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Evaluation of the competitive advantages of construction firms

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Abstract

This study was conducted with the aim of identifying, evaluating, and measuring the component attributes of the competitive advantages of construction firms in Hanoi. After interviewing experts, the questionnaire was sent to 150 construction firms in Hanoi and collected within two months. However, only 130 votes met the requirements and were included in the analysis. The results of descriptive statistics, Cronbach's alpha analysis, and an independent T-test have identified and measured four component attributes of competitive advantage through construction quality and

five component attributes of competitive advantage through innovation, which is seen as a competitive advantage for construction firms in Hanoi. There is no statistically significant difference in the level of competitive advantage assessment among employees of different genders and job positions. Thereby, the study proposes some recommendations to improve the capacity and competitive advantage of Vietnamese construction firms in the coming years.

Keywords: Competitive Advantage, Construction Firms, Construct, Business Performance

JEL Codes: D49, M19, M21

1. Introduction

The construction sector uses a third of all resources, 40% of total energy, and 25% of total water worldwide (UNEP-SBCI, 2016) ^[14]. With an increasing urbanization rate, as UNDESA (2014) ^[13] predicts, about 70% of the world's population is expected to live in urban areas by 2050, which inevitably entails an increase in construction activity.

According to Akintoye *et al.* (2000) ^[1], construction companies prioritize collaborative ties with clients over those with suppliers. Construction companies will also target clients in this area who are eco-aware and follow eco-friendly consumption patterns.

Creating a competitive advantage is the key to the success of any business (Laseter & Gillis, 2012) ^[9]. Maintaining a competitive advantage is a prerequisite for business success. If a business prospers in its industry, it must create a competitive advantage over its competitors.

Enterprises must possess core competences to acquire a competitive edge over rivals in a highly competitive environment (Cao & Zhang, 2011) ^[4].

In Vietnam's market economy, with the trend of integration and development, our country is increasingly attracting a large amount of foreign investment capital through investment projects in different fields of economic life. Socioeconomic. These projects all involve the participation of construction enterprises.

Vietnam's participation in the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) is expected to help Vietnam attract more foreign investment, leading to increased investment demand in infrastructure development and factories. This shows the important role of construction enterprises in the processes of integration, industrialization, and modernization, but also poses a big challenge for construction enterprises to constantly improve management standards. Business, operational efficiency, competitive advantage, construction quality, etc.

2. Literature Review

Competitive Advantage

Competitive advantage has been known and widely used since the 1980s, but up to now, there are still many views on the concept of competitive advantage, such as:

Porter (1985) ^[11] asserts that a company has a competitive edge when the value it can provide to customers outweighs the costs it must bear. According to Barney (1991) ^[3], who had a similar perspective, businesses' competitive advantages come from the exceptional values they produce for customers and the fact that they outperform their rivals in this regard. brand value and turn into the clients' chosen supplier. According to Christensen (2010) ^[5], a company's competitive advantage is any benefit it can provide to customers (end users) to entice them to purchase its goods or services over those of rivals and deter immediate competitors from copying it in the present and the future.

According to Huff *et al.* (2009) ^[8], a company has a competitive advantage when it outperforms other businesses in the same sector in terms of market share, productivity, quality, or advancement. set in technology. A company has a competitive advantage when it possesses a number of advantages that allow it to beat its rivals and generate exceptional financial outcomes (Wang, 2014) ^[15].

Porter (2016) ^[12] asserts that a company has a competitive advantage when it can offer the same benefits as its rivals at a cheaper cost (a cost advantage) or by offering more benefits. surpass the capabilities of rival items (differentiation advantage). According to Resource Dependency Theory (RDT), on the other hand, a competitive advantage is the capacity of businesses to have superior resources and capabilities compared to other rivals; without this superiority, rivals would be able to outperform a company. Any edge will swiftly go as competitors copy what the company is doing.

A competitive advantage is defined as a set of advantages that enable a business to outperform its competitors and thereby help it achieve outstanding business results and build and maintain a competitive advantage. Competition is a prerequisite for business success (Le & Doan, 2022) ^[10].

Competitive Advantage via Construction Quality

The construction work that the construction and installation business must have must be of quality, which means it will be done according to the design or better. High-quality construction will increase the value of the work in the mind of the customer. Thus, the high quality of construction also leads to better business performance and lower costs. High-quality work not only allows businesses to demand higher prices from customers but also reduces production costs.

