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The South African Construction Industry: Perceptions of Key Challenges Facing Its Performance, Development and Growth

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Abstract: The paper investigates the challenges influencing the performance, development and growth of the South African construction industry. The paper examines whether there is a key challenge perceived by construction industry stakeholders as affecting the development and growth of the sector. The rationale for the examination stems from the varied and largely unexamined assumptions available in the literature as to what the key challenge is. The research adopts a qualitative approach, using semi-structured interviews of 120 construction industry stakeholders based in Cape Town. The respondents were selected using the convenience and snowball sampling technique. The results of the study show that from a ranking perspective, the key challenges perceived by stakeholders as affecting the performance, development and growth of the construction industry in South Africa include the increasing costs of building materials, access to mortgage/credits, high interest rates and the high rate of failure of contracting enterprises. The paper concludes that to foster construction industry performance and growth in South Africa, there must be further studies to identify the factors responsible for the increases in the costs of building materials and to test the assumption that exploration and development of new materials and technologies, rather than exploitation of existing ones, will ensure stable building material prices.

Keywords: Building materials, Cost, Development, Perceptions, Performance

INTRODUCTION

Compared to many other industries, the construction industry plays a vital role in South Africa's economy and is a significant contributor to economic growth (Construction Industry Development Board [CIDB], 2012; Statistics South Africa [Stats SA], 2010a). Ofori (2007) and United Nations Industrial Development Organisation (UNIDO) (2009) view the construction industry as that critical sector of the economy that produces building and civil engineering structures and determines the extent to which investment efforts in a resource-rich country are translated into investment outcomes. Kelly (1984) and UNIDO (2009) observe that the construction industry is not a single industry but rather a complex cluster of industries, including banking, materials and equipment manufacturers, contracting organisations and so forth.

Turin (1973), Wells (1986), Hillebrandt (2000), Mlinga and Wells (2002), Ofori (2007), and Giang and Pheng (2011) note that the construction industry plays an important role in the socio-economic development of any nation. Construction makes a significant contribution to the national economy, it creates employment (especially for the least skilled members of society), it plays a role in the development and transfer of technology, it creates many opportunities for enterprises, and it contributes directly to improving the quality of life of the users of its products.

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However, several challenges have been identified as confronting and influencing the performance, development and growth of the South African construction industry (CIDB, 2004; 2007; van Wyk, 2003; 2004; Mbande, 2010; Milford, 2010; Lewis, 2007; Boshoff, 2010; Luus, 2003; Tomlinson, 2010). Though some of the challenges identified have existed for some time, there is little evidence to suggest that the issues raised in the past are no longer current, due to the paucity of relevant and reliable information on the subject. The literature also suggests a variety of largely unexamined and divergent assumptions as to the nature of these challenges.

This study therefore presents an investigation of the challenges assumed to influence the performance, development and growth of the South African construction industry. To accomplish this goal, the various challenges that have been reported in the literature as affecting the South African construction industry are first identified. The results of a survey of the perceptions of construction industry stakeholders are then presented. The implications of the findings for the future development and growth of the South African construction industry are discussed. Lastly, a framework is proposed for addressing the key challenge identified.

REVIEW OF THE CHALLENGES FACING THE SOUTH AFRICAN CONSTRUCTION INDUSTRY

A review of the extant literature revealed the following thirteen challenges said to influence the performance, growth and development of the South African construction industry:

1. Public-sector capacity (Mbande, 2010; Milford, 2010; SA Construction Industry Status Report [Stats SA], 2004)
2. Mismatches between available skills and required skills (Mbande, 2010; CIDB, 2004; van Wyk, 2003)
3. Globalisation/critical global issues (Lewis, 2007; Raftery et al., 1998)
4. Procurement practices and the capacity for sustainable empowerment (*Black Economic Empowerment [BEE] News*, 2009; CIDB, 2004)
5. Access to affordable mortgage/credit and interest rates (Tomlinson, 2010; van Wyk, 2003; Luus, 2003)
6. Poverty (Mbande, 2010; van Wyk, 2004)
7. Technology (CIDB, 2007)
8. Availability of suitable land for construction (Boshoff, 2010; van der Merwe, 1997)
9. Availability of Infrastructure (CIDB, 2007)
10. High rate of failure of enterprises (CIDB, 2004; van Wyk, 2003; 2004)
11. Increases in the costs of building materials (The Bureau of Economic Research [BER], 2011; Stats SA, 2010b; CIDB, 2004; van Wyk, 2003) and
12. Statutes and regulations (SA Construction Industry Status Report [Stats SA], 2004).

