MATERIAL MANAGEMENT AND THE SURVIVAL OF BLOCK MOLDING FIRMS

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DOI: 10.51558/2303-680X.2024.22.1.3

Abstract

The purpose of this study is to examine the effect of material management on the survival of block molding firms in a selected Local Government Area of Ogun State, Nigeria. This study collected data from 100 block molding enterprises from a population of 229 registered businesses in the block molding industry through survey research. To collect data from the respondents, a structured questionnaire with a five-point Likert scale was used. Cronbach's Alpha was used to validate the reliability of the variables utilized in the study. The data was analyzed using descriptive statistics, and the responses were represented using a simple percentage technique. PLS-SEM was used to analyze inferential statistics. The result showed that the coefficient of material procurement (β = 0.114, t = 5.195, p = 0.05) was found to have a significant positive relationship with block-producing-business survival. It also showed that the coefficient of inventory control (β = 0.837, t = 5.514, p = 0.05) was found to have a significant positive relationship with block-producing-business survival. The results further showed that the coefficient of material management (β = 0.965, t = 4.838, p = 0.05) was found to have a significant positive relationship with block-producing-business survival. The study concluded that a cohesive material management strategy can strengthen longevity. It advocated, among other things, that block-producing enterprises implement an integrated approach that harmonizes material procurement and inventory control in order to capitalize on the synergistic benefits of material management. This entails creating complete material management plans that optimize the whole supply chain, from sourcing to storage and distribution.

Keywords: optimize the whole supply chain, from sourcing to storage and distribution.

JEL: M30

1. Introduction

In order to minimize waste and maximize profitability by reducing material costs, material management is a process that coordinates planning, analyzing the requirement for resources, sourcing, purchasing, delivering, storing, and regulating materials (Phu & Cho, 2014). In the block molding companies, managing construction materials is a novel approach (Harris & McCaffer, 2013). At the moment, management and designers are mostly focused on cost control strategies without placing any attention on material management strategies (Wahab & Lawal, 2011). The cost of materials is generally acknowledged to be a sizeable portion of the overall cost of construction projects (Kerzner, 2013). Effective materials management should include monitoring the quality and quantity of materials, optimizing the procurement process to reduce costs, and developing a strategy for the storage and transportation of materials to ensure their timely delivery to the construction site. According to Adafin, Daramola, and Ayodele (2010), material management is crucial to the block molding companies' economic development. By minimizing the quantity of materials used in a project, Ibrahim (2021) defines construction material management as a reduction in the amount and environmental impact of material waste generated. A number of authors from various countries have demonstrated that material waste from the construction industry accounts for a sizable portion of the expenses of production (Saidu & Shakantu, 2016; Muleya & Kamalondo, 2017). The overall cost of construction projects rises as a result of inadequate material management (Ameh & Itodo, 2013). This shows that proper management of construction materials is essential to achieving cost efficiency and reducing the amount of waste generated in the process. On the other hand, the survival of businesses in the block molding firms is largely dependent on how well they can manage

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materials. The entrepreneur learns that the business idea is not practical because a significant portion of block molding businesses fail soon after their inception or cannot be operated financially. There is a significant failure rate for startups. Therefore, the material management approach suggested by Muleya and Kamalondo (2017) is an important factor in the sustainability of any block molding firm business. To survive in the block molding industry, businesses must have sufficient cash to cover debts, stay competitive, and have an efficient financial system. Profit is the next financial objective, earned when revenue exceeds costs. To make a sustainable profit, businesses must add value and sell into a large market. This requires strategic planning, partnerships with reliable suppliers, efficient production and marketing systems, understanding industry trends, and an effective financial system. Entrepreneurs must create a product or service that offers customers an attractive benefit and is more valuable than competitors' offerings.

