

Measuring the Impact of Supply Chain Management on Financial Performance of Apollo Tyres Ltd

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Abstract

The performance indicators derived from the Financial Supply Chain Management (FSCM) have influences on profitability. The financial supply chain management is a financial solution that provides win-win outcomes for all the participants in the supply-side value chain. It is an approach that aims to improve the supply chain efficiency. It is intended to improve payment terms, reduce costs and accelerate cash flows. It aligns the operational flows with the financial flows. They specify profitability as the percentage of profits after subtracting total operating expenses from revenue. This paper studies the linkage between supply chain management performance and corporate performance. The study is based on both primary and secondary data resources. Internet based surveys are developed and distributed to 260 sales managers of Apollo Tyres Ltd. The study is mainly about the impact of various Supply Chain Management (SCM) practices on the financial performance of an organization as Supply Chain Management (SCM) adds to customer satisfaction, cost reduction, and overall image of the organization. It helps to determine the relationship between two supply chain management business processes, as defined by the Global Supply Chain Finance (GSCF), competitive advantage and organizational performance. The seven measures used in this study are: Customer Relationship Management (CRM), Manufacturing, Product Development and Commercialization (PDAC), Order Fulfillment (OF), Organizational Performance, and Competitive Advantage. The results of this study seem to indicate that CRM, PDAC, and OF processes have a positive impact on competitive advantage and organizational performance.

KEYWORDS: Financial supply chain management, customer relationship management, competitive advantage.

1. INTRODUCTION

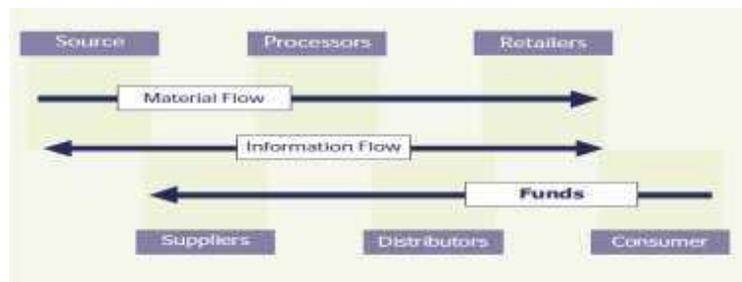
The concept of Supply Chain Management (SCM) is not a new idea. Its meaning has changed considerably, however, over the last decade as researchers have identified potential benefits going along with an expansion of scope of the concept. Several macro-economic developments have contributed to this recognition. Many organizations today are forced to increase their global market share in order to survive and sustain growth objectives. At the same time, the organizations must defend their domestic market share from international competitors. The challenge is how to expand the global logistics and distribution network, in order to ship products to customers who demand them in a dynamic and rapidly changing set of channels. Strategic positioning of inventories is essential, so that the products are available when the customer wants them. Long-term competitiveness therefore depends on how well the company meets customer preferences in terms of service, cost, quality, and

flexibility, by designing the supply chain, which will be more effective and efficient than the competitors’.

“A supply chain is defined as a set of three or more entities (organizations or individuals) directly involved in the upstream and downstream flows of products, services, finances, and/or information from a source to a customer”. The supply chain may include internal divisions of the company as well as external suppliers that provide input to a focal company. A supplier for a company has his own set of suppliers that provide inputs (also called second tier suppliers). Supply chains are essentially a series of linked suppliers and customers until products reach the ultimate customer.

The financial and economic aspect of supply chain management (SCM) needs to be considered from two perspectives. Firstly, one of the overall objectives of SCM is to optimize total supply chain cost and investment. Supply chain costs represent a varying but significant proportion of the total cost of companies in different industry sectors. Secondly, SCM is concerned with the management of financial flows across a supply chain. As shown in Figure 1 below, financial funds flow from the final consumer, who is usually the only source of “real” money in a supply chain, back through the other links in the chain (typically retailers, distributors, processors and suppliers). Good SCM practice, first and foremost, aims to improve customer service. The integrated management of this flow is a key SCM activity, and one which has a direct impact on the cash flow position of companies in the chain.

