



## ORGANIZATIONAL STRUCTURE IN PROJECT-BASED ORGANIZATIONS

Omid JAFARI

Department of Industrial Engineering, Faculty of Engineering, Shomal University, Amol, Iran.

Planning and Project Control Manager, Tehran, Iran

### ABSTRACT

*The organizational structure is the basis for the organization's leadership in achieving the goals and main strategies. By studying the features that require organizational structure in a project-based organization it is possible to find out the necessary solutions for the organization's managers to form the proper structure. The purpose of this research and writing of the article is to search and present the features of organizational structures in project-based organizations and tools are available to managers to match the organizational structure with the requirements of project-based organizations. In this article, first, some of the definitions presented in the organizational structure have been addressed and trying to provide an appropriate definition of organizational structure then, the history and ways of forming the classic organizational structures are presented. The new managers' attitude is related to organizational structures and some types of modern organizational structures are mentioned. Ultimately, a set of conclusions about the organizational structure shaping solutions tailored to the needs of project-based organizations which includes features of organizational structure in project-based organizations and some management tools are used to form an appropriate organizational structure in project-based organizations will be presented.*

**Keywords:** Organizational Structure, Project-Based, Managers, Employer, Staff, Environment

### INTRODUCTION

Organizational structure implicates on how to forming personnel's' roles, Patterns of relationships, resource management and Respond to the peripheral environment. Although each organizational structure has its own unique features, but the common function of all organizational structures, is leading the organization to achieve its goals and main strategies. Study and review the genesis history and evolution of organizational structures helping us to analyze the complex structures of today's organizations and improves our knowledge to understanding the organization's current structure.

The basic principle in the formation of structures in contemporary organizations is flexibility and ability to respond to widespread environmental changes. Formation of organizational structures in project-based organizations has differences with other organizations and has special features which need special management tools to adapt to the organizational structure in project-based organizations.

In the definition of the organization it is said be a purposeful set which as a system has discipline and has a boundary that separates it from environment. The organization is a social unit that uses resources to achieve certain goals. The organization has aims, strategy and it uses specific resources to achieve its goals. With these definitions each organization with own goals, strategies and resources needs structure to arrange things in a way that leading the organization to its aims

because the number of people and roles in an organization is usually greater than that just by the usual relationship like face to face can be defined the mechanisms for doing things.

study and review the genesis history and evolution of organizational structures adds to our knowledge of the organization's current structure and helps us to analyze the complex structures of modern's organizations. However, organizations use more flexible structures and roles in accordance with changing and complex environment conditions and we see movement from vertical structures to horizontal structure, the structure of organizations is rarely changed. This subject is related to "Inertia" or proclivity to immovability in the structure of organizations. So, changes in organizational structure for managers are stressful.

#### ***Glancing review on presented definitions of Organizational Structure***

Organizational structure implies patterns of internal organization relationships. This structure is not only just a coordination mechanism, but also forming the distribution of power and affects organizational processes. Determining responsibilities, how to conferment decision options, formal communication channels, and reporting methods formalized by identifying organizational structure

These are the roles of individuals in the organization and the pattern of relationships between employees, which is the basis of organizational structure. Therefore, organizational structure is the expectation of the roles existing in the organization and the relationships between them. These relationships are usually recognized through the description of jobs and documents that outline the scope and responsibilities of each job.

Although relations defined in the form of an organizational chart is the first image of organizational structure comes to mind, by studying more deeply and looking at the definitions of scholars who have made remarkable studies in this regard one can find that organizational structure is one of the deep concepts of management in the organization and the organizational chart is the only image formed by the decision of senior executives and the main directions of the organizations.

The set of above definitions is in addition to regulations, rules, standards, interactions and communications, decision-making and principles of decision making which is in the field of science and skills of top executives of organizations leads us to how to define the vertical units, horizontal communications in the organization, the definition of jobs, the definition and division of tasks and relationships between defined roles is in addition to top managers in the areas of work associated with middle managers of organizations.

In order to understand the concept of organizational structure, attention to this point is essential which, like other science and skills required by top executives, the process of defining and shaping the organization's structure by top managers in a company is more conceptual and deals with intuitive concepts and mechanisms. In this case, take into consideration the building before construction, the designer should consider the employer's requirements and consider the total conditions and specifications and design building plan. With such a design only a specific building with specific characteristics in place and geographic coordinates can be constructed with a certain percentage of tolerance. Now, if we want to design an organizational structure for an organization is spite of similarities, we can only expect to use the existing patterns after the necessary examinations and to maximize the efficiency with the greatest satisfaction of the needs and potential of the structured organizational structure. In other words, there are no



definite mathematical methods and calculations to calculate and determine the best structure for an organization but a better understanding the current situation leads us to a more consistent structure with the organization.

### *Formation of Classic Organizational structure*

Frederick Taylor Studies and Theories in America ,Henry Fayol in France and Max Weber in Germany, Along with the industrialization of societies at the beginning of the twentieth century based on the basics, such as considering the organization as a mashie, association of bureaucracy with capitalism, transition of power from people to jobs, determination of standards of discipline, professionalize jobs separation and classification of occupations leads organizations to formation of vertical structure from up to down which is known as a traditional or classic organizational structure, as prerequisites for the formation of an organizational structure,

Factors of hierarchical reporting and priority of organizational aims and strategies to personal goals and interests constrained professionalization of jobs due to the industrialization of structural societies imposed bureaucracy on organizations. In such organizations, numerous operational sections are active and executive processes, standards, Laws and rules are seen more than anything else in a various dimension for example, organizations like this can be refered to the Ford plant which became the most powerful automotive factory in the United States in the early decades of the twentieth century. With the economic growth of countries like USA after World War II, the magnitude and complexity of industrial organizations became even greater and we see the maximum structure of bureaucratic organizations in this period.

The objective and final shape of the classic organizational structure was an organizational chart which consists of a number of cells that include roles in the organization and a number of connector which displays relations between roles and positions in the organization.

According to researchers, the formation of classical organizational structures has usually been influenced by four fundamental factors:

1. Business's departmentation.
2. Works division that results in specialized division of task.
3. Measuring Groups" that which shows the number of people in each group and under the supervision of each manager.
4. Form of decision making which determines the range of deciding and decision making in each of the groups.

Different organizational structures different managerial attitudes about the above mentioned factors are formed. One of the effective factors in the formation of organizational structure is the level of specialization in jobs. The attitude of some managers leads to the formation of organizations that jobs are highly specialized in them. In such organizations, employees are tied up with their limited tasks and do not have the desire or ability to perform other tasks. On the other hand, there are organizations that employ various and diverse tasks and has different functionality. In organizations that have larger dimensions naturally, the organization is going to be bureaucratic there is a tendency to be more specialized. Another factor in the formation of the classic organizational structure is division of job. That is, managers should decide on the basis of which organizations are division in the organization.

One of the most common types of division of job is based on functional. Departmentalize of jobs into engineering, procurement, accounting are examples of this type of departmentalize of jobs. The factor of decision making is also effective in the formation of an organizational structure.



