

## PalArch's Journal of Archaeology of Egypt / Egyptology

### TESTING THE EFFECT OF COLLABORATIVE PLANNING, FORECASTING, AND REPLENISHMENT ON SUPPLY CHAIN PERFORMANCE IN OMAR KASSEM ALESAYI MARKETING

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**Wedyan Bajahnun, Ahmed Attia. Testing the Effect of Collaborative Planning, Forecasting, And Replenishment on Supply Chain Performance in Omar Kassem Alesayi Marketing -- PalArch's Journal of Archaeology of Egypt/Egyptology 18(15), 47-53. ISSN 1567-214x**

**Keywords: Collaborative Planning, Forecasting, Replenishment, Saudi Arabia, Supply Chain Performance**

#### **ABSTRACT**

The importance of collaborative planning, forecasting and replenishment (CPFR) and its impact on the performance of the supply chain (SCP) have not been sufficiently studied by the organization in Saudi Arabia. In addition, managers are not aware of the importance of the relationship between collaborative planning, forecasting and replenishment (CPFR) and supply chain performance (SCP). It will have both theoretical and practical implications for academics as well as for the organization. Thus, this work was done to identify the effect of collaborative planning, forecasting and replenishment (CPFR) on supply chain performance of Omar Kassem Alesayi Marketing (OKAM) in Saudi Arabia. This study was based on a quantitative research design based on a cross-sectional survey. The sample population were 60 employees from Omar Kassem Alesayi Marketing (OKAM). The collected data were analyzed using SPSS software. Correlation analysis were carried out. The key findings of this work have shown that there is a positive relationship exists between CPFR and SCP at OKAM organization.

#### **CCS Concepts**

• **Information systems** → Database management system engines • **Computing methodologies** → Massively parallel and high-performance simulations.

#### **INTRODUCTION**

Operations management plays an important role in the life of the company [1]. One of the most noticeable and widely discussed topics in the field of

operational research is the supply chain management (SCM). If the business is to be effective and efficient, SCM needs to be successful enough to increase revenue and reduce costs [2]. They are also responsible for tracking demand uncertainty, point-of-sale data, product availability, and promotional and replenishment plans. It also adds to the competitive advantage of the organization so that it can set a benchmark for others and so that rivals compete with it in order to remain on the market [3]. Essentially, it improves the performance of an organization that excels in the market and is often seen as a strong key point that the organization holds [2,3].

The company's operating system has evolved with globalization and modern technology. With this, supply chain management has also improvised and introduced a widely discussed concept known as collaborative planning, forecasting and replenishment (CPFR) which is designed to improve its performance, also known as supply chain performance (SCP) [4]. Many companies have implemented it, but performance varies from company to company based on the nature of the product, the service and the company itself. Earlier businesses were only involved in manufacturing and distributing products and services [5]. But now most companies have realized that businesses run only through customers and that their operations should be customer driven and that collaborative planning, forecasting and replenishment (CPFR) is one solution that is being offered so that companies excel [6].

In addition, Kiriinya et al. [7] stated that CPFR process is a powerful tool to enhance cooperation between partners from upstream to vendor / suppliers and downstream to the customer. Furthermore, it manages the complexity of the processes well by removing any hindrance to the supply chain management process [7]. Management shall plan and share information accordingly and shall cooperate all processes together with the existing innovative technology as an important component of the entire process. This will add to the financial and operational performance of the organization as the customer demands are met accordingly. Overall, a broad picture of success is achieved if the companies use the CPFR wisely, as the developed countries have also benefited [8].

Panafihar et al. [9] pointed out that there are many benefits of CPFR to organizations where knowledge is created and shared through collaboration to boost innovation performance Niemann et al. [10] found that CPFR had a significant impact on the performance of the supply chain. This could help to gain interest from the shareholder's perspective, as well as increase wealth, help diversify the country's agenda and improve the country's GDP. Hollmann et al. [11] found that trust, information and communication technology and the quality of information sharing are key enablers and inhibitors of CPFR implementation. Janamanchi and Burns [12 ] found that the final point of the CPFR is to give better input to the supply chain process compared to competitors. The CPFR framework is designed and coordinated in such a way that it is feasible and capable of achieving consumer loyalty and developing a brand image. In addition, Kwon et al.[13] found that by implementing CPFR, more revenue can be generated as the proper use of income is essential, since

primary activities are based on that. It adds to cash flow management, as supplies can be easily tracked and help in the production line as well.

CPFR is relatively a new concept under the topic of SCM and its implementation in organization in Saudi Arabia is still at a minimal level [14]. Thus, this work was done to analyze the relationship between collaborative planning, forecasting, and replenishment (CPFR) and its effect on supply chain performance (SCP) in Omar Kassem Alesayi Marketing (OKAM) in Jeddah, Saudi Arabia.

