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Investigating the effect of re-engineering on improving the quality of educational services of Islamic Azad University, Karaj Branch

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Abstract

Introduction: educational services are one of the most important parts of human capitalization. This system improves all parts of society including politics, economy, the environment and other systems that humans are connected to them. In this context re-engineering of educational system is an incumbent process because this system needs to improve every time.

Method: In this study, library sources and science documents were used to gather data, and also a standard questionnaire or a -5point Likert scale. 104 corrected questionnaires were selected from 120 questionnaires. SPSS 20 software was used to calculate Cronbach›s alpha coefficient and determine the reliability of the questionnaire.

Result: Ten criteria are divided into one-dimensional categories, meaning the conditions that include both the degree of satisfaction and the level of satisfaction. Such that, the more satisfaction is given, the greater the need is satisfied, and vice versa. Finally, 9 components of attractive needs are composed of.

Conclusion: The transition of construction, the re-creation of thought, and the absence of insistence on existing organizational structures are stressed by reengineering. Therefore, it should not be believed that the final term in the administration of organizations is the popular learning of the organization and management.

Keyword: Re-Engineering, Education, Educational Services

Introduction:

Human capital investment needs a dynamic training framework that relies on the new talents and job prospects of young people. The continued population decline is approved by studies. It would affect the allocation of resources at all levels of education and would have a direct impact on future human resources(1). Reengineering helps to satisfy consumers, maximize versatility, boost productivity, and improve performance. This provides new growth opportunities through drastic procedural changes(2). With the growing need for increased income, better-performing programs need to be identified by both direct and indirect educational institutions. Institutes today need to devise new revenue-generating plans for seats in higher education that are not entirely burdened with increasing costs. With the present situation with the available infrastructure, this needs to be done (3). The recent developments are the development of novel concepts and practices for organizational management in contemporary management thinking. The re-engineering methodology is one of the most popular organizational management methods. It is called a modern management term for all organizations(4).
Reflecting on the critical state of the global economy and enumerating various business areas, reengineering movements, and challenges and achievements, Hummer and Champi see the only answer to this dilemma as reengineering (5). Researchers have come up with other methods of reforming organizations until this time, such as Total Quality Management (TQM) and timely development. For some point in time, management theorists have taken into account the idea of creativity or the concept of transformation in order to get out of crises and accelerate operations for organizations and agencies. Companies and industries experienced severe crises in labor, technological progress, competition, and the availability of products and services in the second half of the nineteenth century. This compelled them to choose between transformation for life or death. Those transformative aspects were:

1.Customer Transformation: Customers had Troubled Manufacturers and Sellers by Offering numerous and Various Demands

2.Close-competition: The development of production equipment and services and efforts to reduce costs and expand penetration into new markets, provided a field of competition for strong organizations and companies.

3.Permanent changes: Organizations and companies at the same time must look at several aspects and make changes in proportion to environmental changes in data and processes and outputs (Baraer, 2012).

The implementation of this definition revolutionized industries and organizations

Research aim

Hammer made a simple claim: Many of the things that are done have no value to the customer, they need to change; this does not mean that it becomes a machine quickly. Some people think that re-engineering means that what was done by hand can now be done using computers and advanced equipment (5). To be more precise, Hammer and Champie define reengineering as: a fundamental rethinking and redesign of a company›s processes to achieve fundamental improvements in current performance metrics such as cost, service, and speed (5). Hanson says reengineering is a form of forgetfulness; Forgetting the inflexible organizational structures in the production process, forgetting the management footprint in doing things, forgetting the specialization of work, forgetting the annual promotions, forgetting the definitive artistic advice of Ford and the production line (Hanson, 2008). Abdi noted that reengineering is a fundamental redesign of a business process to achieve dramatic improvements in output metrics such as productivity, cost, speed, and service(6). Ozcelik believes that reengineering makes substantial improvements to the performance of the company and not just the function of modifications(7)

Methods of reengineering process use

So far, several methods have been used for re-engineering. These methods, with a single basis, are slightly different from each other. Here are some of them:

1.Process Reengineering: The oldest method most commonly used in IT. This method is called «process reengineering steps». This method has been proposed by Guha and colleagues(8).

2.Re-engineering marketing processes (BPR): A management method that aims to improve through proven tools as well as efficiency and effectiveness in the actions that are being taken in the organization. This is done in the organization through the application of information technology(8).

