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The Competitive Advantages via Productivity of Construction Firms

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Abstract

Competitive advantage expresses the extent to which the organization has higher capabilities than its competitors in exploiting the available opportunities and limiting their potential effects. Its importance also enables the organization to make better use of its material, human, and technological resources than its competitors by providing the best services and products to its customers (Al Khasabah, 2022) ^[1]. This study was conducted with the aim of identifying, evaluating, and measuring the component attributes of competitive advantage via productivity for 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 EFA have identified and measured six component attributes of competitive advantage via productivity, which are considered competitive advantages of construction firms in Hanoi. Based on the research results, we propose some recommendations to improve the capacity and competitive advantage of construction firms in Hanoi in the coming years.

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

JEL codes: D49, M19, M21

1. Introduction

In Vietnam, in Resolution No. 31/2021/QH15 of the National Assembly on the Economic Restructuring Plan for the period of 2021-2025, the goal by 2025 is defined as: Increasing the proportion of contributions of science and technology and innovation into growth, in which total factor productivity (TFP) accounts for about 45% of GDP (National Assembly, 2021) ^[11].

Productivity is an important factor in the production performance of firms and countries. Increasing national productivity can raise living standards because more real income improves people's ability to buy goods and services, entertain, improve housing and education, and contribute to programs that benefit society and the environment. Increasing productivity can also make businesses more profitable.

Competitive advantages are factors that help a business stand out from other businesses operating in the same industry. When businesses possess this advantage, they can gain a strong foothold in the hearts of consumers, which helps them operate more profitably.

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The revised Housing Law (National Assembly, 2014) ^[10] allowing foreigners to buy houses in Vietnam is expected to be an important driving force in Vietnam's real estate market. Currently, it is estimated that only about 500 out of the 80,000 foreigners in Vietnam own a home. Therefore, the easing of this policy is likely to create a large demand in the high-end segment. Therefore, construction enterprises have more opportunities in production and business.

Construction firms play a special role in the national economy. In any period, the development history of human society is always associated with architectural works. Therefore, the demand for construction is regular and is increasing with economic and social development. Today, the more production develops, the more the position and role of the construction industry are confirmed.

Construction activities include (i) the design and construction process, so architectural works are carried out at the site and

according to the specific requirements of the customer. These two factors make the construction industry's products not similar to those of the manufacturing industry but have many characteristics of the service industry. The most important element of the service property is that the product depends on the customer's requirements. Therefore, the construction contractor's value chain must adapt to the requirements of the output product; this is in contrast to manufacturing industries, where the output is often determined by the value chain, such as machinery and production lines.

There have been studies on competitive advantage through factors such as brand, distribution network, service, intellectual property, cost structure, product quality, innovation, customer responsiveness, prices, etc. However, there have not been many studies on the competitive advantage of enterprises through productivity in construction firms.

2. Literature Review

2.1 Competitive Advantage

Many scholars have dealt with explaining a variety of definitions and opinions about competitive advantage. Kamal (2021) ^[9] asserts that competitive advantage is at the core of organizations' performance in banking markets. Obeidat *et al.* (2021) ^[12] argue that the organization uses competitive advantages to create economic value that enables it to avoid looming risks and helps it take advantage of the opportunities available in the environment in which it operates, which helps it to lead revenues and reduce costs, which will reflect positively on the organization's customers. In addition, Davis and Simpson (2017) ^[4] added four criteria for considering the resources the organization possesses as a competitive advantage: (i) the resource must help to create added value to the organization; (ii) the resource is scarce or unique; (iii) it is difficult to imitate; and (iv) it cannot be substituted with another resource for use by competitors. Competitive advantage is a favorable position for the organization due to its ability to provide greater value to customers, which gives it a feature that distinguishes it from the rest of the competitors in the market (Respatiningsih, 2021) ^[13].

Previous research by Farhikhteh *et al.* (2020) ^[5] explained that the effective factors in competitive advantage comprise competitive intelligence, organizational ability, environment, and communication. A competitive advantage is a special, unique quality, capability, or characteristic that represents value to customers (Borseková *et al.*, 2015) ^[2]. Previous research explains that competitive advantage mediates the relationship between dynamic capabilities and business performance (Correia *et al.*, 2020) ^[3]. The induced competitive advantage is able to create synergies within the company with the support of IT and a competitive advantage with the support of resources (human, knowledge, and capital) (Iqbal & Suzianti, 2021) ^[8].

