

Assessing the Mediating Influence of Supply Chain Management Practices on the Performance of a Manufacturing Firm in Ghana

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ABSTRACT

This study explores the impact of supply chain management (SCM) practices on the performance of Wood Processing Company Limited (WPCL) in Ghana, with a focus on its manufacturing operations. The research investigates how SCM practices are implemented at WPCL, assesses their effects on the company's performance, and analyzes sales trends over time. A sample of 200 clients from WPCL in the Greater Accra Region was surveyed using questionnaires, and semi-structured interviews were conducted with key WPCL personnel. Data analysis, facilitated by SPSS, examined the relationship between SCM practices and WPCL's performance. The findings reveal that WPCL effectively integrates SCM practices into its operations, which has significantly enhanced its business performance, as evidenced by improved sales trends from 2018 to 2024.

Keywords: Supply Chain, Practices, Performance and Supply Chain Management

BACKGROUND OF THE STUDY

The competitive landscape for businesses has evolved significantly since the 1980s, with a growing emphasis on the integration of operations across the entire supply chain (Amoako et al., 2019). Today, the ability of companies to effectively coordinate with suppliers, distributors, wholesalers, retailers, and customers is a crucial competitive factor that extends beyond the internal boundaries of an organization (Appiah-Kubi et al., 2020). Establishing and nurturing long-term, trust-based relationships with these partners has become essential, driven by factors such as shorter product life cycles and rising customer expectations (Mattson, 2022). As a result, supply chain management (SCM) has evolved into a strategic priority, guiding decision-making at the highest levels of senior management (Obeng, 2020).

SCM systems aim to optimize costs while maintaining high customer service standards. This involves a customer-centric approach that aligns supply and demand management across the entire value chain, integrating business planning processes (Lambert & Cooper, 2020). Ideally, a well-functioning SCM framework brings together suppliers and customers in a unified process that spans from the initial source to the final consumer. Recent advancements in e-commerce and information and communication technologies have become integral to these interconnected supply chains (Opoku et al., 2021). Consequently, businesses increasingly rely on external partners to deliver products and services effectively (Ayers, 2021). The failure to adhere to SCM principles can jeopardize a company's competitive edge and operational efficiency.

Statement of the Problem

The following could be used as justification for the lack of adoption of supply chain management principles: excessive emphasis on acquisition and inadequate "African countries are suffering largely due to the non-application of the principles of supply chain management practices to business activities," according to the West African Institute for Supply Chain Management (WAISCL) theme, "Can Ghanaian and West African business executives and policy makers continue to underrate the strategic importance of SCM in today's world?"

Research Objective

The study sought to achieve the following objectives:

1. To examine Supply Chain Management practice at Wood Processing Company Limited.
2. To ascertain the effect or influence of SCM practice on WPCL performance.
3. To describe the trend in sales of Wood Processing Company Limited (WPCL) in Ghana.

Research Questions

The research sought to address the following research questions:

1. What are the Supply Chain Management Practices at Wood Processing Company Limited?
2. What are the effect or influence of Supply Chain Management practices on Wood Processing Company?
3. What is the trend in sale of Wood Processing Company Limited in Ghana?

LITERATURE REVIEW

Concepts and Ideas of Supply Chain Management

The term "supply chain management" (SCM), according to Van der Vorst (2020) is relatively new. It first appeared in logistics literature as an inventory management approach with an emphasis on the supply of raw materials (Obeng and Anim2022). By 1990, academics first described SCM from a theoretical standpoint to clarify how it differed from more traditional approaches to managing the flow of materials and the associated flow of information (Cooper and Ellram2023). The growing interest in SCM, according to Lummus and Vokurka (2021) is attributable to three (3) basic factors, thus, growing specialization or focus on core activities by many firms, intense competition from both local and international sources, and the realization by firms that maximizing performance of one department or function may lead to less-than-optimal performance for the whole company. Agreeing with this assertion, Cooper et al. (2023) in their research concluded that, the concept of SCM arose over the recognition that sub-optimization occurs if each organization in a supply chain attempts to optimize its own results rather than to integrate its goals and activities with other organization to optimize the results of the chain.

