

# An Appraisal of the Benefits of Supply Chain Management Integration in the South African Construction Industry

Emmanuel Ayorinde<sup>1,2</sup>, Ntebo Ngcobo<sup>1,2</sup>,  
Vhangwele Mudzusi<sup>1,2</sup>, Jeffrey Mahachi<sup>1,2</sup>,  
and Clinton Aigbavboa<sup>1,2</sup>

<sup>1</sup>Department of Civil Engineering Technology, Faculty of Engineering and the Built Environment, University of Johannesburg, South Africa

<sup>2</sup>SARChi in Sustainable Construction Management and Leadership in the Built Environment, University of Johannesburg, South Africa

## ABSTRACT

The construction industry due to its ever-evolving collaborative focus on sustainability and technology integration, is pivotal in fostering economic and social development in nations across the globe. Supply chain management (SCM) has an enormous role to play in ushering in this unique development, due to its impact on the quality of the final constructed output. SCM ensure the coordination and optimizing process of every construction product to ensure an overall responsiveness of the construction industry market demand and output in the society. This study identifies the benefits of SCM adoption in the South African construction industry (SACI). The study adopted a quantitative research approach with data gathered from the participants with the SACI. Information gathered was analyzed using mean item score, standard deviation, and Cronbach alpha. The findings revealed the benefits of SCM in the SACI to be, improved sustainability and productivity in the construction sector, construction project cost reduction, improved quality control in the construction sector, adequate risk reduction in the construction sector and improved construction project delivery time. These were seen as a direct impact the adoption SCM have in the SACI. The lack of SCM integration can stifle the economic development in the society. Therefore, it requires effective public policies and stakeholders' collaboration to help ensure smooth integration and usher in economic prosperity in the region. The central government through effective policies must ensure communications, technology adoption, collaboration, training, and development among construction stakeholders in the industry. This study will benefit the construction industry researchers and stakeholders around cost savings, better risk management and improved efficiency in adequately delivery of construction projects.

**Keywords:** Economic development, Sustainability, South african construction industry, Supply chain management

## INTRODUCTION

The construction sector, as a significant economic contributor to the country, plays an important role. Integration of a supply chain can help stimulate

economic growth by promoting collaboration and value-sharing between suppliers (Studer et al., 2021). In addition, efficient supply chain management can help 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). Improvements in construction industry performance can be encouraged by successful application of supply chain management (Pervez, 2022).

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 (Studer et al., 2021).

The SCM has been successfully used and has yielded the desired results, particularly in the industrial sector [Roth and Martin, (2000); Proverbs and Holt, (2000); Ledwaba, (2012); Christopher, (1992)]. Reduced real costs with margin maintenance, an incentive to eliminate waste in the process, competitive advantages, increased certainty of out-turn costs, delivery of better underlying value to the client, on-time delivery, productivity improvement, value creation, more repeat business with key clients, increased confidence in longer-term planning, and improved relationships between parties are a few of these advantages. A more responsive industry that delivers facilities that better suit user demands, delivered to schedule and money with low faults, is one of the benefits for end-users and project customers. Higher levels of consumer satisfaction and an enhanced reputation for the sector are the results of this.

This can be accomplished by focusing on the client, developing general strategies throughout the entire chain, operational coordination, and collaboration, and the four proposed critical factors that were identified after a review of the SCM literature (Ross, 1998; Ledwaba, 1998; Lee and Whang, 2001; Roth and Martin, 2000). The fundamental goal of SCM visibility is to boost firm performance (Wang and Wei, 2007; Pidun and Felden, 2012), as well as to assist in decision-making (Ledwaba, 2012). Several initiatives and programs, such as Quick Response, Efficient Consumer Response, Vendor Managed Inventory, and Continuous Replenishment, have successfully incorporated the concept of performance improvement enabled by visibility (Choi and Sethi, 2010).

Despite the enormous number of studies, most of the visibility research is still theoretical. Although the primary performance variables influenced by improved visibility have been identified, most research focus on only one or a subset of the impacted performance measures. Furthermore, whereas most scientific articles on the advantages of visibility aim to analyse the dyadic connections between retailers and producers (Li et al., 2005), only a few

benefits have been quantified in these circumstances. Lee et al. (2000) created a linear model to measure inventory reduction and cost savings achieved through information exchange between retailers and their upstream suppliers for illustration purposes. Organizations continue to use the strategic supply chain as a means of gaining and maintaining a competitive edge (Ireland and Webb, 2007). Given the potential benefits of good supply chain management, such a shift is understandable (SCM). Inventory minimization, enhanced delivery service, and quicker item development times are among the benefits. In CSCP operations, the goal of sustainable development is to improve environmental performance, increase efficiency and effectiveness, decrease waste, and maximize value addition for stakeholders (Badi and Murtagh, 2019).

