



Process Reengineering in Iranian Higher Education

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Abstract

Today, more than ever, the independence of societies lies in devising new development mechanisms to enter the new global context. Change, transformation, and dynamism are the basic principles and managers must be constantly looking for ways to improve the units under their management. Management thinkers and agents use one of the management innovations called process reengineering to improve the performance of organizations. Reengineering focuses on redesigning work processes to achieve productivity and competitive advantage. In recent years, universities have also faced many challenges and crises due to advances in technology, rising education costs, global competition, and community expectations, so many have turned to re-engineering and redesigning their processes. Therefore, in this article, the definition, goals, principles, techniques, success factors, obstacles, perspectives, elements of re-engineering as well as the necessity of re-engineering processes in the university, challenges facing universities, and finally the nature of universities in the future are discussed.

Keywords: Process Reengineering, University, Organizational Management, Higher Education.

Introduction:

To improve the performance of organizations, management thinkers and agents have undertaken various innovations such as total quality management, continuous improvement, organizational change, and determining the correct size of organizations. The common goal of all these approaches has been to change the way things are done to improve organizational performance. One of the tools used to improve this is process re-engineering. Reengineering requires redesigning and rooting organizational processes. Re-engineering replaces activities that do not create added value in the organization with new processes with a central process and with fundamental changes that it creates in the organization. In that case, the organization's energy will be focused on real and value-added work, which will lead to productivity enhancement by increasing speed, quality improvement, service improvement, and cost reduction. In recent years, universities have also faced many challenges and crises due to advances in technology, rising education costs, global competition, and societal expectations, many of which have resorted to re-engineering and design measures to overcome the challenges and crises that result. They have redefined their processes. A look at the current developments in the higher education system suggests that higher education should maintain, improve and improve quality while paying attention to the crisis of quantitative increase and financial constraints. Various evidences also indicate that this system can fulfill its duties and goals if it has a desirable position in terms of educational quality. With this in mind, the need to find ways to increase the quality of education becomes clear. (1) The purpose of university re-engineering of processes is to simplify the methods of performing activities in order to increase the satisfaction of the people who are provided with services, such as faculty members, students, staff, financials sponsors and significantly reduce costs.

Problem statement

According to Ezigbo, process reengineering involves a review of current business theories. By separating from following the old methods and adopting new methods, significant progress is made. (2) It is important to carry out re-engineering carefully enough, because otherwise the consequences could be catastrophic for the organizational structure as well as for the related economy. In the early 2000s, the introduction of the concept of open innovation in reengineering was a relatively new concept at the time. Explaining the concept of open innovation, Fernando stated that «open innovation integrates internal and external ideas into architectures and systems whose requirements are defined by a business model». (3) It can lead to several aspects of open innovation. Gassman et al. Stated that open innovation is defined as a two-way information process that leads to improved training processes in process reengineering, so open innovation is an essential outcome for process reengineering. (4) Universities today face many problems. Goals are either not well formulated or current strategies do not deliver them. Therefore, in order to achieve their great goals, they have felt the need to review, change and up-to-date, revise some of their goals and operational plans. To do this, we must start from a complete and comprehensive knowledge of the various processes of the university to achieve the status quo, and then change using the techniques of management, including process reengineering, which is strongly used in the business world and improved processes. Reengineering, with a new transformation and design, changes the mindset, culture and value system in the structure of processes and the way resources and facilities are used. The question here is what are the appropriate and basic conditions for re-engineering at the university?

Re-engineering

It is a set of tasks that an organization performs to change its processes and internal control to change from a traditional vertical and hierarchical structure to a horizontal structure, between a group-based and flat activity in which all processes it is done to satisfy customers. The two vital areas that are the main goals of reengineering are: First, a fundamental rethinking of the philosophy of education. Second, complete redesign of the process structure in order to provide public services in an efficient manner(5) Reengineering means starting again, being born again, starting again. Reengineering means transformation, transformation in the mind, mindset and attitude of managers and employees, in culture and value system, in processes, in structure and organization, and in the use of information and communication technology in organizations. In reengineering, the radical design of a company's processes, organization, and culture is done to achieve extraordinary leaps in that company's performance, leaving aside old and traditional methods and new attitudes to work to create a product or Appropriate service as well as giving value to the customer is considered. In reengineering, the goal is to meet today's needs such as superior quality, service, flexibility, low cost, and therefore processes must be simplified. The above definitions show that re-engineering usually takes place in the whole body of an organization or company and its implementation in only one part of the organization can not be called re-engineering, although the various work processes of a subset can also be called engineering. Again, however, it may be necessary to apply this managerial argument to the whole set given the challenges ahead. The present age is such that it is subject to rapid and continuous changes and these changes also affect the behavior and needs of customers. . Therefore, organizations also need to analyze these changes and their effect on the customer, and apply in the process of their activities. Reengineering is a process in which