For any market driven organization to be able to compete effectively with its competitors it must sustain certain core competencies, such as process management, integration of knowledge, and diffusion of learning. Competitive position of a business arguably results from the assessment of what the firm offers with regards to value creation as compared to that of its competitors (Gorynia 2024). Indeed, basic measures of the competitive position of a firm are its market share and financial position. Additionally, factors such as product quality, customer loyalty, and reputations are also used as additional measures of business performance and competitive position of a firm (Gorynia, 2024). Consequently, Lee and Billington (2019) pointed out that, SCM can be used as a strategic weapon to develop a sustainable competitive advantage by reducing investment without sacrificing customer satisfaction.

Supply Chain Management and Business Performance Measurement

Generally, there have not been many studies regarding the practical part of performance managing (Jaakkola 2019). However, in 2000, Clark studied how managers actually judge marketing performance. Therefore, it is vital researchers account for the measures managers are using (Jaakkola 2019). It needs to however be noticed that performance is meaningful only when used in decision making (Lebas and Euske 2020). Also, of importance is to what is performance compared (Clark 2020).

Measuring Business Performance

There are several points of departure that can be used to assess performance of a business (Jaakkola 2019). These include, among others, accounting perspective (assessment of financial measures of performance), marketing perspective (assessment of marketing inputs, tools) and operations perspectives (assessment of effectiveness and efficiency) (Neely 2022). Apart from purely accounting-based assessment, all the assessment systems are increasingly using non-financial indicators to analyze according to Jaakkola (2019).

Conceptual and Theoretical Framework

Conceptual framework of SCM practice on the performance of WPCL is defined according to synthesis of analyzed theoretical findings. Consequently, researchers have developed the conceptual framework on the basis of Li et al. (2019) model. The model has four (4) major components; (1) Level of information sharing, (2) Quality of information sharing, (3) Customer relationships, (4) Strategic supplier partnerships. The researchers, however, outlines what a SCM practice is and performance impact of SCM practice.

Definition of Supply Chain Management Practice

Li et al. (2019) define SCM practices as a set of activities undertaken in an organization to promote effective management of its supply chains. From this definition one can conclude that components of SCM practices includes supply and material management issues, operations, information technology and sharing (ICT) and customer service (Tan et al. 2022). Other components such as technology, cost, inventory management, competitiveness and external regulations, according to McMullen (1996) needs to be managed effectively to achieve to business goals of each supply chain members. It also leads to value creation to end customer.

RESEARCH METHODOLOGY

Introduction

This chapter explains the procedure, methods and techniques used in carrying out the research. It deals with the population and sampling techniques used, data collection procedure, research design, and data analysis.

Study Design

The survey included the direct administration of questionnaires. Both qualitative and quantitative methods of analysis were employed in analyzing the data collected. The qualitative data analysis involved an analysis of production output and sales level collected from the study area to assess the company performance regarding applying supply chain management practices to business processes. It also includes content an analysis of data or information collected during interviews in the form of notes jotted down during reconnaissance survey and in-depth interviews with key personnel. The quantitative analysis of the data involves the ranking and descriptive analysis of answers to questions according to their frequencies and distributions in the collected data in the study area.

Population

The study population includes all manufacturing firms operating in the wood processing limited company (WPCL) in Ghana. However, the sampling is done to include only WPCL in Accra. Nonetheless, the total population size cannot be determined from any reliable source, so the study considers the population as infinite.

A sample size of 200 respondents was used for the study. The sample size was taken after considering the relative number of customers who use KCL products. The sample frame includes: Wood Processing CWood Processing Limited Company Limited. A quota sampling technique was employed in the selection of respondents to answer the questionnaires. The convenience sampling was used to select the required number from each stratum.

Sources of Data

The study benefited from two main data sources; primary and secondary. The primary data was sourced from the administration of a well-structured questionnaires whilst the secondary data was sourced with the help of a well-structured and organized interview guide.

