



A Cultural Perspective of Organizational Behavior in Construction Industry: An International Viewpoint

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ABSTRACT The ability of the construction firms to successfully organize themselves internally and respond to the environment externally is related to their organization culture, an intangible force currently believed to play a tangible role in affecting the competitiveness, development and ultimate survival of the organizations. The main objective of this study is to analyze the organizational behavior and culture of construction project participants based on their cultural orientation within the contracting firms. A questionnaire survey was based on some specific indices of the organizational culture and was conducted with the participants within the contracting firms. Both qualitative and quantitative research approaches were used and the responses to the survey items were analyzed using factor analysis. The results revealed that significant differences exist in specific cultural traits, ‘paternity-certainty’, ‘competitiveness-individuality’, ‘femininity’, and ‘informality’ within the contracting firms.

INTRODUCTION

Over the last decade or so, culture has become a mainstream topic of interest, discussion, and research within the construction industry (Hofstede 1984). In particular, the focus has tended toward organizational levels of culture rather than national (Hofstede et al. 1990). There is no single definition which encapsulates the term “culture” wholly. It has been referred to as a set of shared experiences, understandings, and meanings among the members of a group, an organization, a community, or a nation (Mead 1998; Hofstede and Hofstede 2005). Culture is an ingrained behavioral influence which affects the way collective groups approach, evaluate, and negotiate opportunities for international business (Ozorhon et al. 2008). Different cultures have different models of management and different ideas of the nature of organizations (Hofstede and Hofstede 2005).

Organizational culture gives identity to an organization. Notwithstanding the individuality of the staff members, their actions are collectively bound by the organizational culture (Cheung et al. 2011). Schein (1983, 1984, 2004) and Chaudhry (2016) advocated the organizational culture/leadership model and defined culture as a pattern of basic assumptions—invented, discovered, or developed by a given group as it learns to cope with its problems of external adaptation and internal integration. Cole (1997) considered culture as a

two-tiered set of “shared values, norms and beliefs within an organization.” On the surface is the explicit culture, which manifests itself in the “official” organizational and communication structure. Beneath the surface is the implicit culture that management and staff consider of real importance. Cole (1997) believes that implicit culture is probably closer to reality. Schein (2004) identifies three distinct levels that refer to the degree to which the different cultural phenomena are visible to the observer in the organizational cultures: (1) artifacts and behaviors (visual organizational structures and processes), (2) espoused values (the organization’s stated values and rules of behavior-strategies, goals, philosophies), and (3) assumptions (deeply embedded and taken-for-granted beliefs, feelings as the ultimate source of values). The organizational level of culture reflects the project-based, consequent, and transient working arrangements in the construction industry (Barley and Kunda 2001). Though culture is manifesting widely in the construction industry, there is still a serious lack of appreciation (Fellows 2010).

Construction is a so-called “people’s business,” and the culture issue especially deals with the differences between people’s behavior involved in the total business processes within the construction industry (Tijhuis and Fellows 2012). As indicated by Tijhuis (2001), construction industry participants need to become more aware of the importance of this phenomenon and

its manifestation and impact on the process and the product of the construction business. This awareness must be stimulated through further systematic research based on the adaptation and improvement of the existing frameworks and principles (Ankrah and Langford 2005).

Pierre Bourdieu and Jacques Derrida introduced a theoretical framework for the way culture can be accessed and its effects can be analyzed. Bourdieu (1984) roughly introduces the symbolic fields as strata of human activity. This theory involves not only the idea that objects have a symbolic meaning (that can be analyzed with the help of semiotics), but also the assumption that human behavior, “habitus” has a symbolic meaning. This refers to the way people act and interact with other people. As found in Hofstede’s (1984) work, people’s behavior plays an important role, and Bourdieu makes a decisive contribution to the interest that lies behind different behaviors. In other words, behavior isn’t a natural, meaningless phenomenon either. Even when it doesn’t lead to a special result or doesn’t seem to have a primary intention, it always has to be regarded as an indicator and consequently as some sort of a statement that has to be taken into account.

Derrida (1978) describes every constitution of the objects as the result of a presumed difference. Every object has its value according to the value of another comparable object. Also, every human activity is the result of the difference it makes to other people’s activities. This implies that the starting point for human activities is the comparison, either the comparison of the different values that objects have or the different values that are accorded to other people’s behavior. That means that human activities can never occur by chance; they always have a special meaning, but that meaning is constructed as a result of the comparison one makes between different social stakeholders and his or her own social role. So people derive what they do from the things other people do and thus behave and act in a way that appears preferable for them. This is why Luhmann (1995) says that there are no values but only preferences. According to Kimbrough and Compton (2009) numerous frameworks for understanding organizational culture have been proposed, using a wide variety of ideas. Some focus on management’s assumptions about workers, while others describe the various patterns of behavior within entities.

