

Assessment of the Barriers Facing Supply Chain Management Integration in the South African Construction Industry

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ABSTRACT

The construction industry is a motive force, and a good proxy to measure significant level of development in an economy. Supply chain management (SCM) is a significant aspect in the industry to help synergize collaboration between construction stakeholders to improve the performance in the construction sector. This study assessed the barriers facing SCM integration in the South African construction industry (SACI). The study adopted a quantitative research method with data gathered from the participants with the SACI. The information obtained was analyzed using mean item score, standard deviation, and Cronbach alpha. The findings showed that lack of integration in the SACI is influenced by factors such as lack of investments in supply chain management sector, lack of collaboration among construction professionals, skills shortages in the construction sector, inefficiencies and delays in construction project delivery, limited use of technology in monitoring project progress, a lack of innovation and investment in the construction sector. These were seen as the barriers facing the adoption of SCM in the SACI. The lack of adopting SCM in the SACI can lead to enormous decline of the construction industry and economic infractions. Therefore, it requires an effective central government clear roadmap and industry stakeholders' participation to help stifle the bottleneck currently maligning SCM integration in the SACI. This can be achieved through a national SCM strategy, that promotes SCM awareness and knowledge, by fostering a collaborative and innovative culture, and providing financial and technical assistance to this course. The study of SCM can efficiency and effectiveness in construction by promoting collaboration between construction stakeholders, greatly improve construction completion time, increase customers satisfaction and confidence, and most importantly improve the political economic situation in the region.

Keywords: Economic growth, Construction industry, Political economy, South Africa, Supply chain management

INTRODUCTION

The construction sector, as a significant economic contributor to the country, plays an important role. Integration of a supply chain helps to stimulate economic growth by promoting collaboration and value-sharing between suppliers (Ebrahim et al., 2022). Efficient supply chain management helps to reduce risks and interruptions that organizations face, as well as cost savings, productivity gains, and increased customer satisfaction, which can help support economic growth (Meyer et al., 2019). It is critical in the construction industry to integrate supply chain management to ensure that information, raw materials, and funds flow smoothly from initial design to project completion. This process will improve stakeholder cooperation and coordination, including clients, contractors, and suppliers (Pillay and Mafini, 2017). Furthermore, it can significantly improve construction efficiency and effectiveness by promoting an integration philosophy in supply chain management. This is done by establishing a network of different bodies within the supply chain, all dedicated to delivering high-quality products and services that add value for the end consumer (Khalfan et al., 2004). There are several internal and external challenges to integrating supply chain management in South Africa's construction sector. Some of these challenges include issues with competencies and qualifications, procurement procedures and systems, integration into supply chains, and relationships in the global industry structure (Pillay and Mafini, 2017). Lack of quality of materials and components, ineffective communication and information transfer, weak supply chain management, insufficient training for contractors, suppliers, and workers, and the absence of effective performance measurement methods for different parties in the supply chain are examples of these challenges (Serpell and Heredia, 2007).

This research paper investigates the barriers facing the construction industries in implementing supply chain management (SCM) practices into their operations. The study focuses on the impediments that stifle the adoption of SCM. The research paper reviews existing literature to identify factors that can impede the adoption of SCM.

Barriers of Implementing SCM in the Construction Industry

Every country's construction industry has several problems and difficulties. However, the issues in the South African construction industry (SACI) are dealing with are far more basic, severe, and complicated. These issues and obstacles coexist in South Africa with the broad socioeconomic stress, ongoing resource shortages, and general incapacity to address pressing problems while there exist risk and uncertainty in the construction business in any country, these risks are especially severe in South Africa due to factors including instability, low productivity, unskilled labour, corruption, government involvement, and activity in the informal sector (Pillay, 2016).

According to the United Nations Industrial Development Organization, one of the first industries to experience the consequences of a recession is the construction industry (UNIDO, 2013:22). This issue makes the growth of

this industry challenging, in addition to financial and other commercial hazards. The building business is unstable, but in South Africa where resources are scarcer, instability and volatility are more severe (Kujawa and Prinsloo, 2004:14). Construction demand is characterized by discontinuities and variations, which are also unstable in South Africa (Vogt et al., 2010:12). Due to this, local contractors are unable to build and retain a stable supervisory staff, competent labour, or a suitable supply of basic equipment. Even though clients (often the government) could insist on using local contractors for the job, there might not be many capable local contractors available (Vogt et al., 2010:12).