Public-Sector Capacity

Mbande (2010) observes that there is a shortage of skills within the South African skills sector and in state-owned enterprises. According to South Africa's construction industry development board (CIDB, 2004), public-sector capacity is a key constraint on infrastructure delivery and sustainable growth in the South African construction industry. Milford (2010) observes that the lack of public-sector capacity has led to an inefficient and cumbersome process of funding construction projects by the government and in some cases, backlogs of more than six months in payments to contractors.

van Wyk (2003) notes the inability of the South African government to spend allocations received and its inability to evaluate public-private partnership schemes submitted to it for much-needed infrastructure. Ofori (1990) opines that the range of projects undertaken by a client might be limited by the number, types, experience and expertise of the available personnel within the client organisation. According to CIDB (2011), specific issues of concern are the quality of tender documents and specifications and the management of change orders. The CIDB report notes that these factors are a reflection of the procurement capability of clients and their agents.

Mismatch between Available Skills and Required Skills

Mbande (2010) suggests that there is a correlation between an increase in community protests due to the lack of service delivery in South Africa and the acute shortage of skills in the construction sector. The report by CIDB (2004) suggests that the skills supplied to the market through the Further Education and Training (FET) System were in many cases not appropriate to the needs of the construction industry, resulting in a skills gap and a decline in the capacity of the professional sector within the construction industry. van Wyk (2003) opines that the high number of industry participants who have no education, let alone a degree, is a serious impediment to the development of the construction industry.

Critical Global Issues/Globalisation

Lewis (2007) highlights the impact of globalisation on the construction industries in developing countries and the areas in which global trade perpetuates economic underdevelopment, thereby posing a challenge to the development of the construction industries in those countries. Raftery et al. (1998) opine that importing of construction services could grow at the expense of the indigenous construction sectors of developing countries. They attribute trends in the construction sector in the Asian region to the globalisation and deregulation of markets necessitated by fiscal, technological and managerial constraints. Furthermore, the current global economic recession and its effect on the world economy pose a challenge to the performance of the construction industry in South Africa.

Procurement Practices/Capacity for Sustainable Empowerment

The CIDB (2004) reports that, the existing preferential procurement environment is a challenge as it encourages historically disadvantaged professionals to establish

their own firms rather than join established companies. This fragmentation, according to the report, has reduced the depth and breadth of expertise that can be consolidated within medium and large companies through access and experience on specialised and diverse projects. In addition, the preferential method of procurement in use in South Africa (CIDB, 2012; *BEE News*, 2009; Williams, 2007) results in unhealthy levels of competition and impedes the development of small enterprise capabilities and sustainability (Bowen et al., 2007).

Access to Affordable Mortgage/Credit and Interest Rates

Since the global economic crisis started in late 2007, banks have become very stringent in their lending criteria, compared to the access to easy credit that characterised the period from 2001 to 2003, as shown by Luus (2003). This increased stringency has required developers and purchasers to put down equity of up to 50% and not less than 20% of the cost of a development or house, which very few people can afford. Funds available for lending have shrunk significantly, which directly influences the number of developments constructed (Luus, 2003). The developers need the banks to finance the building process and the purchaser needs to access a mortgage to finance the purchase of a house or apartment. In addition, mortgage rates have fluctuated between 13% and 24%, causing substantial problems, with households finding it difficult to afford the higher interest payments and as a result, failing to pay their mortgage bonds (Tomlinson, 2010).

Poverty

At first glance, one might wonder what poverty alleviation has to do with the construction industry. However, according to van Wyk (2004), poverty alleviation has been identified as one of the Millennium Development Goals (MDG) precisely because poverty has the ability to destabilise the world economy and lead to global unrest. According to Mbande (2010), given the MDGs intention to fight poverty, many donor nations are linking their funding of infrastructure to the achievement of socio-economic goals. Therefore, accessing infrastructure development funds can be a useful tool in construction industry development.

Technology

Ofori (1990) opines that where projects involve relatively new technology, individual contractors might not have the capability to undertake them. South Africa has reasonable access to the latest technology; however, the prevailing levels of technology within the country and overseas tend to limit the scope of the projects that can be undertaken at any one time, with the material, equipment and personnel available. There is also a problem with end-users' perceptions about viable alternative building methods and innovative building systems, especially in the low-cost housing market, as well as tension between technology and labour. Construction companies are encouraged by government policy to employ more labour to boost the economy and alleviate poverty (CIDB, 2007).

