

Knowledge Management in Architecture

Leili Iranmanesh¹⁺ and Ali Mohammad Iranmanesh²

¹Sama technical and vocational training college, Islamic Azad University, Kerman Branch, Kerman, Iran

²Islamic Azad University, Kerman Branch, Kerman, Iran

Abstract: In today's world, the power of societies depends on the scientific development and the ability to use the current science of the world. Therefore a society will be considered successful that is mastered in producing, achieving and applying new scientific findings and is able to have efficient output in shorter time in comparison with others. On the other hand the organizational and managerial attitude will remove some mistakes and will speed up the scientific enhancement. Although Knowledge Management has been mostly in organizations, it is useful in the process of organizing the growing rate of scientific developments.

Architecture is a multi-dimensional science, with artistic, technical, cultural, and humanistic approaches that creates spaces by using other sciences such as physics, psychology, sociology, economy, etc. Because of being in the area of knowledge and activities based on managerial and organizational approaches on the one hand and the direct relation of architecture with man's daily life in different environments regarding the capabilities connected to knowledge management on the other hand, Architecture can be lead to improving human life if its strategies are applied.

Keywords: Architecture, Knowledge Management, Organization, Architecture Design

1. Introduction

In the recent years, Knowledge management has turned into an important and controversial issue and both scientific and commercial communities believe that organizations can keep their long term superiority in competitive fields with the power of knowledge and the future world will be a knowledge based world [8]. Architecture is a science that all human deal with it, because they are frequently in environments and spaces that need to be assessed based on architecture and are designed by technology and equipments.

Therefore, paying attention to the relevant and useful technical and scientific advances in architecture will enhance human life. Although organizations have paid more attentions to knowledge management, it can be assessed as a useful strategy in organizing development, application, and knowledge production.

According to this, architecture can be placed as a science in the area of knowledge management. On the other hand Administrative nature of architecture design is an organizational nature. To do a project, a team of experts cooperate to achieve the determined aim which can be designing, implementing, auditing, and building maintenance. Therefore the function of knowledge management can be discussed in 2 ways.

2. Definitions

In this chapter, we will define some terms in this background.

2.1. Knowledge

A set of information, its relevant applicable strategy, the result of its application in various decisions, relevant training about it and people's attitude toward that strategy in different occupations and tasks is called Knowledge [11].

Knowledge is the body of learning and those skills that people (not machines) use for resolving problems. Knowledge is not data or information only. It is the only source that the more it is used the more it grows [1]. Knowledge is a good that is transferable due to people's interactions and communications.

2.2. Architecture

Creating architecture is something more than setting up a physical configuration and includes functional values [10]. Architecture has defined the science and the art of forming human living environment.

⁺ Corresponding author: Tel.: +00989133407031;
E-mail address: Liranmanesh@gmail.com

Architecture has been always considered as a poly tactic issue and is the interface of 3 areas of science-technology, the humanities, and art [12].

In his book, *The Seven Lamps of Architecture*, John Ruskin defines Architecture as “the art of setting up and ornamenting a building by human... it has a strong and firm organization, it has profound geometry and most of all is a creation that displays beauty and avoids monotony and boredom [6]. Architecture expresses ideas and values through a system of visual elements [116]. Efforts have been made to distinguish architecture from common superficial attitude and to explain its range and scope of its work which is directly related to human soul.

2.3. Organization

Organization is a group of people and units which cooperate to achieve a goal through specific relations and regulations [2].

3. Knowledge Management

Knowledge management is managing and preparing an organization for collecting knowledge, sharing and using it as an organizational capital to achieve its goal; and its major effect on reinforcing and stabilizing managerial decisions leads to the highest performance in the system [11]. Many researchers have introduced the details of knowledge in the form of four levels (data, information, knowledge, and wisdom) [4]. Socomaro says: knowledge management is a practice that aims to control and apply knowledge and information and unconditional access for every staff in an organization in order to have them do their job in a better manner [1].

Gloet and Terziovski define Knowledge management as followed: formalization and access to experience, knowledge, and expertise that create new capabilities, enable superior performance, encourage innovation, and enhance customer value. Parlbay and Taylor (2000) believe that knowledge management supports, creates new ideas and seeks to use thinking power in organizations [13]. Knowledge management has two dimensions: 1- managing data and information 2- managing personnel that are capable and skillful and have special talents.

4. Knowledge Properties

Knowledge properties of organizations include knowledge and trainings that are created in the minds of organization experts and managers during the process of produced work and are considered as the main competitive advantage of organization in the era of knowledge oriented economy. Knowledge properties of organizations determine the economic objectives of organizations and are the means by which the firm can provide solutions, productions, superior services and grow accordingly [3]. These properties are created as expertise in peoples' minds. There are two major policies regarding this property:

- Leaving knowledge properties and continuing production which is accompanied with high dispersion.
- Managing knowledge properties and designing a mechanism to lead it in a specified path in order to increase efficiency in organization in the light of our own managed knowledge.