Statement of the Problem

No project can start without an adequate supply of resources, aside from the builder's careful consideration of the supplies required. This has the benefit of fostering positive relationships with the suppliers, many of whom would have been selected owing to their consistent ability to complete orders to the needed standard and meet delivery deadlines (Adeyinka *et al.*, 2014). The researchers and scholars have identified material management as an alternative paradigm to the performance of manufacturing organization (Muhdin et. al, 2023; Oyebamiji, 2018). Material management practices are critical to an organizational performance in today's competitive and dynamic market (Muhdin et. al, 2023). The management of materials in terms of reduction, reuse, and recycling has a substantial impact on a building project cost, quality, timetable, and environmental impact (Dania, Kehinde, & Bala, 2017). Consequently, managing construction materials well can considerably raise the likelihood that any project will be completed successfully. According to Jarkas and Bitar (2011), poor material delivery, waste, abuse, improper working design, inadequate handling on site, and an excessive amount of working all contribute to inefficient material management. The inability to place orders on time, which causes a delay in project implementation, the wrong delivery direction, over ordering, insufficient materials, or material theft, and the double handling of material due to inadequate storage are the general issues in material management, according to Wanjari and Dobariya (2016). Patil and Pataskar's 2013 study suggests errors in construction management, especially in paper-based procedures. Potty and Ramanathan's 2011 study found site logistics, material handling, and building supply allocation as the most significant obstacles to material management. Block molding firms in Nigeria face challenges in efficient material procurement due to poor communication between contractors and suppliers and the lack of a centralized management system, resulting in delays, increased costs, difficulty in maintaining market competitiveness and theft of material, most especially cement, by the workers on site. Furthermore, inefficiencies in Nigerian block molding firms' procurement processes are causing substandard building materials (block) and putting lives at risk. Despite government policies, contractors face challenges due to convoluted processes. Efficient and well-regulated procurement can improve market competition, maintain construction quality, and reduce project completion delays. Block molding firms struggle with inventory cost control, hindering accurate financial records and resource tracking. Proper control can improve financial management, reduce costs, and help identify profitable long-term investments, ultimately improving overall performance. Despite this, many block molding firms do not fully utilize inventory cost control, leading to inefficient resource tracking and management. This can result in harmful business decisions and financial performance issues, potentially causing their extinction. Studies (Albert, Shakantu, & Ibrahim, 2021; Albert, Shakantu, & Ibrahim, 2018) show that effective material management practices reduce material costs, improve quality control, and enhance productivity in building projects. How this is true for Nigeria block molding firms needs to be researched. In Nigeria, poor management can lead to material waste, poor work quality, and project profitability, highlighting the importance of cost control in block molding firms. Poor material management significantly impacts construction project waste generation, quality, and profitability. Okorocha

(2013) study in Nigeria found planning and handling as critical factors for material management in construction projects. Other factors, such as quality and profitability, also have moderate effects. Previous studies have mainly focused on construction companies worldwide, neglecting small businesses like block molding firms. The lack of research on material procurement process and inventory control in block molding firms highlights a gap in the area of empirical review, methodology and variables identification. Therefore, a study on material management strategies and their impact on the survival of Nigerian block molding firms is imperative.

Objectives of the Study

This research assesses the effect of material management on the survival of block molding firms in a selected Local Government Area of Ogun State, Nigeria. To achieve the aim of this study, the specific objectives are to:

- Examine the effects of material procurement process on the survival of block molding firms in a selected Local Government Area of Ogun State, Nigeria.
- Investigate the extent to which inventory control affects the survival of block molding firms in a selected Local Government Area of Ogun State, Nigeria.
- Determine the combined effect of material management variables (material procurement process and inventory control) on the survival of block molding firms in a selected Local Government Area of Ogun State, Nigeria.

Research Hypotheses

Based on the research questions above, the following hypothetical statements were formulated in their null form:

$H0_1$: Material procurement process has no significant effect on the survival of block molding firms in a selected Local Government Area of Ogun State, Nigeria.

$H0_2$: Inventory control has no significant effect on the survival of block molding firms in a selected Local Government Area of Ogun State, Nigeria.

$H0_3$: The combined effect of material management variables (material procurement process and inventory control) has no significant effect on the survival of block molding firms in a selected Local Government Area of Ogun State, Nigeria.

2. Literature Review

2.1 *Material Management*

Material management in construction projects involves planning, procurement, handling, stock and waste control, and logistics. It aims to minimize project costs by delivering the right materials on time and in the right quantity (Dallasega & Rauch, 2017; Flanagan, 2019). Implementing integrated material management practices can improve project performance by reducing waste and environmental impact, thereby reducing the use of materials (Kulkarni, Sharma & Hote, 2017). Technology improvements have led to an increase in the use of construction materials on the global market. Designing, planning, and controlling the quality and quantity of materials in a specific period of time constitute the essential process of material management. It is crucial for the success of building projects, resulting in increased output and better performance (Calkings, 2019). A number of processes that are involved in material management need to be coordinated, controlled, managed, and assembled. Planning, which entails the quantifying, ordering, and scheduling of materials and activities, is the first step in every phase. For construction organizations, good material management can increase output and profitability, which boosts performance (Donyayi & Flanagan, 2019). Contractors must carefully select and carry out procurement while taking building materials into consideration because the quality of service is a significant project indicator. All duties start with the acquisition of materials, services, and other essentials for the construction project, and delivery of construction materials must occur after approval (Grant, 2021). A single manager is given authority and responsibility for policies and actions related to determining material requirements, obtaining necessary materials, receiving, storing, issuing materials, creating inventory records, scheduling the use of materials, and discarding excess materials. Material management is an integrated organizational arrangement. In order to effectively distribute resources, it uses a

system approach that involves cooperation and coordination of decisions made by several departments (Kumar *et al.*, 2020; Williamson, 2020).