3.Process-Based Management (PBM): Another process proposed for reengineering is called process-based management. In this action, re-engineering, accurate analysis, and review of the processes of the company or organization are of great importance. The greatest emphasis in this process is to extend reengineering and analysis beyond the usual operations of the organization(8).

4.Process-based management implements financial metrics but describes in an organized way how each production impacts the organization as an amalgam of multiple processes. As a result of recent technical advances and increased foreign rivalry, more companies are searching for improved ways to group and merge business activities (9).

5.Hammer believes that process reengineering teaches us how to prepare ourselves and our children in the face of the market and how, based on that, each person›s role is determined (5).

Reengineering actions

Theorists also proposed that four basic measures be stressed to operationalize reengineering:

1.Assessment of the current situation: Organizations reengineer when they are dissatisfied with the current situation; The audience and customers of the organization are not satisfied with the current situation and the organization is faced with a cumbersome, complex and inefficient management system and is not able to meet the needs of customers in a timely and complete manner. Identifying such a situation requires a careful assessment of the current situation of the organization to identify weaknesses, the need for re-engineering and identify the strengths to draw its starting point. At this point, the organization must come to the conclusion that nineteenth-century organizations, created for successful work in the twentieth century, enter the twenty-first century without being built and prepared for (10).

2.Existence of heroism at the top of the organization: Without a creative person at the highest levels of the organization, fundamental changes such as re-engineering will sooner or later fail. This hero must reassure the actions of the organization with his support and backing. As the support of senior .

managers increases, the impact of reengineering decisions will increase and more resources will be available and more reengineering can be hoped for. This hero in the organization has two main tasks: 1. Helping managers and supporting them to move things forward 2. Coordinate all reengineering activities throughout the organization and regulate them (10).

3.Forming a leadership team: To lead the affairs in the organization, a team consisting of senior human resource managers, information systems managers, operational level managers, and experts from outside is formed (10). This team has several responsibilities; Including: understanding the basic needs of customers to the production process or services; Map of common processes and system requirements; Considering a new product or service in the process; Define reengineering processes and provide a step-by-step plan of operations. The most important task of the leading team at this stage is (8).The emphasis on the title «team» is in the sense that three characteristics are considered:

A. Limited team members; And between five to ten people is suitable for a team.

B. Each team consists of two groups of people inside and outside. Insiders are people who are in charge of current tasks in the organization and are familiar with the work. Therefore, they know the problems, they can offer new solutions. Externals are not involved in the finer points of processes, but have a broader perspective and see higher goals.

C. The team does not have an official manager. Instead of choosing a team leader from the outside, it is more beneficial for the members to choose one person as the team captain (10).

D. Forming the executive team: This team is formed to solve any problems that arise in the work process. Team members present a new process according to current processes. They also analyze the cost-benefit of each solution and guide it, and finally determine the work infrastructure, manpower, and equipment needed by the system (10). After this, the program will be tested, equipment will be installed, management will be transferred, staff will be trained, and new personnel will be deployed. Hammer and Chambi believe that forming this team is optional and some organizations operate without it. The members of such a team are a group of senior managers headed by a re-engineering champion who approves strategic plans and sets work priorities(5) .

4.Information systems play a critical role in reengineering. When employees in the organization are expected to make new decisions and are asked to take action in several ways, to achieve this requires an active and comprehensive information system in the organization(11). The most important task of the information system in the re-engineering process is predictive power; the ability to accurately predict the processes and results of the organization›s product or service that will change the organization›s attitude to its environment. Managers are usually accustomed to objectively thinking organizations; That is, defining the problem and then finding one or more solutions, as recommended in the decision-making process (11). But the use of information systems in the reengineering process requires inferential thinking; first we should find a factor and then search for problems that the factor can solve. Some organizations confuse the importance of information systems with information technology; In other words, in the reengineering process, instead of evolving and reviewing the information system, they replace tools and work tools and computerize the work (Isakson, 2005). Such organizations ask themselves, «How can we use the capabilities of a new technology to advance and improve things?» However, the question must be asked: «How can we use new technology to do what we can not do now?» Of course, organizations must be careful not to overuse information systems. Organizations must seek to know exactly what the organization needs. The use of information and IT networks can be effective for the organization (11).

