOD:

The research is conducted as an analytical-surveying work. Library and field studies were applied for data gathering. Library studies were mainly carried out to survey literature and organizational agility application, and QFD models experiments and decision making techniques to improve organizational services and their performance. Car industries sector is mainly under consideration. At this stage, and considering research background, car industries agility indices were extracted and ranked in the scale of importance based on interviews with the company's clients. Therefore, factorial analysis and validity of indices in the industries are under consideration. As for second stage, current and preferred level of each of agility empowerments in the company under study were measured, following by determining indices with negative gap through gap analysis. Results were applied to omit indices with proper conditions. Kano model was applied to spot necessary, one dimensional and attractive demands and reducing number of input indices to quality section. Clearly, only essential demands were inserted as input to quality section, afterward, improvement approach of each was developed. Noticeable is that, to have more accurate results, a two-step quality section was applied in the study. This helps drawing better approaches for executive managers. Statistical society was comprised of all clients, managers, and experts for and in the company (Tehran). At the time of conducting the research (2011) the group was comprised of 180 individuals and unlimited number of clients.

Considering that access to all clients was not realizable, a sampling method for unlimited society was employed. Following formula was applied to this end:

$$n \geq \frac{Z^2_{\alpha/2}\,\delta_x^2}{\varepsilon^2}$$

A elementary sampling was applied to the formula to determine standard deviation of the society. To this end, the questionnaire was handed out to 30 clients of the company in Tehran. Obtained standard deviation for the study was 0.070. Considering this figure, therefore maximum number of participants of sample society was 108 individuals with error level of 5%. With 111 returned questionnaire the study is based on the data provided in the questionnaires.

$$n \geq \frac{(1.96)^2 \times 0.070}{0.05^2} = 108$$

For sample society of experts and manager, the questionnaire was handed out to 38 individuals. Considering sample society comprised of 180 individuals, number of participants were obtained by the following formula. Fifty three questionnaires were returned.

$$n = \frac{N \times Z^2_{\alpha/2} \times \delta^2}{\varepsilon^2 (N-1) + Z^2_{\alpha/2} \times \delta^2} \quad \Rightarrow \quad n = \frac{180 \times (1.96)^2 \times 0.215^2}{0.05^2 (179) + (1.96)^2 \times 0.215^2} = 51$$

4 - RESEARCH QUESTIONS:

1 – How is the current situation of agility in Saipa automobile making group from the customer's viewpoint?
2 –what are the most important parameters related to the agility in the automotive industry?
3 - What are the critical factors of agility in Saipa automobile making group?
4 - what are the most important strategies for improving agility level in the company's using the model of quality performance?

5- RESULTS OF ANALYSES:

Discussing liability and validity of the questionnaire is out of the scope of this study (the applied questionnaire was a standard questionnaire; Yusef et, al. 1999). Noticeable is that, reliability of the research was 0.815, while adequacy test is illustrated in table 3.

Table 3: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of sampling Adequacy		0.803
Bartlett's Test of sphericity	df	512.1
	sig.	0.000

Table 4: Mann-Whitney Test

Decision domain	Integration	Competence	Team building	Technology	Quality
Z	-1.209	-1.052	-1.225	-2.432	-1.919
sig.	0.015	0.03	0.103	0.125	0.132

Decision domain	Change	Partnership	Market	Education	Welfare
Z	-2.101	-2.813	-1.13	-1.247	-1.802
sig.	0.015	0.000	0.012	0.000	0.001

Considering error level of the test (5%), meaningful level inserted in the above table implies that except for team making aspects, technology and quality, the company has suitable understanding about clients' expectations. It can be interpreted therefore that out of 10 cases of clients' perceptions and expectations, seven were featured with gap. Table 5 lists the results of indices analyses.

