



The Involvement of Project Stakeholders in the Briefing Process: Evaluations through a Construction Project

Ekrem Bahadır Çalışkan^{*1} , Mehmet Koray Pekerçli² 

¹Ankara Yıldırım Beyazıt University, Department of Architecture, Türkiye, ebcaliskan@aybu.edu.tr

²Middle East Technical University, Department of Architecture, Türkiye, koray@metu.edu.tr

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Abstract

The briefing is a process to ensure that the project stakeholders work together from inception to completion of construction by implementing knowledge management. Effective and continuous involvement of project stakeholders in the briefing is vital for the success of the process and the project. The level and method of participation differ due to the project delivery method; however, the importance of managing project stakeholders' knowledge and experience always remains the place. This study presents the definition and importance of construction briefing and the place of project stakeholders in the process. Then, the participation of project stakeholders is discussed through an example of an existing construction management process. The main objective is to evaluate the relationship of the decision-making process between the involvement of project stakeholders for different stages of construction projects. Thus, Anka Bilim College Building, in which the involvement of project stakeholders was ensured from start to completion, was utilized as a case study. Session examples from the briefing records, kept by the architect from the design phase to the completion of construction, are presented and evaluated as sessions in time order. The evaluation and discussion were made by exploring the sessions' descriptive information. For an important finding, it can be said that the continuous participation of project stakeholders in briefing processes provides a basis for making the right decision with the help of their knowledge, and experience. Examples of situations where issues and problems can be addressed and decisions made more realistically and accurately when contractual and working relationships and project stakeholders are involved in all processes. However, for construction projects, the participation of all project stakeholders in the briefing processes may not be ensured due to the implementation method of the project.

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1. Introduction

Construction projects start with investment feasibility studies and continue identifying and evaluating needs. Construction is executed with the participation of the project parties according to these needs and completed with the delivery of the building to the users. Project stakeholders should contribute to the process throughout the design and construction and take responsibility due to their roles. The construction project covers all the necessary building processes, superstructure, and infrastructure manufacturing [1]. Project stakeholders can be involved in all these processes depending on the project's location,

conditions, and delivery methods. Traditionally, the building construction process has four phases: briefing, planning, construction, and facilities management [2]. In addition, in the 20th century, these phases were considered to start after the briefing process had ended [3]. However, for the last two decades, briefing has been considered a set of activities that enable communication and information management between all stakeholders involved in these processes and is used from the beginning of the project to its completion [3–6]. Thus, briefing sessions are utilized from the inception stage until the completion of any construction project.

All briefing activities are set under the design and construction process. Therefore, the contribution of briefing activities in parallel with construction processes with the participation of the necessary project stakeholders to project success is crucial. It provides a framework that supports collaboration and co-decision-making. Different groups are involved in different construction project processes [7]. The decision-making process in which human judgment is implemented needs a set of briefing processes and differs from the decision-making process with quantitative analysis such as fuzzy-based multi-criteria decision-making [8], or Analytic Hierarchy Process [9]. The objective is to evaluate the briefing process's contribution to decision-making for construction project phases in which the needed project stakeholders' participation can be sustained. This research first analyzes the general contribution of briefing processes to construction processes. By focusing on the participation of project stakeholders, the important requirements for the briefing process, problem identification, and decision-making processes are examined on a completed project where project parties can be involved at every necessary stage. This way, the potential contribution of the users, investors, and designer collaboration to the construction project's success is demonstrated. This study evaluated briefing session records from a case study in which all project stakeholders participated in invited briefing sessions. The briefing sessions's information is taken from the records of the project, presented, and discussed due to the defined order in the method section. The study presents an evaluation and discussion case to identify the contribution of the briefing process to the construction industry.

1.1. Construction Briefing

Briefing is the process by which needs and objectives are defined and met at the right time and under the right conditions in the project by carrying out the necessary studies. Although the proportion of briefing and planning in the total construction budget is around 1.5%, it can affect up to 80% of the budget [10]. The flow of complex projects requires the management and processing of more information and, therefore, the involvement of experts from different disciplines [11]. Briefing is not only a process for communication of project parties through checklists and tracking lists, but also a medium for evaluating information from the experiences of different people and groups. Defined and ensured continuous briefing processes throughout a construction project contributes to management. It starts with the inception stage and does not end with handover, where it is also used to evaluate project results.

