FACTORS AFFECTING CONSTRUCTION INDUSTRY DEVELOPMENT: RELATIONSHIP WITH CHARACTERISTICS OF THE BUSINESS ENVIRONMENT

[1]DESALEGN GIRMA MENGISTU, [2]GANGADHAR MAHESH

Department of Civil Engineering, National Institute of Technology Karnataka, Surathkal, India
[1]Research scholar, [2]Assistant Professor
E-mail: [1]m.g.desalegn@gmail.com, [2]gangadhar.mahesh@gmail.com

Abstract - Construction industry development (CID) is affected by the condition of the business environment it operates in. Therefore, improving CID primarily needs identifying its determinant factors and their relationship with characteristics of the business environment. In this paper, the relationship between factors with business environment is assessed in the context of Ethiopian construction industry focusing on three factors; manpower development, competitiveness of stakeholders and practice of the industry. The findings are based on a structured questionnaire prepared to understand perception of professionals about characteristics of the business environment pertaining to construction industry and the significance of impact of the determinant factors on progress of the industry. Mean value was utilized to rank dimensions of the factors and variables of dimensions of business environment; and correlation analysis was carried out to identify the relationship between the factors and characteristics of the business environment. The findings indicate that there is significant correlation between the factors and the characteristics. It is also found that there is significant correlation among the factors and among characteristics of the business environment.

Keywords - Business Environment, Construction Industry, Ethiopia, Factors

I. INTRODUCTION

Creating conducive business environment for CID through improving its competitiveness is important to maximize contribution of the industry to socioeconomic development of a nation. This needs identification of the factors affecting CID and the relationship with characteristics of the business environment. As reports of different CID initiatives and seminal researches in the area indicate determinant factors of CID are related to; manpower development, sustainable investment in the industry, harmonized industry practice, sharpening competitiveness, capturing alternative market and industry performance measurement practice [1],[2],[3],[4],[5], [6],[7]. Classifications of the factors is not mutually exclusive [8], the factors are interrelated. Understanding the relationship between factors and the business environment is important to prioritize improvement requirements.

Extents of effect of the factors are context specific. Considering manpower development, sharpening competitiveness and harmonized industry practice as the major factors in developing country's construction industry, this paper is aimed at assessing the relationship between these factors and characteristics of the business environment in the context of Ethiopian construction industry.

II. LITERATURE REVIEW

Business environment is the aggregate of all conditions, events and influences that surround and affect it [9]. The general business environment covers political, economic, social-cultural, legal and technological aspects [10]. Construction industry is not out of this general business environment realm. However, it is important to describe it in the context of construction industry to understand the influences and effects.

Condition of the environment is distinguished (good or bad) by factor conditions, the strategy, structure and rivalry of domestic competition, demand conditions and related and supporting industries [11]. These are the four attributes that shape the environment coupled with external factors, government and chance ,indicated in porter's diamond [12], which is framed to hexagon by [13]to suit the context of construction industry. Nations are most likely to succeed in industries or industry segments where the national diamond is the most favorable [12], i.e. the determinants are collectively favorable/conducive. Factors affecting CID are majorly aligned with these determinants. This indicates these factors determine characteristics of business environment. Influences and effects of the factors are expressed through nature of the interaction between business environment and organization.

The interaction between the business environment and organization is revealed through different ways; exchange of information, exchange of resource and exchange of influence and power [14]. The inputs to the business in the form of manpower, financial, physical and other required resources are drawn from the environment. The business converts these resources into output of products or services. In the course of this process the environment offers opportunities, incentives and rewards on the one hand and sets constraints, threats and restrictions on the other.

The interaction is affected by characteristics of the business environment. Change in the business environment changes the inputs, transformation process and outputs of the industry [10]. Characteristics of the business environment is measured by four dimensions; degree of munificence, dynamism, complexity and diversity [15]. [16]adopted these dimensions to suit context of construction industry as; munificence, dynamism, complexity and competitive intensity. Munificencerefers to the degree to which an environment can offer sufficient resources to organizations that operate in it to support their growth, Dynamism refers to the uncertainties in the business environment, and Complexityexplains the degree of difficulty in implementing a plan to achieve a number of quantifiable objectives associated with knowledge about products, customers, or practices in the industry. Competitive intensity is defined as a situation where competition is fierce due to the number of competitors in the market and the lack of potential opportunities for further growth.

Generally, to smoothly run the business; constraints, threats and restrictions imposed by the environment should be minimized to thereby create conducive business environment. Identifying the causal relationship between the factors and the business environment is important for prioritization and critical intervention.

III. METHODOLOGY

The data used in this paper is part of a questionnaire survey which was conducted as part of a larger research project on construction industry improvement in Ethiopia. To consider the major stakeholders in all areas of establishment purposive sampling method was used to select the respondents.