Sampling Procedure and Technique

Samples were chosen using convenient sampling technique. Taherdoost (2016) describe convenient sampling as a type of nonprobability sampling where members of the population are chosen based on easy accessibility to the researcher, especially during data collection. It is also a good option when there is a need for availability and willingness of the participants. In the current study, WPCL in Accra were contacted until 200 respondents were accessed. The study uses 200 respondents based on value judgment of the researcher. Nonetheless, a sample of 200 respondents is representative enough to make an inference of the study population. Even though there are other sampling methods such as; simple random sampling, systematic sampling, stratified sampling, snowball sampling, and so on, convenient sampling is most suitable for this study because it is affordable, easy to carry out and the subjects are readily available. Taherdoost (2016) posits that the main objective of using convenience sampling is to collect information from participants who are easily accessible to the researcher and it is neither purposeful nor strategic. This sampling approach is based on the assumption that the members of the target population are homogeneous. Even though Birinci et al. (2018) pointed out that a major disadvantage of convenience sampling is that it is likely to be bias it wouldn't be so in this study because the study population is homogenous.

METHODS OF DATA COLLECTION

The study uses research questionnaire as the data collection instrument. The questionnaires were distributed all 200 respondents in Accra via online survey. All respondents were given ample time to study the questions to give their honest responses. The answered questionnaires were retrieved from the respondents as there was high assurance of confidentiality and privacy. However an interview guide was also administered to solicit for response from the respondent for the qualitative aspect of the study.

Ethical Considerations

Research ethics refer to the norms and attitudes followed by researchers to conduct research in a professional and regulated manner. It is argued that during the research process there is the likelihood of harms in one way or the other that may be caused as a result of interaction with participants so it is the duty of the researcher to foresee such harms and resolve them amicably (Narayan et al., 2020). Some ethical issues in this study includes; the use of correct referencing so as to avoid plagiarism. In the course of data gathering, there is assurance of confidentiality and anonymity of data as the data is restricted from third party usage. In addition, there is no incidence of academic fraud and the study presents accurate result. Dooly et al. (2017) emphasize that informed consent is the major ethical issue in conducting research. Therefore, in getting access to the research data, management of the various firms are consulted. Further, the study is conducted by observing all the research ethics and conduct in the University.

Data Analysis

Descriptive analytical technique was used with the aid of Statistical Package for Social Sciences (SPSS) to analyse the data collected with the use of questionnaires.

After the data is gathered, it was coded and analyzed using IBM SPSS software. Descriptive and inferential statistical techniques were employed for data analysis. According to Amin (2020) descriptive statistics offer us with the techniques of numerically and graphically presenting information that provides an overall picture of the data collected.

Limitations of the Study

The research scope should have covered the entire manufacturing companies in Ghana to give adequate grounds for generalization of the research findings but due to limited time frame the research was limited to Wood Processing Company Limited.

RESULTS

Data Analysis, Presentation and Interpretation

Demographical Description of Respondents (Age of Respondents)

Table 4.1: Age of Respondents

	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid 20-24	15	7.5	7.5	7.5
25-29	44	22.0	22.0	29.5
30-34	66	33.0	33.0	62.5
35-39	38	19.0	19.0	81.5
40 and above	37	18.5	18.5	100.0
Total	200	100.0	100.0	

Source: Researchers construct, 2024

Table 4.1 is a representation of the ages of the respondents. Fifteen (15) of the respondents representing 7.5% are between the ages of 20 to 25 years. Forty-four (44) respondents fall between the ages of 25 to 29 years of ages. The modal age group is 30-34 which has sixty-six (66) respondents representing about 33% of the total respondents. Thirty-eight (38) of the respondents are between the ages of 35 to 39 years also representing 19% of the total respondents. Thirty-seven of the respondents are 40 years or above also constituting 18.5% of the respondents.

