World Applied Sciences Journal 8 (8): 980-984, 2010
ISSN 1818-4952

A Qualitative Research Approach to the Innovativeness of Architecture Firms

[1]Yasemin Erbil and [2]Nilüfer Akıncıtürk

[1]Uludag University Faculty of Engineering and Architecture
[2]Department of Architecture, Bursa, Turkey

Abstract: In Turkey similar to other developing countries, Architecture, Engineering and Construction Industries are very important for the development of the country due to the decisive status in the economy and the employment volume they generate. In order to develop innovative strategies to shape the future of the industry, which is a complex production system that is formed by architecture, engineering and construction industries, regulatory organizations, suppliers, operators, end users, customers, knowledge and information sources, actors that influence innovation process should be understood thoroughly. Architectural design offices, which are among those actors, are very important for the architecture, engineering and construction industry due to their critical roles in the built process. For this reason a field research has been designed to better understand the roles of architectural design offices and the factors influencing the innovation process within the Architecture, Engineering and Construction Industry. The goal of the research was to understand and interpret the whole process of innovation therefore a qualitative research method has been selected. Sampling method has been used in order to ensure that persons that are considered as large information sources become a part in the research. A priori defined 13 architectural design offices are the analyses unit of this research. Due to the preferred research method one of the limits of the work carried out is the confined analyses unit. For data collection a semi structured interview method has been used. Data has been collected from the analyses unit between the dated June 9 and July 16, 2009 via face to face interviews. In this paper the research process is described.

Key words: Innovation Theory · Construction Innovations · Architecture Firms · Case Studies · Qualitative Data Analysis

INTRODUCTION

In Turkey similar to other developing countries, architecture, engineering and construction industries are very important for the development of the country due to the decisive status in the economy and the employment volume they generate. The dynamic and global economic structure and more competitive markets of today puts pressure on the construction sector similar to other sectors to be more innovative. In such an environment it has become a necessity for the actors of the construction sector to use innovative approaches in addition to factors such as quality, costs, presales and after sales services and speed in order to be competitive, gain a larger share in the market and stand out from their competitors [1]. In our current period where innovation has become a tool for competing with others, factors such as size of businesses, business strategies, customer relations, sales and marketing approaches become more and more important.

Slaughter and Shimizu [2] define innovation as "the actual use of nontrivial improvements in products, processes or system that are actually used and are novel to the organization developing and/ or using them". Construction industry practitioners define innovation as: "the effective generation and implementation of a new idea, which enhances overall organizational performance." [3]. The construction industry has direct relations with hundreds of different services and products nevertheless it is considered as a static sector when innovation is concerned [4-6]. Factors such as immobility and durability of the products of the construction sector, their long term usage, high costs for testing new products and associated failure risks can prevent new processes or products to be used. Most work within the construction industry is organized as construction projects, which are always unique in some respects, also implying that it is not feasible to make and test full-scale prototypes [7]. In addition the conservative approach of the sector is also considered as one of the reasons for innovation occurring

Corresponding Author: Yasemin Erbil, Uludag University Faculty of Engineering and Architecture

at questionable rates [8, 9]. At the other hand some argue that the enormous level of competition in the sector may be a trigger for innovation [10, 11].

The construction industry is multi-dimensional and formed by regulatory institutions and organizations, suppliers, implementers, users, customers and information sources. There are many actors that influence innovation during building design and construction process. One of these actors is architectural offices. In this paper, a case study has been designed to understand the sources of ideas for innovation in architecture firms.

Research Methodology: In a scientific research selecting a qualitative or quantitative research method differs from the technical and epistemological viewpoints. The technical viewpoint supposes that the research method should be formed according to the research question and the nature of the research. The epistemological viewpoint suggests a qualitative research method in order to find answers to more detailed and complex questions. The basic difference between qualitative and qualitative research methods is that in quantitative research interpretation is less emphasized compared with qualitative method and contingency is taken into consideration at different levels [12, 13].

In qualitative research method the basic concern is to deeply understand and interpret conditions without numerical data. The core of this research is based on totally understanding relations at different levels and interpreting outcomes. For this research the researcher has decided that the subject should be approached with critical thinking. Qualitative research method has been selected since it is a method enabling understanding of the context and the data collection tools provide flexibility to the research. The use of a qualitative survey is the innovative aspect and the originality of our work.

Analysis Unit: The basic goal of the qualitative research method not being generalization and the labor intensive process due to the interview technique limits the size of the sample. In this situation a "purposive" sampling method has been used rather that a systematic sampling methods that are based on "probability" in quantitative researches. For this reason the researcher has selected purposeful sampling method in order to ensure that individuals that are considered to have good knowledge on the subject were selected.