Figure 1: Funds flow (Along with Material and Information flows) in the Supply Chain



The overall SCM objective of optimizing total supply chain cost and investment contributes directly to the overall profitability of a business. Figure 2 indicates how good SCM practice can impact on shareholder value, as measured in the form of profit generated for every euro invested.

Figure 2: Impact of SCM on shareholder value



1.1 Supply Chain Management as a Management Philosophy

Supply chain management as a management philosophy takes a system approach to observe the supply chain as a single entity. This means that the partnership concept is extended into a multi-firm effort to manage the flow of goods from suppliers to the ultimate customer. Each firm in the supply chain directly or indirectly affects the performance of the other supply chain members, as well as the overall performance of the supply chain. Supply chain management as philosophy has the following characteristics:

- ✓ A systematic approach to observe the supply chain as a whole and managing the total flow from the supplier to the ultimate customer.
- ✓ A strategic orientation toward cooperative efforts to synchronize and connecting intra-firm and inter-firm operational and strategic capabilities into a unified operation.
- ✓ A customer focus, to create unique and individualized sources of customer value, leading towards customer satisfaction.

1.2 Supply Chain Management as a Set of Activities to Implement a Management Philosophy

When a company adopts a certain philosophy, a set of management practices must be established to ensure behavior consistent with the philosophy. The key activities needed for successful implementation of the supply chain management philosophy are:

- ✓ Integrated behavior.
- ✓ Mutually sharing information.
- ✓ Mutually sharing risks and rewards.
- ✓ Cooperation.
- ✓ The same goal and the same focus on serving customers.
- ✓ Integration of processes.
- ✓ Partners to build and maintain long term relationships. .

1.3 Supply Chain Management as a Set of Management Processes

Supply chain management is increasingly being recognized as the integration of key business processes across the supply chain. Implementation is carried through by three primary elements: the supply chain network structure, the supply chain processes, and the management components.

In India, organizations are responding to the challenges of cost control & customer responsiveness in five key supply chain areas:

- ✓ Synchronizing supply, managing demand by making planning customer driven
- ✓ The perfect product launch and lifecycle management
- ✓ Effective customer order management through real-time information
- ✓ The procurement opportunity by realizing the benefits of holistic sourcing
- ✓ Efficient logistics services by driving efficiencies in logistics operations

1.4 SCM at Apollo Tyres Ltd

SCM at Apollo Tyres Ltd. is an interface between Sales/Marketing Team and Plants. It's a channel through which all requirements of sales are communicated to plants and

all commitment against those requirements are communicated back to sales team along with the reasons of any shortfall in commitment against requirement. Currently SCM team of Apollo Tyres is based out of head office at Gurugram, Haryana. Head of the Department reports to CEO of India Operations and entire team is divided into 3 parts:

- ✓ **Planning:** This team works very closely with plant and is involved achieving day to day production targets for each individual Stock Keeping Unit (SKU). Any changes in demand are communicated to plant by this team only.
- ✓ **Transportation and execution:** This team works closely with transporters and involved into day to day dispatches of produced tyres. Entire transportation infra is taken care by this team.
- ✓ **Export Logistics:** Main work of this team is to deal with shipping lines to ensure that export containers are available at plant as and when required. This team is also responsible for all documentation work required for smooth export operations.

2. LITERATURE REVIEW

After the clarification of the term FSCM a review of selected referred journal articles follows in order to gather and analyze systematically the recent developments on the field. By scrutinizing both theoretical and empirical literature and giving emphasis on the contemporary aspects of FSCM in terms of collaboration among companies, suppliers and financing institutions, not only problematic areas are identified, but also useful conclusions come to surface.

Lambert and Pohlen (2001) state that most of the supply chain metrics used to measure performance are unable to capture the value and profitability drivers in the supply chain. Therefore, they proposed a specific framework for developing supply chain metrics which translates performance into shareholder value using the EVA method.

Baiman S., Rajan M.V. (2002) investigate collaborative SCF and show that there are two special aspects to take into account, each of them illustrated by a short case. Firstly, investing in projects that would otherwise be beyond their individual organization's scope of consideration (collaborative supply chains), implies an increase in the number of investment alternatives. Secondly, the optimal investment alternative is the one delivering the highest value to all collaborating entities, considering the cash flows of all participants when deciding about different alternatives.