the current tasks of the organization are replaced by the main business processes, and therefore, the organization moves from a task-oriented to a process-oriented state. This speeds up the business process and reduces costs, making the organization more competitive. The re-engineering method is based on step-by-step reviews and the elimination of outdated regulations and fundamental assumptions that underlie current business performance. These regulations are based on assumptions about technology, employees, and organizational goals that are no longer applicable. Reengineering is the fundamental and radical rethinking of processes to achieve amazing improvements in critical metrics such as quality and speed of service. New organizations will be companies that are specifically designed for operation in the world today and tomorrow, and are not institutions that will move from a glorious early period that has nothing to do with today. In reengineering, it is believed that reengineering cannot be done in small, cautious steps. This is the theorem of zero or one; In other words, either no change is realized or if it is realized, change is achieved from the root and foundation. Reengineering does not mean repairing what already exists or making additional changes and leaving the original structures intact; Reengineering means starting from scratch, abandoning old methods and applying a new look. Reengineering does not require minor corrections and patching of the existing situation or expansion changes that leave the original structure and architecture of the organization intact. Reengineering does not seek to improve the existing system and improve the result. Reengineering means abandoning old methods and acquiring new ones that are necessary to produce the company's goods and services and transfer value to the customer. Reengineering can be identified by different names, such as core process redesign, process innovation, business process redesign, organizational reengineering, radical redesign, and organizational redesign are all names that introduce the category of reengineering.

So if we are asked to make a brief definition of reengineering, we answer: start all over again. Proponents of reengineering argue that reengineering is not efficient for small improvements; It is also very useful when the goal is new initiatives. For example, reengineering is not very efficient for a company that is looking for %10 progress, but it is suitable for an organization that is looking to increase efficiency in 10 areas. According to Hammer and Champy, reengineering focuses on processes and works, not tasks and people. (6)The keyword in redefining engineering is «process». Although this term plays the most important role in our definition, it also brings the greatest inconvenience to most managers. . Most actors in the business world have not been «process-oriented» so far. They focus on tasks, jobs, people, and structures, and do not care about processes. The work process is a set of steps that employ one or more «inputs» (7) and creates «outputs» (8)that are useful and desirable to the customer. For example, accepting the customer's request as «input» and satisfactory delivery of the goods to him as «output», and the value that the process has created. The idea of conscientiousness, that is, breaking down the work into the simplest components and leaving each component to an expert, has influenced the design of the corporate organization for two hundred years. But the shift to process-oriented thought has begun, and this shift is well seen in the radical transformations that have taken place in some of the old and well-known corporations. It should be noted that the difference between task and process is the same as the difference between part and whole. Duty is a unit of work, an activity that is usually performed by one person. In contrast, a process is a group of interconnected tasks that together produce a valuable result from the customer's point of view.

Reengineering goals

There must first be a significant and fundamental need for the process to be re-engineered. The justification of this need draws attention to the beginning of the preparation of activities.(9) The goals that reengineering pursues are leap goals. Achieving these goals will lead to significant and fundamental improvement in the performance of the organization. Accordingly, the transformations that reengineering pursues include all aspects of the organization, from strategy and planning to organizational systems and manpower, and technological and engineering transformation of the organization and the organization based on customer needs and process-based organization. "Reengineering will be meaningful when the process improvement is consistent with the organization's mission and strategies," says Davenport.