2.2 The Competitive Advantages via Productivity

Performance is seen from the perspective of an enterprise as a system that transforms inputs into outputs, where the basic factors include labor, capital, land, technology, and management capabilities. Outputs are the products and services that the firm produces. Performance is a measure that reflects the level of use and mobilization of resources to achieve defined goals and is measured by the results

achieved compared to the resources, costs, and time spent to achieve those results. Thus, high efficiency gives the company a low-cost advantage. For most firms, the most important efficiency is labor productivity. This indicator is usually measured by the output results calculated for a worker. All else being equal, the most productive firm in the industry will have the lowest costs and the lowest competitive advantage.

At the enterprise level, productivity is a measure of the efficiency of a company's production process. It is measured by measuring the number of units of product produced per employee's labor hours or by measuring a company's net sales relative to employee hours.

Calculating productivity indicators to analyze the current operating status of organizations and businesses reflects the results of the evaluation of the criteria. Therefore, properties that represent guarantees or not are expressed. Compared with expectations and goals, actual performance has the same or different outcomes. The results are made in comparison with other organizations and enterprises of the same nature. Or compare with industry-defined standards. Aim to set goals and fix problem areas.

In fact, the performance indicators are very diverse. Have a direct connection to the operation of the firm. Therefore, when performing productivity measurement, enterprises need to choose appropriate evaluation and review criteria. Which performance indicator to use depends on the purpose of the analysis and evaluation. As well as the ability to collect the necessary data. The information or data must accurately reflect the figures and results of operations. In addition, compared to the required requirements, how many percent have been met in reality?

Total factor productivity (TFP) was first introduced by Solow (1956) ^[14] in his study of economic growth theory. The concept of TFP was originally used in macroanalysis, but later It was widely used in microanalysis at the industry or firm level. Along with the widespread popularity of TFP, many different approaches and conceptions of the term have emerged.

The output of production can be divided into three parts: the part generated by capital, the part produced by labor, and the part produced by the aggregator.

While capital and labor growth are limited, TFP can be an unrestricted driver of growth. An increase in TFP can reflect the level of innovation in production processes, the application of new technologies and techniques in management, or an increase in the efficiency of the use of resources in the economy.

TFP is an indicator reflecting production efficiency thanks to the impact of intangible factors involved in the production process along with tangible factors (capital, labor, or natural resources).

From the perspective of an industry or the entire national economy, growth based on the productivity growth of new synthetic factors ensures stability and sustainability, is competitive, creates a premise for expansion production, and contributes to improving the lives of workers and people (Tang, 2005) ^[15].

3. Methodology

3.1 Choice of Method and Sample Selection

We design mixed methods, both quantitative and qualitative, to identify, evaluate, and measure the component attributes of competitive advantage via productivity for construction

firms in Hanoi.

To begin with the qualitative method, we look at previous studies and conduct interviews to identify six component attributes of competitive advantage via productivity. However, since their studies were based on foreign experience or other industries, we tried to propose an enhanced framework by synthesizing their insights, adjusting them, adding observation variables to the questionnaire, and applying it to the context of construction firms in Hanoi.

Then, we use quantitative components, including the use of questionnaires as inputs for descriptive statistics, Cronbach's alpha analysis, and EFA, to measure the component attributes of competitive advantage via productivity for construction firms in Hanoi.

In our sample, 100% of participants are employees of construction firms in Hanoi. The employees' knowledge and skills ensured the survey results were more reliable.

We conducted a questionnaire survey of six observation variables on a 5-point Likert scale. Dependent variables are measured from 1 ("without agreeing") to 5 ("strongly agreeing").

3.2 Build a Scale

Table 1: Scale of competitive advantages via productivity of construction firms

Code	Description
Labor productivity (LP)	
LP1	By production value, labor productivity
LP2	By revenue, labor productivity
LP3	By profit and labor productivity
Total Factor Productivity (TFP)	
TFP1	Capital intensity
TFP2	Labours
TFP3	Total factor

4. Results

4.1 Descriptive Statistics

Table 2 indicates that the respondents agree with the dependent variables of "the competitive advantages via productivity of construction firms in Hanoi" where six attributes were quite high. All six attributes were rated at an average of 3.78 or higher.

Table 2: Descriptive analysis of attributes

Code	N	Minimum	Maximum	Mean	Std. Deviation
Labor productivity (LP)					
LP1	130	1.00	5.00	3.78	0.909
LP2	130	2.00	5.00	3.89	0.838
LP3	130	1.00	5.00	3.85	0.902
Valid N (listwise)	130			3.84	
Total Factor Productivity (TFP)					
TFP1	130	1.00	5.00	3.87	0.918
TFP2	130	1.00	5.00	3.85	0.864
TFP3	130	1.00	5.00	3.92	0.940
Valid N (listwise)	130			3.88	

4.2 Cronbach's Alpha

The competitive advantages via productivity of construction firms in Hanoi have been measured by Cronbach's alpha. The results of testing Cronbach's alpha for attributes are

presented in Table 3 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.*, 2014) [7, 6].