Competitive Advantage via Innovation

Innovation is the process, method, practical implementation, etc. that are considered new in the way enterprises construct and install work. Innovation includes advances in business development in terms of construction products, construction and installation processes, distribution, services, organizational structure, and management apparatus. Innovation is considered one of the most important stages. Competitive advantage, because in the long run, competition is seen as a process led by innovation. While not all innovation is successful, it is an important factor in creating a competitive advantage.

Banerjee *et al.* (2003) ^[2] define competitive advantage through innovation as: (i) my company has achieved significant cost advantages by experimenting with improving environmental quality; (ii) my business can lead the market through systematic investment in research and development of environmentally friendly products; (iii) my

business can enter new and profitable markets by using an environmentally friendly strategy; and (iv) my business can reduce the environmental impact of its operations.

3. Research Methods

3.1 Research Processing

In this study, we combined qualitative and quantitative research. First, we did in-depth interviews with five experts who have expertise in research as well as experience working in construction enterprises. Next, quantitative research was conducted on SPSS 26 software, including descriptive statistics, assessing the reliability of the official scale through Cronbach's alpha coefficient, performing a T-test, and an ANOVA.

3.2 Choose an Official Model

This study uses a random sampling method. The list of construction enterprises participating in the survey was randomly taken from the overall study of the construction contractors in many different districts or regions in the Hanoi area. The authors selected satisfying: as of 2022, have a duration of operation of 3 years or more. The survey subjects are employees of the planned economy department, the business department, and the team captain. In addition, the assembly products of the construction enterprise are quite diverse; however, for this study, we chose the construction works as houses (apartments, individual houses) for survey.

3.3 Collecting Official Data

The total number of votes issued and sent through both direct and indirect survey methods was 150, with 135 votes received, corresponding to a response rate of 90.0%. However, five of these votes were invalid, so the final result was 130 valid votes.

3.4 Building a Staircase

Table 1: Scale of competitive advantages of construction firms

Code	Description
Quality of construction (Q)	
Q1	Consumers are satisfied with the work of the construction firm.
Q2	Construction quality is guaranteed.
Q3	Construction is diverse.
Q4	Construction to meet customer needs.
Innovation (I)	
I1	Construction firms understand the impact of the environment.
I2	The construction firm always recognizes opportunities and challenges.
I3	The construction firm feels the change in the needs of customers.
I4	Construction firms are always actively investing in research and development.
I5	Construction firms always have new products.

4. Research Results

4.1 Descriptive Statistics

Information on the data collected is shown in Table 2. It shows that among the 130 respondents, about 75.4% were male, while the remaining 32 (24.6%) were female. Of these, 51 of them (or 39.2%) were the team captain, 44 of them (or 33.8%) were working for the planned economy department, and 26.9% of the participants were working for the business department. Among the respondents, 50.0% of

the participants have work experiences for 5 years to 10 years, 23.1% of the participants have work experiences for less than 5 years, and over 10 years accounted for 26.9%.

Table 2: Respondents by gender, job position and work experience

	Frequency	Percent	Cumulative Percent
Gender			
Male	98	75.4	75.4
Female	32	24.6	100.0
Age			
The team captain	51	39.2	39.2
Planned economy department	44	33.8	73.1
Business department	35	26.9	100.0
Work experience			
From 5 to 10 years	30	23.1	23.1
Less than 5 years	35	26.9	50.0
10 years or higher	65	50.0	100.0
Total	130	100.0	

Next, table 3 indicates that the respondents agree with the dependent variables of "Competitive Advantages of Construction Firms," where nine attributes were quite high with an average of 4.28 and 3.97 compared with the highest of the Likert 5-point scale. All nine attributes were rated at an average of 3.92 or higher.

Table 3: Descriptive Analysis of Attributes of Competitive Advantages of Construction Firms

	N	Minimum	Maximum	Mean	Std. Deviation
Innovation (I)					
I1	130	1.00	5.00	4.27	0.814
I2	130	2.00	5.00	4.32	0.790
I3	130	2.00	5.00	4.31	0.824
I4	130	2.00	5.00	4.26	0.812
I5	130	2.00	5.00	4.25	0.771
Valid N (listwise)	130			4.28	
Quality of construction (Q)					
Q1	130	2.00	5.00	3.97	0.897
Q2	130	2.00	5.00	4.02	0.880
Q3	130	2.00	5.00	3.92	0.890
Q4	130	2.00	5.00	3.97	0.914
Valid N (listwise)	130			3.97	

According to the survey respondents, construction quality is guaranteed, which is quite high (reaching 4.02/5 points), and construction to meet customer needs (reaching 3.97/5 points) are competitive advantages of construction firms in Hanoi. These advantages come from the construction technology of many enterprises up to standards, including

some construction enterprises with modern technology imported from developed countries.