The need for briefing in a construction project is under five main headings: requirements management, time and budget management, communication, project evaluation, and knowledge source [12]. Requirement management is one of the most important outputs of briefing processes and is an important factor in the success of construction projects [13–15]. It includes the processes of eliciting, analyzing, prioritizing, and approving requirements [16, 17].

There are some implemented techniques in the briefing process, including post-project reviews, recruitment, communities of practice, brainstorming, training, face-to-face interviews, mentoring, text and data mining, case-based reasoning, knowledge bases, reassignment of people, groupware, consensus decision-making, observation, project extranets, lesson learned tools, , repertory grid, , concept map, and cognitive map [18–21]. Technologies like BIM or machine computing are also used for better briefing and requirement management for contemporary applications. One of the important problems in this area is converting the written requirements into computer-processable formats that machines can work on, and humans can read and make comments [22–26]. The dimension of this knowledge should be arranged, and the involvement of project stakeholders should be ensured. The human dimension is about the experience and skills of people involved in the briefing. Barrett listed rule-based and knowledge-based failures in the briefing. He provided suggestions for development [27]: (1) brief takers' reliance on experience, knowledge needs to be presented in a framework that is proper to individuals, (2) another brief taker may be proper instead of architect, (3) client should be involved more to sustain the necessary checks to ensure the brief is on course, (4) a computer-based expert system may be used for the weak areas of professionals.

Briefing involves obtaining building requirements from project stakeholders, especially users, and implementing them into project goals and programs by evaluating them in an architectural methodology. Effective and open communication, the proper identification of objectives, the experience of the client and the designer, the involvement of the project parties, and the use of a defined method or system are important criteria for correctly executing the requirements management process [28]. The experience and knowledge level of project stakeholders is important since it directly affects individuals' communication and knowledge transfer [29].

Investors and clients want construction projects to be completed on schedule and budget. The briefing is important in identifying these goals and needs and ensuring the process continues accordingly [30]. Within a defined briefing framework, all project stakeholders are responsible for sharing and informing all parties of positive or negative situations to achieve the necessary balance [3]. In this way, possible changes and negative developments are evaluated in the process and decisions are taken considering budget and schedule. An important contribution of the briefing, both the purpose and the means, is strengthening communication between the parties. Communication can be realized through the same technical and semantic language between the parties. The quality of the information communicated also affects the communication between the parties [31]. Project parties with different experience levels and knowledge can have a more successful communication pattern with briefing processes that enable techniques such as visualizations, graphics, and scenario analysis.

Project success, performance, and evaluation are among the contributions of briefing processes to the

construction industry. The objectives should be determined properly for the project's success, and the outputs should be associated with them [32]. User evaluations are very important for industry improvement, knowledge creation, and experience records, both during and after the project. A project's performance is measured by the performance of the construction team and by feedback on how well the initial inputs are met [33]. Any decision, suggestion, or revision resulting from the briefing process is, in fact, new knowledge. This knowledge, which the parties evaluate through a specific technique or procedure, can be used as a source of knowledge when recorded in a system and reused.

1.2. Involvement of project stakeholders in briefing

Different project stakeholders play important roles in the construction process, from the investment decision to the completion of construction. Different individuals and organizations monitor the design and project teams, investors, consultants, building users, construction teams, and control engineers to ensure the project is executed and completed [34, 35].

The responsibilities and tasks of the project stakeholders may differ due to the project delivery method and contractual relationships. The construction industry is dynamic, and managers try to adapt and use the most proper project delivery method [36]. For example, in the DBB (Design-Bid-Build) method, where the project process is separated from the construction process by a tender stage, there is no direct relationship between the construction team and the project design team whereas, in the DB (Design-Build) method, where the same contractor takes responsibility for the construction and the project, the project design team, the investor and the construction team can work directly together [37]. This affects the construction and operation procedure of the project, and the project parties may not be able to participate in decision-making during the project process due to the schedule and the investor's organizational decisions. The location of the project and the profile of the contractors also affect the management and execution of the briefing; however, the definitive perspective of comparing the relationship of the procedure is accepted as the project delivery method.

