

Management, quality and economy in home building construction

Khosro Zehro^{1*}, Shahram Jkhsi¹

¹Faculty of Civil and Environmental Engineering, Near East University, Nicosia, Mersin10, Turkey

ARTICLE INFO

ARTICLE HISTORY:

Received: 11 January 2020

Revised: 17 January 2020

Accepted: 21 January 2020

Published: 30 April 2020

KEYWORDS:

Construction management, construction project, home building, quality, cost

ABSTRACT

The framework of a construction industry could be identified by the nature of the work, by material type, contract volume, difficulty, and position of end products. In the planning phase of the construction projects, two fundamental constraints should be taken into account, and they include; quality and cost. To ensure a successful outcome, it is crucial to evaluate both limitations in the project's schedule and implementation. The management, economics, and quality of home construction are rapidly becoming a subject of international study, practical analysis, and execution. The construction of a project involves a broad range of complex operations. While supervising a construction operation, clients' demands and budget should inform of the adequate standard fit for quality. This is because if a project is not adequately managed, construction firms will encounter a substantial economic impact. Consequently, project management is a critical means for developing construction processes and successful completion of the project. This study gave prominence to a conversation about management, economics, and quality of home building construction. This is considering that customers are generally concerned with quality and costs when engaging professionals for procurement. The quality of the project outcome depends on prescription construction details, and the cost is the quality-related financial outcome. This study explains how residential building companies can create external partnerships, obtain direct and indirect support, and deliver optimal project results. It also explains how it is necessary to monitor and manage the quality and efficiency of the project via an enhanced economy control in the home constructions.

1. INTRODUCTION

The aim of project management in the construction sector is to ensure that projects are completed using the satisfactory quality and at a prompt schedule. This is a complex task handled effectively by project managers. It comprises of continually calculating progress, analyzing plans, and carrying appropriate action when necessary (Olawale and Sun, 2010). Management of project construction requires the application of the appropriate information, expertise, methods, and techniques to project operations, to achieve the requirements of the project. Project management achieved by applying and integrating the initiation, making plans execution, supervising, and control methods of project management (Heagney and Joseph, 2012). Furthermore, construction has an essential range of features that makes it harder to incorporate effective management processes (Ribeiro et al., 2013). However, it is the responsibility of the construction manager

to boost the efficiency, profitability, and economic success of the home building construction. In general, construction projects should perform at the expected cost, scheduled time, and specified quality (Cnudde et al., 1991). The primary step in project construction is the briefing of the client. The demands of the client are influenced by time, quality, and cost variables. While this certainly looks straightforward, the implementation is inherently complicated, while the outcome is unsure (Bezelga and Brandon, 2006). The cost and budget are the central components of consideration in the development of a project. Other significant factors that influence a project's costs are qualitative, like the client's primary objective over construction time, contract scheduling capacity, procurement techniques, and market trends, involving construction acting levels (Azhar et al., 2008).

2. OBJECTIVE OF STUDY

It is inferred that construction managers further face the odds of making optimal use of limited resources at the expense of various aspects of a project. This study emphasizes that one of the fundamental elements for each construction project is the costs and quality of project completion. The development of new contracts, which impose enormous pressure on optimizing the variety of construction projects resources while reducing their costs, needs the implementation of models that recognize performance in addition to prices that have been extensively handled by model.

Alternatively, this study aims to describe factors that affect the quality and economic management in home building construction projects. Hence, the baseline of this research is project management, as it relates to the management of construction and climaxes with the management of resources and services. One of the primary purposes of any infrastructure procurement process is to achieve a quality standard that satisfies the preferences of the customer. As an outcome, it was always of interest to care about what common standards of quality are contemporary in the construction industry and in which form they could be maintained, developed, and guaranteed.

3. METHODOLOGY

The study is intended to determine the best method of product usage that will contribute to the implementation of project aims inside the building industry. The use of the evaluation method was employed for this research. The study included a critical review and interpretation of the project-related academic literature.

Table 1. Some instance of methodologies and their aims of their study

Author	Methodology and aims
Olawale & Sun	The author, using a literature review and questionnaire survey, evaluates and explains the ways to control the project, cost, and overrun cost.
Ibironke & Elamah	The author, through a questionnaire and interview survey, recognizes influences affecting quality and cost management in building construction.
Ali, & Kamaruzzaman	The author, within the literature review, found the techniques to monitor project performance and economic efficiency in the field.

Abdul-Rahman	The author undertook a survey to demonstrate the spectacular view of how often the quality assurance influences output and the different methods used to enforce quality control.
Jha & Iyer	The author employed the questionnaire survey to address and evaluate different factors influencing quality construction projects.
Abdul-Rahman, Hanid & Yap	Author by literature review, questionnaire survey, and interview shows the correlation between ethical conduct in the building projects and quality-related issues.
Nguyen, Ogunlana & Lan	This author adopted a questionnaire survey to gain data on the achievement factors in construction projects.