Availability of Suitable Land for Construction

Perhaps the most important physical constraint on construction activity is land because the supply of land is largely fixed (Ofori, 1990). Boshoff (2010) emphasises that while there is an extensive supply of public land, private land is not readily available in South Africa. The total area of land within each cluster that can be developed is further limited by such factors as topography and soil conditions (van der Merwe, 1997). Furthermore, there are many land claim issues in the courts, zoning issues and heritage sites, all of which combine to make the price of available land inhibitive, thereby delaying development processes.

Availability of Infrastructure

Human settlements require infrastructure to sustain them. An area cannot be developed without infrastructure such as electricity, pipe-borne water, roads, streetlights and sewage disposal systems (Ofori, 1990). According to the CIDB (2007), the government of South Africa spends a considerable amount money on improving its old and depreciated urban and rural infrastructure. There is also a huge challenge with respect to limitations on electrical capacity (Eberhard, 2008). The electricity-generating company in South Africa, ESKOM, has a nominal generating capacity of 39,154 megawatts (*Mbendi.com*, n.d). According to reports, water scarcity is also going to become an increasing problem. In certain cases, such as high-end housing estate development in new areas, private property developers are increasingly delivering housing-related infrastructure as an added cost of the development (Kihato, 2012). Furthermore, for smooth progress of the work on site, infrastructure facilities are required, and in cases where these facilities are unavailable, a contractor must make provisions for them.

High Rate of Enterprise Failure/Delivery Capacity and Performance

Business failure, according to Arditi, Koksal and Kale (2000), is the inability of a firm to pay its obligations when they are due. The CIDB (2004) report notes that the failure rate of South African construction companies is unacceptably high. The report shows that there were 532 liquidations of construction companies in 2004, 371 in 2002, 554 in 2001 and overall, 1,400 companies that could not remain viable in the 2002–2004 period. According to this report, there has been a long-term decline in profitability in the industry, and many companies confirm profit levels as low as 1%. Windapo and Cattell (2011), in a study of CIDB-registered building and civil engineering contractors, found that there was a reduction of 801 (or 8%) in the total number of contractors registered in 2010 compared to 2009. It is evident from the findings by van Wyk (2004; 2003) on the performance of the construction industry that the high rate of enterprise failure reflects demand volatility, high levels of non-completion, poor management and low productivity. According to van Wyk, compared to seven other countries that were not identified, South Africa's productivity remains the lowest.

Increases in the Costs of Building Materials

Materials account for as much as 60% of total project costs (Bourne, 1981; Haskell, 2004). South Africa produces its own strategic materials and relies on imported equipment. Therefore, increases in material costs within the industry are a cause for concern. The CIDB (2007) report on the Building and Construction Sector in South Africa notes that the prices of volatile building materials such as steel, cement, sand, copper, timber, polyvinyl chloride (PVC) pipes, bitumen and masonry increased by up to 100% between October 2000 and 2006. Stats SA (2010b) and BER (2011) reported price increases ranging from 70%–241% between 2000 and 2010. In addition, BER (2011) determined that the prices of building materials increased linearly at an average rate of 70% between 2002 and 2010 and that all building material prices increase overall up to 2008, when the material prices reached their peak.

According to van Wyk (2003), significant growth in the construction industry is dependent upon price stability in material costs, which have increased at rates higher than the inflation rate. Cockayne (2011a; 2011b), the CIDB (2007) and Enslin-Payne (2007) note the effects that increases in building material prices have on the construction industry, including the inability of developers to deliver affordable housing, high tender valuations and poor construction industry performance.

Statutes and Regulations

Ofori (1990) identified statutes and regulations such as insurance provisions, standards, the defects liability period, height restrictions, and health and safety provisions as factors that constrain the level of construction activity in any country at any given time. The CIDB (2004) report states that since 1994, the South African Government has passed more than 1,000 pieces of legislation, which have in turn spawned numerous regulations, giving the impression of over-regulation. These laws have affected tender and procurement procedures, employment and labour practices, BEE, planning permissions and controls, skills development and training and business practices. As a result, the development approvals and zoning processes of local authorities are slow and lead to unnecessary holding costs for developers (CIDB, 2004).

Climate change poses a huge challenge to current global industrial development. Addressing global issues such as sustainability, global warming (levels of CO_2 emissions by buildings under construction and in use), and the use of water and other natural resources involves requirements that might be difficult for construction sector participants to comply with (UNIDO, 2009; van Wyk, 2004).