This factor directly depends on the managers' attitudes toward the degree to which employees interact with the decisions of the organization. However, at the beginning of the industrialization of societies the labor force was viewed as one of the requirements for the production equal with materials and machinery, In short, this attitude came about involving human resources in decision making has a positive outlook for organizations.

The tendency of large-scale organizations towards this attitude led organizational structures to the formation of structures with less extent of control and concentration of authority structures that incorporate organic terms into science. As with organic natural products, this term is used has a natural origin and is not used in the process of producing it from a chemical or a process that changes the natural nature of the constituent, in organic structures, the highest decision-making, responsiveness, self-efficacy and self-determination in the employees and the least amount of control and management involvement in the work processes can be seen.

The classic organizational structure consists of hierarchical layers that can be seen in its organizational chart. Top managers at high levels, middle managers, operational managers, and professionals and staff are at the next levels. Organizational size determines the number of layers and management levels and the management layout structure of a large organization will not be suitable for a small, agile organization.

Several factors have challenged the organization's traditional structures. Barriers to creativity and innovation given the low flexibility of these structures and the lack of motivation in the staff are among these factors. Given the complex and dynamic environmental conditions and the ever-increasing changes in the required responses of organizations to these environmental conditions organizational classical structures did not actually meet the needs of organizations and created new approaches to defining and formulating an organizational structure.

Moving the economy towards globalization in the twentieth century and the changes and evolutions in business processes and the peripheral environment of organizations has caused fundamental changes in the shaping of organizational structures.

#### ***Steps and basis of Organizing***

Organization is the foundation of shaping the organizational structure and, consequently, the formation of an organizational chart. The traditional organization has four stages as follows:

1. Horizontal division: The division of the organization into several general sectors.
2. Vertical division: Communication between levels and organizational layers based on their authority, which distinguishes the management levels associated with this step.
3. Forming horizontal relations: Establishing the relationship between positions and roles that the organization's working relationships are defined at this stage.
4. Arrangement of personnel: To stabilize and establish the optimal position of individuals

This way of organizing the so-called organized from top to down which is based on the classical theories of organizing. The more modern views point to the top to down organization more attention to skills and abilities, talent, creativity and the motivation of employees in the organization.

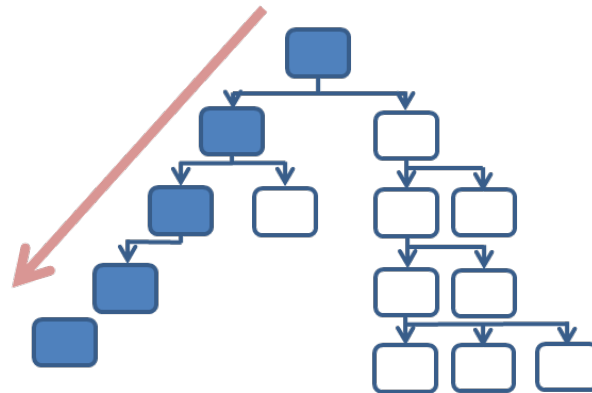
#### ***Prevalent Types of Classic Organizational Structure***

Based on the initial attitude associated with organizing in traditional organizations, classical organizational structures were formed. The most important structures are as follows:



### ***1) Linear Structure***

In this structure, the power and authority of senior management hierarchically reach employees via direct lines. The definition and formulation of relationships in these structures is linear. Its inflexible and serious structures and relationships are often contrary to the principles of prosperity and staff crippling and organizational dynamics. Schematic of linear structure is showed below:



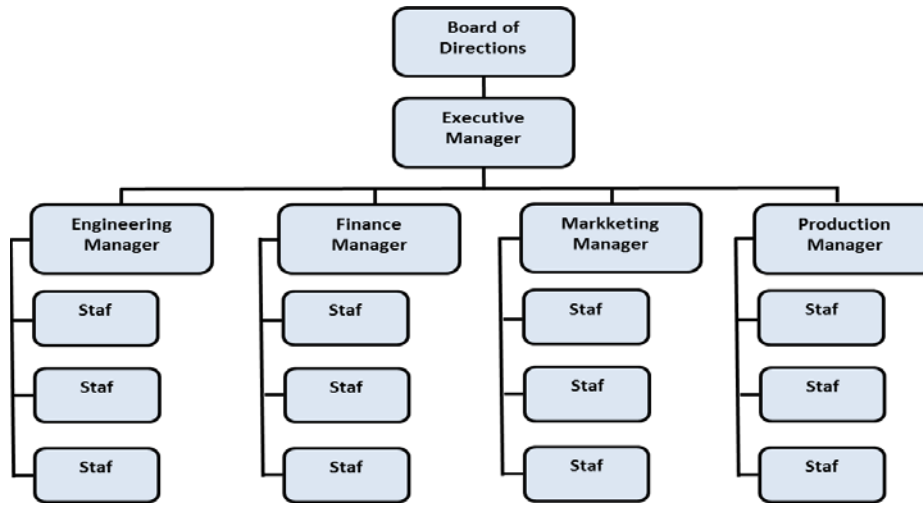
### ***2) Simple Structure***

This structure is named simple because of the transparency and promptitude of formation and the definition of relations. Making control and ordering is also easier with these structures. Usually the limits of individual authority over the top management associated with these organizations have been a kind of dictatorship. So, most of them turn to static organization.

### ***3) Functional Structure***

In the linear structures mentioned above, less specialization is visible and a manager cannot have all the specialties therefore, the functional structures on which expertise can be formed beyond the vertical and horizontal hierarchy that determines organizational relationships. Although the focus on specialization in such organizations often limits the focus of the activities of intermediate and operational managers, at the same time, this structure increases the efficiency of linear structures and optimal allocation of resources. One sample of functional structure is showed below:





#### 4) Divisional Structure

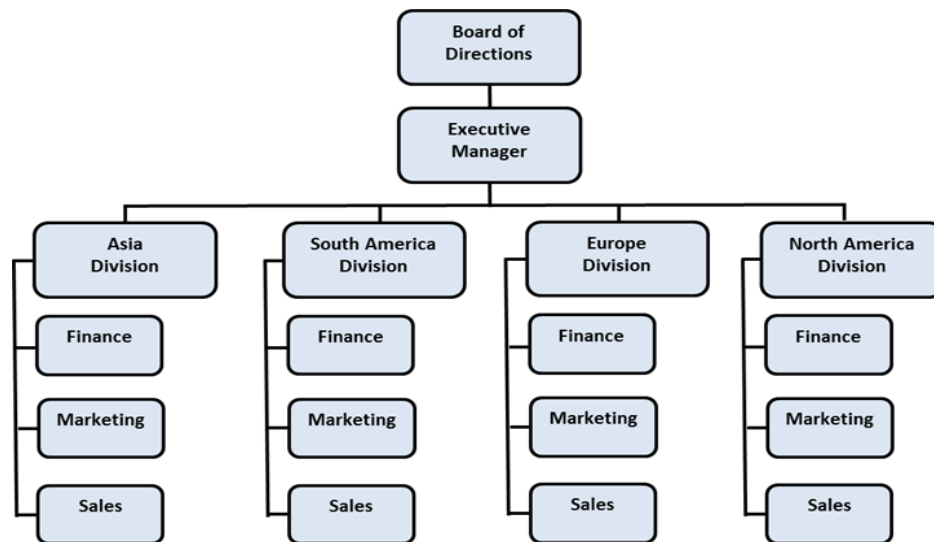
The science of shapes, dimensions, and spaces is known as topology. When we place objects with similar appearance in a category in a category, we follow the topology. The basis for defining the organizational structure of a part is also consistent with this principle. Members with similar features are in the same unit. The activities of each sector in this type of organization, is like an autonomous state of a country, while following the general strategies and policies of the organization their activities are autonomous. Profit and unit efficiency are also in an independent structure.