The critical writing has submitted reports from articles, academic journals, and related books. A lot of relevant information in this study is collated via these primary sources. References to research study designs helped the researchers to understand the research topic's issues, concerns, and provides valuable insights into how to develop successful research.

4. INDUSTRY OF CONSTRUCTION

This sector of construction is among the productive areas that reinforce the country's economic growth and is the source of a country's growth and generates a movement of products and services with specific industries (Dixit et al., 2019). Construction is a skill generally recognized as a mixture of science and art. Therefore, it is incredibly crucial to understand the technical details of the construction.

Table 2. Aims and outcomes in the construction industry

Aims	Outcomes
Production of sufficient and skilled professional services	A significant level of industry expertise. Regulation of talents, training, and employment of experienced staff to serve the industry's varied requirements. Creative Motivation. Increasing levels of home building staff workers.

Promoting, enhancing the process and economic environment	Reinforced industrial relationships to improve industrial development stability and access to global sectors. Simplified and facilitated administration. Adequate Industry Management Strategy and Guidelines. Financial assistance for the community.
Increased focus of the client	Enhanced implementation of projects which satisfy the conditions of quality and cost.
Development of household	Increased local teamwork and participation in the growth of the local construction implementation. Reinforced membership in the internal economy of local building construction companies.

Construction experts must have an awareness of the profession's finance and management forms. To gain an idea of the construction process, continual monitoring, and involvement in entire construction activities are also fundamental.

Furthermore, some construction consideration during an academic setting is encouraged to utilize every opportunity to observe and engage in real construction operations (Nunnally and Nunnally, 1998). Table 2 describes the aims and outcomes of the industry of construction.

5. EVALUATION OF QUALITY

5.1. Identification of construction quality

Quality in construction includes the entirety of a building's features (Bezega and Brandon, 2006). It is a crucial component in effective home building project management (Abdul-Rahman, 1997).

Quality means the characteristics of the material that satisfy the needs of the client and thus ensures the client's fulfilment. Such quality is intended to provide better satisfaction for the client. Offering further results and features with good quality, even so, typically involves investment and cost increases (Juran and Godfrey, 1999).

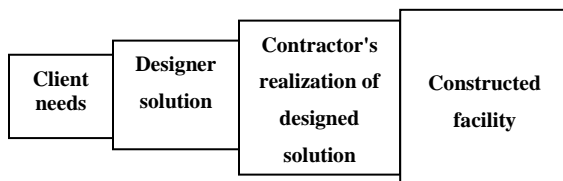


Fig. 1. Construction process

There is a stronger chance to establish the project quality administration at the initial stages of the construction project. Fig. 1 shows every step of the construction process that provides a new supply chain, the quality of which has to be associated and managed. The quality demands and efficiency of the different stages are often achieved while ensuring the actual quality of the project. This method is a departure from the position in which construction quality is usually designed and discussed within a construction process (Harris et al., 2013).

Construction quality is directly tied to time and cost and conversely. A poorly managed project may result in additional costs and time modifications, short time, and cost-monitored projects that may influence demands compliance (i.e., quality). Therefore, for project managers, it is necessary to realize the cost, quality, and time expectations of the client. Management must include an understanding of customer's needs and be liable for building at the perfect environment for maintained and gradual achievement. It must also provide useful predictions that lead to these demands (Abdul-Rahman, 1997).

Preethi and Manoharan (2017) stated that we could not even create quality assurance in the construction industry. The backup explanation is that every construction project is specific, and performance is a continually evolving variable (i.e., time to time, the site to site, change in quality). Some of the troubles with construction operations and requirements are:

- Design and computation problems,
- Inadequate materials and equipment,
- Construction and management administration,
- The effect of environmental conditions,
- Improper use of standard equipment and materials.

5.2. Factors affecting the quality

According to Azmanet et al. (2018), the identified factors that affect the quality include:

- Consulting with a high level of professional skills and knowledge,
- Use of products and equipment with good quality,
- Using appropriate and traditional facilities for building,
- Consider a proper period of the project,
- Compliance construction details and standards,
- Participation of employees,
- Resource accessibility (Jha and Iyer, 2006),
- Engagement of all project stakeholders,
- Attempts to comprehending the liability of different projects.

6. HOME BUILDING CONSTRUCTION ECONOMIC EVALUATION

6.1. Economics evaluation in home building construction

Economics plays a crucial role in the growth and progression of manufacturing projects at different phases (Omran et al., 2017). Economic analysis is typically an operation that promotes the mechanism of construction and design. Usually, we analyze based on a range of assumptions that we never apply to budgets or original plans (Bezelga and Brandon, 2006).

In terms of developing economic analysis, many criteria and variables are put into consideration. The most common of these are the materials and the facade (Gholam et al., 2019).