Table 3: Results of Cronbach's alpha testing of attributes and item-total statistics

Cronbach's Alpha	N of Items			
0.868	3			
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
LP1	7.74	2.536	0.758	0.805
LP2	7.62	2.764	0.750	0.814
LP3	7.67	2.595	0.738	0.823
Cronbach's Alpha	N of Items			
0.874	3			
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
TFP1	7.77	2.784	0.749	0.829
TFP2	7.78	3.023	0.717	0.857
TFP3	7.72	2.589	0.809	0.773

4.3 Exploratory Factor Analysis (EFA)

Next, tables 4, 5, and 6 show that exploratory factor analysis (EFA) was conducted through component analysis and variance.

The results of factor analysis in Table 4 show that KMO is greater than 0.5 but less than 1. Bartlett's testimony shows sig. = 0.000 is less than 0.05, which means variables in the whole are interrelated (Hoang & Chu, 2008; Hair *et al.*, 2014) [7, 6].

After implementing the rotation matrix, six components of the competitive advantages of construction firms in Hanoi (including labor productivity and total factor productivity) with a factor load factor greater than 0.5, eigenvalues greater than 1, and the variance explained respectively 79.188% and 79.835% (see tables 5 and 6). These statistics demonstrate that research data analysis for factor discovery is appropriate. Through the competitive advantages of construction firms in Hanoi and the test of the EFA model, we have identified six components (Hoang & Chu, 2008; Hair *et al.*, 2014) [7, 6].

Table 4: KMO and Bartlett's Test

KMO and Bartlett's Test		
LP		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.739
Bartlett's Test of Sphericity	Approx. Chi-Square	186.346
	Df	3
	Sig.	.000
TFP		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.722
Bartlett's Test of Sphericity	Approx. Chi-Square	200.169
	Df	3
	Sig.	.000

Table 5: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
LP						
1	2.376	79.188	79.188	2.376	79.188	79.188
2	0.327	10.904	90.092			
3	0.297	9.908	100.000			
TFP						
1	2.395	79.835	79.835	2.395	79.835	79.835
2	0.373	12.435	92.270			
3	0.232	7.730	100.000			

Table 6: Component Matrix^a

LP	Component
LP1	0.895
LP2	0.891
LP3	0.884
TFP	Component
	1
TFP3	0.921
TFP1	0.889
TFP2	0.870

5. Discussion and implications

Objects of construction enterprises usually have a large volume, great value, and a long construction period. The product price calculation period is not monthly like other types of enterprises, but is determined depending on the characteristics of the construction industry and the technical specifications of each project. This is reflected in the payment method between the contractor and the customer. Because of the long production time and the fact that often customers only advance a part of the amount of the construction work, construction enterprises need long-term capital in large volumes. This brings many financial risks to the business. Long-term borrowing increases the cost of capital. Moreover, being paid only after the work is completed also reduces the solvency of the enterprise during the product production stage. In addition, the long construction period also has an impact on the risk of capital loss for enterprises due to the influence of wear and tear on tangible and intangible fixed assets.

Because the cost of construction products for a project is often large, during the construction process, it will be divided into many technical stops to make payment records. However, due to many reasons, such as the investor's capital running out, bad weather, natural disasters affecting the construction, slow application procedures, etc., payment has been slow. When the construction unit cannot pay the money, it will be difficult to prepare the inputs to put into production, creating a vicious cycle of slow construction progress and high value of work-in-progress, affecting the quality of products and capital efficiency.

Domestic enterprises need to find a sustainable development strategy to compete with international contractors. Currently, only a few large domestic firms have the opportunity to access advanced management methods and construction techniques from around the world; however, there are no supporting enterprises in the country to create support for these firms to reach the world level. Currently, there are a number of large contractors, such as CotecCons (CTD) and Hoa Binh (HBC), that are going deep into the design-build model to create added value for the implementation packages and improve the gross profit

margin. This could be the upcoming trend and strategy for Vietnamese construction firms. The remaining small and medium construction firms are developing spontaneously, without strategies, strengths, or key products, and using outdated technology. This has created waste and loss in production and construction, so the popularization and development of new construction and management technologies is a necessary step for the construction industry in the coming years.

Firms should develop annual business plans as well as long-term development strategies. At the same time, annually, the level of completion of the set plan must be evaluated. Only in this way can firms evaluate their operational capacity, thereby making appropriate adjustments for business activities.

Firms should be more aware of building their accounting systems to serve financial management and business decision-making, unlike now, when it only stops at the level of tax reporting. For most. Because of this, it also becomes more difficult for construction firms to access loans from credit institutions because it is difficult to meet the financial documents required by the loan application capital.

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