Research methodology

In this research, library resources and scientific documents as well as a regular questionnaire or a -5point Likert scale have been used to collect research data. In Likert style, respondents are presented with a statement and asked to indicate whether they agree or disagree with it (12). Stratified random sample methods were used in this analysis due to the importance of data collection to generalize the findings. The study›s statistical population included graduate students from Islamic Azad University of Karaj. In the present analysis, the Cochran sampling formula was used for the sample population to ensure an adequate sample size, and it was determined that the sample size could not be less than 100 objects based on the Cochran formula with 0.5 percent error and 95 percent confidence. It should be remembered that, according to the size of the sample population, the investigator provided more questionnaires (120 questionnaires) so as not to face a shortage of relevant data and not to undermine the quality of the data. Lastly, 104 accurate questionnaires were collected and included in the study after deleting the incomplete questionnaires. Duplicate and missing objects were excluded after obtaining the questionnaires and statistical analyses were conducted on them. The validity and reliability of the questionnaires were proved in this study to verify the consistency and validity of the research instrument. In this study, the validity of the questionnaire was obtained by using the method of validity (validity) of the content through the opinion of experts (10 professors of the Islamic Azad University of Karaj). If the questions in the questionnaire indicate the specific characteristics and skills that the researcher intends to measure, the test is valid in content. The final questionnaire consisted of 26 questions. To measure Cronbach›s alpha coefficient and assess the reliability of the questionnaire, SPSS 20 software was used. The alpha value for the entire questionnaire was determined in this analysis to be (0.901), which suggests the questionnaire›s strong reliability. The results of the sampling adequacy test are as follows:

Kaiser-Meyer-Olkin(KMO)		0.861
Bartlett test	Test value	553.9
	Significance level	0.0001

Table1. KMO rate and Bartlett questionnaire indicators

The sampling adequacy value was between zero and one in this analysis. If the variables have a strong linear correlation, KMO would be near to one (Hooman, 2009). Given that this value was equal to 0.861 in this sample, our sampling was also ideal for analysis.

Research

We evaluated 26 questionnaires. In the first step, the Kano model (Shafiei & Owlia, 2008) divides the quality indicators of university facilities that have a negative gap into three groups of attractive, functional, and mandatory needs, suggesting the presence of seven indicators in the mandatory needs subset. Due to the significance of these 7 measures in improving the standard of the educational services of the Islamic Azad University of Karaj, 14 primary process criteria were drawn up in the second step to improve them through the QFD model (Abu-abas, 2012). According to the results of the Kolmogorov-Smirnov test (K-S), which emphasizes the abnormal distribution of the collected data, the Yuman-Whitney non-parametric test was used to analyze the gap between students› expectations and perceptions of the quality of educational services. In this test, the existence of differences between unrelated pairs is examined.

- Hypothesis 0: There is no significant difference between students› expectations and perceptions of the quality of educational services
- Hypothesis 1: There is a significant difference between students› expectations and perceptions of the quality of educational services.

Test components	Tangibles	responsiveness	validity	assurance	empathy
Z Statistics	-2.375	-1.43	-1.381	-0.455	-1.219
significant level	0.384	0.03	0.046	0.011	0.019

Table2. Mann-Whitney test results

The significant levels shown in the table below, taking into consideration the error level of 0.05, confirm that there is a significant gap in the dimensions of responsiveness, validity, assurance, and empathy in the perceptions and expectations of students regarding the quality of university education services and that their expectations have not been met.

dimensions	index	Perceptions	exceptions	gap	dimensions	index	perceptions	exceptions	gap
tangibles	1	3.61	3.45	0.16	Guarantee	1	2.04	3.21	-1.17
	2	3.9	2.98	0.92		2	2.68	4.71	-2.03
	3	4.04	3.73	0.31		3	1.45	5	-3.55
	4	3.02	3.72	-0.7		4	2.97	4.01	1.04
assurance	1	2.23	4.34	-2.11		5	3.05	3.34	-0.29
	2	1.88	3.91	-2.03		6	3.43	3.61	-0.18
	3	3.57	4.07	-0.5		7	1.86	4.02	-2.16
	4	2.3	4.53	-2.23		8	1.64	3.54	-1.9
	5	2.12	3.65	-1.53		9	2.65	3.1	-0.45
empathy	1	3.07	3.76	-0.69		10	1.91	3.41	-1.5
	2	2.67	4.2	1.53		11	2.36	4.29	-1.93
	3	1.86	4.13	-2.27	responsiveness	1	3.79	4.34	-0.55
	4	3.059	3.77	-0.71		2	2.61	3.49	-0.88
	5	2.24	4.48	-2.24		3	3.9	4.26	-0.36
						4	2.02	4.09	-2.07