Table 5: lists the results of indices analyses

Related agile attributes			
1- Concurrent execution of activities	3.32	3.41	-0.09
2- Enterprise integration	3.01	2.87	0.14
3- Information accessible to employees	3.78	3.69	0.09
4- Developed business practice difficult to copy	4.3	3.92	0.38
5- Multi-venturing capabilities	4.51	4.6	-0.09
6-Decentralised decision making	2.5	3.31	-0.81
7- Empowered individuals working in teams	3.4	4.1	-0.7
8- Cross functional teams	2.3	4.67	-2.37
9- Teams across company borders	3.4	4.1	-0.7
10-Technology awareness	2.5	2.6	-0.1
11-Leadership in the use of current technology	2.34	3.7	-1.36
12-Skill and Knowledge enhancing technologies	2.89	2.65	0.24
13-Flexible production technology	3.5	3.4	0.1

14-Quality over product life	4.7	4.3	0.4
15-Products with substantial value-addition	3.9	3.9	0
16- short development cycle times	4.1	4.1	0
17-Culture of change	2.9	3.5	-0.6
18-Continuous improvement	4	4.1	-0.1
19-Trust-based relationship with customers/suppliers	3.4	3.3	0.1
20-Rapid partnership formation	3.4	4.52	-1.12
21-Strategic relationship with customers	3.81	3.72	0.09
22-Close relationship with suppliers	3.5	3.98	-0.48
23-Response to changing market requirements	3.87	3.71	0.16
24-New product introduction	3.74	3.75	-0.01
25-Customer-driven innovations	4.2	4.33	-0.13
26-Customer satisfaction	3.5	3.98	-0.48
27- Continuous training and development	4.13	4.03	0.1
28- Learning organisation	3.94	3.97	-0.03
29- Multi-skilled and flexible people	4	4.12	-0.12
30- Employees satisfaction	2.4	3.5	-1.1

Results implied from the above table showed that out of 30 indices, 17 were characterized with negative gaps, and the company is required to improve them. However, for more concentration on some indices, it is better off identifying indices with necessary requirements out of the 17 indices.

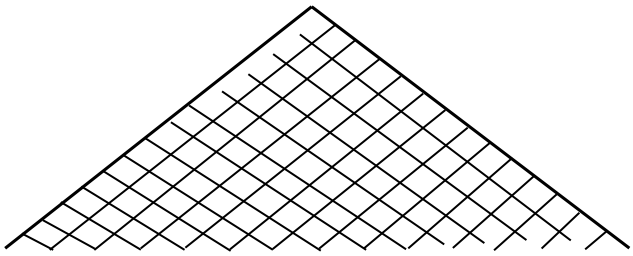
Table 6: Determining the type of each agility attributes in saipa company

agile attributes	C.R.	A	M	O	R	Q	I	Total	Grade
1- Concurrent execution of activities	1	104	4			3		111	A
5- Multi-venturing capabilities	2	9	98	4				111	M
6-Decentralised decision making	3	5	18	88				111	O
7- Empowered individuals working in teams	4	87	14	6	4			111	A
8- Cross functional teams	5	87	1	1	10		12	111	A
9- Teams across company borders	6	89		19			3	111	A
10-Technology awareness	7	11	96	2	2			111	M
11-Leadership in the use of current technology	8	21	14	76				111	O
17-Culture of change	9	2	103	6				111	M
18-Continuous improvement	10		106	1	2	2		111	M
20-Rapid partnership formation	11	98	1	11	1			111	A
22-Close relationship with suppliers	12	95	3	3	6	4		111	A
24-New product introduction	13	89	2	7	4	9		111	A
25-Customer-driven innovations	14	93	2	10	2		4	111	A
26-Customer satisfaction	15	18	84	2	7			111	M
29- Multi-skilled and flexible people	16	23	2	76	4	2	4	111	A
30- Employees satisfaction	17	101	6	2		2		111	A

An interesting point about the above table is that only 5 indices are classified as necessary requirements. It is noticeable that these indices should be occurred in on service, should be not satisfied result in excessive dissatisfaction. On the other hand, should the requirements correspond to demand, meeting them may not result in increase in satisfaction. Necessary requirements are main indices of a product, and meeting them finally results in "not dissatisfied". Therefore these five indices will undergo improvement process as input to quality performance development model. The process is pictured in the following diagrams.

Two quality sections were designed to find the best agility improvement solutions, and five critical indices resulted from Kano table were applied as input to first table QFD model.