The satisfaction of managers due to the greater independence of the units in these organizations and, consequently, the performance of the organization is better. It also facilitates communication, coordination, and oversight of the organization, due to the limited focus of these organizations and helps the organization.

Five types of divisional structures presented below:

- a) Geographical Division: Large organizations operating in a wide range of geographic areas can have an organizational structure consisting of segmentation. Chain stores or banks that have several branches in different places are organizations that can use such structures. One sample of divisional structure based on Geographical Division is showed below:





- b) Product-based divisional structure: The grouping in the structure of these organizations is based on the products that the unit's produce is being done. Factors such as the requirements and methods of production, and the variety and unlimited products, form structures in these organizations. One sample of Product-based divisional structure is showed below:
- c) Market-Based divisional structure: Organizations that operate in multiple markets and have a different way of adopting a policy of activity in different markets forming structures based on customer segmentation.
- d) Process-Based divisional structure: In this structure, units are formed in the manner in which they do things. Therefore, this structure is similar to the structure of the task. But the autonomy of the units in the structure of the structure is the main difference between these two types of organizational structure. That is, units in a structure based on the process, in addition to being classified according to their work processes and type of operation, are evaluated in terms of profit and return.
- e) Time Shifts-Based divisional structure: In some organizations, time and work shifts have a profound effect on organizational structural categories. So that function, the performance and work processes of a work shift are generally different from the other shift.



### *Evolution in Organizational Structures*

Basic classical organization structures based on active organizations in newly industrialized societies design and meet the needs of more advanced organizational and were not more complex with functional processes. Therefore, organizations have been working to design and shape organizational structures to meet their broad needs. Some of which are referred to below:

#### *1. Line and staff*

These structures are a combination of linear structures and functional structures. Therefore, in addition to the managerial integrity of the linear and hierarchical structures, and they have the advantage of specializing in structured work. Functional queues are functions in the organization that directly contribute to the core function of the organization. Staff function refers to functions that act as consultants and indirectly in the performance of the organization.

The headquarters can be a personal staff, specialized staff and General Staff. The linear managers are fully authority by the employees who are under their responsibility. However, their supervisors are advisers. Such structures are responsive to situations with limited technological changes and limited competitive levels. Managers in such organizations, with the advice of experts, can more effectively deal with the affairs and activities of the organization, which are usually larger and more complex than organizations with linear structure. The presence of specialists in decision making of managers in these organizations can make managers' view of daily routines toward strategic and long-term decisions. At the same time, creating great conflicts between expertise and hierarchy is one of the problems of this structure.

## ***2. Project structure***

Before anything else, it's important to note that the purpose of the project is to define the structure of the projects within the organization and not the project as an organization's output and product which projects the organization project-based and will be dealt with in a separate section of this article. Also internal set of activities are defined in time and with specific goals within the organization.

Therefore, the organization forms a temporary structure for the implementation of the project as part of the long-term strategies and programs of the organization and adapts itself to these conditions. Each project should have dedicated personnel. So, if some of projects need one specific expert, the organization should employ them as count of projects, because each personnel allowed to service in one specific project.

## ***3. Matrix Structure***

Combining functional structures and projects creates a matrix structure in organizations. Matrix structure has the advantages of these two structures and has been shaped to reduce the problems of these structures. The functional structure is maintained in these organizations, so they are beneficial in terms of function and organization, but the staff serves organizational projects. Therefore, the functional spectrum of these structures is widespread and more practical.

The goals and strategies of the organization are realized by project managers with specific budgeting budgets by getting resources from resources to the staff. Technical support and specialist staffing are responsible for the structure of the task, but the responsibility of the project managers is to adapt and coordinate the functions of the staff from the various units of the staff.

### ***New concepts in formation of in Organizational Structure***

Continuous and extensive environmental changes, the complexity and diversity of the competitive market, increment of consumer's expectations in last decades forced organizations to choose adapt their structures to this situation or exit of competition gradually. The advancements in technology and communication have also provided managers with a very effective tool to adapt to the circumstances. The conditions for responding to them with traditional structures and the traditional flow of information and decision making is virtually impossible and will make the organization, if not updated, its organizational structure to a distorted patch on existing market conditions.

Creating value is an important part of the missions of organizations Therefore, nowadays quality of service delivery and control and reduction of costs and employee satisfaction are of great





importance in advancing the goals of organizations. The development of human resources that can adapt to early changes and functional complexities is also a requirement for the work of today's organizations. From the last decades of the twentieth century, organizations with more modern, agile and more flexible structures have been spread. Their greater adaptation to the environmental conditions created a competitive advantage for them. By the way, larger organizations with more backgrounds have learned that they will only be able to compete in modern markets that review their organizational structures and change their attitudes towards organizational structure.

The effects of such changes can be seen in improving the skills and motivation of employees, the transformation of work processes and social and environmental impacts of recent years. Widespread use of information and communication technologies and tremendous changes in the way of thinking and management attitudes created modern and fundamentally different structures from traditional structures in organizations.

At the beginning of the third millennium, the structures of organizations were characterized by tremendous changes to traditional structures. So, Structures those start with movements such as moving from the multi-lobe vertical hierarchy to horizontal structures and freeing from any concentration or limitation, and in some cases towards bare structural. Many of the structural functions of organizations in modern times are not customizable in the form of lines and classic cells. These structures are more in the responses and paths of modern smart executives to ever-increasing environmental changes and as mentioned in the examples given in this article they are more functional than physical and operational.

#### ***Prevalent Modern Organizational Structure Types***

Based on new attitudes towards organizational structure modern forms of organizational structure were created.

It is necessary to note that modern structures do not have a centralized state of classical structures and they are sometimes non-physical and cannot be implemented in an organizational chart in a classic form. Examples of these structures are presented below.

##### ***1) Network-based organizational structure***

Network-based structures in three forms of internal networks fixed networks and active networks are based on a form of organization in which they focus on features such as the motivation and creativity of employees in organizations. Transparency of information and maturity of MIS (Management Information Systems), adaptation of networks in accordance with market mechanisms sufficient independence of groups is one of the main features of network structures.

##### ***2) Star-model organizational structure***

Organizations that operate in a highly competitive multi-market there is a huge need for flexibility in their organizational structure in order to be able to meet environmental requirements. In star-model organizational structures, the organization, while maintaining the mold and overall structure and the mainstream of decisions, corresponding to the environment around them, the kernel or sub-nodes in order to capture knowledge the skills and abilities required to serve diverse markets and produce diverse products. These nodes, in turn, can be a central core attached to sub-nodes that enable the continuous learning and massive acquisition of knowledge in complex, unambiguous, and multiple markets for the organization. The core of the organization can be reengineered and necessary changes adapted to the environmental



changes of its structure. Subsequently, these changes are transferred to sub-nodes and the organization's dynamism is constantly maintained.