Unprotected and unregulated people and businesses involved in the construction industry are referred to as the “informal sector.” This covers the provision of labour and the creation of construction supplies and components for both official construction projects and bespoke customer requests (Institution of Civil Engineers, 2010:14). The features of the informal sector, according to Modares and Sepehri (2009:15), are: low quality of construction output; instability; resistance to advancement and change; and a sizable inertia in employing contemporary materials and/or processes. Many studies have been conducted on the issues and challenges that South Africa’s construction industry confront, as well as solutions. Studies and suggestions have been made to deal with these issues (State of the Construction Industry, 2012:22). Some of these recommendations have been carried out by the government, but the outcomes have been unsatisfactory, and the issues still exist. Observations from Kujawa and Prinsloo (2004:19) on the lack of progress in implementing these recommendations, according to the report, is caused by several factors, including the inappropriateness of some of the recommendations and initiatives adopted, the implementing agencies’ poor executive capacity, a lack of resources for initiative implementation, and more. Governments’ disregard for the construction sector and their unwillingness to address its issues. The lack of quantifiable objectives in programs for strengthening the building sector is another significant factor in the lack of growth. Performance of the industry.

According to research on construction projects conducted by several South African businesses, the real cost of a project by the time it is finished exceeds the agreed-upon amount by 30%, while modification orders cause an 8.3% cost overrun (Jain and Benyoucef, 2008:32). Both residential and public structures encounter delays in their completion and ongoing renovations. The building sector in South Africa has found this to be a very significant and expensive issue (Jain and Benyoucef, 2008:32). The presence of a robust construction industry is crucial to completing projects successfully, maintaining them within budgeted limits and on schedule. To meet the demands of social and economic development and to make use of the most recent technology in planning and execution, the sector must be capable of continuous expansion and development. For projects to function well and with minimal delays and cost overruns, early planning is essential (Modares and Sepehri, 2009:15).

The cost of materials, dishonest tactics and bribes, and volatility in material prices are among the most significant reasons contributing to high building

costs in South Africa, according to the State of the Construction Industry (2012:21) study. To account for “hidden taxes/costs” in South Africa, contractors may need to raise their budget. Additionally, the competitive bidding method does little to ease these restrictions. The least expensive bidder approach should, in principle, promote efficiency; unfortunately, contractors, especially small ones, have very limited leeway in pricing an offer. The design is predetermined, the price of the required materials is predetermined, and prices for rented equipment are generally standardized. Therefore, a contractor generates money through lowering overhead expenses, increasing labour efficiency, and/or streamlining site organization, according to Modares and Sepehri (2009:25). Additionally, according to Modares and Sepehri (2009:25), small contractors find it challenging to get credit since there is no guarantee of work or continuity of labour. They are unable to acquire plant and equipment outright or with financing. They are thus frequently forced to use a series of ineffective technologies, which results in low output. The big contracting companies, which are frequently foreign owned, on the other hand, are familiar with the regulations that regulate the sector and have little trouble supplying the appropriate bonds and guarantees.

The goal of construction supply chain management (CSCM) is to ensure a seamless flow of goods and services to the building site by collaborating with supply chain members (Dainty et al., 2001). According to Luo (2020), Due to long-standing challenges such as distrust, fragmentation, and inconsistency, CSCM is extremely difficult to implement in practice. Many issues plague the construction sector and its supply chain, many of which have a detrimental impact. Budget overruns, delays, low profit margins, and many legal claims and counterclaims are among the issues facing the construction business, according to Yeo and Ning (2002). According to Vrijhoef and Koskela (2000), myopic supervision of the building supply chain is the primary cause of waste and difficulties.