The questionnaire survey was forwarded to 250 selected professionals having minimum two years' experience and 127 valid responses were collected which accounts for 50.8% response rate. Respondent are from; Employers (16.54%), Contractors (32.28%), Consultants (35.43%), Academics (12.60%) and Regulatory Authority (3.15%). The main stakeholders are fairly represented with their possible areas of establishment; building construction (31.5%), road construction (14.17%), waterworks construction (7.87%), general construction (35.43%) and others (11.02%). Respondents also cover a wide range of experience and 70.07% of the respondents have experience of six years and above. As the responses are experience based opinion, the data can better reflect the intended enquiry.

The data used for this paper focuses on two aspects; impact of the determinant factors on development of the industry and characteristics of the business environment. Respondents were asked to rate the level of impact of the factors on progress of the industry in a 5 point Likert scale where; 1 = Very Low, 2 =Low, 3 =Moderate, 4 =High and 5 = Very High. Similar rating scale was used to describe influence of characteristics of the business environment. Mean and standard deviation were used for ranking of dimensions of the factors and ranking of variables of the characteristics of the business environment. Correlation analysis was conducted to understand the relationship among the factors and dimensions of the business environment. IBM SPSS version 21 software was used for the analysis.

IV. ANALYSIS AND DISCUSSION

A. Factors affecting construction industry development

Improving the factors needs identification of the dimensions of the factors that affect progress of the industry. Manpower development has two dimensions; quantity and quality. There might be shortage of manpower in terms of number or quality of the available manpower in the industry or both cases

Table 1 Impact of the factors on CID

Factors	Dimensions of the factors	Mean	Std. Deviation	Rank
Manpower development	Quality of manpower	3.48	1.240	1
	Availability of manpower	3.21	1.206	2
Enhancing competitiveness	Technical capacity	3.34	1.142	3
	Financial capacity	3.41	1.281	2
	Management practice	3.53	1.350	1
Harmonizing industry practice	Effectiveness of the applicable regulation in harmonizing industry practice	3.23	1.100	1
	Participation of the industry (trade and professional associations) to improve the practice	3.04	1.151	5
	Effectiveness and efficiency of the regulatory institutes in improving the practice	3.20	1.175	2
	Application of IT for improvement of the practice	3.11	1.335	4
	Progress of Technological advancement	3.13	1.254	3

could be challenges of the industry. Competitiveness of the stakeholders also has different dimensions; technical capacity, financial capacity and management practice. Poor performance of organizations in the industry is attributed to these dimensions. Similarly, improving and harmonizing industry practice can be achieved through improvement of different dimensions; regulatory tools, capacity of regulatory institutes, involvement of business and professional associations, wider application of IT and Technology development (transfer and innovation).

Perceived impact of the dimensions of the factors on progress of Ethiopian construction industry is summarized in Table 1. All the mean values are above three which indicates the respondent perceived as all the dimensions are affecting the current performance of the industry. Quality of manpower, management practice and effectiveness of the applicable regulation in harmonizing industry practice takes the top rank.

B. Characteristics of the business environment

Table 2 characteristics of the business environment

Dimensions of BE	Variables of the Dimensions	Mean	Std. Deviation	Rank
Environmental Munificence	The current demand is strong	3.51	1.053	2
	There is a potential for high demand growth in the industry	3.56	1.096	1
	There is an abundance of resource (i.e. financial, supplies, human resource, etc.) in the industry for companies to support growth potential	3.09	1.151	3
	There is no shortage of necessary resources in the market	2.94	1.180	4
Environmental Dynamism	The marketing environment is rapidly changing	3.69	.982	1
	Rate of change in clients' need/requirement in the industry	3.42	.895	2
	Changes in standards and regulations	2.96	.971	4
	Demand fluctuation	3.39	1.000	3
Environmental Complexity	Inconsistency of management practices	3.67	.873	1
	The complexity of knowledge required to meet customer needs	3.28	.967	4
	The degree of market segmentation in the industry	3.28	.916	3
	The complexity of effectively managing the supply chain	3.45	1.021	2
Environmental Competitive intensity	Competition in the local market is intense i.e. number and diversity of rivals	3.37	1.037	3
	Selection is majorly on least cost bidder	4.05	1.097	1
	Unreliable supply chain	3.83	1.014	2

Dimensions of the business environment are measured by different variables. In this paper demand potential and resource availability are the two variables adopted for measuring environmental munificence. For environmental dynamism; dynamism of the marketing environment, change order, change in standard and regulations and demand fluctuations are considered as measurement variables. Management consistency in the industry, knowledge of the work, degree of market segmentation and effectiveness in supply chain management are adopted for measuring environmental complexity. For environmental competitive intensity; intensity of competition, reliability of the supply chain and effect of least cost practice in bidding are considered as variables. Most of the adopted measurement variables have been employed in main stream business management studies [15]. [16]has employed the variables in the context of construction industry.

Characteristics of the business environment of Ethiopian construction industry are summarized in Table 2 as perceived by the respondent.