One of the most important factors for the briefing to contribute to the project's success is the involvement of the project stakeholders within a framework by taking the necessary time [3, 6, 28]. This depends on the system the main contractor decides and its contractual relationships with the project parties. When integrated information and data sources could sustain the involvement of process stakeholders, the briefing results in a more satisfactory decision—making process [38]. Collaborative working is important for construction [39], and briefing helps design and construction teams collaborate. The other important thing is the end-user's involvement in the briefing process from the beginning of the project. In this way, the users' needs and experience with the usage of the building can be reflected in the space requirement and articulation [40]. Besides,

architects have an important role in defining the project's requirements. The opportunity of receiving comments for improving briefs should be used and individuals should be open about the priorities for the success of the requirement elicitation process [14]. Through examples, this study discusses the contribution of briefing processes to project and decision-making processes, in which major project stakeholders are involved in the entire process from project inception to completion and commissioning.

2. Method

A three-phase approach was used to conduct this research (Figure 1). In the first phase, a comprehensive literature survey was presented to determine the construction briefing and the importance of the stakeholder's involvement in the briefing process. Then, the case study was presented with descriptive information, and the seven briefing session records were selected, extracted, and refined from the project meeting records. These examples are from the different stages of the project in which the involvement of the needed project stakeholders in briefing sessions is sustained. For evaluation over briefing sessions, they were given in order with a layout organized to explore the participants, topic, status, recommendation, factors, and decision for each case. Lastly, discussions were conducted to explore the importance of project stakeholders' involvement in briefing stages and to underline the impacts on the decision-making process for achieving project success.

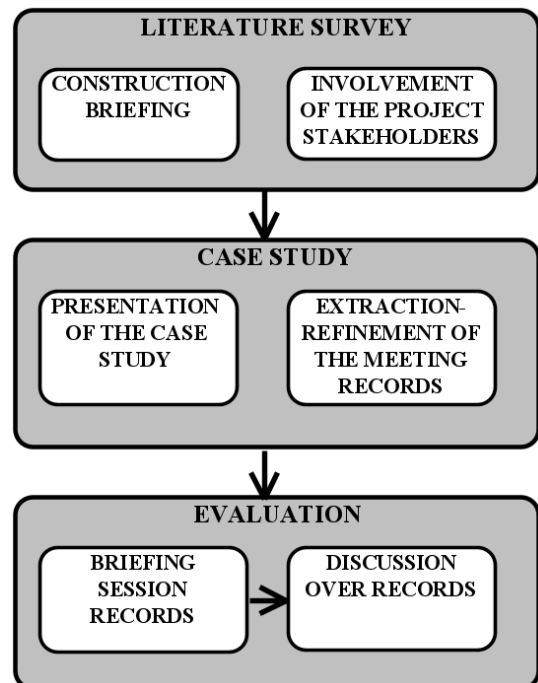


Figure 1. Research Method

3. Results

In the first part of the section, descriptive information about the Case Study was given to present the design and construction stage context. Then, the briefing session information extracted and refined from the project meeting records was given.

3.1. Case study: Anka Bilim College Building

Ankara Bilim College was completed in Ankara, Kızılcaşar district, with a total construction area of 14500 m² on 6500 m² land to provide K12 level education. It is planned for approximately 1500 students with kindergarten, primary, elementary, and high school classrooms and other necessary spaces. Design project studies started in September 2017, and the building was completed and opened in September 2019. The project was completed in less than two years, including construction, interior design, and installation. In the preliminary design of the building, main features such as land structure, the relationship between age groups and levels, accessibility, the effect of spaces on student life, the importance of all non-classroom volumes, ease of operation, and use were examined in detail [41].

The main design decisions can be listed as follows: (1) the design should turn the approximately 10 m difference between the two edges of the land to the advantage of the project, (2) creating spaces that can be both enclosed and organized spatial relationships by placing the spaces on different levels and providing outdoor access, (3) educational classrooms and other related spaces for age groups and grade levels should be allocated according to the relationship order, (4) spaces should allow the school management to use them flexibly according to the educational planning of the school, indoor and outdoor common areas should be defined with the quality and usefulness that the terrain and the needs program allows, and (5) ease of access and operation and options should be provided for both school time and holiday period activities. Figures 2-5 show the aerial photo, render, and interior views.