Within this paper, the researcher consequently cannot take any value systems for granted. The researcher had to analyze people’s motives to follow a certain set of rules in their organizations.

Nevertheless, the organizational behavior and culture of the principal participants of the Turkish contracting firms were examined in this study. This study also seeks to emphasize and intensify understanding of the cultural variability between contracting organizations aiming to establish specific cultural attributes and orientations of the construction project participants; moreover, it seeks to set the contexts within which some of their behavior and the motives that drive such a behavior can be assessed and understood. The framework described in this research aims to provide guidance for construction decision makers or engineering managers, thus they can generalize most of the conclusions in a systematic way to other project-based contractor companies.

Organizational Behavior and Culture in the Construction Industry

In previous times, cultural and organizational behaviors were not common topics that were measured side by side. As a matter of fact, the concept of measuring or examining organizational behavior on the basis of cultural impacts seems rather out of place. As early as the 1980s, there was an intense push in the field of theory and literature, which attempted to pay close attention to organizational culture and the individuals’ cultures as an integral factor in the overall success of an organization. Contracting firms have also not been left behind in their pursuit for superior and successful organizational behavior (Wenger and Snyder 2000). Culture’s role in organizational successes and failures is becoming more obvious as we dissect events of the past decade (Mallak 2009). Kimbrough and Compton (2009) theorized that organizational culture plays a critical role in key areas such as how major initiatives are implemented, how quickly the organization can react to the market changes, and whether or not the organization can successfully navigate major changes in the business environment. Attention to these aspects for managing construction companies should help construction project organization’s leaders or managers to prepare for threats to the orga-

nization and its project assets more intelligently and productively.

Experts defend that the development of a strong organizational culture is essential to the overall success of an organization (Carrillo and Chinowsky 2006; Teerikangas and Irrmann 2016). Yazici (2011) also theorized that organizational culture is linked to individual or team performance, and this link needs to be further studied to understand how organizational culture contributes to meeting project deliverables and to making an organization grow and compete. It is rather evident that there is a strong connection between people's cultures and the behavior within organizations. Construction companies modify their organizational behaviors on the account of their employees' cultures (Kim and Hwang 2012). In the European Union (EU), for instance, behavior noted in successful construction firms is largely due to the continually nourished and healthy organizational culture that not only appreciates the cultural backgrounds of its workforce, but also upholds such cultural characteristics (Tomek 2011). This is, for instance, done by abiding to culturally significant events within the organization, as well as allowing all persons from different cultures to maintain their unique cultural identities (Gold et al. 2001). People of different ethnicities and races have distinctive cultural beliefs, behaviors, and ceremonies.

Given the idea that organizational culture is the software of the mind (Hofstede 1991) that is shared by organizational members, it influences the cognition and perception of its members, guides their behaviors, and integrates its internal processes to ensure the ability to survive and adapt to the environment (Schein 1984; Cameron and Quinn 1999; Schein 2004; Eriksson and Ingelsson 2016). With the growing awareness that the nature of the industry, with its project-based and contractual arrangements, joint-venturing, internationalization of procurement, and requirements for the cooperation of a myriad of participants, makes it even more susceptible to the influence of organizational culture and culture in general, there is currently increasing research within this domain in the construction context. Occupational and organizational differences and how they affect receptivity to new practices and technologies and inter-firm collaboration is one of the two main focuses of culture research in the construction industry

(Fellows and Seymour 2002; Ankrah and Langford 2005).

Serpell and Rodriguez (2002) investigated the critical cultural elements of construction firms and the strategic action areas that could potentially influence these elements. There is a general awareness that organizational culture influences the processes and products of the construction business, especially with its project-based arrangements and the myriad of participants required to cooperate on a project to deliver the construction product (Ankrah and Langford 2005). It influences attitudes toward work, conflicts and their management, the transfer and implementation of innovative management practices, and philosophies and inter-firm collaboration inter alia. As a result, a deeper understanding of how this phenomenon manifests and the extent of its influence is required to enable project participants to harness the potential of culture and minimize or mitigate its adverse effects.

Assessment of Organizational Behavior and Culture in Construction

It is of paramount importance to appreciate the kinds of behavior on which culture has the utmost impact and identify how culture works to control the behavior of the members of a contracting firm. For instance, as a construction company, the German-based construction company Alfons Haar asserts that its superior image and service delivery are the foremost organizational objectives, and there is, therefore, a need to appreciate behavior that is culturally acceptable to different individuals of different cultures (Son and Rojas 2011).

