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# Industrial Leadership: Leading Within the Field of Construction and Design

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## Abstract

The structure of the design and construction organizations is different from that of the service or manufacturing industry. Although design and construction organizations are parts of the construction industry, they are different from each other, also. This chapter is based on the researches investigating the leadership behaviours of construction professionals and consists basically of two main sections. In the first section, the concept of leadership and importance of leadership in design and construction processes will be discussed. In this first section, firstly initially, as the leaders of the design teams, the importance of leadership skills of architects in both architectural design teams and other design teams, and, secondly, the importance of leadership skills of construction professionals will be evaluated. In the second section, the focus of the study will be focused on the evaluation of leadership behaviours of construction professionals with a literature review of previous researches. In this second section, initially, the leadership styles in design teams, and secondly leadership styles of construction teams will be evaluated.

**Keywords:** design, construction, design team, construction team, construction project management

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## 1. Introduction

The importance of leadership in construction industry arises from the fact that construction professionals in variously work in teams. It is a reality that construction professionals often take on leadership roles as the design manager, construction manager, procurement manager, contract manager, or project manager. Team working is paramount in construction, perhaps more so than in any other service or manufacturing industries. Members of the construction industry have always worked in teams because of the practically total focus of the industry on projects. The use of interdisciplinary groups of specialists in a construction project team

is a necessity. It is the only rational way that projects could be designed, developed, and constructed in any other way [1].

Construction organizations are called project based or project oriented, because project is the primary business mechanism for coordinating and integrating all main business function of the organization. Project-based organizations rely heavily on human resources who work in teams over a period of time, to deliver clients' needs and requirements to the desired quality and within the budget. Project team participants from different project-based organizations are brought together on a temporary basis to deliver the production function that enables realization of project objectives and goals, since project is a temporary organizational form [2]. In the construction industry, teams are the primary unit. A project team in the construction industry is a group of construction professionals from one or more organizations who come together to fulfill the necessary design, detailing, and construction functions in the construction project [3]. In a construction project team, there are two or more people from different disciplines and organizations that, like the other teams, have a common objective, but with individual objectives. The construction project team can operate in different locations with multiple reporting relationships. The accountability of these relationships and leadership are significantly governed by the contractual arrangements [4].

The fragmented nature of the project teams, which often has individually defined objectives that are always in conflict with one another, is a peculiar problem. During the process, many problems, such as poor team interaction, low-quality workmanship, material unavailability, coworkers' incompetence, and the project itself among others, arise among the individual team members [2]. Integration of the related knowledge and ability is important because they are allocated among its members in the project team. It depends on their interpersonal relationships, such as the degree of trust and their way of work together. Many sub-tasks, with team members relying on the speciality of their colleagues, are interdependent; therefore, trust may be especially important. Work may be probably affected by the temporal aspects of relationships and consequently the success of the project may be influenced [5]. Developing trust between the leaders and the employees is generally an important aspect and has an impact on the project performance.

The purpose of this chapter is emphasizing the importance of leadership in design and construction. Design and construction are the two main processes of a construction project. The design process is concerned with the size, shape, and organization of the spaces within the building and defined by the nature and form of the building construction and its services. Construction is the production process. The construction process is concerned with the nature and consecution of the operations which are involved in the installation of the building and through which the resources for building are deployed [6].

## **2. Leadership in design**

### **2.1. Leadership in design teams**

Although a design project team differs from other parts of the industry in many ways, it is part of the construction industry. In project-based organizations, organizations are dis-

banded; the case is similar in much of the construction industry, but upon completion of the task, design project teams are not disbanded. In a design project team, the task is temporary, but the organization is not a temporary organizational structure. Design project teams usually continue to work together on a different project and are not disbanded, after completion of the project. The structure of design project teams is characterized by permanent organizational structures differing from that in the manufacturing industries. In a design project team, a single project is undertaken that may need a large capital investment, unlike the manufacturing industry.

Building projects are performed by a design team, which include the architecture, structure, and building services teams. The success of the project depends on the performance of each team. The design team is a major and the most prominent sub-team and will have an impact on project success [7]. A successful management of design is critical to quality, cost-effectiveness, and timelines of projects [8]. Design process requires a collective effort involving a team of specialists from different organizations [9]. The dynamic and complex nature of design tasks and the specialized knowledge of team members in design projects make it difficult to control members' behavior [10]. When a large number of people are working on a project, a high level of successful teamwork and social competence is required to work in a team and to be able to deal with all kinds of people [11]. Cheung et al. [9] highlighted that the works faced by the design team are unstructured, highly uncertain, and full of crises. Conflicts could occur among the team members, because of the fragmented nature of design tasks. A competent team leader could be helpful to improve the communication and mutual understanding when accomplishing the design tasks [9].

Success of a construction process depends on the performance of the overall design. Yet the architectural design forms the basis of most of the civil projects, especially the superstructures. Hence the architectural design team has a key role among the parties of a construction project. Oftentimes the designs of other disciplines such as structural, mechanical, and electrical evolve around the architectural design. Thus in that respect, the essential responsibility of the architectural design team is the development of a design in respect with the owner's needs and requirements and furthermore setting the criteria for the designs of other disciplines. Hence, first a schematic or conceptual design is prepared by this team. Then, the overall design team, normally under the coordination of the architect, produces a whole set of documents named design development documents, followed by the construction documents. Then these plans and specifications transformed into a finished facility by a constructor [12]. Hence, the success of a project heavily depends on the scope and the soundness of the architectural design. A good end-design product requires a team to have considerable technical knowledge and expertise as well as being visually imaginative and mutually inspirational [10]. Naturally, achievement of a sound design is directly related to the performance of the design team members and the team leader. Generally, architects are leaders of both the architectural design team and the design team. Coordinating design projects, structural projects, and building services projects is the responsibility of the architect as the team leader. The leadership style of the design team leader affects the productivity of the design team and therefore performance of the construction project [9].