### **3) Web-Style organizational structure**

The Web-Style organizational structure consists of independent centers mature and evolved as a commonwealth for macro purposes and strategies in the form of a balanced structure. The required resources of the centers are provided jointly and the possibility of continuous and gradual growth of the opportunity for new experiences in this structure is provided with lower investment risk. Possibility to develop geographic scope with the support of neighboring centers, providing research and development the study of new markets in terms of innovation and creativity is available in such organizational structures.

### **4) Triangular organizational structure**

The basis for the formation of triangular structures is outsourcing of activities that will reduce costs and profitability in organizations. In this structure, the first aspect relates to the key personnel of the organization, which plays a fundamental role in the growth and activities of the organization, The second point represents the employees who provided the organization with outsourcing and they are part of the organization's activities, and the third is related to so-called flexible employees which completes the main processes in the organization. The basic skills and knowledge of the organization are at the disposal of the key personnel of the organization and the organization has been spending and investing in maintaining these staff. These employees are usually clever with brilliant talents, and have specialization and professional skills and perseverance and commitment to high work while the organization places great value on such employees, considering the high wages and costs necessary to maintain them in the organization, there is no tendency for the circle to be enlarged to include these employees. Various studies have been done on the impact and outsourcing activities of organizations. In summary, outsourcing is the basis for the transfer of part of the organization's activities to external resources it is costly to do this within the organization and it is cost effective to go through sources outside the organization. Through the organizations' triple structure, it can maintain and enhance the body of knowledge in the context of the presence of key personnel, reduce their costs through outsourcing and provide both competitive advantages in reducing costs and differentiating in the competitive market.

Shabbat structure and parody structure are among other titles used for the triangular structure.

### **5) Virtual organizational structure**

The complexity of processes, environmental changes, the growth and expansion of organizations and the various horizontal conflicts of formation and it is very difficult to maintain the structure of organizations in a centralized and traditional format, and it has made an organization which uses virtual structures alongside their structure. Such a structure increases the effectiveness and efficiency of organizations in their activities. Stakeholders linked through a virtual structure without the need to integrate physical and geographical structures or organizational cultures will be able make it possible in the interests of each other, to meet the great goals that they alone cost to each member, more timely or even impossible.

### **6) Cluster organizational structure**

Organizations operate in order to achieve diverse goals and with different mechanisms, they can create workgroups of people and specific resources with specific goals in a cluster structure. A



cluster structure emerges temporarily in the organization in order to achieve specific goals at a specified time. These teams and teams, depending on their performance and the goals that the organization has been considering for them, can be geographically dispersed, Variety of information systems and organization are diverse. The objectives of these working groups can be to study the production of a new product, checking the entry into a new market.

### ***Future Organizations***

Future organizations may have different structures from the present and the past so that in each of the fundamental studies in relation to organizational structures, new information is obtained from the trends of leading companies in the industry and technology. In this regard, the studies and theories of management scholars have predicted the shift and formulation of organizations from steering-based structures to information-centric structures.

Technological advances have transformed the way things are done, and will introduce new styles of organizational structures to organizations. The deep transformation in communication and information flow and the level of staff control and motivation will be the basis for these changes.

### ***New procedures in projection of organizational structure***

Below are some of the trends that have emerged in more advanced organizations that are tailored to the environmental needs and create modern organizational structures:

- Flexibility
- Moving from vertical structures to horizontal
- Transformation in hierarchy
- Formation of shallow & hollow structures



### ***Expectations from the suitable organizational structure***

Following numerous studies in the field of organizational structures, the basic question here is what can be expected from an optimal organizational structure? In the following, some of the parameters that the researchers referred to in their organizational structure for the purpose of organizational excellence are:

- Providing basis for maximum personnel satisfaction and motivating
- Formation of practical learning structure
- Determining of power and authority's domain
- Determining of duties and responsibilities borders
- Providing maximum efficiency of resources
- Prepare potential of sharing interests and grouping with external resources or parties
- Providing basis for optimum team making
- Maximum flexibility for accommodation with top strategies and goals
- Training of managers which can carry out activities variable structures

### ***Inferences about Organizational Structure's formation which applicable to Project Based Organizations***

One of the main challenges faced by executives is the formation of an appropriate structure in project-based organizations. First, we need to provide a proper definition of project-based

organizations. The Project is defined as a set of activities that are organized and scheduled at a specified time and with unique purposes.

In this article, the project-oriented organization refers to organizations that providing services to projects as their output products and services. Contractors, consulting engineers, project management companies, and other organizations that employ employers and industry owners to use their services in their projects are included in this category. Now, the question arises as to how the organization of the organizational structure in a project-oriented organization differs from other organizations, and what managers should consider in order to organize the structure appropriate to the needs of such organizations. According to the above definition, the necessary characteristics of organizational structure in project-based organizations can be described as follows:

***1) Simultaneous service to several projects is structured by the organizational structure:***

Because projects are considered as products of the organization and usually the organization deals with a number of projects, such as those organizations that prepare their own structure for the production of several original products, organizing in these organizations should be tailored to the simultaneous service of several projects and make the organization more effective in delivering its services to the projects.

***2) Attracting Employer Satisfaction as Organizational Customers in Formation of Organizational Structure:***

Employers as the organization's customers are the most important external factors affecting the organization's internal processes and structure. Though the employer is regarded as a customer for these organizations however, the role of employers with customers who have ordered or purchased a product from the organization has incredible differences. A typical customer, even if he is very loyal to the brand and has a repeat purchase, has a small share of the overall turnover of the organization. So, although the customer's demands are also important in this case, but instead of every single customer, the level of satisfaction with meeting the common demands of the customer base is on the agenda of the organization. While, given the limited number of projects an organization can offer at the same time, each of the employers for a project-based organization accounted for a significant share of the company's turnover.

Employer Satisfaction is a substantial issue for project-based organizations and it plays a key role in assigning or not assigning parts of future employer's projects to the organization. It is natural that the marketing and sales process for such organizations is meaningless, instead of the technical ability to manage costs and suggest lower costs and the satisfaction of previous employers that determine the conditions of competition in contracting projects and the market share of each organization depends on these factors. Therefore, the wishes and interests of each employer have been effective in internal processes and organizational structure and even some employers have the right to interfere directly with how companies are organized to meet their needs. Such cases are usually included in contracts of contractors or consultants.

***3) Flexibility of structure with considering temporary nature of projects:***

Another important feature of the projects is their temporary nature. Projects have a certain lifespan, and the organization's service to the projects is done at specific times. In the event that the organization is organized solely for service to a specific project, It Will not be able to properly manage its costs and resources if the project-related structures in the organization are rooted in



a permanent state and removed temporarily the organization will not have control over the unnecessary costs that the project has completed. The consequences of the organizational structure's mismatch with new projects will also endanger the organization therefore, this capability and flexibility should exist in project-based organizations which will have the possibility of updating and adapting to the new projects that the organization is involved with, after the completion of the projects.