2.1.1 Material Procurement Cost

The goal of procurement in the management of construction materials is to reduce costs and increase profitability for businesses. It includes planning the procurement of materials, communicating delivery deadlines to vendors, and monitoring progress to guarantee delivery on time. The critical processes of planning and procurement are used to keep track of the overall cost of construction projects. To avoid shortages and surpluses on the construction site, material control and expediency are crucial considerations. Time is a crucial indicator of the sustainability and success of a project, and failing to respect time can result in higher operating costs and pointless material alterations (Krishnakumar & Selvakumar, 2020). Procurement personnel play a crucial role in organizations by managing commercial, technical, and relationship aspects (Melton, & Iles-Smith, 2019). They analyze vendors, make decisions, and ensure materials are available at the right time and quality. Construction strategies aim to balance risk, control, and funding, using various methods. Despite modern methods, procurement processes remain relatively unchanged in Nigeria (Moher, 2019; Moher, 2019; Qazi *et al*, 2021).

2.1.2 Inventory Cost Control

Inventory control is a procedure that regulates the quantity and quality of raw materials in a manufacturing firm, assuring continuous operations and minimizing stock-out situations (Amrina and Dewi, 2021; Mahdi Nakhaeinejad *et al.*, 2022). It entails keeping track of and processing purchases, ordering, receiving, and issuing stock, and managing stock investments. Inventory control is critical for firms in order to meet consumer demand at the lowest possible cost and with the least amount of expenditure. It entails synchronizing material control, use, and purchasing to ensure the appropriate inventory is in the right location, at the right time, and in the right quantity.

In manufacturing, inventory control focuses on material control, as it is one of the largest assets of a business. Proper control ensures that materials are available when required, considering factors such as shortages, ordering costs, purchase prices, and working capital. It also helps material managers assess stock levels and issue stock (Ekakitie et. al, 2022). A good inventory control system minimizes production delays, allows for efficient purchasing, and ensures a smooth financial statement production (Hjaltadóttir & Hild (2021)). It also allows for increased output, quality discounts, and buffers between input and output. It also helps prevent material scarcity and avoids inventory build-up. Overall, inventory control is essential for a company's success and overall success.

2.3 *Survival of Block Molding Firms*

The survival of block molding firms relies heavily on effective material management, as many products fail to survive beyond their launch. To ensure long-term success, businesses must have efficient systems, focus on production efficiency and waste reduction, and have effective marketing strategies. Reliable partners, a sound pricing system, and a competitive industry understanding are essential for long-term success (Muleya & Kamalondo, 2017). Profit is the most important financial objective for a new business, as it is earned when the revenue exceeds the total costs. Profit is the reward for taking risks and should provide enough income for the entrepreneur to live on (Hani Mizhir Magid et.al., 2021). To make a sustainable profit, businesses must add value and sell into a large enough market. Personal wealth is another financial objective, and entrepreneurs must create a product or service that provides customers with an attractive benefit and is more valuable than competitors' offerings. In summary, strategic planning, strong partnerships with reliable suppliers, efficient production and marketing systems, a good understanding of the industry, and a unique product or service are all essential for the survival of block molding firms (Lin *et al.*, 2020).

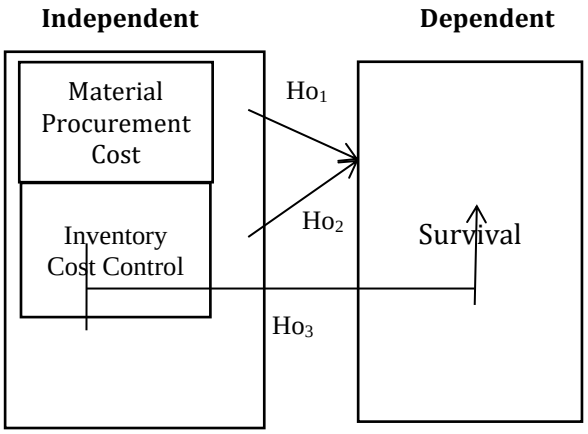

Figure 2.1 *Conceptual Framework*
Source: Researcher's Conceptual Model 2023

This conceptual framework shows the link between the dimension of material management and the survival of block molding firms. Material management is measured using two dimensions which are material procurement cost and inventory cost control.

2.4 *Theoretical Review*

The theories discussed in this research are application theory and system theory. The theoretical framework of this study is anchored on application theory.

2.4.1 Application Theory

Application theory, proposed by Donyavi and Flanagan in 2009, focuses on the role of material management in the construction sector. It provides a comprehensive framework for firms to effectively carry out planning and operational activities. However, other theories must be considered for maximizing effectiveness within the sector. The theory emphasizes the importance of understanding the scope of a project and its budget for informed decisions and maximizing potential. It also emphasizes the importance of understanding the construction process from start to finish. However, application theory has its drawbacks. Critics argue that it lacks guidance on the actual construction process, does not consider external factors, and is often more focused on a structuralist approach, which can limit creativity in architecture and design. Despite these criticisms, application theory can be a valuable tool for ensuring smooth and timely completion of construction projects.