Design project not only causes stress on designers but also comprises greater degree of thought and working process, personal identification with project goals, heavy workload, bureaucracy, focus on utmost value, and restricted deadlines set by the parties either the firm or stakeholders such as clients or other members of the design project team. Demotivation begins depending on whether they are compensated for the long hours worked or the employee has other responsibilities or preferred activities such as family, social, and sporting [2]. It is important how the leader architect deals with this problem, because it directly affects the success of the project. Coordinating design teams and maintaining the relationship between stakeholders are some of the responsibilities of the leader architect. Motivating employees is important because project success depends on the performance of both the leader and employee architects.

Leadership is important for all types of design teams, for instance, an engineering project design team, as a knowledge-intensive team, involves a wide range of team members who have different expertise backgrounds and possess distributed and specialized knowledge [13]. Development of one or a small set of ideas into a single design or problem solving can be a solution of such a team [14]. Ding et al. [10] suggested knowledge sharing as a precondition for translating the differentiated ideas or expertise into the design of a project to increase design performance. Zhang and Cheng [15] conducted a research among designers engaged in construction engineering project design. Providing continuous and ongoing knowledge sharing is stated as a key responsibility of leadership [15]. Design process is a hard and trouble phase that consists creativity. Creativity has been recognized as one of the most important factors ensuring prosperity for existence of a company [16]. Kratzer et al. [16] investigated engineering design teams and verified that leadership supports creativity when it is moderately centralized in the workflow network. According to the results of this research, engineering design teams decentralized in the problem-solving network, moderately centralized in the awareness network, and are very central in the external information network [16].

According to contingency theories of leadership, project team leaders in construction industry need the ability to vary their leadership style depending on the type of issue and its context. For design teams, Walker [1] suggests that relationship-oriented leadership would be better when there is a challenging design problem in an architectural design team. When task is unstructured and relationship with employer is moderate because of the new appointment, relationship-oriented leadership would be better [1]. Walker [1] suggests that task-oriented leadership would get better results when a conventional structural solution is needed in an engineering design team. When task is highly structured, the leader is the senior partner or director, and relationship with boss is high, task-oriented leadership get good results [1]. Project team leaders are continually in receipt of information from their teams and must interact with the teams. The information constantly exchanged by project team leaders contains large volumes and has a creative, technical, and financial nature. The nature of the work to be undertaken within each stage should determine the most appropriate leadership style, the best outcome for each stage [1].

## **2.2. Leadership in architectural design teams**

Architectural design teams perform planning and architectural design phase of construction. Architects have a complex role that they are responsible from building space use, appearance, relationships among users and spaces and finishes, as well as the overall coordination of all parties to the planning and design process. Architects will probably be in charge of the process to select the contractor and, during construction, may be involved in quality control inspections and other activities on behalf of the client, in addition [12].

When we compare architectural design teams with other organizations, there are some differences. Generally both the employers and employees are architects; the task is changeable and consisting creativity in architectural design teams. Leadership is needed to maintain communication and the team spirit with the group members. Followers of a leader architect expect also their leaders to be true to their stated values and beliefs. Leader effectiveness will lack as well, when authenticity is lacking [17]. It is a reality that organizational variables, such as size, technology, organizational environment, strategic approach, and organizational structures, impose different demands on leaders. Specific leadership behaviors can be necessary for the success of the project. It is probably that either different behaviors or differential importance of behaviors will be reconciled with differences in organizations [18].

It is essentially because most of the architectural practices are small; these are largely informal organizations in which control and coordination are achieved through empathy between organizational members and through direct personal contact. The managing director, probably the founder or a founding partner, plays a key role in coordination. Administrative tasks in these organizations are generally considered as being unimportant relative to the professional tasks [19]. Architectural design teams have a significant role in the construction management process, and one of the necessities for improving the performance of the project is uniting employees around team objectives. As in all teams, the architectural design teams also have a leader. Oftentimes, this role is assumed by the owner or the partner of the architectural firm, who is an architect also. Thus an architectural firm's owner is the formal leader of the design team, and the lead architect's behaviors are a main contributor to the performance of the architectural design team. However, simply being the owner is not enough to ensure effective team leadership; members of the architectural design team must also trust and believe in the owner. The main purpose of the leader is achieving design project, but being the owner makes naturally the team leader. So it does not mean that a good architect will be a good leader. Sometimes architects are not aware that they are team leaders, and leadership is significant in achievement of the design project. This is the main difference between the architect-leader and the leader in managerial positions.

## **2.3. Architect as the leader of design team**

Architects are naturally expected to be the leader of both architectural design team and design team. As the leader of both groups, the relationship between the leader architect and the groups directly relates overall performance of the project. Coordinating design project—

architectural design, structural design, and installation design projects—is generally among the responsibilities of the architect as the team leader. Success of the project depends on the performance of both groups. In design teams, architect is the leader of a team whose members are from different expertise and expected to unite them around team objectives and create an atmosphere enabling team members to perform better [20].