**4) *Managing Conflicts of Interests of the Organization with the Benefits of Employers in the Formation of Organizational Structure:***

Not necessarily the components involved in the projects are not in their interests in all cases. Employers are looking for the highest level of quality and in the shortest time with the lowest cost from contracting companies. In the same vein, as for the organizational structure, the employer expects the organization to use the organizational structure that has the most benefit to the employer.

On the other hand, the interests of contractors and contractors with the employer, It is possible to provide project services at the lowest cost. Therefore, the conflict of interests between employers on the one hand and contractors and contracting companies, on the other hand, could have adverse consequences for the Second side. Because too much attention to the interests and demands of the employer increases costs and reduces the profitability of the organization and neglecting the wishes and interests of the employers also causes the employer's dissatisfaction and the consequences will be returned to the organization. As we know, according to the Project Management Triangle, the optimal utility for the three parameters (quality, time and cost) is inapproachable at the same time. So another issue that managers need to consider in their core decisions is to create balance in the interests of the organization and the interests of employers in shaping the organizational structure.

**5) *Update of Organizational Structure according to environmental conditions:***

Organizational classical structures Considering the ever-increasing changes and complexity of the environment in terms of the responses of organizations to these environmental conditions, It does not naturally respond to the needs of organizations and has led to the development of approaches and the search for and use of solutions in defining and shaping the organizational structure. Along with these continuous and extensive environmental changes, the increasing growth of organizations, the complexity and diversity of the competitive market and the promotion of the level of tastes and expectations of employers have forced companies to adapt to these conditions or to ignore competition in the environment. Considering that employers' projects are in many dimensions and facets with highly competitive business world and modern variables. Organizations whose products provide project services should also adapt their internal processes and structures to these conditions. For example, consider a domestic industrial project. Such a project would include, if it involves the development of large-scale infrastructure and factories, refineries, downstream industries or such industries. Naturally, in addition to the design and engineering services, and the operation of the workshop, it is necessary to supply a number of equipment to complete the project, which is usually the major part of the budget and the turnover of the projects is related to the equipment supply sector. The limited equipment and equipment in the project can be supplied from the domestic market and other equipment needed for the project must be supplied from the overseas market.



The supply of foreign equipment has been heavily influenced by the political situation and the relations between countries and other equipment needed for the project should be supplied from the overseas market. The supply of foreign equipment has been heavily influenced by the political situation and the relations between countries and in recent years, the economic sanctions against Iran have had a significant impact on the supply of foreign equipment needed for projects. An entity that, as a contractor, is contracted under the terms of an EPC, Turn Key, or other contractual arrangements of the equipment for such a project, it directly deals with this challenge and its benefits depend on the correct management of the situation and the proper development of the project in such circumstances. Clearly, it can be assumed that the formation of the organizational structure of the contractor in terms of the ability to provide a powerful and efficient manpower and the ability to create and apply new creativity and new solutions, and in terms of the potential for timely response to the situation, Critical and flexible management skills in team formation and collaboration with organizations that are capable of contributing to the goals of the organization, How important it can be. Therefore, managers in project-based organizations need to focus on changing environmental conditions in forming the organizational structure.

### *Management tools for Organizational Structure's formation applicable to Project Based Organizations*

With regard to the above mentioned issues regarding the necessary features of organizational structure in project-based organizations, what the organization has is the ability to formulate the appropriate structure by adopting what methods and solutions is of particular importance. Below are some tools that can help managers of a project-centric organization to formulate an appropriate organizational structure:

#### *1) Projects Portfolio Management (PPM)*

Among the tools that managers have to manage their projects efficiently is Projects Portfolio Management. Basis of project portfolio management approach to principles and methods of integrated management and considering a portfolio of projects that are managed and organized together, a project-based organization usually serves multiple projects at the same time. Each project conditions, employer's wishes, the necessary resources and manpower required for the organization. If the organization fails to look at the projects in the process as a portfolio of projects together, it certainly will incur higher costs and profitability. The key to the success of project-centric organizations is the integrated management of resources and manpower for projects that serve them and this approach can be implemented through portfolio management. For instance, a firm which actives in huge metal industries projects as EPC contractor might come to our minds. If that contractor organizes tasks insularly and consequently form separate organizational structures for each project, obese engineering and procurement could be appeared. At the other hand, implementing classical matrix organizational structure certainly leads to low quality of services and inefficiency of staff in such projects. Furthermore, the contractor might apply multi projects portfolio management method Instead. Accordingly, mentioned method could help the firm to revise organizational structure for set of activities which completing them with mutual structures leads to upper quality as well as lower costs. This process will result to increase profitability in long term.

#### *2) Knowledge management*



Knowledge management is a modern management tool that has found significant importance in organizations at the end of the 20th century and the beginning of the 21st century. Various definitions for knowledge management are presented, but the summing up of these definitions can be summarized as follows: Knowledge management skills are the methods by which organizations of experiences, information it transforms knowledge assets from an individual to an organizational aspect, and through this interaction, people's future access to stored knowledge is provided.

Projects, due to their various fields of knowledge and tools and information, become a suitable platform for experiences, information and graduates that are stored in the minds of individuals and in the form of hidden knowledge. The ability to collect, classify storage, and eventually transform these data into organizational knowledge in the field of knowledge management and a successful manager in project-based organizations should have the ability to do the right thing for realization of nominated goal, it will be critical to utilize the organization with integration systems, automation applications, organizing and storage tools such as online analyzing process as well as software and hardware utilities. Implementing of knowledge management will be resulted to sensible advantages such as continuous learning, sharply recovering of information, systemization of procedures, minimization of reworking and wasting of time and resources, sharing best practices, practical risk management, rapidly response to issues as well as knowledge leadership. Pioneer firms usually employ some Knowledge Engineers which have duties such as derivation, analyzing and modeling of knowledge in order to build a knowledge database. As a result, implementing knowledge management tools could result to wonderful effects in optimizing organizational structure and maximizing efficiency in project-based organizations. Allocating some parts of organizational structure to knowledge engineers could result to transforming individual knowledge to organizational knowledge in these firms. Consider a managing contractor (MC) firm which servicing to several similar projects. A considerable part of MC firm's fee includes preparing variety of general procedures of projects. If the MC firm implements knowledge management tools, most of these procedures could prepare which are practical for multi projects. Accordingly, these procedures could be generate by using exist data from past or current projects which archived in enterprise's database. This method leads to achieve mentioned services' fee via lower costs. Otherwise, if the firm has not implemented knowledge management tools, might to consider independent resources in organizational structure for complete these services for each project.

### ***3) Continuous Evaluating satisfaction of clients***

Considering the importance of employers 'satisfaction for project-based organizations, it is necessary that the employers' satisfaction with all the projects that the organization provides them with is continuously evaluated at appropriate times and with the correct mechanism and, after recording the results, managers should Seeking to summarize the results of the evaluations together and the necessary conclusions. Satisfaction of employers is usually done through consent forms. Although the design philosophy and general question in these forms can be similar, it is necessary that the forms for each project and each employer. Personalization and dedicated satisfaction forms for the same project are available to the employer so that the employer has the incentive to complete the forms.