An assessment of constructs of culture requires the identification of aspects important to culture just as an assessment of the forces will consider such aspects as magnitude and direction (Hofstede 2001). These aspects are referred to as dimensions of culture, and "hardening" the construct of organizational culture involves the identification of these dimensions of organizational culture and developing empirical referents around these dimensions that can be measured. Various dimensions abound in literature on the organizational culture, and various researchers refer to different dimensions depending on what is considered important in the culture being studied and whether the focus is on values or practices.

Hofstede (1984), developed a "value survey module" (VSM) based on the dimensions of power distance, uncertainty avoidance, masculinity/femininity and individualism/collectivism. Trompenaars (1994) focused on the dimensions of universalism/particularism, individualism/collectivism, effective/neutral relationships, specific/diffuse relationships, and achievement/ascription, while Schein (1984, 2004) reported, among others, dimensions of the nature of time, space, human nature, human activity, and human relationships; humanity's relationship to nature; the nature of reality and truth; individual/groupism; participation and involvement; and the characteristics of role relationships. Quinn and Cameron's "competing values framework" (CVF) emphasized the dimensions of leadership, dominant characteristics, organizational glue, organizational climate, criteria for success, and management style (Quinn 1988).

A multitude of dimensions are employed as an alternative to provide a simplified means of assessing cultures. Dimensions describe a number of ideal type of culture, each of them easy to imagine, against which the culture being assessed is compared (Hofstede 2001). A summary of the various cultural dimensions developed by other researchers interested in dimensions can be found in Quinn (1988) and Trompenaars and Hampden-Turner (1997). Hofstede's (1997) cultural dimensions were based on the empirically determined dimensions of power-distance and uncertainty avoidance which he considered to be the dimensions of national culture (from an IBM survey) particularly critical to the culture within organizations. The dimensions proposed by Trompenaars and Hampden-Turner (1997) were equality/hierarchy and orientation to the person/orientation to the task, similar to Hofstede's dimensions.

Setting these various contributions together, an extensive list of dimensions can be accumulated to reflect the various perspectives adopted by researchers. However, these dimensions of organizational culture may all be essential to unraveling the cultural differences that exist in construction organizations, having too many dimensions in a measurement framework causes it to lose meaning by becoming difficult to comprehend, as indicated by Hofstede (2001) and Ankrah and Langford (2005). It was therefore necessary in this study to identify a few but important dimensions to form the basis of the sub-

sequent assessment. This identification of dimensions can be made arbitrarily depending on what the research seeks to highlight, or it can be determined empirically as seen in Hofstede (1997, 2001).

Aspects of culture that define the structure must be determined to assess the identity of that culture. These aspects arise primarily in magnitude and direction (Hofstede 2001). These issues are referred to as dimensions of culture. The construct of organizational culture involves the identification of these dimensions, and these dimensions can be measured around a number of variables, creating empirical reference points. A large number of dimensions are available on organizational culture in the literature proposed by various scholars (Deal and Kennedy 1982; Schein 1984; Quinn 1988; Trompenaars 1994; Hofstede 1997; Trompenaars and Hampden-Turner 1997; Hofstede 2001; Schein 2004; Erez and Gati 2004). In addition, many scholars have examined important aspects of culture and emphasized focus on values or practices. Dimensions of organizational culture developed by the scholars can be grouped under the aspects of these values and practices. Nevertheless, it is generally suggested to focus on human behavior, process of production and human relations, managerial aspects, technology, organizational learning, innovation, and environmental issues.

RESEARCH METHODOLOGY

As mentioned by Hofstede (1991) and Van Den Berg and Wilderom (2004), the most appropriate approach for culture research is a conciliatory approach combining both qualitative and quantitative approaches. However, this paper has adopted quantitative research strategies with structured questions. This is because there is a lack of culture research regarding the organizational culture in construction in terms of contracting companies, especially in Turkey. On this account, to receive an initial outcome about the cultural dimensions of the contracting companies, the quantitative part of the research comprised this paper. The limitation of this study is the qualitative part of it. The qualitative phase was conducted just for the modification and selection process of the variables as a pilot study with some of the companies.