Coordination is a fundamental aspect of design management not just within the firm but also with other consultants and designers from other firms [2]. It is the design team leader who is responsible for the overall control, monitoring, and coordination of the design [9]. The architect plays the role of a project manager especially when there is no separate appointment of one, traditionally, on most construction project [21]. The project team, as do all working groups, goes through various social action phases. There may be professional and personal conflicts. In this phase it is necessary to reach the mutual understanding that everyone is working toward the same goal, and this can be achieved only by working together and maintaining respectful forms of interaction and behavior. It is an essential part of the architect's work, along with effective project management, to direct the planning team with this end clearly in sight, and without it the planning team may lose sight of its goals. Thus, the project team can work effectively, powerfully, and purposefully toward realizing the project aim [11].

The relationship between client and architect affects the success of the project. As the leader of the design team and architectural design team, it is the architect who deals with the client. Architect is a coordinator between the design teams and the client. Satisfaction and needs of the clients must be met throughout the project process. Clients can range from occasional and uninformed clients to knowledgeable clients [2]. If the clients are occasional and uninformed, problems can arise for architects trying to understand and develop a comprehensive brief that meets client's needs. Some of these clients' needs are idiosyncratic and tacit in nature and hence hard to accurately develop and comprehensibly implement. On the other hand, knowledgeable clients can demand for more or radical innovation in design to meet their needs [2]. Clients can also make unrealistic demands particularly in relation to cost, time, and project requirements from design point of view [22]. Clients are notable for frequent design changes apart from their needs, which could lead to dilution of strong design concepts [23]. The leader of the architectural design project, with a single point of contact with the clients, is responsible for satisfying their requirements and managing all aspects of a project [10]. Architects as the leader of design teams are expected to be a mediator between not only the architectural team but also the design teams and clients.

## **2.4. Effects of leadership on the success of design project**

Design team, in order to produce successful projects, should be a team; in this context the objective of employees and team must be overlapped. Leader architect plays the main role here. Being the owner is not enough to be an effective leader on employee architects. Architecture is a profession that requires teamwork, carried out coordination of teams from different fields of expertise. Coordinating these teams successfully is needed, to make continuity of success of design during both design and production processes. It is important to bring team members' objectives as common objectives of the organization. Employer

architect, except for small-scale projects, without creating a team of good architects, cannot expect yield from design. In this process, employer architects undertake the main task as the leader and upgrade design quality of their offices. Architectural design teams have an important part in the construction management process. It is a reality that the performance of the overall design affects the success of entire construction process. The success of design and the quality of the project depend on the performance of design project team. In this context, leadership become crucial, because effective leadership is needed to enable effective team management. Thus, design faults which can cause important delays in time, waste of money, and poor quality in construction can be prevented.

### 3. Leadership in construction

Differences between the construction and manufacturing industries include the geographically distributed nature of construction, dynamic nature of site management, highly mobile and itinerant workforce, and large number of companies and organizations that have to work together in the project. The timescale involved is, maybe, the most significant difference. A construction project has a fixed duration lasting, whereas manufacturing provides a long-term stable environment [24]. The size and cost of the product and its custom-designed, one-of-a-kind features are the most significant differences between the construction industry and most other product industries. The product required by any construction contract is a manufactured product. In response to the needs of the customer, it can be a residential building, road, office building, factory, church, or dam. Although the product of construction is not a service, contractors must service the needs of their customers. The product of construction is built properly in accordance with the plans, specifications, and expectations of the owner [25].

The product is immobile in the construction industry and it is produced at the point of consumption. The production process is affected by site and weather conditions. Production depends on the climatic conditions. Depending on the weather conditions, additional precautions can be needed. Each product is produced for once, durable, long lasting, and complex. There may be big value differences among the products. Cooperation of experts from different fields is required. Demand is not regular, it is volatile. Construction industry is one of the industries which are the most affected by the economic crisis. During economic crisis, demand decreases. Production can be realized in different parts of the country/world. Uncertainty in decision-making related with the different production methods of projects such as dam, highway, and high-rise building is built at the same time. Every project requires different design study and production results. A large number of labor specialties are needed. The experience of experts is required, since it is hard and long way for a contractor to gain this expertise through project experiences. Production systems in construction are nonroutine. Coordination of resources is significant for the success of the project.

The organizational structure on a construction site is usually based on a large percentage of subcontract staff. The ability to fine-tune labor flexibility, bargain down labor cost, encourage quicker completion of tasks, externalize less rewarding and dangerous activities, transfer financial risk, avoid workers' compensation cost, and rapidly meet changing product

market demands is the reason of subcontracting in construction [26]. The increased use of subcontractors makes the situation more difficult. It is because the higher levels are likely to be employees of the main or prime contractor, whereas the lower levels are likely to be employees of subcontractors rather than the main contractors. It is the project managers' responsibility to create a single project culture, unifying the cultures of prime contractor and subcontractors [24].

