

# FACTORS AFFECTING COMPETITIVENESS IN THE CONSTRUCTION INDUSTRY: A SYSTEMATIC LITERATURE REVIEW

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In today's globalized and highly competitive construction industry, it is crucial for companies to have a deep understanding of competitiveness in order to survive. The competitiveness of the construction industry is influenced by a multitude of factors. As a result, construction organizations must improve their understanding of the relationships between these various factors that affect competitiveness. Thus, this paper aims to determine the factors affecting competitiveness in the construction industry through an analysis of relevant literature focusing on aspects that shape competitiveness in the construction industry. This systematic review explores these factors by analyzing 27 peer-reviewed English-language articles from 2003-2023. It found that the major factors affecting competitiveness are mainly under eight main themes: technological, organizational, human resource, and strategic factors, economic and political factors, financial factors, operational factors, and external factors. The review emphasizes the growing importance of digital technologies in the construction industry's competitiveness and provides guidance for future studies.

*Keywords:* Competition, Digitalization, Globalization, Innovation, Knowledge.

## 1 INTRODUCTION

The construction industry significantly impacts economic growth, contributing to both developed and developing countries (Zhang *et al.* 2023). The competitiveness of this sector is crucial for the success and sustainability of construction firms, influenced by numerous factors (Arai 2021). Understanding these factors is essential for construction companies to compete effectively in the global market. Given the construction industry's dynamic and increasingly competitive landscape, various factors play a crucial role in determining the competitiveness of organizations operating in this sector (Deng *et al.* 2013). As the sector increasingly embraces technology, it's essential to comprehensively understand the varied elements contributing to competitiveness in this domain.

Over the last two decades, the construction industry has been the focus of numerous studies on competitiveness improvement, attributed to the industry's diversity (Romo *et al.* 2023). Competitiveness essentially refers to a company's ability to produce goods and services that meet international market standards and requirements while simultaneously maintaining or enhancing the income of its shareholders (Badawy 2022). Orozco *et al.* (2014) emphasized that traditional economic theories, which focus on productivity, profitability, or market share, do not fully capture sustained continuous improvement. According to Pellicer *et al.* (2010) and Giménez *et al.* (2019),



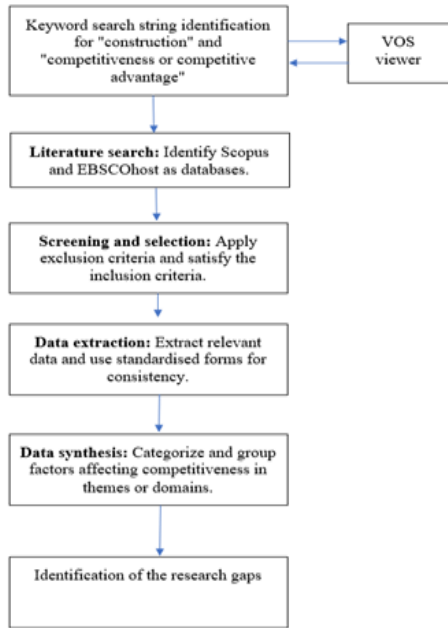


Fig. 2. Research overview.

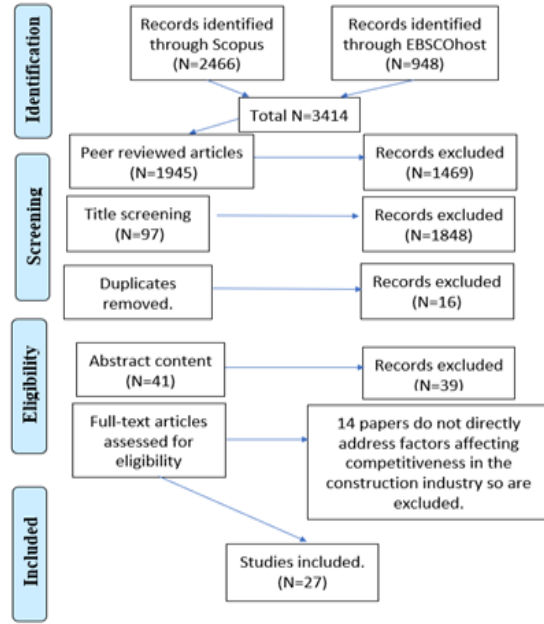


Fig. 3. Systematic literature review process.

Themes	Factors	Xu et al	Taufik	Okwob	Badawy	Afrizet	Gimenez	Alkhatib	Roche	Mohamm	Hudana	Zhang	Testa et	Widjanti	Orozco	Topol	Lee and	Wedzera	Tan et al	Okwob	Dengek	Amri	Pelisser	Yan et al	Mohanna	Orozco	Okwob	Lu et al
Technological factors	Digital technologies	*		*	*					*					*	*	*			*					*			
	Supply chain innovation					*																	*					*
	Innovation																							*				*
Organizational factors	Organizational structure			*	*					*																		*
	Leadership														*											*		
	Decision-Making style	*		*																*						*		
Human resources factors	Employment educational level					*			*		*					*					*					*		
	Human resources		*		*	*			*		*			*	*				*						*	*		
	Health & Safety														*										*	*		
Strategic factors	Bidding strategy				*			*												*								
	Competitive strategy				*																							
	Marketing				*	*						*						*										
Economic & Political factors	Economic factors				*															*								
	Legislation and political aspects				*							*																
Financial factors	Financial capability					*																			*	*		
Operational factors	Just in time																						*					
	Supply chain management					*																					*	
External factors	Industry conditions				*																					*		
	Relationships				*																				*	*		

Fig. 4. Factors affecting competitiveness in the construction industry.