Principles of re-engineering

The principles of reengineering are summarized as follows:

- A) Idealism
- B) Emphasis on value-added processes
- C) Changing the roots of the core process
- D) Competitiveness
- E) Reviewing how resources are consumed and costs
- C) Emphasis on the expansion of information technology applications
- G) Emphasis on the principle of continuous process improvement

Re-engineering techniques

The techniques that reengineering uses in different stages are as follows in four groups:

- A) Graphic techniques
- B) Statistical techniques
- C) Modeling techniques
- D) Textual techniques

Critical factors for the success of reengineering programs

- A) Understanding re-engineering and its implications
- B) Develop a process-based management approach
- C) Criteria and indicators of continuous performance measurement
- D) Transformation management experience and providing a support center
- E) Managing and directing re-engineering projects based on results

Obstacles to reengineering efforts

These barriers can be broadly classified into the following four groups:

- A) Cultural barriers
- B) Organizational barriers and regulations
- C) Technological barriers
- D) Legal barriers

The need for re-engineering processes at the university

In recent years, universities have faced many challenges and crises due to advances in technology, rising education costs, global competition, and societal expectations, many of which have been redesigned and re-engineering to overcome the challenges and crises that result. They have paid attention to their administrative processes. At present, in the field of higher education, many universities use re-engineering and redesign programs in their administrative processes. Considering that Iranian universities are governmental and non-governmental, in this article, first, governmental and

non-governmental organizations and the effect of process re-engineering on each of their factors have been studied. Then, the challenges beyond universities and reengineering in universities are described, and at the end, the perspective of universities in the future is stated.

Government agencies and process reengineering

Many experts have endorsed the differences between public and private organizations.(10) Each of these experts has studied the specific characteristics of these two types of organizations from different angles. Meanwhile, Rini and his colleagues have divided the differences between public and private organizations into three categories: environmental factors, exchanges between the organization and the environment, and processes and internal structure. In the following, these factors and their effect on BPR (11)are studied.

1. Environmental factors:

Government agencies are less market-oriented and rely more on public budget allocations. This means that these organizations have less incentive to be productive and efficient and efficiently allocate resources and have less information such as profit and cost that are market-oriented. On the other hand, legal and formal restrictions are imposed on these organizations and they are under the influence of severe political influences, including the influence of interest groups and the need to support stakeholders.(12)

2. Exchanges between the organization and the environment:

The government forces government agencies to obey orders because of its power based on legal authority and unique approvals. Given the wide scope and importance of government actions, these organizations affect the public interest, and given that some government officials are elected by the people, they are expected to act more fairly and amicably and be accountable for their actions to the people.

3. Internal processes and structure:

Managers in government organizations have less decision-making independence, so they cannot exercise sufficient authority over their subordinates, reluctant to delegate their powers, and play a more political role. Also, due to the political nature of elections and appointments, the turnover of managers is higher and creating motivational incentives to improve the individual performance of government employees is relatively difficult, and organizational commitment and job satisfaction in public sector organizations is lower. (13)

One of the consequences of pursuing process reengineering for efficiency and effectiveness is often the reduction of staff. With new ways of doing things, process reengineering provides an opportunity for senior leadership to reduce employees and transform organizational culture, as reflected in its values, norms, guidelines, and expectations(14)

Challenges facing universities

Universities will face many challenges in the future. In almost every country in the world, universities are under pressure due to the rapid increase in the number of students, the reduction of course costs, the increase in government control and signs of increasing general dissatisfaction with the current trend of higher education. They have been identified. In many parts of the world, the past decade has been a period of rapid growth in the number of university students and increasing access to higher education, and this trend is likely to continue in the future. The increase in the number of students and the increase in the cost of courses have caused universities to face a lack of resources to maintain their identity as an independent institution. Even if new resources are available, they will be used to solve the problem of overcrowding and scarcity of infrastructure, and there are no resources to support innovation, new perspectives, and new scientific developments.

On the other hand, things like dramatic developments in information technology, the Internet that have made virtual classrooms possible, digital libraries that provide resources and repositories of knowledge, and websites that provide up-to-date textbooks for seminars and night classes. It has become a laboratory, and has made change in universities inevitable, and has made it necessary to revise the definition of universities with new concepts. Higher education in general and universities in particular will face many changes and challenges in all areas of life. In other words, the activity of universities in the future will become a dynamic organization, which is one of the necessities of survival in a world full of competition for higher education in the future. The crisis caused by these challenges is often considered in both financial and structural aspects.