2.4.2 System Theory

Miller proposed system theory in 1992, which states that a response is achieved through the collaboration of numerous elements in the working environment. This paradigm has been implemented in material management, helping firms to have a better understanding of the complexities of their work environment and the interconnected aspects that contribute to obtaining desired outcomes. Material management is an important and cohesive component of a system that focuses on specific tasks and their interdependence. By evaluating an organization as a whole and considering both internal and external aspects when making decisions, system theory improves its responsiveness to environmental changes. Despite its limitations, system theory can be a powerful tool for understanding organizations and their environments, allowing for a comprehensive understanding of their environment and developing strategies to maximize positive impacts and minimize negative ones.

2.5 *Empirical Review*

2.5.1 Material Procurement Cost and Survival

Kantasa-ard *et al.* (2020) emphasized cost estimation for effective forecasting. A report made by the USA engineering association's report highlights the importance of budgeting for construction company success. Budgeting for materials, based on annual, trimestral, or semestrial information and expenses, can stimulate sustainable and successful projects.
A study in South Africa by Gadisa and Zhou (2020) examined the impact of procurement on construction project performance, involving 72 companies and found that procurement involves identifying obligations, selecting suppliers, negating contracts, acting as a mediator, and following up with suppliers. Material handling equipment is crucial for improving productivity, worker operation, production, and system flexibility. Tao *et al.* (2021) conducted a study on the impact of logistics factors on material procurement for

construction projects in Abuja, Nigeria. They found that vendor qualities and procurement officer competence are crucial for successful procurement. Factors affecting procurement include late delivery, inaccuracies, transportation challenges, increased waiting time, and poor-quality materials.

2.5.2 Inventory Cost Control and Survival

Harifi *et al.* (2020) studied the impact of inventory control on construction project performance using descriptive and correlational research designs. They found a positive correlation between material estimation cost and project performance at Baraka Properties, and a significant correlation between procurement process and project performance. Mayer *et al.* (2020) and Fang and Chen (2021) conducted studies on the effects of material estimation cost and inventory cost control on organizational effectiveness. Mayer *et al.*'s study focused on 200 construction companies in India, revealing that material estimation leads to adequacy and effectiveness in service delivery. Rezina *et al.* (2020) investigated the impact of inventory cost control on the profitability of cement manufacturing companies in Kenya. The study used cross-sectional data from 2009 to 2019 and used ordinary least squares (OLS) to analyze variables such as inventory turnover, conversion period, inventory levels, storage cost, firm size, gross profit margin, return on assets, and firm growth.

Singagerda *et al.* (2022) studied the influence of inventory cost control on organizational competitiveness, specifically in Safaricom Ltd Kenya. The study found that inventory shrinkage, investment, and turnover affect the competitiveness of Safaricom Ltd. The study concluded that inventory cost control practices are vital for organizational competitiveness. Maheshwari *et al.* (2021) studied stakeholders' perceptions of inventory cost control practices impacting the performance of the medium-scale food industry in Nigeria. The study found that business size was the highest factor influencing adoption of inventory cost control practices. Mishra *et al.* (2020) empirically conducted a study on inventory cost control in small business finance in Kwara State, Nigeria. The study revealed a strong positive relationship between inventory cost control and profitability, suggesting that small businesses can generate higher profits if effective inventory cost control is implemented.

2.6 *Material Management and Survival*

Muhdin *et al.* (2023) examined the effect of material management practice on organizational performance in Werabe Town flour factories through a close ended questionnaire using the software of statistical package for social science (SPSS) version 25, in which multiple linear regression and correlation were used for analysis. The findings revealed that organizational performance was significantly influenced by maintenance, expediting, storage management, and inventory management factors. Akinola *et al.* (2022) investigated the influence of material management practices on the financial performance of manufacturing firms in Southwestern Nigeria. A multistage sampling technique was adopted to arrive at 354 workers, cutting across positions like procurement officer, logistics officer, store officer, production manager, research and development officer, and accountant. Both descriptive and inferential statistics were used to analyze the data obtained. The results revealed that the extent of material management practices among the manufacturing companies in Southwestern Nigeria was high, including warehousing and storing, production and procurement, distribution, production planning and control, and inventory management. Albert *et al.* (2021) conducted a study on the effects of material management on building projects and discovered that successful procedures led to lower costs, better quality control, better field material control, better material handling, enough on-site storage, and increased productivity. They urge that material management procedures be properly planned from the start of project execution and practiced on all sites and by all types of block businesses to enable timely project execution and standard work delivery within reasonable cost, time, and quality. Tadesse and Kumar (2020) investigated current material management

practices and their impact on building construction project delivery. They discovered three main core reasons of unsuccessful material management: price matching to competitors' prices, time wasted finding non-qualified suppliers, and material unavailability. Albert, Shakantu, and Ibrahim (2021) studied the impact of poor materialmanagement on material waste, job quality, and project profitability in Nigerian construction projects. The findings demonstrated that poor material management has a significant impact on material waste creation, a moderate impact on building project quality, and both significant and moderate impacts on profitability.