Organizational culture itself may set the parameters within which employees identify with

their national culture while at work (Ashkanasy et al. 2011). Trompenaars and Hampden-Turner (1997) and Hofstede (2001) emphasized that organizational culture is strong enough to influence the values of the participants and that the national roots of the company and participants working in those firms are reflected in their organizational behavior. Organizations are considered a system of individuals. Schein (2004) wholly emphasized individuals as manufacturers of organizations and organizational culture. At this juncture, the sum of the individual perceptions is the result of the organizational culture. Accordingly, key participants of the construction process play an important role in the organizational culture. These participants include the main contractor, client/investor, subcontractors (and suppliers), occupational group team (architect, civil engineer, etc.), and certain key individuals. In most cases, especially in Turkey, the contractor is the main actor in the development of the culture. A contracting firm can also be a pioneer in the construction of the whole project organization depending on the project procurement system selected in general.

This study focused on contracting firms registered with the Turkish Contractors Association (TCA). Istanbul, Ankara, Izmir, Bursa, and Kayseri were the regions targeted in the survey, as these areas constitute the most populated and the most actively developed regions in construction. A list of contracting firms operating within the construction sector was obtained from the TCA and the Chamber of Commerce and consisted of a total of 600 firms. The sample included relatively small to medium companies. As a matter of fact, a majority of the firms in the Turkish construction industry are small to medium companies (Acar et al. 2005). Company size was determined by the number of professional staff, number of construction projects per year, and the size of a typical project in US dollars. The samples of contracting firms were chosen from those who often put forward a wide range of perspectives of the construction sector and had the necessary experience and knowledge. After the selection process, structured questionnaires were conducted explaining the purpose of the survey based on face-to-face interviews.

The empirical data was collected through a questionnaire, which was administered to the firms registered with the TCA. For this survey, all of these firms were contacted and asked to

participate in the study. They were then fully informed of the research objectives, that the research was strictly scientific and confidential and that their anonymity was assured. A total of 600 different firms participated in the survey, and 505 completed questionnaires (one respondent from each firm) were received, giving a high response rate of 84 percent (505/600) and indicating that the sampling procedure was effective and that the respondents perceived the research to be relevant and worthwhile. The quantitative methodology (face-to-face survey) was completed in August 2010. Interviewees were predetermined prior to the completion of the survey.

Instruments developed and proposed by most of these scholars for measuring a particular set of organizational culture are generally not standard and can be used as is in other countries or organizations and situations. Accordingly, the dimensions and the variables used for this research were defined in two stages. For the first stage, dimensions were identified based on various publications (Trompenaars 1994; Trompenaars and Hampden-Turner 1997; Hofstede 1997, 2001; Ladhari et al. 2015) and grouped under eight different organizational culture dimensions with 28 independent variables. Within the constraints and limitations of this research, the dimensions selected were universalism vs. particularism, power distance, masculinity vs. femininity, uncertainty avoidance, long-term orientation, individualism vs. communitarianism, inner-directed vs. outer-directed, and achieved status vs. ascribed status. For the second stage independent variables were also extracted and reproduced from various publications: Hofstede's (1990) questionnaire and dimensions proposed by Trompenaars (1994). However, most of these variables were developed based on the results of the interviews with the pilot companies in order to adapt the survey to the specificities of the contracting organizations. Small modifications introduced in variables did not affect the design, and constructs were considered already validated. The respondents were asked to rate the extent of their agreement with each statement/independent variables based on a five-point Likert scale of 1 (strongly agree) to 5 (strongly disagree). Factor analysis applied to this research questionnaire was in depth. Answers varied from 1 (high compliance) to 5 (low compliance) ("Most", "Very", "Moderately", "Little", and "Very little"). Consequently, these 28 indepen-

dent variables were categorized under the four groups of dimensions presented in Table 1.

The independent variables ranked in the questionnaire describe the internal mechanism of a company in terms of rules, hierarchy, gender equality, risk taking, planning horizon of the company, teamwork, market adaptation, and qualifications. The way that a mechanism works is thought to change according to the structural features of the independent variables. In other words, certain companies exhibit certain behaviors, depending upon their structures. It was assumed that the participants' perceptions and behavior may vary depending on the different cultural structures and characteristics, and the perception presented may also change according to the respondent's position. For instance, different answers could be received from managers, top managers, or experts in a company. Therefore, the independent variables used in the questionnaire were analyzed according to the company profiles of Turkish contracting firms: (1) the positions of respondents, (2) work specialization of the companies, (3) total permanent office workers, (4) work areas (if operating abroad), (5) total number of projects carried out in the last five years, (6) membership in an institution, (7) contractor type, (8) project type at the national level (public, private, public/private), and (9) the field of activity (see Tables 2–10).