The researcher at the phase of designing the sample has chosen multiple case study method where one or more cases are examined in detail. In addition in order to increase maximum diversity to the research factors related with size, service area, service time and partnership structure were selected as diversity criteria. There are no strict rules related with the sample size due to the method chosen by the researcher. For this reason the sample size was limited with 13 offices that have been selected according to the diversity criteria among important architectural offices in Turkey. Importance was given to select persons to be interviewed among owners/partners of companies or senior managers that have influence on decisions taken.

Survey: The survey was based on semi-structured interviews and background documentation including academic papers, books, articles. We conducted a survey composed of open ended questions. The survey is composed of two parts. In the first part there is information on the person interviewed and the architecture office; in the second part there are open ended questions that have been designed to understand innovative activities and processes. These were related with the occurrence of innovative ideas; evaluating and selecting innovation; applying innovation; results of innovation and evaluation of results; and continuity or discontinuity of innovation.

A Case Study Was Adopted in Response to the Research Questions:

- What kind of innovations appear in your projects?
- What are the information resources used?
- Which innovations appeared after the year 2000?
- Which innovations did you learn and which are the ones you have used?
- Are there any innovations that have been used and then were aborted?
- What were the benefits of the innovations that have been used?
- When an application is to be carried out that has different characteristics in terms of techniques and materials what are the characteristics of innovations that you prefer?
- Who or which positions have important influence in the decision making process related with innovations?
- What are the prohibitive and initiative factors for developing innovations?
- What are the obstacles you face for the sustainability of innovations?

In order to explore these questions before the interview an e-mail was sent informing the person to be interviewed on the goals of the research. 13 interviews were undertaken; 12 under face-to-face conditions and one by the internet. Each interview lasted for 40 seconds–1.5 hours on. During interviews the participants were asked for their consent to record the interview on tape and all interviews were recorded. After each interview each record was written down, data were pre analyzed and was sent to the persons interviewed for completing any missing information and for their approval.

There are no standard methods used for analyzing data collected in qualitative research. There are three approaches suggested by Wolcott to analyze data collected. First of them is to use a descriptive approach and present data by directly quoting individuals. The second one is systematical analysis. To use this method after data used in the descriptive analyzes are presented some themes are defined and relationships between these themes are established. In the third method the researcher presents his/her own interpretations basing them on the first and second methods. In this method the researcher steps forward with subjective and participative values. Wolcott suggests that these three approaches cannot be completely disintegrated.

Descriptive analyses method is composed of mainly the first and to some extend the second method and content analyses method is composed of the second and third methods. The basic goal of the content analyses method accepted by most of the researchers is to reach concepts that can describe data collected and reach interrelations. For this at first data collected is conceptualized and similar data are gathered and organized around defined themes. Content analyses requires analyzing data collected in detail. This enables bringing themes to light that were not clear at the beginning and themes at different levels. For this reason the researcher has reached to a conclusion that it would be proper to analyze the data collected using the content analyze method. Content analyze contains four phases which are coding data, defining themes, organizing/defining data according to codes and themes, interpreting findings.

Coding Data: In the first phase of the content analyses, which is the coding phase, data collected are separated into meaningful parts [14]. Coding is defining meaningful data which can be composed of a few words, a sentence, a paragraph or a page by the researcher. Coding can be carried out according to defined concepts in the literature or it can be carried out using concepts that come out of the expressions of the persons interviewed.

Defining Themes: In this phase based on the codes previously identified data themes will be defined which can define data in general and collect codes under different categories. To do this first of all codes will be gathered together and their similarities and differences will be identified and then themes that will define codes that are interrelated will be defined.

Organizing and Defining Data According to Codes: In this phase a system will be set up to define and interpret data collected at the coding phase.

Interpreting Findings: The views and interpretations of the researcher are important parts in qualitative research. For this reason it is expected from the researcher to make conclusions giving meaning to data collected, creating cause and effect relationships, defining outcomes of the findings and describing the importance of these findings [13].

CONCLUSION

Architecture offices tend to use innovations that provide them advantages related with quality/time /costs over their competitors. In addition total quality management, professional liability, institutionalization, customer based design, team work, current digital drawings, presentation and communication techniques, integration of multidisciplinary approaches, sustainability, ecologic approaches, protection of energy, ready systems, range of products, modularity, flexibility and multi purpose usage are some of the issues brought into the agenda of architects. For example construction design and production process requires many changes incorporated into projects. These changes sometimes arise from customer demands, sometimes from problems related with the construction sites and sometimes from problems in finding needed materials. Computer aided design has a big importance to make necessary adaptations without loosing time. Various software are used simultaneously in architecture offices. Some of them are for documentation, graphics, drawing, modeling, animation, computer aided design, building physics, estimation and footage, construction management. Using

various computer programs in architecture offices have some advantages; among these are using different advantages of different software and decreased adaptation times of personnel to the office.