3. Methodology

This study conducted survey research to collect data from 100 block molding firms in Ogun State, Nigeria, from a population of 229 registered businesses in the block molding industry. To collect data from the respondents, a structured questionnaire with a five-point Likert scale was used. The survey is divided into two sections: A, which includes biographical information, and B, which includes questions about the study topic. Cronbach's Alpha was used to validate the reliability of the variables utilized in the study. The data was analyzed using descriptive statistics, and the responses were represented using a simple percentage technique. PLS-SEM was used to analyze inferential statistics.

Model Specification

Y= f (x); Y= Dependent variable; X= Independent variable; Y= f (x_1, x_2); Y= Survival (SURV); X_1= Material Procurement cost (MPC) X_2= Inventory cost control (ICC).

Econometrically using a multiple regression model, we have;

$Y= \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \varepsilon_{it}$…… (1)

$SURV= \beta_0 + \beta_1 MPC + \varepsilon_{it}$…… (2)

$SURV= \beta_0 + \beta_1 ICC + \varepsilon_{it}$…… (3)

$SURV= \beta_0 + \beta_1 MPC + \beta_2 ICC + \varepsilon_{it}$…… (4)

A priori Expectation

It is expected that material management (MM) variables as proxies by material procurement cost (MPC) and inventory cost control (ICC) will exert a positive effect on the dependent variable (business survival).

4. Results and discussion

This section shows the outcomes of data analysis and interpretation of the findings from a study that posed five research questions and three hypotheses. To assess the hypotheses, descriptive statistics and partial least squares structural equation modeling were used. The report is broken into three sections, each focused on a different demographic variable, research question, or hypothesis testing. From 93 questionnaires submitted to block-

Table 4.1 *Demographic Characteristics of Respondents (n = 93)*

Characteristics	Classification	Frequency	Percentage
Gender	Male	93	100.00
Marital status	Single	32	34.0
	Married	55	59.1
	Divorced	6	6.5
Age (Years)	21-30	10	10.8
	31-40	36	38.7
	41-50	31	33.3
	51-60	10	10.8
	Above 60	6	6.5
Work experience (Years)	Less than 5	11	11.8
	6-10	15	16.1
	11-20	38	40.9
	21-30	21	22.6
	Above 30	8	8.6

Source: Author's computation

producing firms in selected local government areas of Ogun state, a 93% response rate was recorded. According to the report, the block moldings sector is dominated by men, with the majority of the respondents being married. The bulk of the respondents are between the age of

Table 4.2 *Distribution of Block molding firms Degree of Involvement in Material Procurement System*

Survey statement	SA	A	U	D	SD	Mean	SD	Remarks
Timely delivery of raw materials	31 (33.3)	32 (34.4)	7 (7.5)	12 (12.9)	11 (11.8)	3.76	0.70	Agree
Documentation and record-keeping	41 (44.1)	27 (29.0)	9 (9.7)	4 (4.3)	12 (12.9)	4.73	0.72	Strongly agree
Compliance with legal requirements	36 (38.7)	31 (33.3)	5 (5.4)	9 (9.7)	12 (12.9)	4.77	0.68	Strongly agree
Risk management	33 (35.5)	42 (45.2)	8 (8.6)	4 (4.3)	6 (6.5)	3.75	0.71	Agree
The efficiency of material procurement	29 (31.2)	37 (39.8)	6 (6.5)	10 (10.8)	11 (11.8)	3.55	0.52	Agree
Grand Mean and SD						4.11	0.67	Agree

Decision Rule: Strongly agree = 4.50 – 5.00; Agree = 3.50 – 4.49; Undecided = 2.50 – 3.49; Disagree = 1.50 – 2.49; Strongly disagree = 1.00 – 1.49.
Source: Author's computation

Table 4.3 *Distribution of Block molding firms Degree of Involvement in Inventory Control System*

Survey statement	SA	A	U	D	SD	Mean	SD	Remarks
Regular monitoring of inventory level	36 (38.7)	40 (43.0)	7 (7.5)	7 (7.5)	3 (3.2)	3.74	0.67	Agree
Accurate tracking and recording of inventory	38 (40.9)	31 (33.3)	6 (6.5)	6 (6.5)	12 (12.9)	4.78	0.74	Strongly agree
Regular physical inventory counts	34 (36.6)	40 (43.0)	4 (4.3)	7 (7.5)	8 (8.6)	3.52	0.67	Agree
Timely identification and removal of obsolete inventory	30 (32.3)	48 (51.6)	8 (8.6)	0 (0.0)	7 (7.5)	3.61	0.66	Agree
Continuous improvement of inventory control practices	41 (44.1)	27 (29.0)	8 (8.6)	7 (7.5)	10 (10.8)	4.66	0.72	Strongly agree
Grand Mean and SD						4.06	0.69	Agree

Decision Rule: Strongly agree = 4.50 – 5.00; Agree = 3.50 – 4.49; Undecided = 2.50 – 3.49; Disagree = 1.50 – 2.49; Strongly disagree = 1.00 – 1.49.
Source: Author's computation

31 and 40, with the largest age group being 41 to 50. The bulk of the respondents had been in the industry for more than ten years, with 41% having worked for 11 to 20 years. The vast majority of the respondents have less than five years of work experience, with a minor percentage having between six and ten years. This shows that the respondents have extensive work experience, which may have an impact on their job performance.