In examining the forms completed by employers, a variety of management tools and software can be used to alert any managers about the behavior and satisfaction of the employer regarding



a particular parameter and its causes and roots. The periods when these forms are sent to employers must be carefully checked before submitting the forms, in addition to providing the information required by the organization, the employer's incentive to keep the questions answered correctly.

The results of this satisfaction can be used in different dimensions and at different time periods. For example, an organization can make changes in its organizational structure in order to manage costs and increase profits, and then complete and accurate studies on the level of satisfaction of employers. The result of these studies can help decision makers find head points and optimize the organizational structure in line with organizational profitability to the extent that it does not significantly reduce the overall satisfaction of employers.

#### **4) Costs control and management**

Other management tools that senior executives use to formulate strategic and strategic decisions of the organization are cost management and control. According to the definitions included in the PMBOK, cost management in the project consists of processes including cost management planning, cost estimation, budgeting and cost control. The main goal of the project is to manage project costs, planning and budgeting in line with the needs of the project, and subsequently advance and complete the project according to the planned budget for it. Specific project management functions such as estimating, estimating, planning, accounting; designing and collecting data are used in the cost management process. In project-based organizations, which provide service to projects as the output of the organization, cost control and management have a significant impact on the organization's decision making and targeting.

The results of this sector's decisions can shape the structure of the organization in order to promote the best of the projects. For example, Earned Value Method in a project-based organization can determine organizational contraction or expansion policies in employee structure. Outputs of the studies the value gained technique is one of the most common methods for evaluating performance in the projects and can provide applied methods to managers in this regard.

For instance, a contractor firm which actives in metal industries projects might come to our minds. Consider a contractor firm which involves multi building projects at the same time. In cost control process for 1st half of year, after entering actual costs against budgeted costs represents considerable variance. Indeed, implementing inexperienced personnel as well as cheap machineries led to mentioned variance. In other words, determined goals at budgeting time not realized. Therefore, one solution be revising organizational structure and outsourcing some parts of works.

#### **5) Scope management**

In project-based organizations, where projects are considered as outputs of an organization, management and control have a significant impact on the progress of the project, making decisions and structuring the organization. The basic factor in managing and controlling the scope of the projects is the full implementation of not less or more of the work defined by the organization as defined in the contract.

One of the methods based on domain management, which has a significant impact on the profitability and cost of doing business for organizations, is the management of claims. Project-based organizations, especially contractors, in the process of controlling the scope of the project,





will achieve a list of activities that are beyond the scope of the contractor's mandate or at the request of the employer in the projects.

This list is based on the part of the claims that the contractor has with the employer on whether or not to perform activities outside his scope of work and to one of two results not doing what is beyond the scope of the contractor's duties and the employer will not be willing to pay extra. They pay or calculate, obtain approval and receive fees for performing activities outside the scope of the contractor's duties. The impact of litigation management in contracting organizations is to such an extent that, as a rule, large contractors in their organizational structure consider a separate unit with the same title, and if the structure of the organization is out of duty mode, they will use these services in their modern structures. For clarification, please consider a consulting engineer enterprise which presents engineering and supervision services to several telecommunication projects. Commitment of scope management in such a firm might influence organizational structure in several ways. For example, after checking the contract's scope of works it might be appeared that responsibility of inspection services are mentioned vaguely in the contract. So, the firm had considered inspection team in organizational structure which achieving separate fee from client for these services is not possible. As a result, inspection team could be deleting from organizational structure. For another instance, checking the contract's scope of works might clarify that establishing PMO (Project Management Office) is not defined in scope of consultant's responsibilities while these services are needful for project. Thus, it will be possible for the firm to gain extra fees by revising organizational structure and adding PMO services. Plus, these services might have overlap in many projects. So, consultant will be able to establishing one PMO for servicing to all of those projects. This action will be resulted to more profitability absolutely.

#### **6) *Quality management of Projects***

The quality in the project can be seen as matching the results, products and services of the project with the employer's expectations and demands, and the principles and technical standards. Quality management also ensures the performance of the project in terms of the responsibilities, goals and policies of the quality in line with the level of managers desired. Project quality management consists of three stages of quality planning, quality assurance and quality control. Quality planning involves processes for identifying the requirements and standards required for project quality and how they are documented, Quality assurance ensures that the audit process is evaluated and the results are measured in order to ensure that appropriate quality standards and principles are defined and quality control is monitored for quality and record results. The quality management processes in the project also include project management processes and processes associated with project outputs and products. According to quality management standards, there are eight principles of focus on employer, leadership, employee participation, process approach, system approach to management, continuous improvement, factual decision-making, and communication with suppliers in quality management.

The most important parameters of project quality assessment are the satisfaction of employers. Managers need to shape the organizational structure in such a way that it is possible to achieve optimal quality parameters. As a sample we can consider a contractor firm which active in procurement of projects field. Results of quality assessments monitored unsuitable performance of inspector partner and delivering low quality material and equipment to project's site as a result. These results recorded based on checking evaluation questionnaires of client as well as



desolation of machineries' statistics. Continuing of poor quality reports, might leads to revising organizational structure in a practical way. Firm may allocate employed quality team for all projects. It's predictable that reorganizing of structure in order to increase quality parameters will result to more costs at short term. But, improvement of quality indicates will lead to high profitability at long term.

#### **7) Risk management of Projects**

Risk management is one of the other managerial abilities that is effective in shaping organizational structure in project-based organizations. Risk management refers to all processes that are identified by identifying, analyzing, and planning to prevent, mitigate or counteract any uncertainty, including maximizing the results of desired events and minimizing the outcome of adverse events. The steps used in risk management are defined by different scientists in a variety of ways, but most include risk identification steps, risk analysis, appropriate risk response design, tracking, and controlling risk situations. The origin of risks is usually in one of the categories of human, organizational processes, unforeseen financial, technological, political and governmental events. If proper and accurate studies are conducted at the risk identification stage, managers can appropriately address the risks through appropriate processes in shaping the organizational structure.

For instance, consider a contractor firm which gains some construction of huge bridges projects recently. Supplying of concrete is one of critical elements in progress of civil projects. In this special project, risk studies had showed that providing needed concrete is one huge risk because of limited sources , variety of current civil projects surrounding. One of applicable decisions might be revising organizational structure in order to develop a concrete supply unit in region. With this approach firm will be able to achieve two goals simultaneously: a. responding to risk of supplying concrete for current project of firm. b. Provide and sell concrete to neighboring in progress projects. Accordingly, grand profitability will gain with this action. Furthermore, determined negative risk will transform to a good opportunity. As a result, we can consider risk management as one of important tools in optimizing organizational structure with accommodating to firm's main strategies.

#### **8) Human resources management (HRM)**

In determining and shaping an organizational structure suitable for project-based organizations, the parameters related to human resource management have a direct impact. Manpower management in organizations has undergone many changes in recent years, resulting from changes in managers' attitudes towards the role of employees in corporate excellence. Subsequently, in the project-based organizations, modern perspectives on manpower management have also emerged.