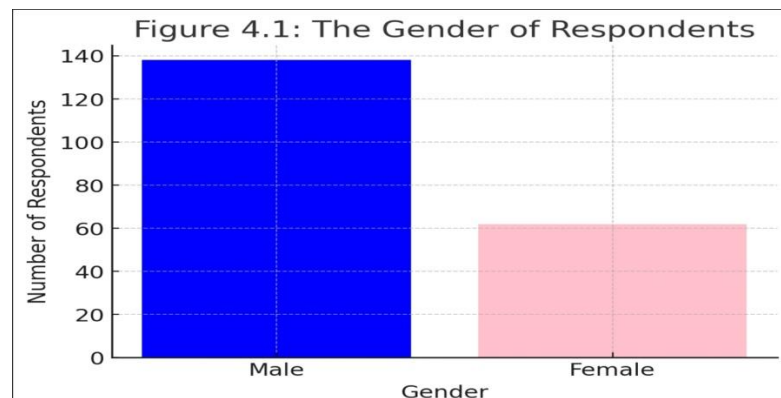


Figure 4.1: The Gender of Respondents

Figure 4.1 above is a graphical representation of the gender of respondents. One hundred and thirty-eight (138) are males, representing 69% of the respondents. Only sixty-two (62) are female also representing 31% of the

total respondents. This seeks to suggest that there are more male consumers of Wood Processing Company Ltd than female consumers.

Table 4.2: Marital Status of Respondents

	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Single	59	29.5	29.5	29.5
Married	101	50.5	50.5	80.0
Divorced	27	13.5	13.5	93.5
Widow/Widower	13	6.5	6.5	100.0
Total	200	100.0	100.0	

From Table 4.2 above, 59 respondents, representing 29.5% of the total respondents are singles. About 50.5% of the total respondents constituting 101 respondents are married. However, twenty-seven (27) respondents are married but divorced. Thirteen (13) representing 6.5% of the respondents are widows or widowers.

Research Question One: Describe the supply chain network of Wood Processing Company Limited.

In an interview with the Procurement Manager, he stated that their supply chain begins with upstream; carpenters, soil millers and so on, these companies enumerated delivers directly to the company for onward manufacturing process or transformation into furnished wood products. Subsequently, the woods are packaged to customers across the countries.

Research Question Two: What is the nature of relationship with your suppliers' suppliers?

Procurement Manager responded that its long term in nature because of the nature of our raw materials couple with intense competition within the wood industry in recent, we need to secure our sources of supply to ensure continuous supply and avoid any shortage which have the risk of affecting production process and our ability to deliver to market. Indeed, it is a backward integrated system, where we take serious activities of our suppliers and those who supplies our suppliers to ensure that quality is built in the raw materials from onset.

Research Question Three: Does the company have interest in the suppliers whom their suppliers are dealing with?

Production Manager: We do, but only in the carpenters and the soil millers because as you understand weather conditions in the country can hamper the work of the carpenters and soil millers thereby affecting their ability to meet the requirement of the institute which can also affect us. Also, we have invested capital to resource the institute to function as expected to be able to meet our request.

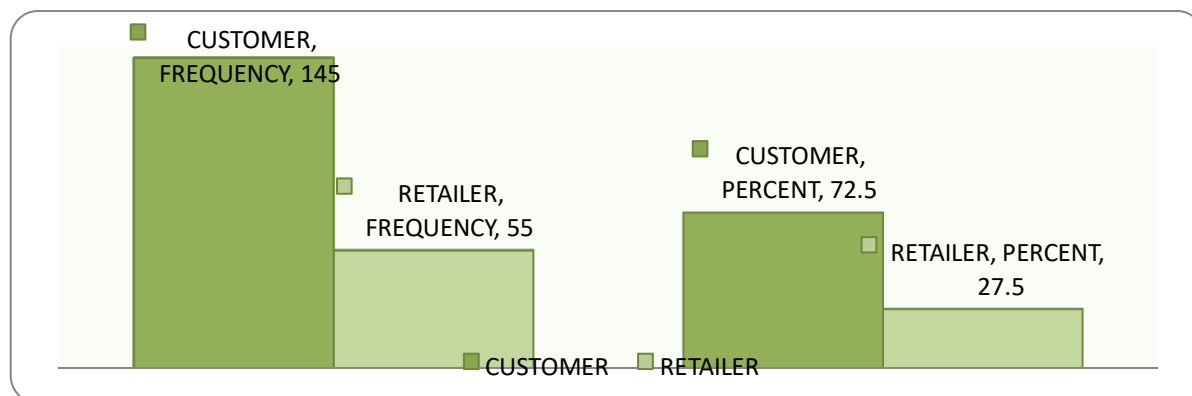


Figure 4.2: Respondents Relation to the wood processing Company Limited

Figure 4.2 is also a graphical representation of respondents' relation to the company. One hundred and forty-five (145) respondents are customers to the company; final consumers of materials produced by Wood processing Company Ltd. This represents 72.5 Percentage of the total respondents. Fifty-five respondents are retailers. These are individuals who sell wood to final consumers. They also constitute 27.5% of the total respondents.