4.1 *Analysis and Presentation of Survey*

Construct Items Result

Table 4.2 presents the results of the block molding firms' degree of involvement in material procurement system in the selected Local Government Area of Ogun State, Nigeria. The survey results indicate a positive perception of the material procurement process in block molding firms in the selected

Local Government Area, with strong agreement on documentation, legal compliance, and risk management.

Table 4.3 presents the results of the block molding firms degree of involvement in inventory control system in the selected Local Government Area of Ogun State, Nigeria. The survey results indicate that the respondents in the selected Local Government Area positively perceive inventory management practices in block molding firms, emphasizing accurate tracking, regular monitoring, physical counts, and continuous improvement. Table 4.4 presents the results of the block molding firms' raw material management process activities in the selected Local Government Area of Ogun State, Nigeria.

The survey indicates that the respondents in the selected Local Government Area recognize the importance of raw materials availability, finance, government policies, technological advancements, and market demand for block molding firms' survival.

Table 4.4 *Distribution of Factors Affecting Block molding firms Survival*

Survey statement	SA	A	U	D	SD	Mean	SD	Remarks
Importance of raw materials availability	36 (38.7)	34 (36.6)	9 (9.7)	5 (5.4)	9 (9.7)	4.81	0.71	Strongly agree
Importance of finance and credit facilities	32 (34.4)	36 (38.7)	13 (14.0)	7 (7.5)	5 (5.4)	3.78	0.79	Agree
Importance of government policies and regulations	37 (39.8)	32 (34.4)	11 (11.8)	6 (6.5)	7 (7.5)	4.72	0.81	Strongly agree
Importance of technological advancements and innovations	31 (33.3)	35 (37.6)	8 (8.6)	8 (8.6)	11 (11.8)	3.85	0.65	Agree
Influence of market demand and customer preferences	39 (41.9)	32 (34.4)	12 (12.9)	4 (4.3)	6 (6.5)	4.67	0.79	Strongly agree
Grand Mean and SD						4.37	0.75	Agree

Decision Rule: Strongly agree = 4.50 – 5.00; Agree = 3.50 – 4.49; Undecided = 2.50 – 3.49; Disagree = 1.50 – 2.49; Strongly disagree = 1.00 – 1.49.

Source: Author's computation

Table 4.5 *PLS-SEM Assessment Results of Reflective Measurement Models*

	Convergent validity			Internal consistency reliability	
	Outer loadings (>0.708)	Bootstrapped p-value (<0.05)	AVE (> 0.50)	Cronbach's alpha (> 0.7)	Composite reliability (>0.7)
Indicator Item	Estimate	Estimate	Estimate	Estimate	Estimate
MP1	0.938	0.001	0.740	0.825	0.831
MP2	0.890	0.001			
MP3	0.889	0.001			
MP4	0.927	0.001			
MP5	0.947	0.001			
IC1	0.973	0.001	0.799	0.876	0.896
IC2	0.888	0.001			
IC3	0.924	0.001			
IC4	0.972	0.001			
IC5	0.967	0.001			
SV1	0.975	0.001	0.798	0.891	0.900
SV2	0.954	0.001			
SV3	0.973	0.001			
SV4	0.975	0.001			
SV5	0.930	0.001			

Source: Author's computation

4.2 *Hypotheses Testing*

The hypotheses formulated for this study were tested using Partial Least Squares Structural Equation Modelling at a 0.05 significance level (two-tailed test).

4.3 *Measurement Model*

The measurement models represent the relationships between constructs and the indicator variables that correspond to them (Sarstedt, Ringle, & Hair, 2017). Measurement theory serves as the foundation for determining these correlations. To acquire useful results from PLS-SEM, a solid measurement theory is required. The outside reflective measuring model was validated using the guidelines proposed by Sarstedt *et al.* (2021). The reflecting measurement model evaluation began with an examination of the indicator loading estimations. Outer loading estimates must be more than 0.708, suggesting that the concept explains more than 50% of the variance in the indicator and has acceptable item reliability. The results of the model's outer loading estimations are shown in Table 4.5. The reflected measurement models are evaluated first by the PLS-SEM assessment model. According to Table 4.5, all 15 reflective measurement model indicators met the relevant assessment criteria.

More particular, all of the outside loading estimates were more than 0.708, indicating that all construct indicators are reliable. Similarly, all of the AVE values were more than 0.50, indicating that the measures were convergent. Furthermore, Cronbach's alpha and composite reliability were greater than 0.7, which is considered satisfactory. These findings imply that the measures for the seven constructs have high internal consistency reliability.