Financial crisis

In most countries of the world, most of the budgets for the devices are provided by the government, which means that governments directly and indirectly support higher education. They provide the initial funding needed by universities to build facilities and implement capital projects. They also allocate regular funds to promote basic education and research. Ozcelik also pointed out that if re-engineering is not done properly, it may disrupt processes, hinder productivity, damage employee morale, and stunt growth.(15) In recent decades, major issues such as privatization and cost reduction in governments and the independence of universities (reducing government control) have confronted universities with the issue of how to fund. In this regard, diversification of resources and efficiency improvements has been proposed as responses to the financial crisis.

Structural crisis

Universities are largely based on the nineteenth-century philosophy of Adam Smith's theory of mass production in a hierarchical system, so it is now the hierarchical system of philosophy that governs the design and operation of university tasks. (16)

In other words, in the organizational and management literature, the process-based approach to process reengineering is a way to meet the challenges of the present age, avoid the inefficiency of hierarchical structures, and implement structural reforms. And to questions like «How do we go from hierarchical structures to flat structures?», «How do we prepare teams to achieve their goals?», «How do we turn task-oriented employees into multidimensional employees?», «How do we?», «Change managers from supervisor to coach?» And «How do we identify core processes and adapt them to suit new challenges?»

In recent years, universities have resorted to structural reforms to address the challenges. The basis of these reforms is the development of new ways of doing business, the development of an appropriate information technology infrastructure, and the avoidance of inefficiencies in traditional structures. Another point that has been considered by researchers is that administrative and support activities in universities do not provide effective support for the academic activities of universities.

Reengineering in universities

Universities and higher education institutions are complex organizations. Because in the structural discussions of universities, researchers are faced with the fact that different units (for example, colleges do the same work in multiple and different ways). These include software systems development activities, construction activities, and office processes. Therefore, applying the process model according to the following items creates more value in the activities of universities.

A) How can process models provide a more coherent and holistic approach to the activities of universities? A process typically affects more than one organizational unit. This allows for a broader view of the organization than a functional or functional view of the organization.

B) How do process models make it possible to design and develop university information systems? Traditional methods of system design and development were performed by analyzing the system requirements, which were often examined solely from a stakeholder perspective. Processes based on process and macro model help us to have a more coherent and multidimensional approach to the organization. These models make it possible for the university to better plan outsourcing measures after identifying its core processes. Using Porter's value chain model, a classification of activities in universities can be done. This model sees the organization as a chain of core activities that create added value. These activities are divided into two categories: main and support activities. The main activities are mainly related to the production of products or services and creating value for the customer. Support activities make it possible to carry out core activities. Based on this model, the following divisions can be made for the activities of universities:

A) The main processes

- Knowledge production
- knowledge transfer

B) Support processes

- Attract «grants»
- Managing cost assistance and contracts
- Promotion and employment of faculty members

C) Student support processes

- Creating and managing students' learning and living environment
- Student registration

D) Indirect support processes

- Supply
- Facility Office
- Record and report financial transactions
- Providing technical resources and infrastructure

E) Auxiliary support processes

- Providing nutrition services
- Publishers

Reengineering concepts can significantly redesign the process of service delivery, teaching and learning in universities. Advances in technology, educational costs, global competition, and community expectations are the four main factors behind the shift in university operations toward reengineering. Reengineering a university can be divided into two main parts according to the division of activities and operations:

A) Re-engineering in administrative and support operations

B) Re-engineering in scientific operations

The nature of universities in the future

In recent years, various opinions and suggestions have been made about the nature of universities in the future, and significant efforts have been made to solve this problem. UNESCO, as an international organization that pays considerable attention to educational issues, including higher education in the world, has a specific view and interpretation of future universities. The organization, which is committed to reviewing the higher education system in the world, believes that all forward-looking systems and institutions of higher education should define their mission with a view to this grand goal, which can be called an «active university».