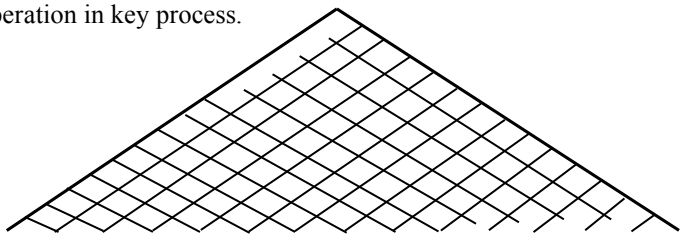
Input indices to quality section are: multiple cooperation capabilities, familiarity with new technologies, culture of evolution, permanent improvement of quality, customer satisfaction.



Relationships between VOC & SE Strong=9 , Average=3 , Weak=1	Competence in IT equipment and facilities	Relationship with other agencies and organizations	Applied and special staff education	A precise and defined mission for the organization	Defined procedures	Virtue the authority based on the staff skills	Monthly control and evaluation	Developing the teamwork culture	Feedback from customers of SAIPA in various stages	The growth of outsourcing research activities	Correlation Competitive Benchmark Efficacy	The situation of organization analysis	Analysis of competitors situation
Multi-venturing capabilities	9							9	9	3	4.1	3.1	3
Technology awareness	3	1	9	1	3	9	9	3			3.8	2.5	3.1
Culture of change	9	9	9	1	9	9	9	9	9	9	4.2	3.1	3.1
Continuous improvement	9	3	3	3		3	9	9	9	9	4.3	2.7	2.9
Customer satisfaction	3	9	9	3		3	9	9	3	3	4.5	2.1	3.2
Degree of difficulty to reach the goal	4	2.1	1.1	4.9	2.4	2.1	1.6	1.3	1.3	2.1			
The cost of achieving the goal	4.1	2.5	2.1	4.1	2.1	4	2.1	1.1	4.9	2.4			
The situation of organization analysis	2.9	4	2.1	2.3	1.2	1.4	3.2	2.9	1.6	1.8			
Analysis of competitors situation	2.8	3.7	3.9	3.1	3.1	3.2	2.5	2.3	3.7	3.8			
The absolute weight	138	99	163	34	49	98	151	165	127	102	1126		
The relative weight	12	9	14	3	4	9	13	15	11	9	100 %		

Fig1. Structure of the first house of quality

In this section they converted into 10 traits as follows and output of first matrix, in fact, is recommended by chief managers of the company to achieve agility in the industry. For the second matrix, QFD was adopted in input and converted into 10 key operation in key process.



Relationships between VOC & SE Strong=9 , Average=3 , Weak=1	Use of new educational technologies for increasing the knowledge of staff	Doing research under supervision of the academic professors to develop communication between industry and	Confidentiality and trust between the customer feedback system	Developing the system of organization or staff knowledge recording	Making workgroups and teams, and giving rewards to the successful teams	Provide salary and bonuses based on performance, not work hours	Changing the staff to the stakeholders of the company and giving information to them	Decentralized control and delegation of authority in all levels of the organization	Accepting the continuation of study and the staff knowledge promotion	Staff and team's control through the specified criteria	Correlation Competitive Benchmarks Efficacy	The situation of organization analysis	Analysis of competitors situation
Competence in IT equipment and facilities	9			3			1		3		3.4	2.9	2.8
Relationship with other agencies and organizations	3	9		3			3		3		3.7	4	3.7
Applied and special staff education	9			9			3		9		2.8	2.1	3.9
A precise and defined mission for the organization				3	9	9					4.1	2.3	3.1
Defined procedures	1			3	9	9			1	9	3.6	1.2	3.1
Virtue the authority based on the staff skills	3				9	3			9		3.7	1.4	3.2
Monthly control and evaluation	3		9		3	3	9	9		9	4.6	3.2	2.5
Developing the teamwork culture					9		9				4.3	2.9	2.3
Feedback from customers of SAIPA in various stages	3		9	3	1	3	9	9		3	4.5	1.6	3.7
The growth of outsourcing research activities		9							3		3.2	1.8	3.8
Degree of difficulty to reach the goal	1.3	2.9	1.6	1.8	2.1	1.7	2.6	3.8	3.2	2.3			
The cost of achieving the goal	1.8	3.8	1.6	1.2	2.6	2.5	3.9	4.3	2.5	4.1			
The situation of organization analysis	1.6	2.5	1.9	1.7	1.9	2.5	1.7	3.4	2.4	2.9			
Analysis of competitors situation	2.7	2.3	2.9	2.8	3.1	2.4	3.5	3.2	3.8	4.3			
The absolute weight	109	62	82	83	160	108	143	82	93	87	1009		
The relative weight	11	6	8	8	16	11	14	8	9	9	100%		