Table2. A gap of students› expectations and perceptions

In the process of analyzing the Kano questionnaire based on the method of maximum frequency, questions with a negative gap are entered into the Kano model and indicators with a negative gap enter the next steps for improvement. After designing the Kano questionnaire, first, the questionnaire was distributed among 10 students to eliminate possible ambiguities of the questionnaires. There were only two ambiguous questions at this stage, which were then corrected. The following table shows the results of the data analysis of the Kano questionnaire based on the maximum method. At this stage, 26 questions were analyzed and although one of the indicators of the tangible dimension also had a negative gap, it was removed because this dimension did not have a significant gap. In this method, a new column is added at the end of the results matrix, in which the item with the highest frequency is selected from the responses to each property. Step 1: At the end of the matrix, the feature that has the highest frequency is selected from the responses related to each of its properties. The answers in the Kano table are classified into six categories. In this table, M indicates the obligatory requirements and O indicates the one-dimensional features, and A indicates the attractive product specifications. Also, I related to the customer›s inattention to the presence or absence of the product, Q indicates when the customer does not understand or have doubts about the question, and R refers to when the customer has an opinion contrary to the questionnaire designer (Shafiei & Owlia, 2008).

The table below shows the type of need for each of the components of the quality of educational services based on the maximum frequency:

GRADE	TOTAL	I	Q	R	O	M	A	C.R
O	104	1		1	81	9	12	1
O	104		6		64	34		2
M	104				2	89	13	3
O	104				82	9	13	4
A	104		3	2	17	23	59	5
A	104	5		3	9	11	76	6
A	104				3		101	7
M	104			4	12	63	25	8
O	104				63	12	29	9
A	104				21	13	70	10
O	104		4	1	91	7	1	11
M	104				6	93	5	12
A	104		2		9	7	86	13
A	104				9	14	81	14
A	104	2		1	5	1	95	15
M	104				21	71	12	16
A	104	2	1	2	25	1	73	17
M	104				5	92	7	18
A	104		4		79	18	3	19
M	104				26	77	1	20
O	104	6			73	13	12	21
A	104		2	4	7	3	88	22
M	104		2		1	83	18	23
O	104				92	3	18	24
O	104		2	3	98		9	25
O	104				79	2	1	26

Table3. Determining the form of need the maximum frequency of each aspect of the standard of educational services

Based on the findings obtained from Table 3, it can be inferred that only 7 metrics of the quality of the university›s education facilities are among the compulsory needs. It is worth noting that these metrics must remain in operation, and the customer would be very disappointed if they are not fulfilled. On the other hand, satisfying them would not improve customer loyalty if these needs are by customer demands. Also, 10 criteria are grouped into one-dimensional groups, meaning the specifications that offer both the degree of satisfaction and the level of satisfaction. That is, the more the need is met, the more satisfaction is provided, and vice versa. Finally, attractive needs consisted of 9 components. These needs are the features of the product that have the greatest effect on satisfaction. Attractive needs are never explicitly stated or expected by the customer. Observing these features makes organizations market leaders.

obligatory requirements	Provide appropriate, up-to-date information resources with 24-hour access to students
	Preparing students for future jobs by providing theoretical and practical training
	Existence of high quality educational programs
	Existence of faculty members with relevant education and experience
	Equal and non-discriminatory behavior and attention of university professors and officials
	Get a better grade despite more effort by the student
	Existence of feedback system to improve the quality of university services
one dimension requirement	Act on the promises made
	Facilitate discussion and exchange of views by professors on the topic of the lesson
	Providing timely services by the university
	Existence of appropriate relations between professors and students
	Appropriate consultation hours between professors and students
	Adequate consultation hours
	Informing the student about the result of the evaluation of the homework done by her/him
	Appropriate behavior of education staff with students
	Existence of standard procedures
	Availability of supervisor and counseling professors when needed by the student
	Provide lesson materials for each class session in a regular and related manner
Attractive requirements	Existence of respectful behavior of the teacher with the student
	Easy access of students to administrators to convey comments and suggestions
	Reputation of the educational programs of this university among other universities
	flexible curricula
	Existence of diversity in extracurricular educational programs
	Existence of feedback in different stages of training
	Eliminate the confidential needs of each student
	Existence of special attention to each person by the university and professors
	Giving appropriate homework related to the lesson

Table4. Indicators related to needs

Stage 2: The needs are evaluated in this step and the service characteristics are defined by the method of QFD. As a client, 7 mandatory needs are considered at this stage. According to educated individuals from the Islamic Azad University of Karaj, which included professors and other faculty heads, 19 technological characteristics were obtained to fulfill the requirements of the client, which were decreased by the re-interview of certain individuals. Finally, competencies in facilities and equipment, communication with other institutions, the existence of a healthy competitive environment, practical training, access to professors, the existence of a precise mission and procedures defined for the organization, control and evaluation, budget prioritization, team work, Feedback at various stages of training included specialized training for professors and the growth of faculty members› research activities. Comparing the results obtained from comparing the organization with competitors, it can be seen that among the 7 customer demands, the Islamic Azad University of Karaj is superior to the rival university only in terms of sufficient information resources, updates, or -24hour access, among 14 features Service is also in the top two indicators.