### 3 RESULTS

Of the 27 included studies, it found that the major factors affecting competitiveness are mainly under eight main themes: technological, human resource, strategic, organizational, financial, external, economic, political, and operational factors. The categorization of the factors is meticulously grounded in an analysis of their frequency across various studies. These factors are grouped based on the regularity of their mention in the literature.

Out of the selected articles, technological factors were the most researched topic with 15 publications. Human resources factors had 12 articles and strategic factors had 8 articles. Technological factors lead discussions due to their increasing representation over time (Table 1).

Table 1. Detailed list of number of publications by year and publication focus.

Year	Technological factors	Human resources factors	Strategic factors	External factors	Organizational factors	Financial factors	Economic & Political factors	Operational factors
2005	1	1						-
2010	1							-
2011	2	1			1	1		
2012			1					
2013		1	1		1	1		
2014	1	1		1	1	1		
2016	1							1
2018		1						
2019	3	3	2		1	1		
2020		1	1					
2021	2		2					
2022	3	1	1	2			1	
2023	1	2						
Total	15	12	8	3	4	4	1	1

Fig. 5 shows the distribution of studies across 13 regions, highlighting global interest in the subject. Indonesia leads with 4 studies, China, South Africa and EU with 3 each. Chile has 2 studies; Pakistan, Jordan, Egypt, Korea, Johannesburg, Hong Kong, Malaysia, and Japan each have 1. This shows the subject's wide relevance and impact across different regions.

Furthermore, many contexts were analyzed for competitive factors in the construction industry. "Construction companies" were the most studied, with 11 articles, followed by the "construction industry" in 6 studies. "Construction projects" and "Construction organizations" received focus in 3 studies each, "construction firms" in 2, while "construction businesses" and "contractors' top managers" each had one. However, none examined competitiveness in construction industry sub-sectors, indicating a research gap.

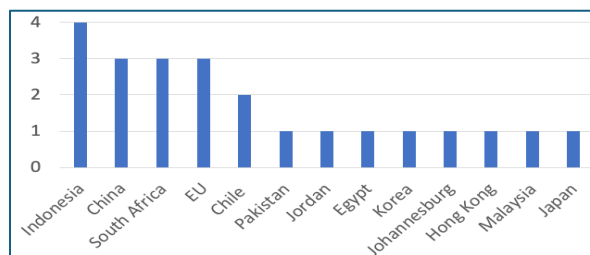


Fig. 5. Number of publications by region.

## 4 DISCUSSIONS

The review highlights technological factors as central to the construction industry's competitiveness. Technological advancements and innovation are pivotal for operational efficiency and addressing specific challenges, provide flexibility for firms to adapt to market changes (Lee and Park 2022, Oyewobi *et al.* 2019). Tools like BIM are revolutionizing the industry, significantly improving productivity (Afraz *et al.* 2021, Tan *et al.* 2012). Following technological factors, human resources emerge as the second most significant factor. The fusion of technology with the knowledge and skills of a workforce forms a dynamic competitive structure (Taufik 2023, Huda 2018). Lastly, strategic factors signify the importance of aligning organizational goals with market dynamics and technological capabilities which helps firms navigate challenges and adapt to market changes (Alkhateeb *et al.* 2021, Oyewobi *et al.* 2016).

Regionally, studies indicate diverse global interest with Indonesia, China, and South Africa leading. The geographical distribution highlights different regional priorities and challenges in industry competitiveness. Focusing mainly on "construction companies" suggests a sector-specific approach but misses sub-sector nuances. This lack of sub-sector focus and uneven geographical emphasis reveals critical research gap. Addressing these would enhance understanding of competitive dynamics in the construction industry.

## 5 CONCLUSION

This systematic review revealed the major factors affecting competitiveness in the construction industry. This includes technological, human resource, strategic, organizational, financial, external, economic, political, and operational factors. Among these factors, technological, human resource and strategic factors stand out as the top three. Technological integration emerges as a core for enhancing competitiveness, signifying a shift towards a technology-driven future, highlighting the importance of innovative technologies for sustainable growth and leadership. Moreover, the strong correlation between technology, human resources, and strategic planning shows a significant research gap, indicating the need for more study on how these factors collectively influence competitiveness. The review also notes regional and context-specific variations in the construction industry but lacks focus on sub-sectors, highlighting a gap in understanding competitiveness nuances in these specific sectors of the construction industry.

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