Teams in construction are temporary groups and comprise a set of diversely skilled people who are expected to work collaboratively on a complex task often under time constraints [27], and there is no time to engage in the usual forms of confidence-building activities. Temporary groups challenge conventional understanding of effective organization and developing and maintaining trust in traditional, enduring forms of organization [28]. Trust-based relationships create advantages such as improving performance, lowering cost, and shortening duration in conducting business [29]. It is important for the leaders of the construction industry to develop trust among the team members. A different method that may be suited to temporary groups such as design and construction teams is the concept of swift trust. Traditional form of trust building that often develops and strengthens over time is based primarily on personalities and interpersonal relationships [30]. Traditional trust developing elements such as familiarity, shared experience, reciprocal disclosure, threats and deterrents, fulfilled promises, and demonstrations of nonexploitation of vulnerability are not obvious in temporary groups [31]. Meyerson et al. [31] suggested swift trust based on presumptive foundations beyond evidence of direct contact between individuals and defined as a practice that involves the collective perception and ability to relate matters that are capable of addressing topics pertaining to vulnerability, uncertainty, risk, and expectations in short-lived temporary organizations [27]. Swift trust, based on feelings of confidence without having prior mutual experience, leaders in the construction industry rely on defined roles rather than personalized sources to develop trust [5]. An initial condition for developing swift trust is that members perceive that they belong to a team and share a goal [32]. Third party information based on their prior reputation, the general disposition of an individual to trust other people, the presence of rules and the adherence to them enable individuals to behave in a predictable way, membership of the individuals in the same social groups or categories, assumptions about an individual's ability to fulfill a particular role rather than through specific knowledge are of significance in the development of swift trust [33]. Swift trust is a concept especially related to lack of time. In a temporary group such as construction teams, there is often little time to develop trust in traditional ways, and a leader, to gain trust from subordinates, must make most of it under time pressure [34].

It is important to be aware of how to lead people for a construction project manager, in order to arrive at a successful construction project. For many technical professionals, people aspects of project management are the most challenging aspect of construction projects. It is the reason that most professionals who enjoy designing things, building things, and solving problems go into construction industry. These same people may seek project management responsibilities or have these responsibilities thrust upon them. However, as these same people grow in their organization, an increasing amount of their work will involve leading others to succeed the many project functions [35].

### 3.1. Leadership in construction teams

There are various joining organizations on a construction project. These organizations must operate together as a team to deliver a high-quality product to the client within budget and on time. The various participants bring to this team different ways of thinking and different attitudes, practices, and approaches to work and in some cases different and divergent objectives [19]. The task of a construction project leader is to manage the whole production process according to client's objectives from start to completion.

The project leader of a construction project may be referred to as the project manager or project coordinator depending on the level of authority given to him by the client. He is referred to as a project manager, if he is charged with full responsibility for the selection of the professional team, the procurement system and contractor, as well as setting up the maintenance program after commissioning. He is referred to as the project coordinator if he is appointed with very few delegated powers. Any of the construction-related professionals, an architect, a structural engineer, and a builder, might make a good project manager, provided that he/she has a good overall knowledge and experience of the industry and possesses the ability to lead and coordinate [21]. The fact that the production phase focuses more on the employee in construction makes leadership more important. Toor and Ofori [36] underline several financial, social, technical, political, and cultural aspects of the construction industry. Since construction professionals invariably work in teams, they point out the need for leadership development in construction professionals [36].

On a construction project, there are different participant organizations, and they should operate together as a team and deliver a high-quality service and product to the client on time and within budget. These different groups, who have to work together, may imply different ways of team working, formality, and achieving control and coordination. On a construction project, there are various participating organizations, and they should function together as a team where these different groups have to work together, and these differences may have implications for team working, formality, and how control and coordination are achieved [19]. The leadership skills of design manager, construction manager, procurement manager, contracts manager, or project manager are important to the overall performance of the construction industry [37].

Construction production is a complicated process; it is important to be managed by educated specialists having necessary knowledge and education related to legal, economical, and management subjects. Pries et al. [38] highlighted that firms in the construction industry need to become more client and market oriented as in other industries. However, it is a fact that the construction industry is not good at following the variances as have occurred in other industries. Construction industry did not become more market oriented and see an influx of managers with a legal, economical, business, and other professional degrees, which is the case in those industries. It seems that the management paradigm is still mainly technical and the management profile still mainly engineer-manager in construction, but it is now aware of the need for more client and market focus business strategies [38].

Zerjav et al. [39] propose an alternative perspective on the role of leadership in the context of collaborative practices in architecture, engineering, and construction domain which are often

planned, designed, built, operated, and used in complex interdisciplinary and interfirm organizational arrangements. They suggested a leadership-as-practice perspective for collaborative design of architecture, engineering, and construction projects. Zerjav et al. [39] said that the conceptual position that their study adopts is one that considers leadership personalities as a feature of leadership practices, while the bulk of mainstream leadership studies considers leadership practices as a feature of remarkable leadership personalities. Leadership is as a practice rather than a leader-focused instrumental strategy. According to the findings of their study, leadership as practice emerged through specific patterns of domain knowledge ownership, frequency of interactions, actor responsiveness, and cross-disciplinary knowledge brokering. Leadership can and should be viewed as an opportunity, a situated and emergent interactive phenomenon rather than an inherent characteristic of invariably charismatic individuals and their supposedly heroic achievements [39].

#### **4. Effects of culture on the preferences for leadership styles**

Many parts of organization theory shows that leadership studies are unlikely to be of any additive value unless they take into account the organizational culture. The relationship between leadership and culture represents an ongoing interplay in which the leaders shape the culture and is in turn shaped by the existing culture [40, 41]. Bass [42] demonstrated the relationship between the two concepts by examining the impact of different styles of leadership on culture. He claims that transformational leaders change organizational culture in line with their vision, whereas transactional leaders tend to work within their organizational cultures [42]. The ability to understand and work within a certain culture is a prerequisite to leadership effectiveness [41].