Factor analysis was applied to the questionnaire output because it suited the goal of understanding the basic content and structure of the research variables. The SPSS version 16.0 (SPSS, Inc., Chicago, IL, USA) software package was used for factor analysis. The Kaiser-Mayer-Olkin (KMO) test and Bartlett's test of sphericity was used in this study to ensure suitability for conducting factor analysis (Bartlett 1950; Kaiser 1974). F value indicates the degree of statistical confidence on the developed models. The sig. value stands for the confidence level. A sig. below 0.1 indicates that the predictor is significant.

RESULTS

It was observed that certain groups in the companies agreed with certain statements within the 28 independent variables in the questionnaire (see Table 1). This means that, if a respondent expressed compliance with a statement, it is likely that he or she also expressed compliance with a certain other statement as well. Thus, it is possible to compile synchronously moving statements less than one category as certain features

of those statements in the questionnaire may appear together within the companies. The 28 statements were divided into four categories: paternality-certainty, competitiveness-individuality, femininity, and informality. The questionnaire analyzed differences in the respondents and company structure changes. The traits constituting the groups are described below.

Paternality-certainty

If the trait is low (higher in number), competition among workers is important. Although the culture does not agree with unconventional behaviors, teamwork is also poor. Superiors are not always consulted, and workers do not always receive instructions, nor do they always comply with formal procedures. A good job is enough to be a good employee. Colleagues do not trust each other, and they do not develop informal problem-solving strategies. Therefore, employees rarely inform each other about developments. Chinowsky and Carrillo (2007), Cheung et al. (2011) and Idris and Kolawole (2016) emphasize the necessity of an atmosphere of trust encouraging employees to improve their skills in the organization. Employee loyalty is low, and turnover is high. Long-lasting features of the equipment are not considered. Information flow is not easy, and decision-making mechanisms operate without the employees. Improvement in employment is poor. Networking and good relations are important as they do not keep up with the markets through advisors.

Competitiveness-individuality

If it is low (higher in number), doing a good job is not enough in this structure, and exceptional behaviors are not appreciated. There is no strong trust or competitiveness among employees. Workers only have loyalty to the companies that they do not leave easily. Decisions about the company are shared with the workers. Good relations with superiors do not ensure a job. Workers do not tend to undertake challenging jobs to prove themselves. Long-lasting equipment is preferred.

Femininity

If it is low (higher in number), females are less visible. They do not have the same qualifi-

Table 1: Questionnaire for understanding the organizational behavior and culture of contracting firms*Dimensions and Variables**Paternality-certainty*

- 1- In our company, some colleagues are less respectful about rules than others, but as long as they do a good job, even superiors don't complain.
- 2- In our company, superiors make the decisions. They rarely ask subordinates about their opinion.
- 3- It happens that changes about the future of the company or the way a certain job is done are decided and the colleagues feel surprised.
- 4- To have a competitive rather than a cooperative relationship with colleagues.
- 5- To have challenging tasks to do, from which you can get a personal sense of accomplishment.
- 6- There are clear limits of what individuals are allowed to decide how to schedule their daily task. Responsibilities are precisely defined.
- 7- The employees of our company care a lot about the reaction of their superiors regarding their daily work, especially in exceptional situations.
- 8- In our company, the colleagues trust each other and don't need to control them all the time.
- 9- In order to ensure the successful completion (management) of the project, it is often necessary to prepare written formal procedures.
- 10- The employees don't easily leave our company, even if they have the opportunity to earn a bit more in a different company.
- 11- In our company, the best results are achieved through teamwork.
- 12- Some of the employees in our company are quite special characters with unconventional attitudes and ways of working.
- 13- In our company, employees discuss problems with each other and inform their colleagues about important developments.
- 14- Some colleagues have reached good positions through their experience.

Competitiveness-individuality

- 1- In our company, only useful and long-lasting equipment are acquired. Employees are encouraged to use them with care.
- 2- Our company doesn't need to follow every latest trend of the market.
- 3- Tax advisors and / or management consultants have important influence on the development of our company.
- 4- Suggestions for improvement of colleagues are highly valued.
- 5- In our company, the jobs are only assigned to people with the best possible qualifications and skills.
- 6- It is true that people are hired because of their especially good relationship with a superior and not because of their performance.

Femininity

- 1- Equally qualified women do their jobs as well as men.
- 2- In our company, female colleagues certainly earn as much money as their male colleague.
- 3- There is no difference between working with a male or a female colleague, regardless of their being superiors or subordinates.

Informality

- 1- There is a clear hierarchy in our company with several different management levels.
- 2- To take more risks and get a job where you can earn more money.
- 3- In our company, debts are avoided.
- 4- In our company, written, unwritten or informal rules exist. Every colleague knows them and expects others to obey them.
- 5- Although some rules might exist, personal relationships between colleagues allow solving problems more efficiently.

cations (according to the respondents), positions, and wages as men. Assignments of employees are not well defined.