5. The Relation between Knowledge Management and Operation Effectiveness

Operation is usually evaluated by two criteria of efficiency and effectiveness, efficiency is proper performance of tasks by saving sources and equipments, achieving the most output with the least input. Effectiveness is performing appropriate tasks and achieving the objective [14] of operation, doing entrusted tasks and responsibilities.

In other words those behaviors which people show in relation with their job [9]. Dessler mentions individual behavior, motivation, positive reinforcement, job enrichment, morale, organizational structure, group relations, leadership, learning and training, organizational change and improvement of the most factors in the operation of organization [7]. Copleman believes that operation is the result of importance of motivation [5].

6. Architecture and Organizational Attitudes

Designing architecture requires different people's cooperation with various specialties. Therefore, in the definition of organization, although architecture is not introduced as a separated section, it can be considered as a separated section in the process of performing the entrusted task in a different point of view. If we consider the organization as a section which includes unites and individuals, clear objectives and, rules and regulations, architecture contains triple tasks of the organization in fulfilling tasks which perform the projects under the supervision of architect.

7. The Place of Architecture in Constructional Projects

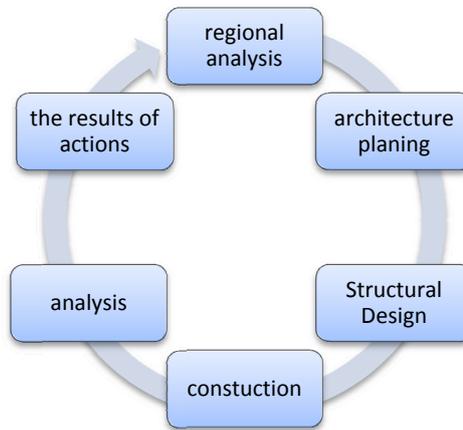


Fig. 1. Steps of constructional projects

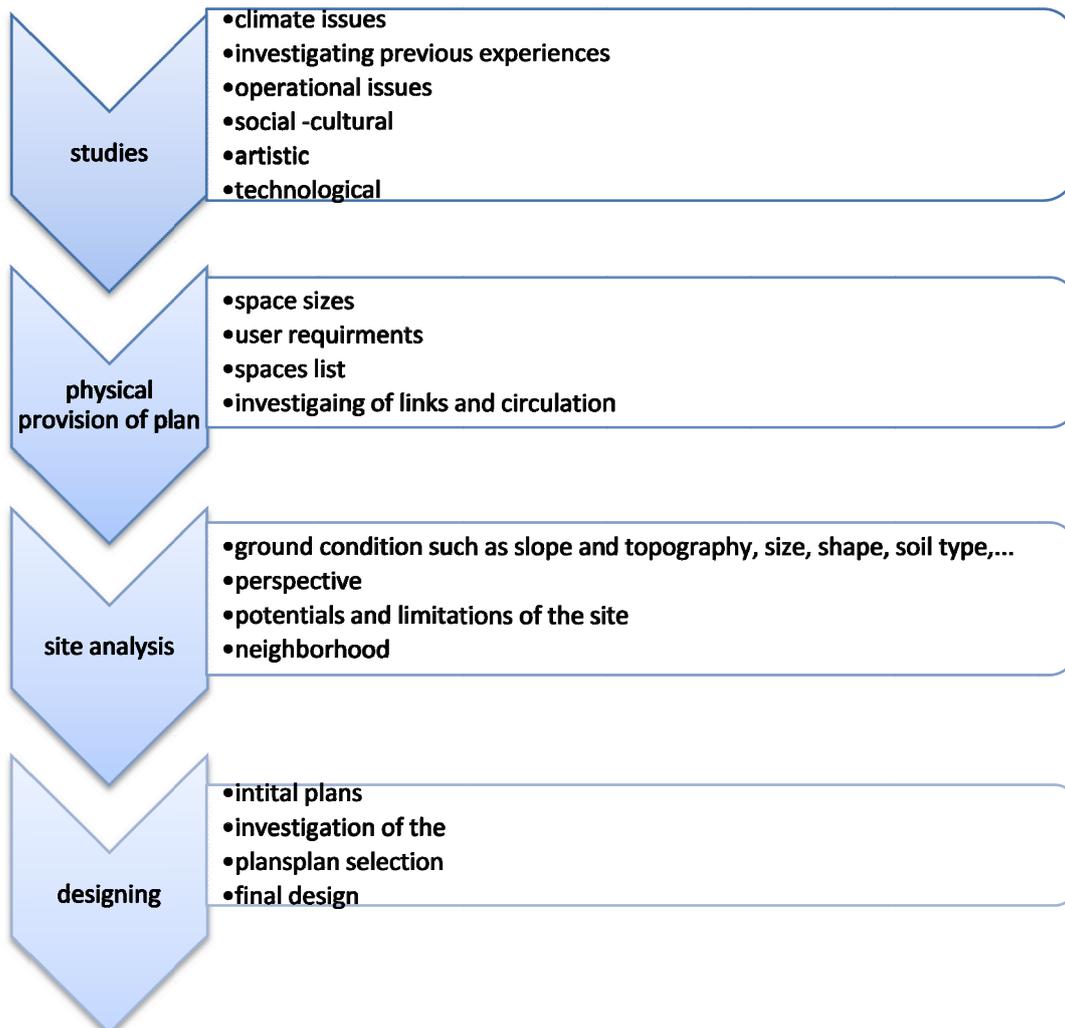


Fig. 2. Steps of Architecture design

A constructional project is performed with cooperation of different groups of experts in four levels.