Different cultures have different ideas of the nature and different models of management of organizations. Hence, every organization has its own culture or shared systems of meanings. An organization can differentiate its members from other organizations' members with its own culture [43]. The effectiveness of leaders considerably differs across cultures [44]. Hofstede [45] argues that cultural dimensions differ between Western and Eastern nations. Attributes of Western cultures are task oriented, with relatively low power distance, individualistic, and uncertainty avoidant. On the other hand, Eastern societies are high in people orientation, collectivism, and long-term orientation and also have high power distance [45].

Chen et al. [46] investigated similarities and differences between Chinese and Western construction project managers' conceptions of their work. The results show that Chinese conceptions are dominated by attention to relationships. Chinese always attach personal feelings, in their efforts to build and maintain long-term good relationships with people involved in the project. On the other hand, Westerns separate work and personal relations and have greater emphasis on contract conditions and utilizing contracts. Chinese have a greater concern about dependence on their work [46]. However, Wong et al. [47] found that Hong Kong Chinese and Western expatriate project managers did not differ significantly in leadership perceptions. Both manager groups emphasize project time deadlines and efficient task performance, value high productivity. It is also reported that both manager groups have a strong emphasis on

interpersonal relationships, preferred to negotiate, avoid conflict, and maintain good relationships with external parties [47].

Management models of Western societies might not be compatible with the culturally derived job attitudes and values of employees in developing countries [48]. Van de Vliert [49] studied the relationship between autocratic and democratic leadership and economy, geo-climate, and bio-climate. The results show that autocratic leadership is less effective in economically richer countries with colder geo-climates but more effective in poorer countries with colder geo-climates. Similarly, autocratic is less effective in economically richer countries with colder or hotter bio-climates but more effective in poorer countries with colder or hotter bio-climates [44]. Low and Leong [50] found that the culture of an organization is predominantly influenced by the national culture. Organizational values that are in conflict with national values and beliefs are likely to be met with resistance [50]. Organizational culture is of particular consequence to the interactions of the leaders and their subordinates [51]. The organizational culture includes different constructs and is composed of different elements from those of national culture [52]. On the other hand, Ozorhon et al. [53] studied the effect of cultural similarity/difference relative to the national and organizational characteristics of partner companies on international joint ventures' performance. The results show that differences in organizational culture have a greater impact on international joint ventures' performance than differences in national and host country culture [53].

Cheng et al. [54] investigated how leadership operates, the nature of the power of leaders, and the organizational cultural environments among project quantity surveyors in consultancies in Hong Kong. Results show that they are relationship oriented and the basic leadership style is supportive. Supportive style, the actual leadership style employed mostly, is compatible with a low individualism society and one in which harmony and paternalism are important behavioral components [54].

Giritli et al. [55] demonstrate that managers in the contracting companies with different cultural characteristics tend to adopt different leadership styles to lead their employees to succeed in their business. Their findings showed that there is a significant relationship between specific leadership practices and specific cultural profiles within the Turkish construction industry, exhibiting high ratings in clan and hierarchy culture. Significant relations were found between the clan culture and paternalistic and consultative leadership styles. Paternalistic and consultative styles with respect to autocratic style are more likely to be clan culture characterized by concepts such as mutual trust, cooperation, team spirit, commitment, and individual growth [55].

## **5. Leadership behaviors in design teams**

Negative leadership behaviors within an organization can cause demotivation among the design team members. A competent team leader is required to manage various tasks among design team members, because of the fragmented nature of design tasks [2]. Oyedele [2] citing Cheung et al. [9] highlighted that if design team members are not satisfied with their

team leader, the morale of a design team can be adversely affected. Being ruthless, asocial (self-centered), irritable (malevolent), loner (self-centered), egocentric, non-explicit (face saver), noncooperative (malevolent), and dictatorial (autocratic) contribute to inept leadership behavior that causes demotivation to employees. Inadequate leadership support, lack of open interaction between superior and subordinates, display of no interest in subordinates' work and nonrecognition of effort, lack of synergy between organizational goals and leadership behaviors, and changing project priorities by supervisors are other relevant criteria [2].

Cheung et al. [9] suggested the use of charismatic and participative leadership behaviors by design team leaders. Their results found charismatic and participative leadership behaviors as the most critical leadership behaviors as far as satisfaction is concerned. Charismatic leadership behavior includes acting as a role model for the subordinates and enables them to feel proud to be affiliated with team. Participative leadership behavior includes the use of appropriate delegation, value, and reward constructive alternatives, to encourage participation from design team members. It is significant for the success of the project that the design team leaders should make every endeavor to set a good example in team working with the other members and provide the design team members with more opportunities to participate throughout the design process [9].

According to the results of the research conducted by Rowlinson et al. [56] among construction managers in Hong Kong, most design team leaders used at least two different management styles in each phase of the project. Although in the feasibility and precontract phases a supportive style was most regularly used, during the post-contract phase, a directive style was most popular. According to Rowlinson et al. [56], it is possible for the leader of the design teams to prefer a much more open style of leadership due to the nature of the task, absolutely in the design process and, to a lesser extent, in the documentation and construction phases. An interesting finding of their research was the use of an achievement-oriented style was rarely recorded, even in the feasibility stage. This may be because of a need to retain some control over a subordinate's work [56].