Informality

If it is low (higher in number), formal rules are expected both for the relationships of workers and work handling. Cameron and Quinn (1999) stress that formal rules and policies hold the or-

ganization together in a hierarchical culture. Good work is not sufficient to make the system run smoothly. There are more clearly defined roles, although the system is not strictly hierarchical. The company does not take many risks to avoid debts.

Tables 2–10 show the significance between factors (created out of 28 statements) and the independent variables. The columns show the significance of the independent variables (sig).

The green cells indicate that a statement changed significantly according to the independent variables, and that there is significance between the factor and the structural feature. While assessing the means, the lower the number, the more the factor applies to the structural feature because the lowest number means high compliance with the statement (1—Most, 5—Very little) in the questionnaire.

The companies mainly had workers in different departments: administrative, technical, managerial, and site-worker positions. Within this scope, managerial positions of the respondents consisted of three different degrees hierarchically: top manager, manager of other managers (middle-level manager), and manager of people who are not managers (lower- or supervisory-level manager). Factor analysis showed that managers of people who were not managers—in other words, managers working in lower levels—were inclined to be secure at work and give employees limited control (see Table 2). They also did not perceive their companies as strong in terms of competitiveness among employees. Managers of other managers considered women to be equal more than the other respondents did (see Table 2). Female friendliness decreased as the position in the hierarchy increased. There was

no significance between positions and informality (see Table 2).

To understand the structural features, respondents were asked to provide the most closely represented work specializations of the companies. In total, four categories of work specializations were described by the respondents: construction, construction management, project management, and engineering services. As seen in Table 3, work specialization showed statistical significance for competitiveness-paternalism but not for femininity and informality. Engineering services showed the least competitiveness among the workers; 82 percent of the companies dealt with construction, while 20.2 percent of them operated in project management (see Table 3). Table 4 shows the number of workers who showed significance for competitiveness, femininity, and informality. The more employees the companies had, the more female friendly they were (see Table 4). The higher the number of employees in the company, the less informal and less competitive they were (see Table 4).

Respondents were asked to specify the available and current market of their company. Great parts of the companies did not work abroad (84.2 percent), while other parts of the companies (15.8

Table 2: Factors according to positions of respondents

	<i>Means</i>			<i>F</i>	<i>Sig. (0.1 >)</i>
	<i>Top managers (68.7%)</i>	<i>Managers of other managers (9.7%)</i>	<i>Managers of people who are not managers (21.6%)</i>		
Paternalism-certainty	0.06	-0.11	-0.31	3.56	0.03
Competitiveness-individuality	-0.07	-0.14	0.26	3.04	0.05
Femininity	0.10	-0.26	-0.18	3.93	0.02
Informality	-0.07	0.22	0.08	1.98	0.14

Table 3: Factors according to work specializations of companies

	<i>Means</i>				<i>F</i>	<i>Sig. (0.1 >)</i>
	<i>Construction (82.8%)</i>	<i>Construction management (16.2%)</i>	<i>Project management are not managers (20.2%)</i>	<i>Engineering service (14.9%)</i>		
Paternalism-certainty	0.00	-0.47	0.29	-0.08	3.13	0.03
Competitiveness-individuality	-0.02	-0.17	-0.05	0.43	2.27	0.08
Femininity	-0.02	0.21	-0.04	0.13	0.57	0.63
Informality	0.03	-0.07	-0.09	-0.12	0.44	0.73

Table 4: Factors according to the number of office workers in companies

	<i>Means</i>				<i>F</i>	<i>Sig.</i> (0.1>)
	<i>1-10 workers</i> (63.1%)	<i>11-25 workers</i> (20.2%)	<i>26-100 office workers</i> (12.7%)	<i>100 and over workers</i> (4.0%)		
Paternality-certainty	-0.04	0.18	-0.07	-0.17	2.00	0.11
Competitiveness- individuality	-0.12	-0.09	0.13	0.50	6.37	0.00
Femininity	0.16	0.04	-0.14	-0.50	6.81	0.00
Informality	-0.10	0.01	-0.17	0.57	7.42	0.00

percent) worked abroad with international customers—in other words, within a multi-national project environment. It was observed that if a company worked abroad, they were more concerned with certainty, less in favor of informal rules, and more female friendly (see Table 5). The construction projects that the respondents took part in, may provide clues about the structure of the companies. The number of projects undertaken by the companies in the past five years was used as the base for the analysis. There was significance between the number of projects

undertaken and femininity and informality. The companies having carried out 21–50 projects were more female friendly. The most formal companies were the ones with 11–50 projects. A high number of projects signifies a female-friendly attitude, but, once the number surpassed 50, the environment returned to a male-dominated one (see Table 6).