Furthermore, Merchandise provenance difficulties and contested product inspections add to a lack of trust, while fragmentation issues stem from several CSCM stages and a geographical dispersal of parties. Discontinuity occurs due to a lack of sufficient information for coordinated functional units such as compliance checking, process control, and quality assurance in the current CSCM framework, as well as insufficient levels of information visibility and traceability. Product data, for example, is still primarily communicated on paper from the prefabrication facility to the worksite (Zhai et al., 2019). According to some experts, socially responsible activities such as Sustainable supply chain management (SSCM) might result in additional expenditures such as environmental policies, staff training, and community development (McWilliams and Siegel 2001).

Studer et al., (2021), discovered that the main barrier to SCM implementation in construction projects is the transient nature of client-designer-contractor-subcontractor-supplier connections. The barriers to an integrated supply chain in the construction industry were highlighted at the 2015 Project Management National Conference in India. These barriers manifest as a failure to share project information, a fear of losing control, a lack of awareness,

a failure to comprehend the project's requirements, a failure to comprehend the supply chain, among other things.

Olaniyan et al. (2015) outlined several issues that are problematic for SCM practices in the construction sector, including inadequate IT investment, diverse objectives, ineffective communication, passive contractors, unclear anticipated rewards, unfair risk allocation, and others. The difficulties of SCM practices that can impede the development of SCM in the construction industry were also mentioned by Ahmed et al. (2002). These difficulties include: a lack of guidance for forming alliances with supply chain partners; a failure to develop measures for monitoring alliances; an inability to expand the supply chain's focus beyond product distribution and procurement to include larger business processes; a lack of trust within and outside of a company; and organizational resistance to the concept. Finally, Studer et al. (2021), argued that SCM presents difficulties including building trust and collaboration among supply chain partners, identifying best practices that can facilitate supply chain process alignment and integration, and successfully implementing the most recent collaborative information systems and internet technologies that promote efficiency and performance throughout the supply chain.

RESEARCH METHODOLOGY

The study is aimed at evaluating the barriers facing the adoption of SCM in the SACI. Utilising a deductive approach, the study was hinged on a post-positivism philosophical view aided by quantitative data from professionals in the SACI. Data was collected with the use of questionnaire survey. The questionnaire was developed from an extensive review of the literature on the factors that impede on the adoption of SCM in the SACI. The target population for the study were professionals from the construction industry in South Africa, while the sample size was arrived at using the formula given by (Yamane, 1967). Overall, a total number of 80 responses was received and deemed appropriate for analysis of the research findings. The question posed to the respondents elicited their perception of the barriers facing the adoption of SCM in the SACI. These impacts of these barriers were presented to the respondents for rating using a Likert scale which were strongly agree = 5, agree = 4, neutral = 3, disagree = 4, and strongly disagree = 5. The methods of data analysis employed for the study are Cronbach's alpha and mean item score (MIS). Cronbach's alpha was used in ascertaining the reliability and validity of the research instrument. A value of 0.822 was given from the analysis which indicates a good reliability and validity of the research instrument (Tavakol and Dennick, 2011).

Mean Item Score

Table 1 shows the ranking of the result of the ranked the barriers facing the adoption of SCM in the SACI. The results indicates that the most ranked variable are informal sector activities with mean score of 4.42, scarcity of resources with the mean score of 4.26, low level productivity with 4.16, and instability in supply chain management with 4.14. While the least ranked

effects are lack of collaborative teamwork in the organisation with a mean score of 3.98, lack of trust within and outside the company with 3.96, and ineffective technologies with 3.88.

DATA ANALYSIS

Data analysis were carried out in the form of mean item score. The ranking of the variables was done with mean item score (Ahadzie et al., 2008).

Table 1. Barriers facing the adoption of SCM.