Fig2. Structure of the second house of quality

6- DISCUSSION AND CONCLUSION:

Results of data analyses showed that out of 30 indices, 17 were characterized with negative gap, and SIPA Co. should place them in priority. However, critical indices were identified when an index has a negative gap and classified as necessary requirements. To this end, the indices were inserted in Kano Model to determine type of

requirement, so that 5 indices were classified as necessary requirement, 10 as attractive requirements, and 2 indices as mono-dimension requirements. The study found 5 indices as multiple cooperative capabilities, familiarity with new technologies, permanent product development and clients' satisfaction in critical situation. There are many methods to identify critical indices. For instance, should importance level of an index be high and current situation is not preferred, it is in priority for improvement. However, we obtained critical indices through combining Kano model and gap analysis. Considering important level and current situation of the indices, for groups of strategies may be defined as follows:

Invasive strategy: items in this matrix have the best possible performance and importance level. Considering these points as advantages, there is no need to use resources in this section.

Conservative strategy: agility items with high level of importance and low performance are classified in this matrix. This means that key points which play role in implementation and improvement of agility are considered as obstacles ahead of following the policy. As a result, removing factors causing not preferred situations should be of high priority.

Competitive strategy: this has to do with items with low importance and high performance. Interpretation of the items hints dangerous situation, so that despite low importance, such factors are wasting main portion of valuable resources.

Defensive strategy: in this section of matrix both importance and performance of agility items are low. Therefore, there is no need to assign resources for improvement of performance here.

It is noticeable that, factorial load in factorial load can be replace by importance level in defining the strategies and/or multiple decision making techniques may be applied for prioritizing importance.

Two quality sections were designed to find the best agility improvement solutions, and five critical indices resulted from Kano table were applied as input to first table QFD model. In this section they converted into 10 traits as follows

1 - Competence in IT equipment and facilities
2 - Relationship with other agencies and organizations
3 - Applied and special staff education
4 - A precise and defined mission for the organization
5 - Defined procedures
6 - Virtue the authority based on the staff skills
7 - Monthly control and evaluation
8 - Developing the teamwork culture
9 - Feedback from customers of SAIPA in various stages
10 - The growth of outsourcing research activities

and output of first matrix, in fact, is recommended by chief managers of the company to achieve agility in the industry. For the second matrix, QFD was adopted in input and converted into 10 key operation in key process. These final indices are practical recommendation to the managers, so that observing them holds promises to improve agility of the organization. These recommendations or key operation of KPO process are as follows.

1 - Use of new educational technologies for increasing the knowledge of staff
2 - Doing research under supervision of the academic professors to develop communication between industry and university
3 - Confidentiality and trust between the customer feedback system
4 - Developing the system of organization or staff knowledge recording
5 - Making workgroups and teams, and giving rewards to the successful teams
6 - Provide salary and bonuses based on performance, not work hours
7 - Changing the staff to the stakeholders of the company, and giving information to them
8 - Decentralized control and delegation of authority in all levels of the organization
9 - Accepting the continucation of study and the staff knowledge promotion
10 - Staff and team's control through the specified criteria

Quality section matrix gives useful information about satisfaction of clients' expectation, so that only sticking with these results significant improvement can be made in meeting clients' demands. However, for better conclusion making, a second level matrix was formed to give better guidelines to the managers. A usually concealed point in quality section, as authors believe, is that though there are plenty of solutions and services features may be recommended for improvement, only indices that are not in good conditions- in comparison with competitors- are important. General condition of IRAN KHODRO Co. as a competitor was taken into account (as clear in quality section 1).

Study results show that in general there are 10 service element and 10 KPO in this corporation. Moreover, in four indicators out of ten, Saipa group have a better position relative to competitors but 6 indicators are classified as weal points that have to improve in long term, Which include:

1 - Applied and special staff education
2 - A precise and defined mission for the organization
3 - Defined procedures
4 - Virtue the authority based on the staff skills
5 - Feedback from customers of SAIPA in various stages
6 - The growth of outsourcing research activities

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