Delivery Dependency and Performance

One major activity the company undertake is to ensure the management of their supply chain is encouraging delivery dependency. This section presents analysis on activities that ensure delivery dependency and how delivery dependency influences the performance of the organization.

Table 4.3: Responds on Whether KCL Delivers Customers Choice of Products

	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid Strongly Agree	34	17.0	17.0	17.0
Agree	123	61.5	61.5	78.5
Neutral	39	19.5	19.5	98.0
Disagree	3	1.5	1.5	99.5
Strongly Disagree	1	.5	.5	100.0
Disagree Total		100.0	100.0	

Source: Researcher's construct, 2024

Table 4.3 above illustrates customers' responds as to whether WPCL produce materials they the customers want. Thirty-four respondents indicated that they strongly agree that WPCL produce materials they the customers want. One hundred and twenty-three (123) respondents; representing 61.5% of the total respondents agreed that WPCL really produce customers choice of materials. This clearly indicates that WPCL produces materials that customers demand for and therefore provide an opportunity towards establishing product dependency.

Table 4.4: Impact of Delivery Dependency on Customers Purchases

	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid Yes	187	93.5	93.5	93.5
No	3	1.5	1.5	95.0
Not Certain	10	5.0	5.0	100.0
Total	200	100.0	100.0	

From Table 4.4 above, one hundred and eighty-seven (187) representing 93.5% of the total respondents indicated that the delivery process has impact on their purchases. However, whether the impact is positive or negative; Figure 4.4 beneath illustrates that:

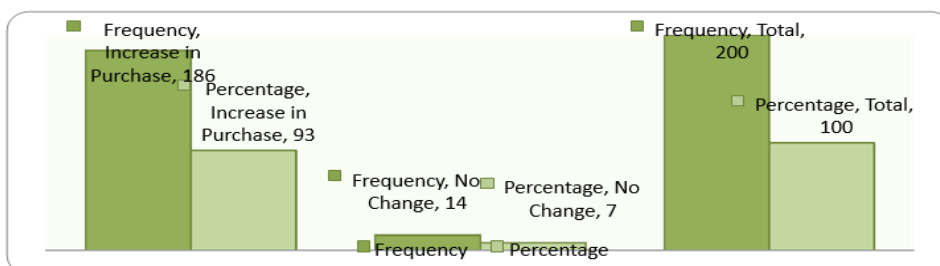


Figure 4.4: Responds on How Delivery Dependency Influence Purchases

From Figure 4.4 above, one hundred and eighty-six (186) respondents indicated that delivery dependency influences their purchases positively; hence increase in purchase. This represents 93% of the total respondents. However, 14 respondents representing just about 7% of the total respondents indicated that delivery dependency has no influence on their purchases and consequently no change on purchases. This analysis clearly indicates that delivery dependency impacts positively on customers purchases.

Customer Relation and WPCL Performances

Customer relation with regards to SCM practices comprises activities that are employed for the purpose of managing customer complaints, and improving customer satisfaction. This paragraph provides analysis on whether WPCL engages in building customers relationship strategies and whether such relationship contributes to the performance of WPCL.

Table 4.5: Responds on Whether WPCL Frequently Interact with Customers

	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid Strongly Agree	70	35.0	35.0	35.0
Agree	95	47.5	47.5	82.5
Neutral	34			
Disagree	1	17.0	17.0	99.5
Total	200	.5	.5	100.0
		100.0	100.0	

Table 4.5 above, illustrates responds on whether WPCL frequently interact with their customers. From Table 4.5 seventy (70) respondents strongly agreed that WPCL frequently interacts with them. This represents 35% of the total respondents. Ninety-five (95) respondents representing 47.5% of the respondents and the modal frequency agreed that WPCL frequently interact with their customers. Thirty-four respondents are however uncertain as to whether KCL frequently interacts with their customers or not. One person disagree that WPCL frequently interact with their customers.