Elmuti, D. (2002) studied the impact of supply chain management on overall organizational effectiveness so as to identify problems that affect supply chain management success. The results of the research showed that organizations generally considered themselves as successful at managing their supply chains, achieving significant improvement in organizational performance, but on the other hand they

have not reached the order of magnitude of improvements ascribed to supply chain management.

Hofmann (2005) notes that Supply Chain Finance is based on three constitutive elements: Institutional of actor, it can be only a business actor in supply chain and/or involve financial institution, private investor and government. Characteristics of supply chain management regarding regulations in cooperation of supply chain system such as contract regulation, financing system, pricing policy, etc.

Craig Shepherd and Hannes Günter (2006) aim to address the shortage of research into performance measurement systems and metrics of supply chains by critically reviewing the contemporary literature and suggesting possible opportunities for future research. The article provides taxonomy of performance measures and argues that despite considerable advances in the related literature in recent years, a number of critical issues have not yet received adequate attention, including the factors influencing the successful

MR Fellenz, C Augustenborg, M Brady and J Greene (2009) explored current models and practice regarding the dynamics of financial flows along global supply networks. Their work was mainly based on data collected from technology and service providers that focus on such issues along global supply networks and identified requirements for improved solutions to supply chain finance challenges. This research has particular relevance in the light of the disruptions that the global credit crunch has brought to global financial system and the related changes that are likely as responses to these disruptions.

Wesley S. Randall and M. Theodore Farris II (2009) show how firm financial management techniques can be used to improve overall supply chain profitability and performance. The proposed methodology includes scenarios that highlight potential supply chain improvements gained by collaborative management of cash-to-cash cycles and sharing WACC with trading partners.

Moritz Leon Gomm (2010) suggests a framework in order to investigate the financial issues in SCM and showcases that there exist huge opportunities for SCM professionals if they add on financial issues the SCM perspective. SCM has the potential to improve the capital cost rate as a critical supply chain driver of shareholder value, apart from the improvement in sales and cost cutting.

Mark van Laere (2012) deploys a model that can be utilized in order to quantify the value of the benefits from reverse factoring for all the involved parties i.e. the buyer, the supplier and the financing institution in an international setting. Furthermore, the author examined the impact of newly established Basel III regulatory framework on SCF and consequently on reverses factoring. However, the impact on product level is proved not to be clear, but it constitutes a useful approach so as to incorporate the effects of Basel III rules in SCF.

Van der Vliet K., Reindorp M. J. & Fransoo J. C. (2013) highlight trends that

widen the range of trade-offs to be considered in an SCF initiative and clarify the relevance of these trends through a case study of two European firms. These firms' primary target is to generate value from their SCF initiative, but their approaches show different strategies for addressing supply chain risk and the opportunity to customize supplier relations. They also propose a conceptual framework which places SCF practices and identifies the need for further research on strategic and tactical considerations.

Rhian Silvestro and Paola Lustrato (2014) explored the role of banks in enabling Supply Chain Integration (SCI) by developing a model of physical and financial SCI, which is based on a process view from both buyers' and suppliers' perspectives. A case study analysis of two international banks is performed and the findings show that banks can support buyers and suppliers by contributing to the enablers of SCI, namely coordination, collaboration.

3. OBJECTIVES

- ✓ To evaluate the implementation of best SCM practices in various industries.
- ✓ To identify various costs and other issues associated with implementation of SCM arrangement.
- ✓ To access various financial and perceptual benefits associated with implementation of SCM arrangement.

4. HYPOTHESIS

- H1: Customer Relationship Management practices are positively related to competitive advantage within an organization.
- H2: Customer Relationship Management practices are positively related to organizational performance.
- H3: Order Fulfillment practices are positively related to competitive advantage within an organization.
- H4: Order Fulfillment practices are positively related to organizational performance.
- H5: Product development and commercialization practices are positively related to competitive advantage within an organization.
- H6: Product development and commercialization practices are positively related to organizational performance.