- Regional studies: In the primary studies which is the base of initiating a constructional project, urban planning and architecture experts will investigate the issue precisely and its uses and regulations and conditions of the region and provide the consequences and results of the similar investigations in the form of comprehensive plans.
- Architecture design: Architects provide the required plans (phase one) in 4 steps. These steps are shown in figure 2.
- Executive Design: calculations, detail designing, providing executive plans (phase two) are done in this step by structural engineers, mechanics and electronics engineers mostly under the management of Architecture engineers.
- Constructing: in this step, the designed plans and maps are performed under the supervision of architecture engineers in most countries.

8. Compliance of Objectives and Knowledge Management in Architecture

The main objectives and tasks of knowledge management in science and technology are mentioned in such ways that the function and place of each of them can be investigated. Moreover the knowledge-based theories, the knowledge management cycle in architecture is also true.

- Process of production, approving, providing, distribution, and application of knowledge
- Creation of ability and skill for changing through knowledge
- Shaping the interactional patterns between technologies, skills and individuals
- Stimulating creativity and innovation

9. Architecture and Knowledge Management

Architecture is a science which is associated with other sciences in its own scope. These sciences can be divided in the following categories:

- Basic sciences, including physics (the effects of forces, and physical properties of materials, etc.), chemistry (chemical properties of materials, etc.), mathematics,
- Humanities: since Architecture is in direct contact with human and its history and thoughts in producing its own output, it needs to contain some information from other sciences such as sociology, psychology, history, and aesthetics. In addition, economics and management are in direct relation with architecture.
- Natural Science: a general understanding of climate and geography, physiology of the human body, etc.
- Art: the fundamentals and the psychology of color, knowing forms...
- Engineering: Structural Engineering, Industrial Engineering, Mechanical Engineering, Power Engineering, etc.

The extensiveness and role of science and technology, especially in the field of architecture and particularly its diversification and specialization in the process of architecture highlights the importance of Knowledge management. It will cause not only knowledge property and experiences in various fields and projects to become usable for achieving objectives, but also evolution and application of knowledge will become systematic.

10. Results

Architecture is a multifaceted science that creates their products based on the organizational approach. Academic nature, organizational approach, close relations of architecture with various aspects of humanities, the economy, the broadness of architectural knowledge and attention to the goals of knowledge management for advancing knowledge, its application and direction makes the importance of knowledge management more clear in the field of architecture.

The increase of experiences in the world of architecture and lack of supervision and management on a global scale in this field on the one hand and the impact of various scientific findings in the field of

architecture on the other hand will become systematic by the application of knowledge management and this will lead to a faster development in the scientific and operational aspects of architecture without experiencing others' experiences.

11. References

- [1] A. Aria zand, "Knowledge management in the decisions of school administrators and education in Tehran ", Journal of Management, Year VII, 2010, No. 17, Tehran
- [2] A. Siah bazi, "knowledge of officials of necessary principles and skills", Sharif University of Technology, Budget and Planning, 2003, Tehran
- [3] A. Vahidi, M. Aghajani, E. Nazerian, " Knowledge Management in the Petrochemical Research & Technology: path traveled", Petrochemical Conference, 2008, Iran.
- [4] D. Longbottom, P. Chourides, "Knowledge Management: A Survey of Leading UK Companies", 2nd MAAOE International Conference, 2001, Versailles, France, UVSQ Press, pp113-126
- [5] E. R. Konpelman, "Managing productivity in organizations", Mc Craw - Hill, Inc, 1986, P.98
- [6] G. Akramie, "Architecture definition, the first step of training (challenges and contradictions)", Fine Art Magazine, No. 16, 2004 pp. 33-48
- [7] G. Dessler, "Management foundation". Tehran, Upper Saddle River, New Jersey, Prentice Hall Publishers
- [8] K. Bamforth, "Social and Psychological consequences of long wall coal Trist", E. L. and mining, Human Relations, 1951, vol2, 53-58.
- [9] M. Griffin, "Organizational behavior foundation", 2000, Morvarid, Tehran
- [10] M.M. Falamakue, "Roots and trends in architecture", Research and Cultural Institute of Faza, Faza Publishing, 2003, Tehran
- [11] P. Shams zadeh, "The development of management", Bureau of Statistics and Information Technology Ministry of Health and Medical Education, 2010, Tehran
- [12] S.J. Imami, "Principles of architecture and urbanism", Knowledge and Technology University, Tehran
- [13] S.H. Mirfakhreddini, S.H. Hatami nasab, R. Taleeie far, A.R. Konjkav monfared, " Knowledge management, innovation, knowledge and practice of innovation in small companies", Business Outlook, No. 2, Summer 2010, Iran.
- [14] S. Robbins, "Organizational behavior management", institution of business research and studies, 2003, p13-14.