4.2 Cronbach's Alpha

The competitive advantages of construction firms have been measured by Cronbach's alpha. The results of testing Cronbach's alpha for attributes are presented in Table 4 below. The results also show that attributes of the dependent variables have Cronbach's alpha coefficients that are greater than 0.6, and the correlation coefficients of all attributes are greater than 0.3. So, all the attributes of the dependent variables are statistically significant (Hoang & Chu, 2008; Hair *et al.*, 2010) ^[7, 6].

Table 4: Results of Cronbach's alpha testing of attributes and item-total statistics

Innovation (I)				
Cronbach's Alpha			N of Items	
.925			5	
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
I1	17.15	8.002	0.810	0.907
I2	17.09	8.224	0.784	0.912
I3	17.11	7.973	0.805	0.908
I4	17.15	7.961	0.825	0.904
I5	17.16	8.261	0.800	0.909
Quality of construction (Q)				
Cronbach's Alpha	N of Items			
.925	4			
Q1	11.90	5.920	0.858	0.891
Q2	11.85	6.033	0.847	0.895
Q3	11.95	6.168	0.795	0.912
Q4	11.90	6.029	0.803	0.910

4.3 Independent T-Test

A comparison of assessment results on the competitive advantages of construction firms between different genders is presented in Table 5. According to Table 5, Sig Levene's Test = 0.846 > 0.05, and Sig Levene's Test = 0.858 > 0.05, so the variance between genders is not different. T-Test sig value = 0.842 > 0.05, and T-Test sig value = 0.876 > 0.05; there is no statistically significant difference in the level of assessment of Competitive Advantages of Construction Firms of survey subjects with different genders (Hair *et al.*, 2010; Hoang & Chu, 2008) ^[7, 6].

Table 5: Differences in the Competitive Advantages of Construction Firms with participants of different gender- Independent Test

Competitive Advantages of Construction Firms via Quality of construction (Q)										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
Q	Equal variances assumed	0.038	0.846	-0.200	128	0.842	-0.03300	0.16533	-0.36013	0.29412
	Equal variances not assumed			-0.194	50,265	0.847	-0.03300	0.17036	-0.37513	0.30913
Competitive Advantages of Construction Firms via Innovation (I)										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean	Std. Error	95% Confidence Interval of the	

						tailed)	Difference	Difference	Difference	
									Lower	Upper
I	Equal variances assumed	0.032	0.858	-0.156	128	0.876	-0.02245	0.14394	-0.30725	0.26235
	Equal variances not assumed			-0.140	44.874	0.889	-0.02245	0.16062	-0.34597	0.30108

4.4 ANOVA

An ANOVA test was needed to make a comparison of the results of the evaluation of the competitive advantages of construction firms between the three subjects, including participants who are the team captain, participants who work for the planned economy department, and participants who work for the business department.

Competitive Advantages of Construction Firms via Quality of Construction (Q)

Table 6 shows that the sig Levene statistic is 0.032 (results in a row Based on Mean), smaller than 0.05, which means that the hypothesis of homogeneity of variance among the variable value groups (different job positions) has not been violated. Therefore, this study uses the results of the Robust Tests of Equality of Means (see table 7).

Table 7 shows that sig. = 0.802 is more than 0.05, which indicates that there is no statistically significant difference in the level of competitive advantages of construction firms via quality of construction (Q) between the mentioned three groups of job positions (Hoang & Chu, 2008; Hair *et al.*, 2010) [7, 6].

Competitive Advantages of Construction Firms via Innovation (I)

Table 6 shows that the sig Levene statistic is 0.665 (results in a row Based on Mean), greater than 0.05, which means that the hypothesis of homogeneity of variance among the variable value groups (different job positions) has not been violated. Therefore, this study uses the results of the ANOVA test (see table 8).

Table 8 shows that sig. = 0.684 is more than 0.05, which indicates that there is no statistically significant difference in the level of competitive advantages of construction firms via innovation (I) between the mentioned three groups of job positions (Hoang & Chu, 2008; Hair *et al.*, 2010) [7, 6].