Project HRM involves processes for the organization and management of the project team. But before that, you need to make sure that you have skilled, skilled, and expert staff in the project. Many factors, such as the definition of the role of team members, the way of assigning tasks and responsibilities, the proper definition of individual goals and team goals, the proper evaluation of performance, and the creation of a suitable framework for motivating employees to increase the efficiency of team performance. These factors are affected by the use of an appropriate organizational structure in the project-based organization.



Teams need the necessary abilities, access to individuals, and the optimal management of individuals for the optimal performance of tasks, such as resource provision, and skills. Using the inadequate mix of individuals in the organizational structure will put the project at great risk. One of the new attitudes shaped by managers is the lack of restrictions on the organization to carry out all activities by the forces involved in the recruitment of the company. This attitude can be attributed to the outsourcing of activities, including the assignment of responsibility for some activities in the organization's commitment to projects to human resources outside the organization, while the cost of doing them within the organization is greater or the resources necessary for them to do Organization is not lead. Therefore, the decisions made by human resource management will have a significant impact on shaping the appropriate organizational structure in project-based organizations. One of critical parameters in HRM is training and bringing skilled personnel up. Also it's crucial for a project-based organization. Outsourcing some part of tasks is of regular method in HRM. For example, consider a contractor which has working in telemetry projects as resume. Recently, the firm wined a tender which includes both engineering and constructions in scope of works. It will not be economical if contractor add an engineering organ to structure. As one solution, it will be possible to implementing an engineering subcontractor for recent project. This will be result to increasing quality of engineering services without addition costs.

#### *9) Time management*

In project organizations, project management and project control is critical. Time management is defined as the required processes for timely completion of the project and is, naturally, one of the factors in measuring managers' performance in project success, timely delivery of the project, and achieving the time objectives set in the project. Several factors contribute to the success of projects in terms of time parameters and timely delivery of tasks, one of the most important of which is the organizational structure of companies, including contractors and engineering engineers, who provide the service project. The organization should act in such a way as to shape the organization's structure in such a way that the goals of the projects are optimally implemented. Project time management typically involves phases of the scheduling program, the definition of activities, the sequence of activities, the estimation of the activity time, the definition of the relationship of activities, the preparation of the timetable and the control of the scheduling. Time management of projects often includes 6 steps as follow:

- a) Define activities (Planning process)
- b) Determine sequence of activities (Planning process)
- c) Estimate and allocate resources (Planning process)
- d) Estimate activity durations (Planning process)
- e) Develop Time Schedule (Planning process)
- f) Control of Time Schedule (Monitoring and Controlling process)

In estimating the time of activities, which is one of the most important stages of time management, methods such as bottom-up estimates are defined using the definition of the failure structure of the project and the division of tasks into smaller sections and time-domain estimates, and then the estimated total project time, Using estimates based on similar projects, the parametric estimation using the product of the required time period to perform a unit of activity in the total number of sub-sets and the three-point estimation is used by means of appropriate



averaging between optimistic, pessimistic and highly probable estimates. Therefore, it is necessary for organizations to consider the parameters related to the organizational structure at the stage of estimating the time of activities, as well as in the control phase of the scheduling phase, rather than adopting the optimal structure for achieving the goals of the time. The firm will be able to use resulted data for forming and optimizing organizational structure, just if an accurate estimate of resources carried out for each project. Consider a contractor which has services of construction of an industrial plant as a project. Required human resource and machineries is variable and unique for each project. Estimate of activities duration and required resources could determine strategies of forming organizational structure. For instance, firm after time management studies might be realized to implementing transport human resource and machineries by out of firms' resources will be result to transform organizational structure. This decision could influence overall costs, if studies carried out accurately and different aspects considered. Estimating of optimize duration of activities, ways of completing task and also considering total floats of activities in scheduling of project could be effective in forming organizational structure of a project-based firm.

#### ***10) Implementing information technology (IT) in managing projects***

Today, information technology plays a major role in implementing organizational processes. Information technology is comprised of computer science, communications, and network design. The extent of the impact and success of IT in an organization depends on the underlying infrastructure and the appropriate way of deploying the IT team according to the organizational structure. An information system as the main tool that affects information technology plays a key role in organizational functions and achieving organizational goals. The flow of information in a project is important because of the speed of information exchange and the quality of information through the use of information technology. Organizations usually use a centralized IT department to organize activities in this area. In a project-based organization, which provides service to projects is the output of an organization, there are usually several projects under way. The functions and processes associated with each project, and consequently the information systems and information technology used in the project, can be different. Project-based organizations need to shape their organizational structure so that the role of IT can be deployed optimally in the organization. One of parameters which had impressed classical organizational structures was implementing personnel in specified office or location for each project independently. Whiles, it's not necessary anymore for personnel to presenting in project's office physically among developments of IT and communication facilities. Accordingly, IT tools could be creating flexibility for organizational structures. As an instance, one of current methods in project-based firms is allocating personnel to several projects due to available IT and communication facilities. Consider a firm which develops engineering services to oil refinery projects. In spite of unique properties of each project, there are several similarities between task of different projects in specify field of projects. For example, task of an electrical engineer could be almost identic for all projects of this firm. Accordingly, designer A could allocate to project no. 1 and designer B to project no.2 whereas designer will be able to servicing to Projects no. 1, 2, 3 & 4 simultaneously without physical presence in all projects offices. Generally, one coordinator for each discipline in each project could be considering in organizational structure these firms. Mentioned coordinator will be responsible for distribute data and getting services



from all personnel of discipline may accommodate in different locations. It just be possible via developed IT and communication facilities. With applying tools such as Email, Ethernet, FTP and so on it will be possible for coordinator to transfer data incoming and outgoing data with personnel of discipline. This method could have considerable reduce in personnel costs and fees. Moreover, achieving to high level of quality will be possible via possibility of implementing more skilled personnel. Recently, majority of clients, accept with this approach because of positive effects on organizational structure. So, it could be considered as a win-win strategy.

## CONCLUSION

In project-based organizations, organizational structure has various implications for how projects are implemented and, as a result, has a significant impact on organizational excellence and profitability. An organizational structure in a project-based organization that delivers services to projects as an organization's products should have features. Services to projects are considered as products of the organization, should have features. Some of these features include the possibility of simultaneous service to several projects by organizational structure, satisfaction of employers as the organization's customers in shaping the organizational structure, flexibility of the organizational structure according to the nature of the project's temporality, management of conflict of interests of the organization with the interests of the employers In formation of organizational structure and updating of organizational structure according to environmental conditions. Managers using the management tools can form an appropriate organizational structure for a project organization.

Some of these tools include portfolio management, knowledge management, employer satisfaction, cost management and control, area management and control, project quality management, time management, time management, human resource management, risk management in projects and management of the role of IT in Project management. Managers through these tools can influence the design of an appropriate organizational structure in a project-based organization.