RESEARCH METHODS

The key challenges that affect the performance of the construction industry have been comprehensively documented in construction, engineering and management literature, but much of the research has not been focused on South Africa, nor does it give an indication of the key challenges affecting construction industry performance. The research adopts a mixed method approach, using a

descriptive survey and semi-structured interviews in collecting qualitative data from construction industry stakeholders based in Cape Town. The cohort of 120 respondents used in the study were selected by means of snowball and convenience non-random sampling techniques from a study population of architects, quantity surveyors, construction managers, project managers of contracting firms, property developers, and representatives of finance and leasing companies based in Cape Town. The selection of the respondents was also based on their willingness to participate in the study. The researcher first identified a number of respondents through personal contacts and, after collecting data from each one, asked each respondent to identify additional potential respondents. In this way, a sufficient sample size of 120 respondents was assembled. At the end of the study period, only 78 of the interviews were judged to be usable because 42 of the respondents provided vague and undecided responses.

The study was conducted between March and May 2010 (an eight-week period), by means of personal interviews, using an interview protocol. Personal interviews were considered a suitable approach to eliciting the required information because additional information that might not have been obtained from the literature could be obtained from the personal interviews. The interview protocol was grouped into two sections. The first section solicited general information about the respondent and the organisation, while the second section required the respondents to rate their perceptions of the 13 challenges identified as affecting the South African construction industry. The respondents were requested to rate the effect of each challenge on a 5-point Likert scale. The responses "very high effect", "high effect", "average effect", "low effect" and "very low effect" were assigned numerical values of 5, 4, 3, 2, and 1, respectively.

The researcher prepared and made use of a data analysis sheet to collate data extracted from the interview protocol. The challenges were thereafter rated using the mean item score (MIS) method of descriptive analysis.

$$MIS = \frac{5M_5 + 4M_4 + 3M_3 + 2M_2 + 1M_1}{5 \times (M_5 + M_4 + M_3 + M_2 + M_1)}$$

where M5, M4, M3, M2 and M1 are frequencies of the rating responses given to each challenge variable.

DATA PRESENTATION AND DISCUSSION

The data gathered from the survey is presented below.

Distribution of Respondents by Sector in the Construction Industry

Figure 1 presents the classification of the respondents according to the sector in which they are based in the construction industry.

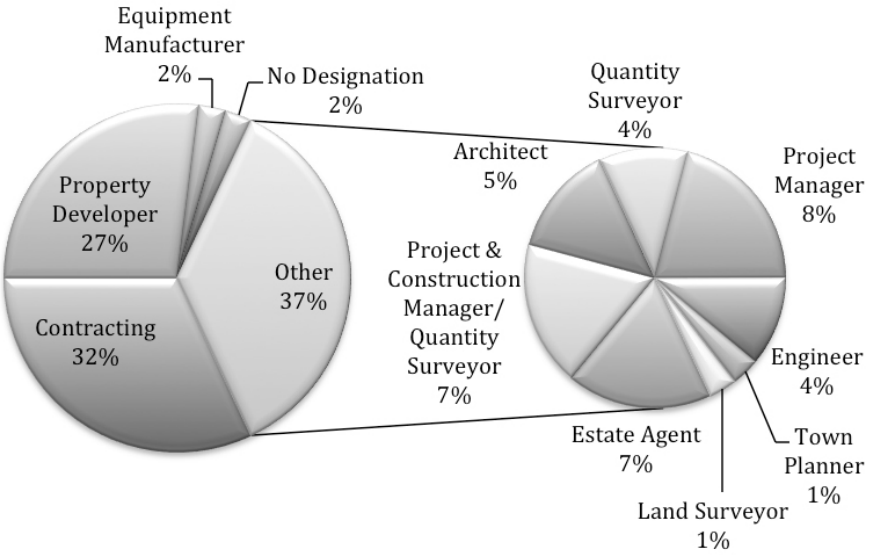

Figure 1. Distribution of Respondents According to Sector in the Construction Industry

Figure 1 shows that 35% of the respondents are in the professional services sector, 32% are in contracting, 28% are in property development and investment, and 2.5% are in the equipment supply and hire sector of the construction industry. Figure 1 also shows that 21% of the respondents in the professional services sector were project managers, 18% were estate agents, another 18% were both project and construction managers/QS, 14% were architects, 11% were quantity surveyors, another 11% were engineers, 3.5% were town planners and 3.5% were land surveyors.