Figure 2. Aerial Photo



Figure 3. Exterior Render

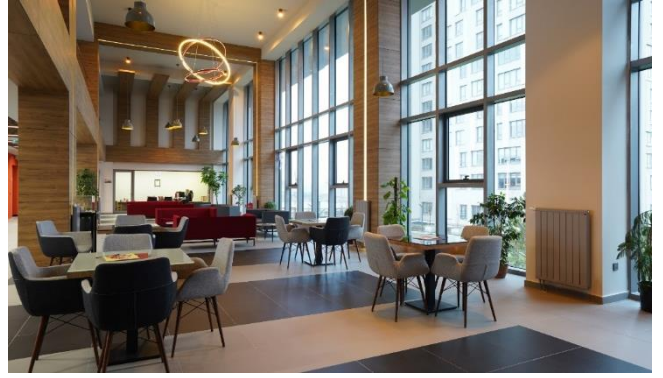


Figure 3. Main Foyer



Figure 5. Library

The project investor who owns the property made the investment decision in agreement with the school founders. Therefore, the users who will be the users when the project is completed are defined and have been involved as stakeholders from the beginning of the project design process. In addition, engineers from the investor organization were involved in all processes.

The relationship between the project stakeholders is shown in Figure 6. All parties were actively involved from the project's beginning until construction completion. The construction team managers, owners, school founders, and designers are available at the start of the design. According to the business contract between the architect and the investor, the architect is responsible for the project design, organization of other discipline projects, communication between the parties, communication with the users (school founders), decision-making on behalf of the investor or together with the investor for the given project schedule and budget, interior layout works and consultancy during the construction processes. Project engineers are responsible for the construction drawings and the necessary arrangement works during construction. In contrast, the construction field office is responsible for the assignment, follow-up, and control of the construction team. The school founders followed and participated in all the building processes that would be delivered to them upon completion of the project within the framework of their contract with the investors. In particular, education experts working at the management level of the relevant school levels were involved from the beginning. This way, user experience was included in identifying and managing project requirements.

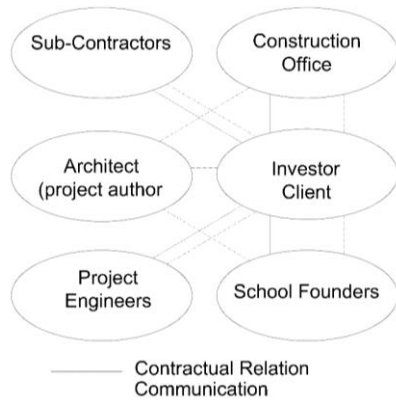


Figure 6. Relationship Framework of Project Stakeholders

3.2. Briefing Sessions

All session examples presented in this section are taken from the meeting minutes recorded and archived by the designer and then presented for this study. For 24 months, the designer keeps 33 formal briefing records and 54 minutes of meetings. Besides, the e-mail archive for collaboration is available, which was kept out of research. The session examples are listed in parallel with the project's progress and are given with sub-headings classified by the study objectives for each session (Table 1). Participants are used for the project stakeholders involved in the relevant session, the topic for the content, and the current information status before the briefing session. Under the recommendation heading, the change or problem solution is to be evaluated. Under the heading of factors, the information that will affect the decision is shared in summary. The decision on the relevant topic was explained at the end of the briefing session.

Table 1. Briefing Sessions

| Briefing Session | Project Phase | Participants |
|------------------|-----------------------|---|
| 1 | Architectural Design | Architects, Investors, School Founders |
| 2 | Architectural Design | Architects, Investors, School Founders |
| 3 | Construction Drawings | Architect, Investor, Static Project Manager, Construction Team |
| 4 | Construction Drawings | Architect, Investor, School Founder, Mechanical Project Manager, Field Office |
| 5 | Construction | Architect, Investor, Facade Construction Team |
| 6 | Construction | Architect, Investor, School Founders, Field Office, Electrical Project Manager, Smart Board and Furniture Company |
| 7 | Construction | Architect, Investor, School Founders, Field Office, Electrical Project Manager, Smart Board and Furniture Company |

Briefing session 1

Project phase: Architectural Design

Participants: Architects, Investors, School Founders

Topic: Main entrance arrangement

Status: In the existing project, the main entrance of the building provides access to the main foyer area from a single point, and from this foyer, the primary and secondary school sections are accessed.