Kasapoğlu [57] focussed on determining the leadership behaviors of architects and on how leadership behaviors affect the performance of the design team. In the context of this study, behaviors of leadership fall into two main groups, based on the level of authority delegation and managerial orientation. Delegation of authority, which reflects the level of freedom of the employee architects in the office, is divided into three subgroups: authoritarian, participative, and free-rein leadership behaviors. The managerial orientation is also divided into three subgroups: achievement-oriented, employee-oriented, and task-oriented leadership behaviors. Kasapoğlu [57] found that the significant positive correlations were between authoritarian and task-oriented leadership and between participative, achievement-oriented, and employee-oriented leadership. On the other hand, the position of leader architects and the age and size of offices were directly related to leadership behaviors. According to results of the research, they actually preferred task-oriented leadership. Architects behave in a more achievement-oriented manner and increase creativity, motivation, and spirituality of their followers, when they are owners of the office. When they are older, architects behave in a more authoritative manner and they are very directive, allow little participation, and make decisions

alone. The behavior of an architect-leader is more employee oriented and less achievement oriented when the size of the office increases [57].

Kasapoğlu [58] focused on determining which of the two leadership styles predominantly architects prefer in Turkey and adopted the leadership styles from Automated Management Assessment Profile (AMAP) [59]. AMAP based on the work of David McClelland and fellow researchers at McBer and Company. The study presented in this paper is based on the study by Giritli and Topçu Oraz [60] on leadership styles in Turkish construction industry. Burns defined transformational leadership as a creative form of interaction between leaders and followers in which both sides play a dynamic role in influencing the other's perceptions and actions. Conversely, transactional leadership style is making mutually beneficial (but scheming) arrangements with followers [61]. According to Hay/McBer [59], leadership styles can be classified into six groups based on the two main styles. Coercive and authoritative are the two styles that fall under transactional leadership. Coercive leaders are the least effective and flexible and expect immediate obedience with their directions. Authoritative leaders maximize commitment to goals and strategy, define standards, and provide flexibility in accomplishing tasks. Affiliative, democratic, coaching, and pacesetter are the four styles falling under transformational leadership. Affiliative leaders' key task is to maintain a pleasant working environment and provide job security and other benefits and amenities to employees. Democratic leaders are known for their participative style, and they hold many meetings, reward adequate performance, and dislike punishing employees. Pacesetter leaders focus on the tasks to be achieved rather than those people who must achieve them. Coaching leaders are concerned about high performance and standards and develop people for the future. According to the results of Kasapoğlu [58], Turkish leader architects prefer pacesetter, affiliative, and authoritative leadership styles. However, the results show that when two of the styles need to be united, their choice is the affiliative-democratic and affiliative-coaching leadership styles. Architects prefer to use affiliative leadership style with democratic leadership style, although the mean of democratic leadership style is low. This means that Turkish leader architects focus on employee first, prefer participation, and create sensual bonds with the team members [58].

## 6. Leadership behaviors in construction

Lansley et al. [62] examined the patterns of leadership styles in the construction industry and investigated the relationship between leadership style and organizational structure and their impact on effectiveness. Ogunlana et al. [63] citing Lansley et al. [62] highlighted that poor performance was associated with low-task low-people consideration, while high performance was primarily associated high-task orientation. Monaghan [64] studied the influence of leadership styles of project managers on organizational structure and project performance. Ogunlana et al. [63] citing Monaghan [64] highlighted those leaders who were high in task and low in people consideration, produced an acceptable-level commercial performance. The importance of contextual factors upon the relationship between leadership styles and effectiveness on a construction project was investigated by Bresnen et al. [65, 66]. According to the results of their research, Bresnen et al. [65, 66] found a positive association between the

construction project manager's leadership orientation and effectiveness. However, this association was contingent upon labor force composition, the duration of the project, and the size of the project [65, 66].

Mustapha and Naoum [67] used Blake and Mouton's [68] Managerial Grid to evaluate the site manager's preferred leadership style. Five types of leadership styles that Managerial Grid includes are impoverished management (1,1), country-club management (1,9), organization-man or middle-of-the-road management (5,5), task management (9,1), and team management (9,9). Mustapha and Naoum [67] found that high-performing site managers are more likely to prefer the team management leadership style (9,9). Team management style of leadership is considered to be most ideal leadership style. Odusami et al. [21] identified and used four leadership styles, as suggested by Slevin and Pinto [69]. Among shareholder leadership, autocrat leadership, consensus leadership, and consultative autocratic leadership, consultative autocrat was found to be the best leadership style in terms of all performance. Consultative autocrat project leaders absorb the information input from the team members but make the ultimate decision. Team management, the most appropriate leadership style found by Mustapha and Naoum [67], is similar to consultative autocrat, found by Odusami et al. [21]. Yang et al. [70] investigated the associations between project manager's leadership style and teamwork and the impact of teamwork on project performance. According to their findings, the project managers who adopt transactional and transformational leadership may improve team communication, team collaboration, and team cohesiveness. In other words, when the levels of leadership increase, relationships among team members may enhance [70].