Perception of Key Challenges that Impact Construction Industry Performance

Table 1 shows the perception of the respondents as to the impact of the challenges identified as affecting the performance of the construction industry in South Africa.

Table 1. Perception of Impact of Challenges on Construction Industry Performance

Description of Challenge	Impact of Challenge					Total Response	Total Score	MIS Score	Rank
	Very High	High	Average	Low	Very Low				
Increases in the costs of building materials	32	29	10	3	0	74	312	0.843	1
Access to affordable mortgage/credit	26	27	11	7	2	73	287	0.786	2
High interest rates	21	38	12	6	1	78	306	0.785	3
High rate of enterprise failure/delivery capacity and performance	19	36	21	1	1	78	305	0.782	4
Mismatches between available skills and required skills	24	30	16	6	2	78	302	0.774	5
Availability of Infrastructure	25	23	18	8	2	76	289	0.760	6
External influences such as government legislation	20	28	19	7	3	77	286	0.743	7
Availability of suitable land	22	24	15	11	5	77	278	0.722	8
Public-sector capacity	18	22	25	5	4	74	267	0.722	8
Poverty	12	25	20	14	6	77	254	0.660	10
Critical global issues/globalisation	11	27	18	13	7	76	250	0.658	11
Procurement practices/capacity for sustainable empowerment	9	15	28	16	6	72	225	0.625	12
Technology	6	20	28	18	5	77	235	0.610	13

It emerged from the study that the respondents' perceived the increases in the costs of building materials to be the key construction and development challenge affecting construction industry performance in South Africa. This was followed by insufficient mortgage markets and high interest rates. Technology, government procurement practices and critical global issues/globalisation were perceived by the respondents' to be of least importance. The findings of this study are consistent with those of previous studies by van Wyk (2003), who acknowledges that significant growth in the construction industry is dependent upon price stability in building material costs; Luus (2003), who posits that the lack of funds directly influences the number of housing developments; and Tomlinson (2010), who views high interest rates as a challenge to the construction industry because they lead to defaults by construction industry clients.

Comparison of the Perceptions between the Key Sectors Surveyed

This study sought to determine whether there are differences in the perceptions of the key construction industry participants surveyed. Table 2 shows a comparison of

the perceptions among three key groups of construction industry participants as to what the key challenge facing the construction industry is.

Table 2. Differences in Key Challenges Perceived to Face the Construction Industry by Three Groups of Participants

Construction Professionals/Consultants	Contractors	Property Developers/Investors	Rank
Increases in the costs of building materials	Mismatches between available skill and required skills	Increases in the costs of building materials	1
High interest rates	Increases in the costs of building materials	High rate of enterprise failure/delivery capacity and performance	2
Public-sector capacity	High rate of enterprise failure/delivery capacity and performance	Availability of Infrastructure	3

Table 2 shows that construction professionals/consultants perceive the increases in the costs of building materials, high interest rates and the availability of infrastructure, in that order, as the key construction and development challenges affecting construction industry performance in South Africa. The contractors perceived the key construction industry challenges to include a mismatch between available skills and required skills, the increases in the costs of building materials and the high rate of enterprise failure/delivery capacity and performance. The property developers and investors perceive the increases in the costs of building materials, the high rate of enterprise failure/delivery capacity and performance and the availability of infrastructure, in that order, as the key construction and development challenges.

Table 2 reveals that the three groups of respondents all perceive the increases in the costs of building materials as a key challenge and that the groups differ in types of challenges they identified and in their ranking.

IMPLICATIONS OF THE CHALLENGES IDENTIFIED FOR FUTURE PERFORMANCE, DEVELOPMENT AND GROWTH IN THE SOUTH AFRICAN CONSTRUCTION INDUSTRY

Table 1 reveals in terms of the overall ranking, the respondents perceived the increases in the costs of building materials, access to affordable mortgage/credit and high interest rates as the key construction and development challenges affecting construction industry performance in South Africa. Technology, government procurement practices and critical global issues/globalisation were perceived by the respondents to be of the least importance.

However, further analysis of the respondents by cohorts, as summarised in Table 2, reveals that the different sectors of the construction industry have different views about which is the key challenge most affecting the performance of the industry. The only point of commonality among the cohorts is the perception that the rising costs of building materials is a key challenge.