Table 4.6 *Discriminant Validity (HTMT)*

	MP	IC	SV
MP			
IC	0.693		
SV	0.668	0.503	

Source: Author's computation

Finally, Table 4.6 revealed the discriminant validity assessment results assessed by examining the Heterotrait-Monotrait Ratio (HTMT), often considered the most conservative method compared to other methods. The HTMT value should not exceed 0.85 to achieve discriminant validity (Kline, 2011). Table 4.7 presents the partial least squares (PLS) estimate and corresponding statistical parameters about the hypothesized paths in the structural model. These paths reflect the relationships between the latent constructs: material procurement (MP), inventory control (IC), material procurement and material management (combination of material procurement and inventory control (MP&IC), and block-producing business survival (SV).

Table 4.7 *PLS Estimate*

Paths	β	Standard deviation	t-statistics	p-values
MP -> SV	0.114	0.083	5.195	0.001
IC -> SV	0.837	0.014	5.514	0.001
MM (MP&IC) -> SV	0.965	0.019	4.838	0.001

Source: Author's computation

The estimated path coefficients (β) indicate the strength and direction of the relationships, while the associated standard deviations provide a measure of the precision of these estimates. The path coefficient of material procurement (β = 0.114, t = 5.195, p = 0.05) significantly and positively influenced block-producing business survival. The path coefficient of inventory control (β = 0.837, t = 5.514, p = 0.05) significantly and positively influenced block-producing business survival. Lastly, material management (combination of material procurement process and inventory control) (β = 0.965, t = 4.838, p = 0.05) significantly and positively influenced block-producing business survival. The study found that 89.9% of survival variance can be explained by material procurement and inventory control, while 93.1% can be explained by the combination of these processes. This suggests a robust predictive power of the combined influence of these factors on block producing-business survival.

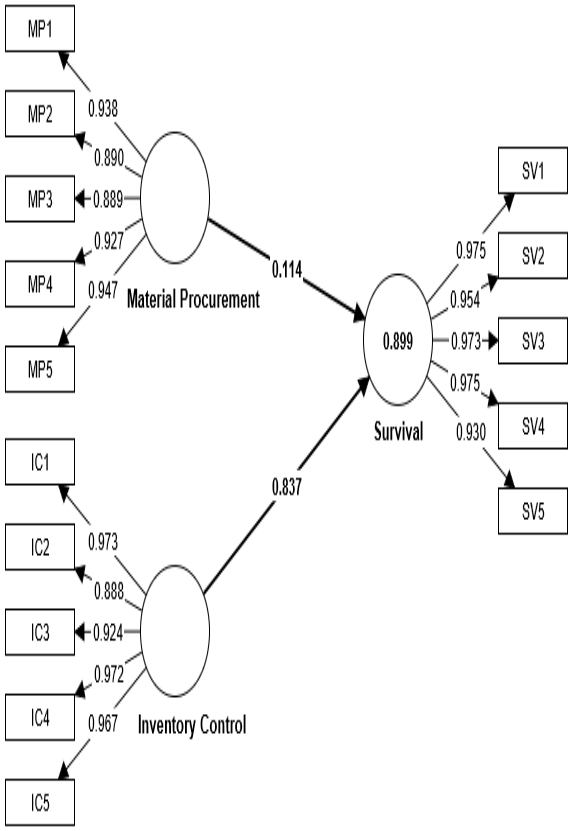

Figure 4.1 *PLS Model of Material Procurement and Inventory Control on Block molding firms Survival*
Source: Author's computation

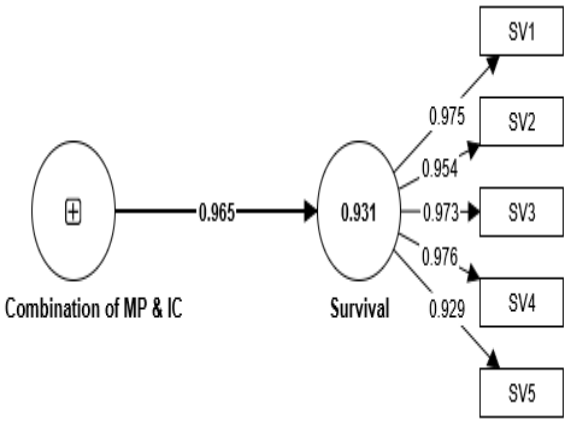

Figure 4.2 *PLS Model of Material Management (Combination of Material Procurement and Inventory Control) on Block molding firms Survival*
Source: Author's computation

Test of Hypothesis One

Ho_1: The material procurement process has no significant effect on the survival of block molding firms in a selected Local Government Area, Ogun State, Nigeria. The results in Table 4.7 indicated that the material procurement coefficient (β= 0.114, t = 5.195, p = 0.05) had a significant positive link with block-producing-business survival. Based on these findings, the null hypothesis is rejected: the raw material procurement procedure has no substantial effect on the survival of block-producing businesses in a selected Local Government Area of Ogun State, Nigeria. Instead, the study showed that the raw material procurement procedure had a substantial impact on the survival of block-producing businesses in a selected Local Government Area of Ogun State, Nigeria.