The Barriers Facing Supply Chain Management Integration	Mean (x)	Standard deviation (σX)	Rank ®
Informal sector activities (corruption)	4.42	0.785	1
Scarcity of resources	4.26	0.965	2
Low levels of productivity	4.16	0.866	3
The issue of instability in supply chain management	4.14	0.904	4
Ineffective communication	4.14	0.857	4
Poor standardized procurement strategies	4.12	0.849	5
Lack of coordination across different supply chain members	4.10	0.953	6
Failure to implement best practices	4.08	0.804	7
Unskilled labour	4.08	0.853	7
Volatility issue/cost overruns	4.00	0.857	8
Lack of collaborative teamwork culture in the organization	3.98	0.795	9
Lack of trust within and outside of a company	3.96	0.880	10
Ineffective technologies	3.88	0.940	11
Average	4.10		

Discussion of Result

The findings reveal that the barriers facing the integration of supply chain management in the South African Construction Industry of informal sector activities (corruption) were highest ranked with (MIS = 4.42; SD = 0.785; R = 1), scarcity of resources (MIS = 4.26; SD = 0.965; R = 2) low levels of productivity (MIS = 4.16; SD = 0.866; R = 3), the issue of instability in supply chain management (MIS = 4.14; SD = 0.904, R = 4) and Ineffective communication (MIS = 4.14; SD = 0.857, R = 4) were all the most barriers facing supply chain management integration in the SACI. Much more, poor standardized procurement strategies (MIS = 4.12, SD= 0.849, R = 5), lack of coordination across different supply chain members (MIS = 4.10, SD = 0.953; R = 6), failure to implement best practices (MIS = 4.08; SD = 0.804; R = 7), unskilled labour (MIS = 4.08; SD = 0.853; R = 7), volatility issue/cost (MIS = 4.00; SD = 0.857; R = 8) were also barriers facing the SCM, while lack of collaborative teamwork culture in the organization (MIS = 3.98; SD = 0.795; R = 9), lack of trust within and outside

of a company (MIS = 3.96; SD = 0.880; R = 10), ineffective technologies (MIS = 3.88; SD = 0.940; R = 11) were the least barriers facing SCM in the SACI. Overall, the average of the barriers facing supply chain management integration in the South African Construction Industry is 4.10. Therefore, it can be concluded that the barriers facing supply chain management integration in the South African Construction Industry are existing and have a huge negative impact.

The findings support the study conducted by Pillay (2016) which shows that every country's construction industry has several problems and difficulties. However, the issues in the South African construction sector are dealing with are far more basic, severe, and complicated. These issues and obstacles coexist in South Africa with the broad socioeconomic stress, ongoing resource shortages, and general incapacity to address pressing problems while there exist risk and uncertainty in the construction business in any country, these risks are especially severe in South Africa due to factors including instability, low productivity, unskilled labour, corruption, government involvement, and activity in the informal sector. The State of the Construction Industry (2012:21) also support the findings that the cost of materials, dishonest tactics and bribes, and volatility in material prices are among the most significant reasons contributing to high building costs in South Africa.

Implications of Findings

The findings are in line with literature review. The findings reveal that the barriers facing the integration of supply chain management of informal sector activities (corruption), scarcity of resources, low levels of productivity, the issue of instability in supply chain management and ineffective communication have the most negative impact in the SACI.

Poor standardized procurement strategies, lack of coordination across different supply chain members, failure to implement best practices, unskilled labour, volatility issue/cost were also barriers that have a negative impact the SCM, while lack of collaborative teamwork culture in the organization, lack of trust within and outside of a company, ineffective technologies were the least barriers facing SCM in the SACI. Overall, the average of the barriers facing supply chain management integration in the South African Construction Industry is 4.10. Therefore, it can be concluded that the barriers facing supply chain management integration in the South African Construction Industry are existing and have a huge negative impact.

CONCLUSION

The literature review revealed different barriers facing the integration of supply chain management in the South African Construction Industry. The barriers faced according to literature review include: a lack of resources for initiative implementation, the lack of quantifiable objectives in programs for strengthening the building sector and resistance to advancement and change. Muchmore respondents revealed their barriers facing supply chain management integration in descending order as: Informal sector activities (corruption), scarcity of resources, low levels of productivity, the issue of

instability in supply chain management, ineffective communication, poor standardized procurement strategies, lack of coordination across different supply chain members, failure to implement best practices unskilled labour, volatility issue/cost overruns, lack of collaborative teamwork culture in the organization. Lack of trust within and outside of a company and ineffective technologies were both the lowest rated ways by respondents. As a result, the objective of the barriers facing supply chain management integration in the South African Construction Industry was fulfilled.

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