Table 4.6: Responds on How Customer Relationship Influence Purchase

		Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid Increase	in	194	97.0	97.0	97.0
Purchase		6	3.0	3.0	100.0
No Change		200	100.0	100.0	
Total					

From Table 4.6 above, one hundred and ninety-four respondents (97%) confirmed that the relationship they have with WPCL influences them to purchase more of their materials. Six respondents however indicated that customer relation does not change their purchases. The gap between those who say customers relationship leads to increase in purchase, and those who say no charge clearly suggest that customer relationship; if well managed could increase organizational performances.

Information Sharing and WPCL Performances

Table 4.7: Responds on Whether Information Influence Customers' Purchasing Decision

	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid Yes	195	97.5	97.5	97.5
No	3	1.5	1.5	99.0
Not Certain	2	1.0	1.0	100.0

Total	200	100.0	100.0	
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From Table 4.7 above, one hundred and ninety-five respondents representing 97.5% of all respondents confirmed that the information they receive from WPCL influences their purchasing decisions. Three respondents indicated that the information they receive has no influence on purchases hence the performance of WPCL. Two respondents were however uncertain.

Table 4.8: Responds on How SCM Influence Purchase of Customers

	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid Increase in Purchase	157	78.5	78.5	78.5
Decrease in Purchase	8	4.0	4.0	82.5
No Change	35	17.5	17.5	100.0
Total	200	100.0	100.0	

From Table 4.8 above, one hundred and fifty-seven (157) respondents indicated that SCM influences their purchases positively; hence increase in purchase. This represents 78.5% of the total respondents. However, thirty-five respondents representing just about 17.5% of the total respondents indicated that SCM has no influence on their purchases and as a result no change on purchases. This analysis clearly indicates that SCM impacts positively on customers purchases.

CONCLUSION

The findings of this work showed that the effective application of the principles of SCM practice as asserted by Li et al. (2019) is instrumental in ensuring sustainable business performance in WPCL. Among these findings is the realization that: WPCL is practicing supply chain management in its operational activities. The company has ensured that its supply chain is able to provide the needed service required for satisfying its teeming customers who are the backbone of the company. For instance, due to its strategic supplier partnership relationship and investment in suppliers, the supply of raw materials considered as critical to continuous operations is secured. In this light, the company does not foresee disruptions in materials flow in the future. In fact, the findings indicate that suppliers and the company have adopted an open book concept to continuously explore areas of product and cost improvement, thereby selling materials at competitive prices as compared to their competitors.

Furthermore, findings from customers confirm the delivery dependability of WPCL has impacted or influenced their performances. In effect the delivery process of the company has impacted positively to performance. Factors such as customer relationships from both upstream and downstream of the supply chain have impacted positively on performance with 97% confirming that relationships they have with WPCL influences them to purchase more of the product.

Thus, with ever growing private sector especially in the Wood industry in Ghana coupled with increasing price volatility the paper seeks to bring in to perspective the contribution that effective and efficient management of the supply chain to profitability. The Wood industry in Africa and for that matter Ghana must improve their supply chain activities in order to compete with foreign brands and the paper gives basis for industries to operate.

RECOMMENDATIONS FOR FUTURE RESEARCH

In reference to the findings of this study, the following recommendations are being proposed to aid in ensuring businesses adopt SCM practices in business activities in Ghana. The research recommends that WPCL needs to improve in the provision of information to customers on time. This is because about 18% of the respondents cannot confidently agree that WPCL provides timely information. Meanwhile information customers receive is

found to have positive impact on performance. So, if WPCL improves on this information provision it is expected that their performance will as well improve.

Businesses are also advised to view supply chain management as a strategic activity, rather than just mere operational activity. Acceptance of suppliers as being part of the business is professed to improve organizational performance. Corporate entities are recommended to engage in employment of appropriate professionals with the expertise requisite to manage the chain at every stage of the process. This is because professionals in SCM are expected to improve delivery dependency which also has positive influence on performance. Improvement in social infrastructure to facilitate communication with supply chain partners by governments and policy makers. Increase education and public awareness of the need to adopt supply chain principles to business operations.

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