The survey findings were not found to be consistent with the findings of Milford (2010), which suggest that public-sector capacity, in terms of financial capital, should have been perceived by contractors as an important challenge facing the performance of contractors in the construction industry. This challenge, according to Milford, might be responsible for the failure of many construction companies. The criteria for payment by the government — the largest construction industry client in South Africa — and the non-payment of money owed to contractors when due might create serious cash flow problems for contractors and lead to enterprise/business failures. Contractors might not perceive this lack of public-sector capacity as a challenge because of the perception held that most companies have never received tenders from the government (Robertson, 2010). It is possible that those who have received tenders are government protégés who have no reason to complain about government services if anything goes wrong, while other contractors depend on private sector-organisations for job opportunities.

The key constraint identified by the respondents in the survey as affecting the development of the construction industry in South Africa is the increasing costs of building materials. The question that needs to be addressed, however, is why do the respondents perceive the increasing costs of building materials to be a key challenge to and constraint on the performance, development and growth of the South African construction industry? This perception of the respondents with respect to the key challenge arises from largely unexamined assumptions that increases in the costs of building materials result in low-cost performance of construction projects, introduce uncertainty into project pricing and bidding, may cause future cash flow problems for contractors (especially when executing long term projects), and may cause the failure of projects that are not adequately priced to absorb building material price increases, resulting in an unsustainable contractor/construction industry.

Factors known to affect the costs of building materials holistically are include manufacturing costs, import duties, sales or value-added taxes, special levies, delivery services, and transport and storage costs (see BER, 2008; Matthews, 2009; Mwijagye, 2010; Master Builders Association of Malaysia, 2011). Among other factors that affect the costs of building materials is the lack of close substitutes for some building materials, such as crushed stone aggregates cement, kiln-dried SA pine lumber, and galvanised roofing sheet metal, which take time to produce.

CONCLUSIONS

It emerged from the study that construction industry respondents perceive the key challenge to the performance, development and growth of the construction industry in South Africa to be the increasing costs of building materials, which implies that either there is a high demand for certain types of building materials or that there is a heavy reliance on particular materials, leading to high demand without a matching supply. Other unexamined economic factors invariably introduce additional uncertainty into the project procurement process.

Based on the research findings, the paper concludes that to encourage construction industry performance and growth in South Africa, further studies are needed to examine the factors responsible for increases in the costs of building

materials and to explore and develop new materials and technologies rather than exploiting existing ones, as shown in Figure 2.

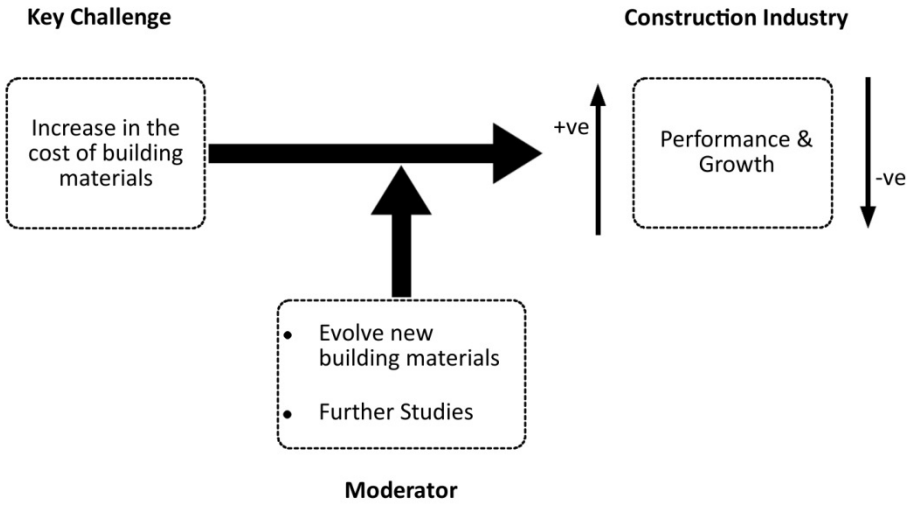

Figure 2. Proposed Framework to Address the Challenge of Increase in the Cost of Building Materials

Figure 2 shows a framework proposed to address the challenge posed by increases in the costs of building materials on the performance and growth of the construction industry. Figure 2 suggests that the construction industry will perform negatively if no action is taken to mitigate increases in building material costs, and vice versa. The actions proposed include further research into factors such as transportation and manufacturing costs, which are believed to be partially responsible for increases in building material prices, as well as research into development of new building materials. However, the possibility of building materials product development being the solution to the challenge of increasing costs of building materials and the assumption that new materials will cost less than existing materials and ensure stable building material prices should also be examined in further studies.

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