To understand the concrete conditions of the companies, respondents were also asked to provide the associations to which their companies belonged. The Istanbul Chamber of Commerce was the main association, of which 89.3 percent of the companies were members. Membership in an institution showed significance for paternality and femininity. If a company was not a member of an institution, then it was more concerned with control and was more male dominated (see Table 7).

The principal activity of the contracting companies may give clues about the structure of the companies. Generally, the industry covered two types of contractors, and house construction was the main activity (49.5 percent). General construction was also important (39 percent). As seen in Table 8, the type of contracting was significant for certain behavior. Companies princi-

Table 5: Factors according to the work area

	<i>Means</i>		<i>F</i>	<i>Sig.</i> (0.1>)
	<i>We operate abroad</i> (15.8%)	<i>We don't operate abroad</i> (84.2%)		
Paternality-certainty	-0.10	0.02	0.84	0.36
Competitiveness-individuality	0.32	-0.06	8.91	0.00
Femininity	-0.46	0.09	18.16	0.00
Informality	0.29	-0.06	7.09	0.01

Table 6: Factors according to the number of projects (past 5 years)

	<i>Means</i>					<i>F</i>	<i>Sig.</i> (0.1>)
	<i>1-5 projects</i> (38.9%)	<i>6-10 projects</i> (20%)	<i>11-20 projects</i> (17.2%)	<i>21-50 projects</i> (14.1%)	<i>51 and over projects</i> (9.8%)		
Paternality-certainty	0.03	-0.08	-0.07	0.10	0.17	0.80	0.52
Competitiveness-individuality	-0.17	0.04	0.09	-0.06	0.21	1.73	0.14
Femininity	0.16	0.06	0.02	-0.28	0.09	2.57	0.04
Informality	-0.15	-0.03	0.19	0.07	-0.20	2.21	0.07

Table 7: Factors according to memberships

	<i>Means</i>		<i>F</i>	<i>Sig. (0.1>)</i>
	<i>Member of an institution (89.3%)</i>	<i>Non-member of an institution (10.7%)</i>		
Paternality-certainty	0.02	-0.38	2.82	0.09
Competitiveness- individuality	0.01	-0.29	1.56	0.21
Femininity	-0.02	0.69	8.90	0.00
Informality	0.00	-0.15	0.37	0.54

pally working on general construction showed the least paternality and certainty. And the companies mainly working on road and bridge construction were the most female friendly. A small group of companies working on non-building construction were concerned with certainty the most, where control over work was important. Competitiveness was the most important for the companies ranked as house construction types (see Table 8).

Customer profiles were also investigated to understand the company profiles. Companies mainly served customers in three different spheres. The majority of the companies (66.7

percent) served customers in the private sphere. Roughly, a quarter percentages of the companies (25.5 percent) within the construction sector had both private and public type of projects. The company's project type related to its method of operation. The companies serving only the public sector had a more female-friendly attitude and took more interest in certainty. The companies serving only the private sector was more competitive among others (see Table 9). According to the results, housing constituted the main field of activity among the companies (87.9 percent). Housing was the field where most competitiveness could be observed within the com-

Table 8: Factors according to contractor types

	<i>Means</i>							<i>F</i>	<i>Sig. (0.1>)</i>
	<i>General construction (39.0%)</i>	<i>House construction (49.5%)</i>	<i>Road and bridge construction (3.2%)</i>	<i>Residential building construction (5.0%)</i>	<i>Non-building construction (1.2%)</i>	<i>Site preparation services (0.4%)</i>	<i>Other (1.8%)</i>		
Paternality-Certainty	0.30	-0.20	-0.06	-0.24	-0.64	-0.44	-0.69	5.37	0.00
Competitiveness-individuality	0.22	-0.23	-0.06	0.27	0.01	0.35	0.60	4.10	0.00
Femininity	0.17	-0.05	-0.58	-0.31	-0.09	-0.32	-0.61	2.78	0.01
Informality	0.21	-0.19	0.22	-0.07	0.50	0.40	-0.30	2.98	0.01

Table 9: Factors according to project types at the national level

	<i>Means</i>			<i>F</i>	<i>Sig. (0.1>)</i>
	<i>Public (7.5%)</i>	<i>Public and private (25.5%)</i>	<i>Private (67.0%)</i>		
Paternality-certainty	-0.41	0.08	0.01	2.86	0.06
Competitiveness-individuality	0.16	0.00	-0.03	0.49	0.61
Femininity	-0.35	-0.30	0.15	10.61	0.00
Informality	0.48	0.15	-0.11	6.60	0.00