5. RESEARCH METHODOLOGY

5.1 Sample Design

For this study, non-probability sampling design has been used. All Sales offices of Apollo Tyres Ltd. in India were sent a structured questionnaire. A total number of 260 respondents were approached to fill up the questionnaire. However, only 124 respondents filled up the questionnaires and therefore have been included in the sample for final data analysis.

5.2 Data Collection

Data has been collected using both primary and secondary resources.

Primary Data Collection: A questionnaire has been prepared and response to this questionnaire has been collected from many employees of Apollo Tyres Ltd in the ways mentioned below:

- ✓ E Mail
- ✓ Telephonic Interview
- ✓ Personal Meetings

Secondary Data Collection: Secondary data is mainly based on secondary research reports.

Following sources of secondary research have been used in the study:

- ✓ Annual Reports of Apollo Tyres Ltd. From 2013 to 2017
- ✓ Research work available in various journals
- ✓ Various articles from websites, newspapers and magazines
- ✓ Published interviews of senior management of many companies

6. DATA ANALYSIS AND INTERPRETATION

6.1. Empirical Analysis

The set-up of this section is to illustrate a general picture of the growth at Apollo Tyres Ltd. The 5-year historical investigation and analysis at Apollo Tyres Ltd are exhibited by the selected FSCM performance indicators and profitability. The study is based on outcomes of statements connected to theoretical background and empirical findings. Mostly, the arguments in this section are discussed as below:

- Apollo Tyres Ltd has become better off in short term by the help of the FSCM program;
- The most important indicators and ratios in practical applications besides theories and empirical analysis.

The use of cash ratio is related to Cash Conversion Cycle (CCC). The cash ratio directly indicates the liquidity of short-term cash assets; however it is not sufficient enough to explain the liquid condition in the company. High cash ratio may be seen as poor asset utilization, because the cash can be used for other investment opportunities generating extra returns. The Current ratio and quick ratio are more robust and conservative because it includes inventory and receivables (the receivables are in current assets), in which the inventory is the least liquid asset in corporate. The cash ratio reflects the ability of paying back current liabilities. Theoretically, the design of financial flows in supply chains can help shorten the cash flow cycle. The CCC consists of Days Sales Outstanding (DSO), Days Inventory Outstanding (DIO) and Days Payable Outstanding (DPO). If we say DIO and DPO are the indicators to explain company's operational efficiency, then DPO is completely under the management control. Clearing inventories is involved in the processes of DSO and DIO. After all, the control of DPO instead of the complete CCC metric makes more sense to generate economic value added to the company. DSO and DIO are operational processes, which are difficult to be manipulated by the improvement of

financial flows in supply chains. Therefore, reducing CCC as a whole by the FSCM program is not guaranteed if considering the inventory management and customer satisfaction. The following figure 3 shows the changes of Inventory Turnover and relative liquidity ratios during 5 years:

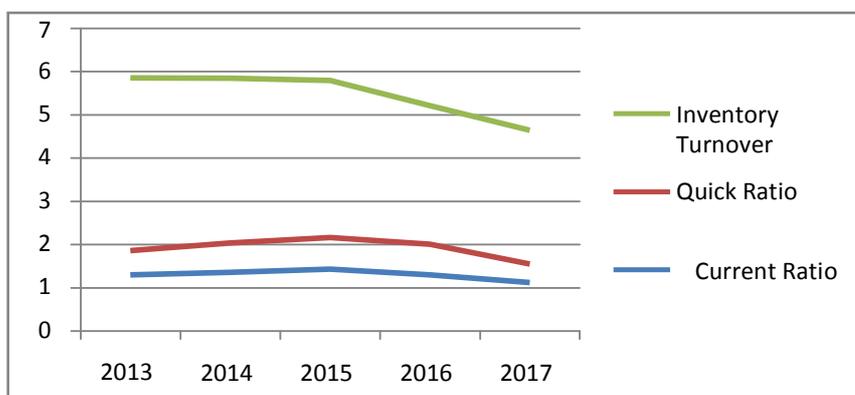


Fig 3: Inventory Turnover and Liquidity Ratios (in %)

Figure 4 and figure 5 illustrates the growth and profitability at Apollo Tyres Ltd. Cost of Goods Sold (COGS) is closely related to the inbound material activities with suppliers through manufacturing operations. Gross Margin (GM) is moving in the gap between revenue and COGS. Sales General and Administrative (SGA) in connection to supply chain management reflect in customer service, supply chain administration and information technology. As we know, the disputed payable process through Enterprise Resource Planning (ERP) systems will reduce costs of SGA generally.