Recommendation: The school founders would like to keep this entrance as an event, parent, and main entrance and create two separate main entrances to the primary and secondary school.

Factors: The plan scheme is by this proposal and one classroom each in the primary and middle school sections should be reduced to make the necessary arrangements.

Decision: An assessment was made between the total student number target and related entrances, creating additional entrances.

Briefing session 2

Project phase: Architectural Design

Participants: Architects, Investors, School Founders

Topic: Administrative office locations

Status: Principal and vice-principal rooms are located in common areas accessible to school groups in the building.

Recommendation: It is requested by the school founders to place the vice-principals' offices in all areas where classroom groups are located.

Factors: The placement in all zones will reduce other spaces and result in more administrative offices than desired.

Decision: According to the classroom zones, a teacher's room is planned on one level and and vice principal's room on the other level, respectively.

Briefing session 3

Project phase: Construction Drawings

Participants: Architect, Investor, Static Project Manager, Construction Team

Topic: Sports Hall Structural Floor Type

Status: Determination of the load-bearing system of the upper floor of the sports hall, which is planned to be walkable on top.

Recommendation: Construction with post-tension system

Factors: Budget, construction technique, and project studies

Decision: Structural analysis of the related proposal was carried out, the project was prepared, the construction team evaluated the budget and construction process, and it was decided to implement it.

Briefing session 4

Project phase: Construction Drawings

Participants: Architect, Investor, School Founders, Mechanical Project Manager, Field Office

Topic: HVAC system decisions

Status: Decisions on the general heating system and zones of the building and the ventilation, air conditioning, and heating system of the specialized spaces (conference hall, sports hall, laboratories)

Factors: Budget, application status, operation and maintenance, architecture

Decision: Potential zone requests were received from the users, the mechanical project engineer presented his suggestions accordingly, all factors were evaluated between the project parties and decisions were taken.

Briefing session 5

Project phase: Construction

Participants: Architect, Investor, Facade Construction Team

Topic: Facade material/system and geometry selection

Status: Application of gray ceramic tiles with angular geometry combination, and application of other panels with each piece in a different color tone.

Recommendation: Make-up application according to the facade design

Factors: Budget, implementation status, robustness, and details, reflecting the design objective

Decision: Due to the details developed with the facade construction team, a one-to-one scale example of the application was made in a regional area on the facade of the building. Details were developed on this, a budget was created, accepted by the investor and the application was made by creating the manufacturing details.

Briefing session 6

Project phase: Construction

Participants: Architect, School Founders, Field Office, Door Construction Team

Topic: Education spaces door selection

Status: The doors to all educational spaces are made according to the designer's color scheme based on school levels, child access, and supervision.

Factors: Color, texture, scale, functionality, observation windows on doors

Decision: Sample doors made according to the design were assembled, evaluations were made, and production started.

Briefing session 7

Project phase: Construction

Participants: Architect, Investor, School Founders, Field Office, Electrical Project Manager, Smart Board and Furniture Company

Topic: Classroom board wall

Status: In the actual construction phase, data and powerline installations on the classroom board wall were made according to the smart projection device, and finishings had not been completed.

Recommendation: Introducing a smart board system in the classrooms and planning a whiteboard accordingly.

Factors: Budget, impact of the change order, and utility of the desired system.

Decision: The proposal was evaluated by positioning it on the project and the neighborhood, and its compatibility with the existing infrastructure was examined. The investor approved the work process and budget.

4. Discussion

Session 1 and Session 2 are two examples of the architectural design phase. The designer, the investor,

and the school founders attended both briefing sessions. In the first example, the proposal for the main entrance of the building can be considered a logical approach when the current situation and other alternatives are evaluated. However, since giving up the classroom space to make this decision is a situation that directly affects the user, the decision can only be beneficial with the participation and approval of this project stakeholder. In parallel, for the arrangement of the executive offices in the second example, the functional benefit of the space organization can be evaluated with the users who have experience in school activities. In the design phase of the project, the participation of the building end users in the briefing process by allocating the necessary time to the briefing process enabled the designer to evaluate and select alternatives that the designer considered similar in terms of planning. These suggestions and evaluations were realized through the participation of users who do not have a technical background in construction in the briefing sessions.