Table 10: Factors according to field of activity (for the first answer)

	<i>Means</i>						<i>F</i>	<i>Sig. (0.1>)</i>
	<i>Commercial buildings (30.0%)</i>	<i>Industrial buildings (15.9%)</i>	<i>Housing (87.9%)</i>	<i>Infrastructure (13.9%)</i>	<i>Leisure (3.0%)</i>	<i>Other (2.0%)</i>		
Paternality-certainty	-0.03	-0.11	0.05	-0.28	0.70	-1.17	2.12	0.06
Competitiveness-individuality	0.03	0.29	-0.08	0.27	1.79	0.56	2.10	0.06
Femininity	-0.19	-0.32	0.13	-0.36	-1.35	-0.84	3.80	0.00
Informality	0.22	0.20	-0.09	0.34	-0.77	-0.58	2.41	0.04

panies. The inspection of work and workers and formal rules concerned mostly the companies specializing in the infrastructure field (see Table 10).

Implications for Engineering Managers

Organization culture sets the blueprint of how a company executes its objectives and is, therefore, exceptionally significant for the accomplishment of any organization. Practicing engineering managers in the construction industry need to know that it is the organization culture that helps actualize the technical skills and provide results (Chinowsky and Songer 2011). The culture in this case involves the internal standards of operation, construction procedures, and norms and laid down regulations that guide every activity of a company.

Organization culture is borrowed from the society practices and must consider the immediate environment to ensure that the organization's operations are not against the norms of the society, which may work against their disadvantage. Managers should also understand that organization norms vary from one company to another and are based on what every organization values most. One missing link that most construction managers need to comprehend is the connection between the organization's culture and efficient delivery of the construction projects. This is because organizational culture influences the perception of its members, controls their behaviors, and integrates its internal processes with the external demands to ensure harmonious correlation with all the factors influencing construction (Cheung et al. 2011).

Practicing engineering managers need to understand that all construction contractual agreements, procurement procedures, and utilization of construction materials are based on the

culture of the organizations. This will help protect the organization against abuses and leaves management with no room for guesswork. In case engineering management fails to appreciate organization culture, there is the risk of conflicts and resistance in the execution of the construction plans from several quarters (Fellows 2010; Liu et al. 2015), such as the community, the employees, and different dependable departments that directly impact the construction like procurement and finance, thus minimizing the overall success.

CONCLUSION

This study offers several key contributions and strengths. Construction project organizations or contracting firms should recognize and understand human behavior and culture principally on the organizational level to compete and challenge within the construction industry in a wide perspective. Human behavior is the key factor for success in any business, including the construction sector. High financial figures can guarantee the provision of requirements that are necessary for the completion of construction projects. However, it cannot guarantee positive human behavior among all entities according to the set objectives. For this reason, the human factor requires detailed research as an important issue for the construction industry.

This research provides a road map for more focused studies seeking to emphasize and intensify understanding of the cultural variability between contracting organizations, establishing the specific cultural attributes and orientations of the construction project participants and setting the contexts within which some of their behavior and the motives that drive such behavior can be assessed and understood. One such area

into which this research can be extended is examination of the organizational behavior and culture of the other stakeholders (that is, architecture-design, engineering, and consulting firms) within the Turkish construction industry. Decision makers or engineering managers need to take these different roles to accommodate the organization's need to complete the projects successfully, and compete in the market. A project leader or manager can use this paper as a tool for understanding potential cultural strengths and barriers prior to implementing the managerial aspects of the construction projects.

RECOMMENDATIONS

This research provides an empirically grounded framework for analyzing the organizational behavior and culture of the contracting firms based on their cultural orientation within the Turkish construction industry. The empirical analysis has two main contributions. First, it has established a measurement model for organizational culture in terms of determined dimensions. Second, the research has adopted the use of specific cultural traits significantly existing within the contracting firms: paternalism-certainty, competitiveness-individuality, femininity, and informality.

That of main contractor is the most common position that the companies' respondents have obtained through their personal experience in the industry. These results prove that control and coordination of the sector dynamics are achieved through main contractors. Currently, the most important percentage of construction projects is carried out in the private sector. This is also further proof that the dynamics of the sector are deeply rooted in the construction companies. In other words, customers of the most recently completed projects are in the private sector. Therefore, the economic advantage of the contractor companies, with their high number of private projects, creates a beneficial authority for them within the Turkish construction industry.

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