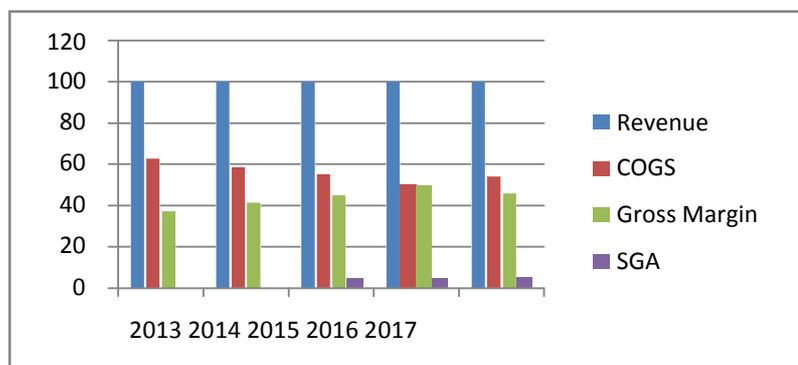


Fig 4: Top Line and Bottom Line Growth (In %) of ATL

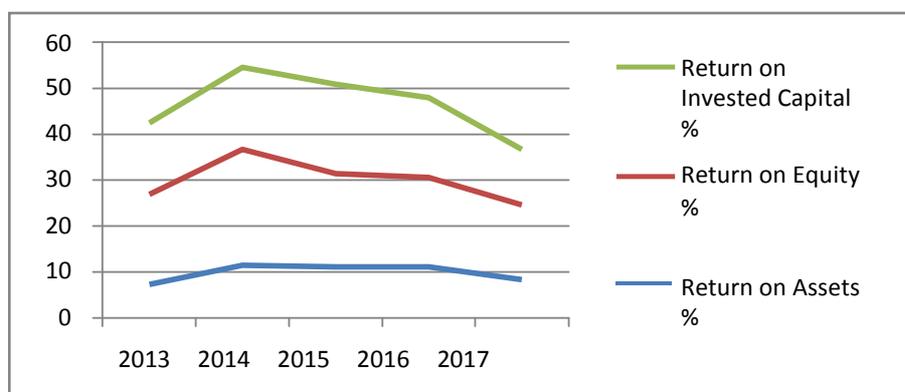


Figure 5: The key ratios (In %) of profitability in Apollo Tyres Ltd

6.2 Statistical Analysis:

260 questionnaires have been distributed and 124 completed questionnaires have been collected. In order to measure relationships between each of the three SC practices to competitive advantage and organizational performance, Karl Pearson's coefficient of correlation was calculated. Pearson's correlation is a measure of the correlation (linear dependence) between two variables X and Y , giving a value between $+1$ and -1 . The larger the absolute value of the correlation coefficient, the stronger the relationship.

Hypothesis One

The first hypothesis: Customer relationship management practices are positively related to competitive advantage within an organization. The CRM and CA measure was evaluated through a 4-point Likert type response scale. The resulting Pearson's correlation coefficient for the response data sample ($n = 124$) is 0.8637 which shows strong correlation between CRM and CA and hence supported hypothesis 1.

Hypothesis Two

The second hypothesis: Customer relationship management practices are positively related to organizational performance. The organizational performance measure was evaluated on a 4-point Likert type response scale. The resulting Pearson's correlation coefficient for the response data sample ($n = 124$) is 0.6412 which shows positive and very strong correlation between CRM and OP and hence supports Hypothesis 2.