There is a need for, first and primarily, economic analysis to determine the impact of the activities on economic development. However, due to the new progressive strategy, experts are expected to analyze each activity in terms of legal reform substance, impact on society, natural effects, the monetary rationale (such as its effect on public budgets), and organizational validity (Davies, 1996). As Pheng and Hou (2019) stated, there are many stages in a home building project: planning, designing, construction tendering, renovation, and destruction. The operations in each process have their unique cost and relate to its owner as well as the user's total cost for the building. The statement made during the preliminary stage of the projects indicates the most appropriate time to study economic analysis. Even at this level, there is the ultimate scope for economies, and the effects of making improvements to projects are the least in line.

In summary, an ideal outcome of the economic analysis should be:

- a) Develop the time, cost, and quality requirements by permitting reasoned charge-off choices throughout all phases.
- b) Be an active manager rather than passive as an administrative leader.
- c) Get started on a project as soon as possible.
- d) Apply the broadest possible array of life-cycle costs and profits of a project.

Ive and Gruneberg (2000) specified that several cost categories are hinged on economic analysis, including:

- Primary cost,
- Running and cost of maintenance,
- Permanent cost,
- Varying cost,
- Additional or nominal cost,
- Life-cycle cost.

6.2. Reducing home building construction costs

Cost is among the critical factors throughout the growth cycle of the project and could be considered one of the essential conditions for a project and the crucial figure of project performance (Ali and Kamaruzzaman, 2010).

According to Nunnally (1998), most of the main reasons for reducing construction costs arise even before construction starts in the design stages. Several ways to enhance production and reduce construction costs include:

- Proper planning for jobs
- Choice and careful training of staff and supervisors.
- Adequately coordination of work.
- Usage of methods to conserve workers, such as modern materials and re-assembly.
- Reduce repeat work with timely control of performance.
- Prevention of incidents with safety processes

6.3. Factors affecting cost in construction project

Many factors affect the cost of construction projects; some of them include:

- Imprecise assumptions,
- Time delay in the project,
- Adding additional work,
- Falsely trained and kicked back,
- Contract duration reduction,
- Weak contract administration,
- Selection of distributors and subcontractors,
- Problem with construction and un-contractually (Ibironke and Elamah, 2011),
- Accuracy and standard of the data collected,
- Specifications are necessary,
- The coherence of demands for specifications and the desired quality (Akintoye, 1999),
- The worker's output, whether professional or unqualified, is variable because, in a given time, one person provides more of a related kind of service than the other (Yadav and Swamy, 2018).

7. PROJECT SUCCESS

The classical activity criteria is a calculation of a project's specific quality against its original design variables timetable (time), budget (cost), range, and performance that the literature appears to consider a calculation of project management achievement (Bannerman, 2008).

Such empirical analysis was subject to several limitations and constraints, which is the quality expressed in terms of the fulfilling plan, timetable, and analytic performance standards for most new and old projects. Modern success reforms such as senior executive's financial value, senior manager's understanding of project orientation

with strategic expedition objectives, and senior manager's advancement of project benefits to end-users through strategic interaction were not generally recognized (Kendrick, 2009).

The standard information systems of project satisfaction aspects are the completion on time, within the budget, and with the desired features and capabilities to be presumed economically successful. The financial return of the project should exceed the operational costs, or the application utility represents and utilizes the expected rewards provided by the program (Kendrick, 2009). There will be five commercial success criteria for building projects, according to Maqbool and Sudong (2018):

- upper management support,
- customer engagement,
- excellently-defined commitments,
- reasonable expectations,
- logical scheduling.

8. CONCLUSION

The economic and quality analysis structure of the home building principle is established and integrated to a specific extent but lacks in quality and cost means failure in the construction projects. Improvement is required in the planning for applying the estimation of economic and quality analysis in home building construction. We want development planning for multiple areas and various types of projects. The scope of projects and the firm's conditions are well-tailored to the theory's present state. In practical terms, there are many aspects of the latest developments. To accomplish the necessary form for successful economic and quality estimation to private sector experience, we must have an operational program.

From the research study presented in this article, it is seen that the nature of the projects, the aims of the client, and the location of the cost manager are three ways to determine the successful application of economic and performance assurance methods. Such analysis may relate to the deficiency of these three criteria and contribute to strategies that can be applied through several types of projects. Moreover, project managers need to control the level that these three concerns prevent their use of present economic assessment methods. These may include experts focusing on a specific type of work or a limited number of customers and increased effort for a more crucial role within the project staff. Any fault in any of these two items would result in the development of successful economic and quality assurance in construction projects.