The active university is:

- A place for quality higher education that enhances the ability and efficiency of students to perform a wide range of administrative and professional activities and activities.
- A place whose access depends on having the necessary competencies and intellectual abilities and the necessary ability to actively participate in its programs.
- A society that is engaged in research, creativity and knowledge dissemination with all its resources.
- An educational place whose work is based solely on quality and knowledge.
- A place that, as part of its work and culture, welcomes the strengthening and updating of the knowledge and capabilities of the forces.
- A community that actively encourages and supports cooperation with industry and service sectors for economic development in different regions and throughout the country.
- A place where important local, regional, national and international issues and solutions are identified, studied and considered.
- A place where governments and other public institutions can turn for scientific and accurate information, which is increasingly needed for decision-making at all levels, as well as promoting public participation in the decision-making process.

Conclusion

- A society whose members, with full adherence to the principles of scientific freedom, strive to achieve truth, defend and promote human rights, democracy, social justice, tolerance in their communities and around the world, and in educating committed citizens. Spread the culture of peace.
- And finally, an institution that recognizes its place in the current world and adapts to the contemporary living conditions and specific characteristics of each region and country.

This macro-vision of an active university shows its creative power to find specific institutional models and methods that can meet the needs, conditions and facilities of higher education institutions, communities, countries and regions. (8)

Our organizations are currently facing many problems, most of which are rooted in uncoordinated processes. Processes, like vessels, are responsible for getting things done in the body of organizations, while processes in the executive system have become extremely inefficient due to lack of review of how things are done and the diversity and complexity of organizations. Therefore, organizations need to re-engineer their work processes to increase efficiency, customer orientation and global competition as a first step.

Considering the issues raised and the impressive results of re-engineering in large and prestigious universities, which has led to cases such as reducing costs by up to %30 and in some places up to one hundred million dollars, and on the other hand the growth of demand for higher education in the world, the need to review the processes and fundamental changes in the way universities are managed is becoming more and more apparent; In Iran, with the growth of the population in middle age in recent years, this has been shown, so it is necessary to study the different methods of implementation of this technique and its localization to be implemented in higher education and appropriate investment to be implemented.

References

1. Kebriaei A, Roodbari M. Gap Analysis of Educational Service Auality in Zahedan Medical Science University: Students Point of View from Current & Ideal Situation. *J Train Med Sci.* 5:1;2005.
2. Ezigbo CA. *Advanced Management Theory and Application* Enugu: Immaculate Publication Ltd. 2011;
3. Fernando RLS. *Managerial Innovation in the Public Sector: An Exploratory Study on the State University Administration in Sri Lanka.* *Vidyodaya J Manag.* 1)2;2016).
4. Gassmann O, Enkel E. *Towards a theory of open innovation: three core process archetypes.* 2004;
5. Elapatha VW, Jehan SN. An Analysis of the implementation of business process re-engineering in public services. *J Open Innov Technol Mark Complex.* 114:(4)6;2020.
6. HAMMER M, CHAMPY J. *Reengineering in Corporation. A manifesto for Business Revolution.* HarperBusiness, a division of HarperCollins Publisher. Inc; 1993.
7. Hammer, Michael ; Champagne, James translated by AR. R. *A New Plan in Corporate Reengineering Management: Charter of Organizational Revolution.* Rasa Publ. 1998;
8. Allen DK, Fifield N. Re-engineering change in higher education. *Inf Res.* 4-3:(3)4;1999.
9. Mayer RJ, DeWITTE PS. *Delivering Results: Evolving BPR from art to engineering.* In: *Business process engineering.* Springer; 1999. p. 129-83.
10. Ablenski, Nik translated by MSK. *Reengineering and Transformation Management of Organizations.* Arvin Publ. 1997;
11. Kazemian P. *University and its challenges, Conversation with academics.* Aya Publ. 2001;
12. Ishraqa Nia Jahromi A. *An effective strategy to change the structure of education in the country, Conference on the development of knowledge and technology in Iran (factors, obstacles and solutions.* Tehran: Sharif University of Technology; 2004.
13. Rahmani Miandehi G. *University Independence in the Future», Quarterly Journal of Research and Planning in Higher Education.* *Minist Sci Res Technol.* 2)7;2001).
14. Schein EH. *Organizational culture and leadership.* Vol. 2. John Wiley & Sons; 2010.
15. Ozcelik Y. *Do business process reengineering projects payoff? Evidence from the United States.* *Int J Proj Manag.* 13-7:(1)28;2010.
16. Druker P translated by AR. *Future Management.* Tehran: Rasa Publishing; 1995.