### METHODOLOGY

This study was based on a quantitative research design based on a cross-sectional survey. This study used survey questionnaire as means of primary data. Data was collected through the survey. For this work, the sample population were 60 employees from Omar Kassem Alesayi Marketing (OKAM). The collected data were analyzed using SPSS software. Figure 1 shows the research model for this study. The following hypothesis H1 : There is Impact of collaborative planning, forecasting, and replenishment (CPFR) on supply chain performance (SCP) was set in this work.



**Figure 1.** Research model

### RESULT AND DISCUSSION

#### *Survey Analysis*

The company of OKAM is relatively small and it is private company. It has employees ranging less than 100. The employees who took part in this study were 60. The organization has been operating for more than 5 years. Based on Table 1, 31.1 % of the employees worked for less than 3 years, 36.1% worked for 3 to 5 years and 32.8 % worked for more than 5 years.

**Table 1.** Number Of Years In The Organization

No. of years	Percentage (%)
Less than 3	31.1
3 - 5	36.1
Over 5	32.8

**Reliability Analysis**

Table 2 shows the reliability test for supply chain performance (SCP) and for Collaborative planning, forecasting, and replenishment (CPFR). Based on Table 2, for SCP, it can be seen that the value of Cronbach's alpha is greater than 0.65 (Cronbach's alpha > 0.65). The alpha value of Cronbach is 0.932, which means that the results of the questionnaire are reliable and valid. Furthermore, for CPFR, the value of Cronbach's alpha is 0.886 which means the results are of acceptable value in terms of reliability.

**Table 2.** Cronbach's Alpha

Variable	Cronbach's Alpha
Supply chain performance (SCP)	0.932
Collaborative planning, forecasting, and replenishment (CPFR)	0.886

**Correlation analysis**

Based on Table 3, it can be seen that correlation analysis has been performed in order to find the relationship between the supply chain performance (SCP) and collaborative planning, forecasting, and replenishment (CPFR) using Pearson correlation. The value generated is 0.854 which means that they are significantly and positively related at a significance level of 0.01. The variables are strongly correlated as the value is close to +1.

**Table 3.** Correlational Analysis

Variable	Analysis	SCP	CPFR
SCP	Pearson Correlation	1	0.854
	Sig. (2-tailed)		0.000
	N	60	60
CPFR	Pearson Correlation	0.854	1
	Sig. (2-tailed)	0.000	
	N	60	60

**Regression Analysis**

Table 4 shows the results of regression analysis and Table 5 shows the ANOVA results. Based on Table 4, The model coefficient of determination (R square) is equal to 73% and P = 0.01 that there will be variation / significant difference due to changes in the CPFR. This means that the H1 is

supported in this research, which states that there is a positive relationship between the variables.

**Table 4.** Regression Analysis

Model	R	R Square	Adjusted R Square	Std Error of the estimate
1	0.854	0.730	0.725	0.698020

Based on Table 5, the ANOVA result showed that the value generated from the model is also 0.487 which means that there is no significant difference between the two variables. This indicates that the relationship between the variables (CPFR and SCP) is significant.

**Table 5.** ANOVA analysis for cost efficacy

Model	Sum of squares	df	Mean square	F	Sig.
Regression	76.386	1	76.386	156.777	0.000
Residual	28.259	58	0.487		
Total	104.646	59			

**OVERALL DISCUSSION**

In this work, the survey was conducted in the OKAM organization and the results that have shown that there is a positive relationship between CPFR and SCP, which means that CPFR has a direct impact on the SCP. The suggested hypothesis is approved in this study as supported by a statistical and descriptive analysis. In addition, the results show that there is no significant difference between the variables used in the reliability test, correlation, ANOVA, and regression analysis. The outcome of this work has shown that the organization has performed better in the supply chain through collaborative planning, forecasting and refurbishment. This study has added to the knowledge of the relationship between SCP and CPFR and has added a company in Saudi Arabia to expand its context. More organizations may be encouraged to use the CPFR to improve their supply chain. This process will help them drive the overall performance of the organization. The outcome of this work is inline with the work of Singhry, and Rahman [15] where it was confirmed that CPFR enhances and improves SCP in an organization. According to Hill et al. [16] supply chain and its performance is actually a critical job in the life of the business to maintain. It not only leads to the development of the business network but also reduces costs effectively.

Furthermore, collaborative planning, forecasting, and replenishment is one of the best methods to improve the performance of the supply chain performance. CPFR is set to improve the execution of the SCP.

## CONCLUSION

This work was done to analyze the relationship between collaborative planning, forecasting, and replenishment (CPFR) and its effect on supply chain performance (SCP) in Omar Kassem Alesayi Marketing (OKAM) in Jeddah, Saudi Arabia. The results of this work have shown that a positive relationship exists between CPFR and SCP, which mean that CPFR has a direct impact on the SCP. This indicated that the OKAM organization has performed better in the supply chain through CPFR. For future works, the authors aim to include more organization in Saudi Arabia to perform an overall comprehensive analysis on the effect of CPFR on SCP.

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