REFERENCES

- [1] Akintoye, A. & Fitzgerald, E. (2000). Factors influencing the project cost estimating practices in the UK. *Construction management and economics journal*, 18(2), 161-172.
- [2] Abdul-Rahman, H. (1997). Some observations on issues of quality cost of construction. *International Journal of Quality & Reliability Management*, 14(5), 464-481.
- [3] Ali, A. S., & Kamaruzzaman, S. N. (2010). Cost performance in building construction projects in Klang Valley. *Journal of Building Performance*, 1(1), 110-118.
- [4] Azhar, N., Farooqui, R. U. & Ahmed, S. M. (2008). Cost overrun factors for the construction industry in Pakistan. *The first international conference on construction in developing countries*, Advancing and integrating construction education, research & practice, Karachi, Pakistan, 499-508.
- [5] Azman, N. S., Ramli, M. Z. & Zawawi, M. H. (2018). Factors affecting the quality management of construction projects using industrialized building systems. *International Journal of Engineering and Technology (UAE)*, 7(4), 307-311.
- [6] Bezelga, A., & Brandon, P. S. (2006). *Management, quality, and economics in the building construction*, (1st ed.). Published by Taylor & Francis e-Library.
- [7] Cnudde, M., Bezelga, A. & Brandon, P. S. (1991). *Lack of quality in construction economic losses. In: Management, quality, and economics in building* (1st ed.). New York: E& FN Spon publishing.
- [8] Davies, D. G. (1996). *The economic evaluation in projects: papers from a curriculum development workshop* (1st ed.), David G. Davie, pp. 35-40.
- [9] Dixit, S., Mandal, S. N., Thanikal, J. V. & Saurabh, K. (2019). Evolution for studies in construction productivity. *Ain Shams Engineering Journal*, 10(3), 555-564.
- [10] Duy Nguyen, L., Ogunlana, S. O. & Thi Xuan Lan, D. (2004). The study on project success factors in large construction projects in Vietnam. *Discover Journals, Books & Case Studies*, 11(6), 404-413.
- [11] Harris, F., McCaffer, R. & Edum-Fotwe, F. (2013). *Modern Construction Management* (7th ed.). Garsington Road, Oxford, UK.
- [12] Gholami, H., Røstvik, H. N. & Müller-Eie, D. (2019). Holistic economic analysis in the building-integrated photovoltaics (BIPV) system. *Science Direct*, 203(15), 109461.
<https://doi.org/10.1016/j.enbuild.2019.109461>
- [13] Heagney & Joseph. (2012). *Fundamentals of project management*, 3rd ed., AMACOM (American Management Association), New York.

- [14] Ibiro, O. T., & Elamah, D. (2011). Factors affecting time, cost, and quality management for building construction projects. *Futy Journal of the Environment*, 16(1), 1-9.
- [15] Ive, G. & Gruneberg, S. (2000). *The economics in the new construction sector*, 1st ed., Macmillan Press LTD.
- [16] Jha, K. N. & Iyer, K. C. (2006). Critical factors are affecting quality performance for construction projects. *Taylor & Francis Journal*, 17(9), 1155-1170.
- [17] Juran, J., & Godfrey, A. B. (1999). *Quality handbook*, 5th ed., McGraw-Hill.
- [18] Kendrick, C. D. (2009). *Project success factors and information technology project success*. Available from ProQuest Dissertations & Theses Global.
- [19] Pheng, L. S., Hou, L. S. (2019). *Construction quality and economy: A Study at firm-level management in the built environment*. Springer Link, 89-111.
- [20] Maqbool, R. & Sudong, Y. (2018). Critical success factors for renewable energy projects; empirical evidence in Pakistan, *Science Direct*, 195(10), 991-1002.
- [21] Nunnally, S. W. (1998). *Construction methods and management*, 7th ed., Upper Saddle River, New Jersey Columbus.
- [22] Olawale, Y. A. & Sun, M. (2010). Cost and time control in construction projects: inhibiting factors and mitigating measures in practice. *Taylor & Francis*, 28(5), 509-526.
- [23] Omran, H. R., El-Marsafy, S. M., Ashour, F. H. & Abadir, E. F. (2017). An economic evaluation of aromatics production. *Science Direct*, 26(4), 855-863.
- [24] Paul L. Bannerman (2008). Defining project success. *The proceedings of the project management institute in the research conference*. NICTA, Australian Technology Park, Sydney, Australia, 1-14.
- [25] Preethi S., Monisha Manoharan (2017). Project management and its effects of quality control in the construction sector. *Indian Journal*, 7(2), 92-96.
- [26] Ribeiro, P., Paiva, A., Varajão, J. & Dominguez, C. (2013). Success evaluation factors of construction project management some evidence from medium and large Portuguese companies. *Springer Link*, 17(4), 603-609.
- [27] Yadav, A. R. & Swamy, R. M. (2018). Factors affecting cost and inflation in a project. *International Research Journal in Engineering and Technology*, 5(2), 1713-1717.