## **RESEARCH METHODOLOGY**

The study is aimed at an appraisal of the benefits 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 benefits of SCM integration in the SACI. The impacts of these benefits 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 0.719 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 reduced cost with mean score of 4.28, on-time delivery with the mean score of 4.28, eliminate waste in the process with 4.20, and meets client's needs with 4.20. While the least ranked effects are productivity improvement with a mean score of 4.04, encourages collaboration with 4.04, and quicker items development time with 4.02.

## **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.** Benefits of supply chain management integration.

Benefits of Supply Chain Management Integration	Mean ( $\bar{x}$ )	Standard deviation ( $\sigma X$ )	Rank (R)
Reduced cost	4.28	0.701	1
On-time delivery	4.28	0.809	1
Eliminate waste in the process	4.20	0.782	2
Meets client's needs	4.20	0.808	2
Value creation	4.18	0.720	3
Boost firm performance	4.12	0.799	4
Increased confidence in longer-term planning	4.10	0.863	5
Lean Construction	4.08	0.778	6
Productivity improvement	4.04	0.781	7
Encourages collaboration	4.04	0.727	7
Quicker item development times	4.02	0.714	8
Average	4.14		

## DISCUSSION

The findings reveal that the benefits of supply chain management integration in the South African Construction Industry of reduced cost (MIS = 4.28; SD = 0.701; R = 1), on-time delivery (MIS of 4.28; SD = 0.809; R = 1), eliminate waste in the process (MIS of 4.20; SD = 0.782; R = 2), meets client's needs (MIS of 4.20; SD = 0.808; R = 2), value creation (MIS = 4.18; SD = 0.720; R = 3) are the most effective benefits of SCM in the CI, while boost firm performance (MIS = 4.12, SD = 0.799; R = 4), increased confidence in longer-term planning (MIS = 4.10; SD = 0.863; R = 5), lean construction (MIS = 4.08; SD = 0.778; R = 6), productivity improvement (MIS of 4.04; SD = 0.781; R = 7), encourages collaboration (MIS of 4.04; SD = 0.727; R = 7), quicker item development times (MIS = 4.02; SD = 0.714; R = 8) are all also effective benefits of SCM. Overall, the average benefits of supply chain management integration are 4.14. Therefore, it can be concluded that the benefits of supply chain management integration in the SACI have a very high positive effect.

The study of Ross (1998), Ledwaba (2012), Lee and Whang (2001), and Roth and Martin (2000), agrees with the findings that the fundamental goal of SCM visibility is to boost firm performance, reduced real costs with margin maintenance, an incentive to eliminate waste in the process, competitive advantages, increased certainty of out-turn costs, delivery of better underlying value to the client, on-time delivery, productivity improvement, value creation, more repeat business with key clients, increased confidence in longer-term planning, and improved relationships between parties are a few of these advantages. A more responsive industry that delivers facilities that better suit user demands, delivered to schedule and money with low faults, is one of the benefits for end-users and project customers. Higher levels of consumer satisfaction and an enhanced reputation for the sector are the results of this.

This can be accomplished by focusing on the client, developing general strategies throughout the entire chain, operational coordination, and collaboration, and the four proposed critical factors that were identified after a review of the SCM literature. This further supports the study's results, which identified Inventory minimization, enhanced delivery service, and quicker item development times are among the benefits. In CSCM operations, the goal of sustainable development is to improve environmental performance, increase efficiency and effectiveness, decrease waste, and maximize value addition for stakeholders as established by the study of (Badi and Murtagh, 2019).

### **Implications of Findings**

The findings reveal that the benefits of supply chain management integration of reduced cost, on-time delivery, eliminate waste in the process, meets client's needs and value creation are the most effective benefits of SCM in the CI, boost industry performance, increased confidence in longer-term planning, lean construction, productivity improvement, encourages collaboration, and quicker item development times were all also effective benefits of SCM. Overall, the average benefits of supply chain management integration are 4.14. Therefore, it can be concluded that the benefits of supply chain management integration in the SACI have a very high positive effect.

### **CONCLUSION**

The information gathered from the respondents' responses to the questionnaires was presented and analysed considering the study's research questions and literature evaluation. The data related to the ways of improving the level of awareness of supply chain management integration, the ways of improving the level of adoption of supply chain management, the barriers facing the integration of supply chain management, the benefits of supply chain management integration in the South African Construction Industry. The results and suggestions of this research are discussed in connection to the study's research goals in the next chapter.

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