There is a potential for high demand growth in the industry which is opportunity whereas the marketing environment is dynamic. Inconsistency of management practices is identified as a source of complexity in the industry. The highest mean value from competitive intensity indicates the lowest bid award practice is majorly affecting performance of the industry. This practice could be a cause for poor performance as there are possibilities where bidders with less capacity are awarded the contract. Such practice creates fierce competition which is going to affect development of the firms and overall competitiveness of the industry.

C. Relationship between the factors and characteristics of the business environment

Factors affecting construction industry development and the business environment are mutually interdependent. There are direct and indirect effects on each other. There could be a possibility that a solution of a specific problem might create or exacerbate other problem or result in positive multiplier effect. Hence, identifying the relationships is important for formulation of solution oriented policies and appropriate interventions for development of the industry.

As indicated in Table 3 there is significant correlation between all the factors and characteristics of the business environment. The causal relationship is discussed focusing on the factors; how they affect and affected by characteristics of the business environment.

i. Manpower Development

While an input of the industry manpower availability affects environmental munificence, it is affected by the demand potential of the industry. The high demand growth in the industry dictates the need of estimating the demand and projecting manpower requirement for effective supply of the required quantity and quality. From variables of environmental dynamism; demand fluctuation and change of regulations directly affects manpower development.

The complexity of knowledge required to meet customer needs and complexity of effectively managing the supply chain is directly related with quality of manpower. Manpower development is affected by human resource management practice of the industry. Human resource management practice is affected by strategic management practice which in turn affected by competitive intensity [16].

ii. Enhancing Competitiveness

Enhancing Competitiveness is directly affected by demand condition and resource availability. Dynamic marketing environment makes price estimation difficult and hence getting project. Change order is common problem in Ethiopian construction and it has the consequence of poor performance in time, cost and poor relationship, which in turn has negative implication on enhancing competitiveness.

Complexity and competitive intensity also have direct impact on competitiveness of the firm. Generally, enhancing competitiveness is directly affected by characteristics of the business environment. Organizations need to understand the environment and adopt itself to the changing condition[17],[18].

iii. Harmonizing industry practice

The practice in the industry affects and is affected by characteristics of the business environment. The two variables; efficiency of the regulatory institutes and effectiveness of the applicable regulation covers the political and legal aspect of the environment. Role of government in construction industry is expressed as a regulator, promoter and major client (especially in developing countries). According to [19], the influence of government at the broadest level is strong in creating conducive business environment by setting polices that promote private firms and combating corruption than its role as a major client. Long term construction industry development policy can improve the demand and resource condition. This reduces the risk associated with competitive intensity. Similarly, the complexity due to shortage of knowledge which is associated with capacity of stakeholders can be improved through capacity development programs.

CID is long term activity which needs coordinated effort of the stakeholders. Active involvement of business associations (i.e. contractors, consultant etc.) and professional associations help to promote best practices; IT application and technology development and reduce inconsistency of practice.

Application of IT and new construction technology developments are challenged by shortage of knowledge in the industry. This indicates improving the complexity dimensions is associated with quality of manpower in the industry.

Findings above indicate the relationship between the factors and characteristics of the business environment. Similarly, as indicated in Table 3 there is significant correlation among characteristics of the business environment and among the factors affecting CID.

Change in characteristics of the business environment affects component of the system. The inputs to the business are drawn from the environment and the process (efficiency and effectiveness) is determined by competitiveness of the stakeholders and is affected by other elements (e.g. regulatory system). Manpower is a resource to the industry which majorly affects input of the system. Competitiveness is a capability, which also integrates resources, majorly affects process of the system, efficiency and effectiveness. Since, components of a system are dependent on each other, both, manpower and competitiveness determines the output. Harmonized industry practice affect the input, process and the output, e.g. regulatory system. Factors that affect majorly one component of the system may not affect the other component equally

Table 2 Correlation matrix among dimensions of the factors and business environment

	MD	EC	HIP	Mu	Dy	Cp	Ci
MD	1						
EC	.749**	1					
HIP	.670**	.830**	1				
Mu	.463**	.382**	.462**	1			
Dy	.262**	.176*	.238**	.284**	1		
Cp	.259**	.269**	.302**	.185*	.339**	1	
Ci	.334**	.385**	.417**	.352**	.338**	.527**	1

**. Correlation is significant at the 0.01 level (2-tailed)

*. Correlation is significant at the 0.05 level (2-tailed).

CONCLUSION

Overall, the findings indicate significant correlation among the constructs and basic conclusions are drawn

from the analysis and discussion that shows the major causal relationship. The analysis indicates harmonized industry practice has significance correlation with environmental munificence (0.462) and competitive intensity (0.417). Similarly, harmonized industry practice hashigh significant correlation with enhancing competitiveness (0.83) and manpower development (0.67). These indicates the dimensions of harmonized industry practice; efficiency of the regulatory institutes, effectiveness of the applicable regulation, promoting involvement of associations, promoting IT application and technology development are critical in creating conducive business environment.

In addition it has revealed that, though environmental competitive intensity is significantly correlated with all dimensions of the business environment it is mainly affected by environmental complexity (0.527). The findings could be used to develop a framework to create conducive business environment for construction industry development.

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