The topic handled in Session 3 is a technical issue and a problem related to budget and construction techniques. If a decision had been made only by the project team's evaluation, it could have resulted in the inability to find a subcontractor or budget overruns due to the construction team's lack of familiarity with the relevant application technique and the post-tension application being a special application. It could have been rejected during the construction phase.

The topic evaluated in Session 4 is the heating system and zoning decision, which was created with the expertise of the mechanical project author according to the architectural building design inputs. It was ensured that building usage scenarios were received from the users and evaluated by the investor, together with the budget and construction status. As a result, the most acceptable alternative regarding operation cycle and maintenance costs was selected.

Sessions 5 and 6 are examples of material and application cases that are under construction. These decisions should be made before the construction tender phase in the DBB method. However, in this project, the evaluation was made by briefing the design team's suggestions and the manufacturing company's sample construction. This way, the façade application and door choices were decided by examining the details and sample productions produced specifically for the on-site project. In particular, it was useful to evaluate the door pattern designed by the designer by the users and the design of the facade by the field team and the investor.

The issue evaluated in the last example is a revision request arising from user requests during the construction phase. The relationship between the existing production and the revision was evaluated with the participation of the field office and manufacturing companies. The advantages of the revision and its impact on the budget and schedule were analyzed and decided upon.

The evaluations of briefing sessions show that briefing sessions set at the right time with the involvement of the relevant project stakeholders significantly contribute to the project's success in ensuring an accurate decision-making process. However,

arranging briefing sessions casually and ensuring project stakeholders' involvement every time cannot be sustained. It is ineffective for time management and can result in a conflict of interest if there is no proper definition of roles and responsibilities and continuity of project monitoring can be done without proper assignment. Thus, a proper framework should be defined before the project starts, in which a sequence of sessions, roles, responsibilities, and action flow are included, inferring from the cases learned and literature.

Project context is unique, resulting from design, scale, location, profile of the companies and workers, and many other reasons. Thus, a comprehensive framework for the briefing process in construction projects manages the whole stages and eliminates the problems and obstacles such as time management of sessions, participation of stakeholders, or monitoring and controlling implementation. However, the evaluations of sessions show that the success in managing needed briefing sessions contributes to the construction process. With further learnings from different cases and the implementation of values and methods originating from literature, a framework specifically for managing the involvement of needed project stakeholders could be developed and validated for diverse project contexts as following research.

5. Conclusion

From the inception of a construction project through its construction and continuing through its delivery and occupancy, briefing is an important process that affects the project's success with the active involvement of the project stakeholders. This study was taken out to underline continuous briefing sessions with all parties. The success of the project was not evaluated, the lessons were stated from the accurate decision-making sessions. One of the bottlenecks of the study, the opposite cases in which project stakeholders did not participate could not be conducted. This procedure can be executed by surveying at least two similar cases, similar for construction diversity but different for management/briefing procedure from the beginning to completion. Besides, if a framework could be developed, it may be validated through different cases.

In the examples presented, the situations of different stages of construction demonstrate the importance of the participation of parties with the knowledge needed to make decisions and the impact of working together to solve the problems that arise. For example, end-users participation in the earlier stages of the architectural design increases the correspondence rate of the design decision to their demands. For another, in the construction stage, the construction team and investors can consider topics more comprehensively with the consultancy of the project author and sub-constructors. Although not all project parties are responsible for the design, design-build, and construction processes in all project cases, their participation in the briefing process can contribute significantly to project success when it can be ensured through contractual and working relationships. However, briefing processes should be implemented

with a framework and system that does not create conflicts regarding authorities and responsibilities.

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Author contributions

Ekrem Bahadır Çalışkan: Writing-Original draft preparation, Conceptualization, Methodology, Visualization, Investigation, Writing-Reviewing and Editing. **Mehmet Koray Pekerçli:** Conceptualization, Methodology, Writing-Reviewing and Editing.

Conflicts of interest

The authors declare no conflicts of interest.

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