Hypothesis Three

The third hypothesis: Order Fulfillment process is positively related to competitive advantage within an organization. This measure was evaluated on a 4-point Likert type response scale. The resulting Pearson's correlation coefficient for the response data sample ($n = 124$) is 0.8882 which supported hypothesis 3.

Hypothesis Four

The fourth hypothesis: Order Fulfillment process is positively related to

organizational performance within an organization. The resulting Pearson's correlation coefficient for the response data sample (n = 124) is 0.8305 which supported hypothesis 4.

Hypothesis Five

The fifth hypothesis: Product development and commercialization practices are positively related to competitive advantage within an organization. The PDAC measure was evaluated by utilizing a 4-point Likert type response scale. The resulting Pearson's correlation coefficient for the response data sample (n = 124) is 0.9094 supported hypothesis 5.

Hypothesis Six

The sixth hypothesis: Product development and commercialization practices are positively related to organizational performance within an organization. The resulting Pearson's correlation coefficient for the response data sample (n = 124) is 0.8788 which supported hypothesis 6.

7. FINDINGS

All of the 6 hypotheses were supported when utilizing the response data sample (n = 124). The Pearson's correlation coefficients calculated are statistically significant (Greater than 0.4) and supported the hypotheses when utilizing the response data sample. All hypotheses are supported when utilizing the response data to calculate the correlation coefficient specific to the evaluation of each relationship. The resulting correlation coefficients suggests highly positive relationships that are statistically significant (Greater than 0.4) for all hypotheses. A correlation coefficient summary using the response data is listed as below:

		<i>CA</i>	<i>OP</i>
<i>CRM</i>	<i>Pearson's correlation</i>	<i>0.86</i>	<i>0.64</i>
	<i>N</i>	<i>124</i>	<i>124</i>
<i>OF</i>	<i>Pearson's correlation</i>	<i>0.89</i>	<i>0.83</i>
	<i>N</i>	<i>124</i>	<i>124</i>
<i>MFM</i>	<i>Pearson's correlation</i>	<i>0.93</i>	<i>0.69</i>
	<i>N</i>	<i>124</i>	<i>124</i>
<i>PDAC</i>	<i>Pearson's correlation</i>	<i>0.9</i>	<i>0.88</i>
	<i>N</i>	<i>124</i>	<i>124</i>
<i>DM</i>	<i>Pearson's correlation</i>	<i>0.9</i>	<i>0.69</i>
	<i>N</i>	<i>124</i>	<i>124</i>

8. LIMITATIONS OF THE RESEARCH WORK

A study in any field is small step and it can't be ultimate. It always leaves room for improvement. The limitations of one study serve as a basis for the further research in that direction. Every researcher has the endeavor to ensure that true picture is brought out but there may be following some limitations related to the study enumerated as under:

- Questionnaires are not responded within the desired time as the researcher has no authority to compel the respondents to complete the questionnaire.
- The study is limited to Apollo Tyres Ltd. Only.
- The responses from respondents may reflect their personal opinion, and may not be true reflection of the entire company.
- The findings of the study are reflection of Apollo Tyres Ltd. Only and may not represent any other tyre company.

9. CONCLUSION

The results of this study seem to indicate that CRM, MFM, PDAC, OF, and DM processes have a positive impact on competitive advantage and organizational performance. Therefore, Apollo Tyres Ltd. should take more active role in managing all facets of their supply chain. In today's increasingly competitive global markets, organizations that do not practice sound supply chain management techniques may find themselves unable to compete with their competitors.

10. FUTURE RESEARCH

Results from this research appear to support the prevailing belief in literature that CRM, MFM, PDAC, OF and DM are positively related to competitive advantage and organizational performance. Perhaps future researchers could work in conjunction with a professional society such as the Global Supply Chain Forum to promote a better survey response rate. A larger sample size would allow for the use of more precise statistical analysis techniques in order to generate more significant findings. The same research may be conducted for tyre industry as a whole and many other industries. One of the vast area that has not been studied as a part of this research is Supplier Relationship Management (SRM). Since SRM forms the biggest component of costs in any tyres company same is recommended to be studied in future research.

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