Toor and Offori [36] suggest authentic leadership for the solution of leadership crisis and so as to maximize the positive outcomes and achieve a veritable organizational performance. Authentic project leaders possess positive energy, high sense of integrity, moral character and self-discipline, clear purpose, concern for others, confidence, hope, optimism, resilience, and personal values. They are able to motivate people and accomplish challenging tasks and capitalize on the environment of trust. According to Toor and Offori [36], organizations with authentic project leaders will have a sustainable competitive advantage over their competitors in the form of veritable performance and sustained growth. Ofori and Toor [44] presented an overview of cross-cultural leadership and management research in construction and underscored the importance of objective measurement of performance of authentic leaders and analyzed the psychological benefits that leaders may get from being authentic in Singapore construction sector. Toor and Ofori [71] suggested authentic leadership as a solution to the construction industry to address the challenges it faces. Hence, research in the construction industry needs to explore new forms of leadership which can enable the construction industry to face the challenges of the global business world. Toor and Ofori [71] indicate that by inspiring mutual trust, helping people find meaning in their work, arousing self-awareness, building optimism and confidence, engaging in connected relationships, and promoting transparency and ethical practices, authentic leaders can bring the best out of their teams and organizations. In construction industry, authenticity of leaders enhances their personal autonomy, desire for positive relationships with others, sense of purpose in leadership, mastery over their environments, and motivation to grow as leaders [71].

Dainty et al. [72] developed a competency-based framework for performance in projects at the construction industry. Functional competencies measure performance against predetermined minimum occupational standards, but competency-based systems are founded on the key behavioral competencies that underlie superior levels of performance. According to the results they revealed, some of the variables are also found in the competency school of leadership, such as achievement orientation, analytical thinking, as well as impact and influence [72]. Dainty et al. [73] found in another study that superior performing project managers demonstrate 11 generic leadership behaviors: customer service orientation, initiative, conceptual thinking, information seeking, achievement orientation, teamwork and cooperation, team leadership, analytical thinking, impact and influence, flexibility, and self-control [73]. Construction industry is conventional in nature and remains technology and project oriented. It becomes a necessity for the industry leaders to take appropriate initiatives to change the old paradigms and make the construction industry more flexible to adapt to the modern business environment. Construction leaders need to develop necessary capabilities to accomplish the future challenges [38]. Leaders with their leadership competencies can make the project more sustainable and achieve better productivity. Tabassi et al. [74] highlighted that project managers should possess the necessary leadership competencies, skills, and knowledge to be able to achieve sustainability in building projects. Their study showed that project manager's leadership competencies as well as their qualities of transformational leadership in the construction industry have considerable impacts on the success of sustainable building achievements [74]. Transformational leaders are able to influence the employee's constructive reaction, which accordingly results in high employee performance, and those who exhibit individualized consideration behavior [75].

Fellows et al. [76] investigated leadership practices and power sources within quantity surveying teams on construction projects in Hong Kong and the effects of power distance in the leader-follower relationship. The basic (highest) "preferred leadership style" of the project quantity surveyors was the supportive style. They highlighted that supportive leadership style is valuable in the stress reduction of subordinates but the reciprocal aspects of behavior required to preserve harmony must be absorbed. According to the findings of Fellows et al. [76], the second scoring style differs between consultants and contractors, with consultants tending to be directive and contractors tending to be participative. They highlighted that working on very large projects, where financial and other stakes are higher, encourages project quantity surveyors to be less participative and more achievement oriented [76].

Famakin and Abisuga [77] evaluated the impact of path-goal leadership styles on the commitment of employees in the construction projects. Path-goal theory of leadership is built on specifying the leadership behavior that fits the employee and work environment through enhancing employee commitment to productivity in the organization [78]. Directive, participative, supportive, and achievement-oriented are the basic styles of path-goal leadership style. Famakin and Abisuga [77] defined organizational commitment, citing Porter et al. [79] and Batemen and Strasser [80], as a multidimensional concept involving the employee's loyalty to the organization, willingness to exert effort on behalf of the organization and maintain a degree of goal and value congruency with the organization, and desire to maintain organizational membership. Famakin and Abisuga [77] found that supportive style of leadership

influences the affective commitment of employees, meaning that in friendly and psychologically supportive work environment, employees will develop an emotional attachment and identification. Achievement-oriented leadership style influences the continuing commitment of employees, indicating that an employee continues in an organization when he works with an achievement-oriented leader [77].

### **6.1. Leadership behaviors of construction project managers**

Müller and Turner [81] examined the leadership competency profiles of successful project managers in different types of projects. In order to develop leadership profiles, they adopted the competency school perspective as the currently most advanced understanding of leadership. Competence school is a specific combination of knowledge, skills, and personal characteristics. Dulewicz and Higgs are representatives of this school, and they identified three leadership profiles for organizational change projects, which they call goal oriented, involving, and engaging [81]. Müller and Turner [81] found that an involving leadership profile might be slightly better suited for engineering and construction projects. Involving leadership is a style for transitional organizations which face significant, but not necessarily radical, change of their business model or way of work [81].

Slattery and Sumner [82] analyzed the leadership characteristics of construction project managers identified as rising stars by senior management of their organizations. In today's more team-based project environment, the project manager must lead teams that may consist of members from different fields. Slattery and Sumner [82] citing Katz [83] indicated that finding rising stars who possess the combination of technical skills, conceptual skills, and people skills may be critical to the success of construction organizations. Their findings indicate that outwardly visible characteristics such as providing support to subordinates and modeling expected behaviors are more highly valued than less tangible behaviors such as providing emotional support in the form of encouragement and inspiration. The high value placed upon tangible leadership skills is probably due to the dynamics of managing projects within the construction industry. These results show that successful management of projects and attaining tangible results can be achieved by managing the team through cooperation and collaboration [82].