Discussion

In the present study, it was found that among the 7 factors of customer satisfaction in the discussion of education service at the Islamic Azad University of Karaj, only easy access to data and up-to-date information leads to customer satisfaction, and in other cases, there is no satisfaction. Abazid›s study found Saudi Arabia continues to suffer from flaws in the application of the standards of absolute quality assurance, a lack of managerial, scientific and technical knowledge and deficiencies in the application of the criteria of construction law in the training and implementation of building projects. It has also been shown that it does not follow the priorities and aspirations of the customer well(2). These studies are similar together. Reengineering should be done in these two educational services although they are different in terms of educational topics. In the Ronnie et al. report, it was found that in this sector, a high degree of customer satisfaction can be attained by re-engineering educational facilities, such that the level of customer satisfaction reached more than 75 percent with re-engineering in the fields of education, financial and administrative policy(13). In the study of Ahmed et al., It was found that Re-engineering makes consumers more satisfied with the goods, and workers are also more satisfied with the work. One of the differences between this study and the current study is that the study of Ahmed et al. was performed on industrial productions but the current study was performed on educational services, although both of them mentioned reengineering is a good manner to improve outcomes quality (4). A study by Khairnar et al. found that Re-engineering may be an effective instrument for systemic transformation at ABC College. Via the organizational re-engineering structure, the organization has gained advantages in order to better manage activities, maximize flexibility to respond to the number of changes in student attendance, and improve profitability. Reengineering has also been shown to enhance organizational systems and increase the efficiency of workers. In the study of Ahmad et al., similar results were obtained. It seems that re-engineering in the Islamic Azad University of Karaj also improves customer satisfaction and performance of managers and staff of the educational service because the current study and the Khairnar et al. study have been done on the educational system (3).

Conclusion

In light of the above, we find that today, with the pace of environmental changes, administrators must take advantage of the new milestones to be able to emerge proud in the hurricane of environmental change. Reengineering emphasizes the transformation of construction, the re-creation of thought, and the lack of insistence on current organizational forms. Therefore, it should not be assumed that the common learning of the organization and management is the final word in the management of organizations. According to the concept of re-engineering and its recommendations, we should look for a new design in the design of management and organization in our country and know that the existence of a conventional design does not indicate its accuracy. And by building, designing, and reorganizing, the success of organizations can be facilitated. In this research, an attempt has been made to present a newer approach in the field of quality reengineering in higher education institutions by combining several efficient models of quality measurement. In this regard, after identifying the most important factors affecting the quality of educational services of higher education institutions and identifying students› perceptions and expectations of these indicators, through the Mann-Whitney test, the gap of these components has been measured. At this stage, only the tangibles dimension shows a positive situation, and the other dimensions had a negative gap. For this reason, 26 indicators of these four dimensions were included in the Kano model to be divided into three categories of needs, in which 7 indicators were required, 10 one-dimensional

indicators, and 9 indicators in the category of attractive needs. Since the most important factors affecting the satisfaction of people in any organization are the required service needs, the indicators related to the required needs were entered into the QFD model and after going through the steps of this model, 14 key process operations were identified for the organization was expressed against competitors for each of them in the quality house. Since the researchers did not consider the mentioned results sufficient to improve the quality of services and change the processes, at this stage, by re-interviewing the faculty members, some solutions are suggested, which we hope will take a step to improve the quality of educational services. A number of solutions were extracted to get out of the current situation, which are the 7 indicators that are more important from the point of view of the professors of the Islamic Azad University of Karaj:

1)Allocate a set amount of time for each student during the week to guide their dissertations

2)Determining the exact criteria for student participation in joint research activities with professors

3)Awarding internal rewards to research work done by students

4)Provide an opportunity for graduate students to participate in intra-university research as a facilitator.

5)Presenting the rank of professors based on the score obtained in the evaluation system

6)Existence of a defined and accurate recruitment process for faculty members

7)Introducing students with ideas to related industries and executive bodies and attracting material support

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