It has been seen that offices wishing to increase their market share or to enter into new markets tend to participate in associations, fairs, conferences and exhibitions that are organized abroad and try to become a part of international networks. Architecture offices, which become part of these networks, facilitate to use equipment, resources that would not be possible otherwise or increase their capacity to take new assignments. Becoming a part of these networks also increases the speed and flexibility of architecture offices and given them the capacity to be more innovative and competitive. These types of cooperation platforms at one hand gives architecture offices the abilities of worldwide known large architecture offices and also make them more flexible and able act faster in various situations. These are some of the drivers that tend to push architecture offices in becoming more cooperative and use related advantages.

Some of the obstacles to innovation are; risks associated with innovations, lack of highly skilled personnel, working with customers with limited budgets, lack of support for innovations by regulations and administrations, lack of contractors and suppliers that are willing to use innovative applications, working with many projects at the same time, the need for a research before applying innovations, lack of information of customers on architecture, differences in esthetic views of customers and architects, lack of awareness on design, political, cultural and economic instabilities in Turkey, unfair competition environment and bureaucratic obstacles.

It is known that cost based competition is dominant in Turkey. However factors other than costs started to gain more importance recently. For example reputation of offices is becoming an important factor for competitiveness. Architects believe that in addition to good relations with customers, having a "good reputation" is also important to be competitive. Some of the other factors that have influence in competitiveness are high quality, design skills, unconditionally obeying to customer demands, timeliness, institutionalization, reassuring customers, economic power and innovativeness.

Interviews conducted during this study have shown that the market served by architecture offices have important impacts on innovation. Architecture offices that are active in national markets have different approaches towards innovation than the ones active in international markets. Offices that are active in international markets are more open to innovations and offices that are active in national markets are relatively more close to innovations and are not as active as others to use innovations. Architecture offices that produce projects in international markets have to make designs that conform to international criteria. This forces offices to make efforts towards institutionalization and obtain ISO certificates, professional liability insurances and other documents, which are valid internationally and to use innovative approaches in design problems and office organization. As a result architecture offices, which are active in the international markets, give higher importance to innovative activities. For architecture offices located in Turkey, gaining a share in international markets is directly related with the ability to use innovative approaches. In case Turkey becomes a member of the EU in the future, international competition in the domestic market, conformity with rules and standards, construction technologies and material quality will be increased which will result in higher quality buildings.

REFERENCES

1. Öney Yazıcı, E., 2009. Competitiveness in The Construction Industry From The Perspective of Contracting Firms: The Role Of Architectural Design. ITU, PhD Thesis, İstanbul.
2. Slaughter, E. and H. Shimizu, 2000. Clusters of Innovation in Recent Long Span and Multi-Segmental Bridges. Construction Management & Economics, 269-280.
3. Barrett, P. and M. Sexton, 1998. Integrating to Innovate: Report for the Construction Industry Council. London: DETR/CIC.
4. Pries, F. and F. Janszen, 1995. Innovation in Construction Industry: The Dominant Role of the Environment, Construction Management and Economics, 13(1): 43-51.
5. Dubois, A. and L.E. Gadde, 2000. Supply Strategy And Network Effects-Purchasing Behaviour In The Construction Industry, European J. Purchasing&Supply Management, 6(2): 207-215.
6. Miozzo, M. and P. Dewick, 2002. Building Competitive Advantage: Innovation And Corporate Governance In European Construction, Research Policy, 31(6): 989-1008.

7. Gann, D.M. and A.J. Salter, 2000. Innovation In Project-Based, Service-Enhanced Firms: The Construction Of Complex Products And Services, Research Policy, 29(7): 955-972.
8. Miozzo, M. and P. Dewick, 2004. Innovation In Construction, A European Analysis, Edward Elgar Publishing Limited, USA.
9. Tezel, B.A., 2007. A Statistical Approach To Lean Construction Implementations Of Construction Companies In Turkey, ODTÜ, Master Thesis, Ankara.
10. Tatum, C.B., 1988. Technology and Competitive Advantage in Civil Engineering, J. Professional Issues In Engineering, ASCE, Paper No. 22586, 114(3): 256-264.
11. Artuk, S.U., 2002. An Innovation Management Model For Construction Companies: Case-Studies From The Turkish Construction Industry, ODTÜ, Master Thesis, Ankara.
12. Bayraktaroğlu, S., R.Ö. Kutanis, Y. Özdemir, S. Alpaslan and E. Dil, 2006. Information Congress in The Methodology Profile: Qualitative Research Method. 5. Information, Economics and Management Congress, Proceeding Books, 1: 594-601, Kocaeli.
13. Yıldırım, A. and H. Şimşek, 2004. Qualitative Research Methods in Social Sciences. Seçkin Publishing, Ankara.
14. Strauss, A.L., 1987. Qualitative Analysis For Social Scientists, University Press, Cambridge, UK.