According to the study of Hwang and Ng [84], leadership is one of the essential skills of project managers and is crucial to the success of the projects. Zhao et al. [85] identified critical leadership characteristics and styles of project managers for green building projects. They found that 13 leadership characteristics are the most important ones for the project managers in the Singaporean green building projects. The top three positions among these characteristics are "strive for work performance and productivity," "have high concern for work tasks," and "direct subordinates with clear roles and goals." Zhao et al. [85] categorized the 13 characteristics into two groups: directive and task-oriented leadership and relationship-oriented leadership. Their results showed that the leadership style of project managers in green building projects was more toward "directive and task-oriented leadership." It is probably because it was not uncommon that most of the staffs were still unfamiliar with green technologies and construction processes, which were usually more complicated than those of traditional

projects [84, 86]. Although project managers, who are accountable for their projects, should highlight the achievement of project objectives, thus being more task oriented, they do not overlook their subordinates' roles. The interpersonal relationships within a project team are also worth the attention, because harmonious relationship can greatly contribute to the project's success [87].

Liu and Fang [88] examined the supervisory styles of project leaders who come from design institutes and client project organizations in China according to P-M leadership theory developed by Misumi [89]. The P-style is performance oriented and the function of contributing toward goal achievement or problem solving. M-style is maintenance oriented and promoting a group's self-preservation or of maintaining and strengthening the group process itself. P-M leadership styles can be classified into the four subsets of pm, pM or M, Pm or P, and PM. The pm leaders show no conscious management, while pM leaders emphasize M-oriented activities and show less P-oriented activities. On the contrary, PM style leaders display both P-oriented and M-oriented behaviors, while Pm style leaders emphasize M-oriented activities and show less P-oriented activities. The results of the research conducted by Liu and Fang [88] show that client organizations' project supervisors when facing a number of temporal organized professionals tend to be P oriented and design organizations tend to be pm oriented. According to the results of the research project, supervisors of client organizations tend to focus more on the mechanistic planning and monitoring aspects of the project. However, supervisors of design organizations are more stable and homogenous in terms of their constitutive members in the organizations [88].

Toor and Ofori [36] declared that there is a need to equip the professionals with hard (technical) as well as soft (management and leadership) skills in construction. Construction professionals deal with various project stakeholders and often get involved in sensitive decision-making and dispute resolution processes. Toor and Ofori [36] citing Pries et al. [38] highlighted that the mainstream paradigm of construction industry leaders largely remains technology and project oriented and the management profile is yet mainly that of the engineer manager. Since leadership is a key element in meeting the needs of the civil engineering profession [90], hard (technical) skills is insufficient to enable the professionals to cope with the leadership challenges that will face construction organizations [36]. Wong et al. [47] explored leadership perceptions and power relationships of both Chinese and Western expatriate project managers in multinational construction firms in Hong Kong. Their findings implied that a "third leadership style" which equally considers the importance of task performance and interpersonal relationships might also exist. Hence, the modernization and economic development led many Asians to focus on work schedules as much as Westerners. Asians have become more "westernized" with increasing contact with Western artifacts and many people [47].

It is inevitable not to prefer more than one style of leadership in complex business life, because distinct styles are possible on distinct situated contexts. It is a reality that there is no best leadership style for all situations and different leadership styles can be more effective in different situations. It is hard to adjust single leadership behavior in variable conditions of the business life. Senior managers in the construction industry lead by example yet

exert tight control over poor performance [60]. Giritli and Topcu Oraz [60] explored and compared the leadership styles of managerial personnel in the construction industry. They adopted Hay/McBer's [59] leadership style typology, which is based on the work of David Mc Cleland [59]. Hay/McBer [59] categorizes leadership styles into six groupings, each of which stems from different aspects of emotional intelligence, based on two major classes or styles, namely, transactional and transformational [91]. Coercive and authoritative styles are under the transactional leadership style. Affiliative, democratic, pacesetting, and coaching are under the transformational leadership style. Their focus was primarily to examine whether there is a difference in the leadership styles of managers in construction settings and extent of the ability to use a variety of leadership styles. Authoritative leadership style is more frequently preferred than all other styles. According to the findings of Giritli and Topcu Oraz [60], managerial personnel in the construction industry performs authoritative style with affiliative style most frequently. In addition, they perform the coaching style more frequently than affiliative, democratic, and pacesetting style. Another interesting finding was the high power distance prevalent in the Turkish society makes democratic leadership a rare practice [60].

## 7. Conclusion

In recent years, although leadership has always been a topic of interest in every field, a broad range of discussions and growing interest continued on this subject, from politics to organizational behavior. In design and construction organizations, effective team management becomes important, since achieving a complex, labor-intensive production process and working with numerous teams from different teams are among the primary problems of the industry. Effective leadership is needed to enable effective team management. Depending on the characteristics of industry, employee, and the culture, the development of different leadership approaches is needed. In recent years, it has emerged that productivity is not simply a technological problem and effective leadership behaviors are needed to achieve employee productivity. Leadership styles of the managers directly affect the productivity of team members. There is no common best leadership style preference for the organizations, even if they are in the same industry and having similar culture. The suitable leadership behavior for the statement due to the working environment and circumstances is a key to motivate employees for achieving productivity.

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