Test of HypothesisTwo

Ho_2: Inventory control has no significant effect on the survival of block molding firms in a selected local government area, Ogun State, Nigeria. The results in Table 4.7 revealed that the inventory control coefficient (β = 0.837, t = 5.514, p = 0.05) had a significant positive link with block-producing-business survival. Based on these findings, the null hypothesis that inventory control has no effect on block-producing-business survival in a selected Local Government Area of Ogun State, Nigeria, is rejected. Instead, the study indicated that inventory control had a substantial impact on the survival of block-producing businesses in a selected Local Government Area of Ogun State, Nigeria.

Test of Hypothesis Three

Ho_3: The combined effect of material management (combination of the material procurement process and inventory control) has no significant impact on block producing-business survival in a selected local government area, Ogun State, Nigeria. The coefficient of material management (β = 0.965, t = 4.838, p = 0.05) was found to have a significant positive link with block-producing-business survival in Table 4.7. Based on these findings, the null hypothesis that material management has no effect on block-producing-business survival in a selected Local Government Area of Ogun State, Nigeria, is rejected. Instead, the study indicated that material management had a substantial impact on the survival of block-producing businesses

in a selected Local Government Area of Ogun State, Nigeria.

4.4 *Discussion of findings*

The study explores the survival of block-producing businesses, focusing on material procurement, inventory control, and material management. It uses PLS-SEM analysis to reveal the impact of these factors on the survival of these businesses. Material procurement has a significant positive influence on business survival, ensuring a steady supply of resources and enhancing operational resilience. This confirmed the studies of Albert *et al*. (2021); Tadesse and Kumar (2020); Akinola et.al. (2023); Muhdin et.al, (2023) who found that performance was significantly influenced by maintenance, expediting, storage management, and inventory management factors. The findings also reveal that inventory control is crucial for business survival, facilitating streamlined operations, minimizing waste, and enhancing cost-efficiency. Implementing rigorous inventory control practices can mitigate disruptions and optimize resource allocation. This is consistent with the work of Adeyemi and Salami (2010), Egberi and Egberi (2011), Nwosu (2014), and Ibegbulam and Okorie (2015). The study further opines that combining material procurement and inventory control into a comprehensive material management strategy can strengthen the foundations of a block-producing enterprise, enhancing its competitive advantage. Overall, raw material management (material procurement and inventory control) significantly contributed to block molding firms' business survival. Nwosu (2014), and Ibegbulam and Okorie (2015), found that raw material management significantly contributed to business survival and, thus, recommended its adoption by firms.

5. Conclusion and recommendations

The research looked at the effect of material management on the survival of block-making businesses in a specific Local Government Area of Ogun State, Nigeria. The study discovered that material procurement has a large and beneficial impact on firm survival. Inventory control was also beneficial to corporate survival. The study concluded that a well-coordinated material management plan can improve business lifetime, especially of block molding firms. To minimize excess stock and reduce carrying costs, ultimately ensuring the survival and prosperity of block-making enterprises the study recommends that:

- Firm should have a planned resource procurement, smart inventory management, and the interdependence of these elements for their survival and development.
- Firms should adopt optimized material sourcing strategies, applying rigorous inventory management techniques, and establishing an integrated approach that harmonizes material procurement and inventory control.
- Firms should carefully work on their innovative projects by leveraging their key competencies and efficient material management to enhance the performances which guarantee survival.

5.1 *Contribution to existing knowledge*

This study uses PLS-SEM to understand the relationships between material procurement, inventory control, and the survival of block molding firms. It provides a nuanced understanding of the complex business ecosystem and highlights the mechanisms driving organizational resilience and success. The study focuses on block-producing businesses, providing a comprehensive framework for understanding survival dynamics and setting a precedent for industry-specific analyses to guide strategic decision-making and resource allocation.

5.2 *Suggestions for further sudies*

The study explores the relationship between material management and business survival in selected Local Government Area, Ogun State, Nigeria. Future research should explore regional variations and use mixed-method techniques to gain a comprehensive understanding of the impact of material management on business survival. Concerted effort should also be made by future research to look at other areas of business for comparative analysis of the effect of material management on business survival. Future

studies should also consider expanding the variables of material management. This will allow for the usage of other analytical tools.

5.3 *Limitations of the study*

The study on block-making enterprises in Nigeria has limitations, including a small sample size of 100 respondents from selected Local Government Area, a potential skewed result due to self-reported information, a cross-sectional design that only measured variables once, and a focus on material procurement and inventory control. These limitations may restrain the generalizability of the findings to other regions and limit the ability to infer changes in variables over time.

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