## References

- A guide to the Project Management Body of Knowledge Pmbok Guide, Sixth Edition.
- Abdulla Mohamed and Abdulla Bahroozyan (2011), Project-Based Organization Structure and Procurement. The British University in Dubai.
- Alami Marrouni Oussama, Bouksour Othmane, And Beidouri Zitouni (2013), Towards an Intelligent Project Based Organization Business Model. IJCSI International Journal of Computer Science Issues, Vol. 10, Issue 1, No 3, January 2013.
- Aljaž Stare (2011), The Impact of the Organizational Structure and Project Organizational Culture On Project Performance in Slovenian Enterprises University of Ljubljana, Faculty of Economics, Slovenia Management, Vol. 16, pp. 1-22
- Arthur G. Jago and Victor H. Vroom (1977), Hierarchical Level and Leadership Style. Organizational Behavior and Human Performance 18, 131--145 (1977) ISSN 0030-507.

- Bernard C. Reimann (2008) Dimensions Of Effective Organizations: Some Empirical Evidence. The Academy of Management Journal, Vol. 17, No. 4.
- Bryan Reinicke (2010), Creating a Framework for Research on Virtual Organizations. University of North Carolina Wilmington. Conference on Information Systems Applied Research 2010 CONISAR Proceedings Nashville Tennessee, USA v3 n1521.
- Delic Alisa and Nuhanovic Senija (2011), the Organizational Structure and Organizational Culture Interdependence Analysis with a Special Reference to Bosnian and Herzegovinian Enterprises. Economic Analysis (2010, Vol. 43, No. 3-4, 70-86)
- Dooley, L, Lupton, G and O’Sullivan, D (2005). Multiple Project Management: a modern competitive necessity. Journal of Manufacturing Technology Management, 16(5), 2005, 466- 482.
- Dušan Bobera (2008), Project Management Organization. Management Information Systems, Vol. 3 (2008), No. 1, pp. 003-009
- Fernando Vega-Redondo (2013), Network Organizations. Department of Economics, European University Institute, Florence, Italy Journal of Complex Networks (2013)1, 72–82
- Fred C. Lunenburg (2012), Organizational Structure: Mintzberg’s Framework. International journal of scholarly, academic, intellectual diversity volume 14, number 1, 2012
- Griffin, Ricky W. (2010). Management (10th Ed.). Mason, OH: South-Western Cengage Learning. p. 358. ISBN 1439080992.
- Grubenmann, Stephanie (2017), Matrix Organization. Zurich Open Repository and Archive, University of Zurich. Journalism Practice, 11(4):458-476.
- Hazar Hamad Hussain (2014), Time Management Tools and Techniques for Project Management. Socio-economic Research Bulletin, Issue 4 (55)
- Helen Walker (2006), The Virtual Organization: A new organizational form, International Journal of Networking and Virtual Organizations 3(1):25-41
- Jay R. GalbRaith (2012), The Evolution of Enterprise Organization Designs. Journal of Organization Design. JOD 1(2): 1-13.
- John A. Kuprenas (2001), Implementation and performance of a Matrix Organization structure. International Journal of Project Management 21 (2003) 51–62.
- José Luis Molina (2001), The Informal Organizational Chart in Organizations: An approach from the social network analysis. Connections 24(1): 78-91.
- Kalu Idika Awa (2016), Functional Structure and Operational Issues: An examination of core challenges and remedies. OSR Journal of Business and Management (IOSR -JBM) e-ISSN: 2278-487X, p-ISSN: 2319-7668. Volume 18, Issue 1.Ver. III (Jan. 2016), PP 01-04.



- Kishk, M and Ukaga, C (2008), The Impact of Effective Risk Management on Project Success. In: Dainty, A (Ed) Procs 24th Annual ARCOM Conference, 1-3 September 2008, Cardiff, UK, Association of Researchers in Construction Management, 799-808.
- Ksenija Čulo (2016), Virtual Organization –The Future Has Already Begun. Media, culture and public relations, 7, 2016, 1, 35-42.
- Mahmoud A. Zaki, Hesham S. Hussien, Haytham M. Sanad, and, Sara S. El-Khoriby (2015), Analyzing Organizational Structure for Contracting Firms' Of Classification "A", Egypt. Journal of Engineering Sciences Assiut University Faculty of Engineering Vol. 43 No. 3 May 2015 PP. 403 – 428
- Martina Huemann, Anne Keegan and J. Rodney Turner (2007), Human Resource Management in Project-Oriented Companies: A review. International Journal of Project Management 25 315-323.
- Maryam Alavi and Dorothy E. Leidner (2001), Review: Knowledge Management and Knowledge Management Systems: Conceptual Foundations Andresearch Issues. MIS Quarterly Vol. 25 No. 1, pp. 107-136.
- Mike Hobday (2000), The Project-Based Organisation: an ideal form for managing complex products and systems. Research Policy 29 2000 871–893.
- Mohsen Gerami (2010), Knowledge Management. (IJCSIS) International Journal of Computer Science and Information Security, Vol. 7, No. 2.
- Nedal M. Elsaid, Ahmed E. Okasha and Abdalla A. Abdelghaly (2013), Defining and Solving the Organizational Structure Problems to Improve the Performance of Ministry of State for Environmental Affairs – Egypt. International Journal of Scientific and Research Publications, Volume 3, Issue 10, October 2013, ISSN 2250-3153.
- Omolaja Muhammad (2015), Advantages and disadvantages of line and staff style of organizations. Faculty of Business Economics and Entrepreneurship. International Review (2015 No.3-4)
- Omolaja Muhammad (2015), Advantages and disadvantages of Line And Staff Style Of Organizations. Faculty of Business Economics and Entrepreneurship. International Review (No.3-4)
- Palgrave MacMillan (2011), Human Resource Management in Project-Based Organizations: The HR Quadriad Framework. Researchgate. ISBN 9780230231900.
- R. Schnetler, H.Steyn & P.J. van Staden (2015), Characteristics of Matrix Structures, and Their Effects on Project Success. South African Journal of Industrial Engineering May 2015 Vol. 26(1), pp. 11-26.
- Rūta Tamošiūnaitė (2011), Organization Virtual or Networked. ISSN 2029-7564 (online) socialinės technologijos social technologies 2011, 1(1), p. 49–60.



Sai Mohan Harsha Kota (2018), Analysis of Organizational Structure of a Company by Evaluation of Email Communications of Employees a Case Study. Faculty of Computing Blekinge Institute of Technology Karlskrona Sweden SE-371 79.

Simon Dischner (2015), Organizational Structure, Organizational Form, and Counterproductive Work Behavior: A competitive test of the bureaucratic and post-bureaucratic views. *Scandinavian Journal Management* 31 (501-504).

Tomislav Hernaus (2008), Process-Based Organization Design Model: Theoretical Review and Model Conceptualization. Faculty of Economics and Business University of Zagreb WORKING PAPER SERIES Paper No. 08-06.

William R. King (2009), Knowledge Management and Organizational Learning. Graduate School of Business, University of Pittsburgh. *Annals of Information Systems* 4, DOI 10.1007/978-1-4419-0011-1\_1, © Springer Science+Business Media, LLC 2009.

Zehra Alakoç Burma (2014), New Organization Structures: Virtual Organizations, *International Journal of Engineering and Applied Sciences*, Feb. 2014. Vol. 6. No. 02.