Table 6: Test of Homogeneity of Variances

Competitive Advantages of Construction Firms via Quality of construction (Q)				
Descriptions	Levene Statistic	df1	df2	Sig.
Based on Mean	3.552	2	127	0.032
Based on Median	3.014	2	127	0.053
Based on Median and with adjusted df	3.014	2	119.774	0.053
Based on trimmed mean	3.445	2	127	0.035
Competitive Advantages of Construction Firms via Innovation (I)				
Descriptions	Levene Statistic	df1	df2	Sig.
Based on Mean	0.410	2	127	0.665
Based on Median	0.213	2	127	0.808
Based on Median and with adjusted df	0.213	2	97.557	0.808
Based on trimmed mean	0.233	2	127	0.792

Table 7: Robust Tests of Equality of Means Competitive Advantages of Construction Firms via Quality of construction (Q)

	Statistic ^a	df1	df2	Sig.
Welch	0.221	2	76.271	0.802

Table 8: ANOVA Competitive Advantages of Construction Firms via Innovation (I)

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	0.381	2	0.191	0.381	0.684
Within Groups	63.602	127	0.501		
Total	63.983	129			

5. Discussion and Implications

Competitive advantage is approached in many directions, such as: according to the market-oriented approach (in the field of strategic management), it is seen in the business performance of the firm.

A firm is considered to have a competitive advantage when its profit margin is higher than the industry average. A firm obtains a sustainable competitive advantage when it is able to maintain a high profit rate for a long time.

Constructions are products built according to design, made up of human labor, construction materials, and equipment installed in the works, linked and positioned with the land, which may include parts. below ground, above ground, below water, and above water. Therefore, improving the quality of construction work means improving the quality of human resources, improving and controlling the quality of construction materials, installation equipment, etc.

Construction is becoming increasingly diverse, with many different types and sizes. Construction products have a lot to do with the landscape and natural environment, so they have a lot to do with the benefits of the community, especially the residents of the locality where the works are located. Construction products have the combined nature of technical, economic, cultural, social, artistic, and national defense. Construction products involve many industries, both in terms of providing inputs, designing, and manufacturing products, and also in terms of using products produced by construction.

It can be affirmed that the quality of construction works is determined by the requirements for safety, sustainability, engineering, and art of the work, but it must be consistent with construction codes and standards and the provisions of the regulatory documents. relevant laws and economic contracts. Usually, customers will be more concerned with the safety, engineering, and sustainability aspects of construction quality. After satisfying these aspects, the aesthetic aspect will be interesting to customers. All these aspects are guaranteed, and the customer will be satisfied with the quality of the construction.

According to Clause 1, Article 2 of Decree 06/2021/ND-CP stipulating that "construction work quality management is understood as the management activities of entities

participating in construction activities in accordance with regulations of law, Decree 06/2021/ND-CP, and other relevant laws during the preparation and implementation of investment in the construction of works and the exploitation and use of works to ensure the quality and safety of the works". Accordingly, most of the construction works that are houses of construction enterprises have met the quality standards of the industry and the standards of Vietnam, and a number of works have met the standards of the construction industry. In advanced countries around the world, some construction work has been sold to overseas Vietnamese.

Despite facing many difficulties due to the impact of the COVID-19 pandemic and prolonged outstanding debt, construction enterprises are still trying their best to adapt to new conditions and improve their competitiveness. accelerate in the near future. Construction businesses also identify opportunities and challenges. Accordingly, the challenges include: (i) price fluctuations of raw materials and construction materials; (ii) developments and effects of the COVID-19 pandemic; (iii) cautious sentiment in investment activities in general due to the impact of objective and subjective factors; (iv) the client's limited financial status; (v) labor shortages in both quantity and quality; (vi) inflation; (vii) competition in the industry; (viii) effects of economic fluctuations; (ix) supply chain weaknesses. Therefore, construction firms have gradually turned challenges into opportunities. Solutions that construction enterprises have been implementing include: using modern technology in construction and installation; using raw materials and materials more efficiently; committing to solutions that are effective for the environment; In addition, construction enterprises also recognize opportunities such as continued strong FDI inflows into Vietnam, which is a bright spot for the industrial construction segment. A series of government support measures implemented have been creating new impulses for businesses in the industry to recover and accelerate.

Construction firms in Hanoi all understand the impact of the business environment, feel the changing needs, are aware of strengths and weaknesses, and identify opportunities and challenges for businesses. However, investment in research and development has not received enough attention, so the ability to always launch new products and stay ahead of competitors is not a competitive advantage for construction firms.

Construction firms in general and construction enterprises in Hanoi in particular all play an important role in building the infrastructure of a country. The activities of construction enterprises create many jobs for a large number of workers, including many rural workers. Because products in the construction industry are not fixed but are made in many different places, the construction time is long and the construction conditions are often difficult, so the number of workers working at construction sites in construction enterprises accounts for a large proportion of the total.

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