Implementation of Best Practices in Supply Chain Management for SMEs

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Abstract

Implementation of best practices in supply chain for small and medium-sized enterprises is crucial for the streamlined flow of the business and cost optimization. Studies on the implementation of Supply Chain Management by Small and Medium Enterprises are relatively rare and their scope is limited to selected aspects. The sector plays a key role in the economies of all the countries in the world. In this context, it is important to streamline the processes within the supply chain management. This would save the time by 10% and enhance proper coordination with the respective departments. The study also presents the most important elements in the cost optimization of SMEs. The proper flow of information and order of processes lead to cost savings by 2.5%. The article is established on data, using surveys, books, interviews with subject matter experts', journals, and online resources collected in this sector. This research aims to streamline the supply chain and optimize the processes within the supply chain to optimize the overall cost of the business by 2.5%.

Keywords
SCM, SME, best practices, implementation and improvement.

1. Introduction
Supply Chain Management (SCM) is a top priority for every business and plays a vital role for small and medium businesses. Large business organizations have the ability to adapt quickly to constant change and meet changing market demands. However, SMEs have a chronic problem of inefficient management due to lack of financial and other resources such as knowledge, human resources and abilities. Thinking in this way, the management of SMEs takes the form of corporate management within limited resources. By using these limited resources effectively, the goal of this research is to improve process efficiency and effectiveness within all departments of the supply chain, and reduce costs across the enterprise, improve customer satisfaction, market share and profits.

In addition, the recent development of Information and Communication Technology (ICT), e-commerce, globalization of the commercial world, and pressure to reduce the cost of doing business has forced companies to adopt best practices in supply chain management for business success. Forced to do so, these practices streamline SCM's business processes to provide end customers with the right product at the right time, at the right price, in the right quantity and quality.

1.1 Objectives
The main objective of this research is to streamline the processes within the supply chain management. This would in turn will save the time and enhance proper coordination with the respective departments. For instance, a single

improved process will not only lead to the other effective process but also reduces hefty delays. If the processes are not streamlined then it will consume time and increase the cost of the department. Thus, it is vital to optimize the processes with adequate sequence.

The other main important aspect of this research is cost optimization. The proper flow of information and order of processes will lead to cost savings. For example, the principles of SCM will help us to identify the bottlenecks and preventive steps to deal with them. If the cost of the supply chain is not controlled then it will affect overall profit loss statement of the company. Hence, saving the cost by implementing this research will lead to profit for the company.

2. Literature Review

Despite many cited studies on supply chain management in the SME sector, there is still insufficient knowledge on the relationship between supply chain management and the performance of firms in the SME sector. This defined gap seems to be an essential problem for researchers and managers. The lack of efficiency in implementing supply chain management in the SME sectors using technology and systems shown to lead to a loss of competitiveness, and a focus on strategic chain performance can improve efficiency. Performance of the SME sector to gain competitive advantage (Androniceanu, 2017). Arend and Wisner point out that supply chain management is not suitable for SME sectors (Arend and Wisner, 2005) and, in fact, it leads to poorer performance than firms do and less return on investment. The literature review was helpful to collect information in connection of use of SCM practices regarding small and medium sized businesses. Many international books, journals contributed to the results of this article. Gathering information about organizational performance achieved simply and efficiently through interviews (Gupta, 1999). Interviews tended to be the main data gathering method. Surveys and questionnaires are one of the largest data gathering techniques and used extensively by the majority of the studies reviewed (Swanson, Watkins, and Marsick, 1997). One of the key external sources reviewed was Lapide's (2007) article benchmarking best practices in SCM. Lapide (2007) stated that successful implementation is enable through command of the supply chain and ensuring that practices and processes work together in a holistic fashion.

3. Methods

3.1 Case study methodology

A case study approach is generally preferred when the research goal is to answer exploratory research questions involving "how" and "why," when control over the study situation is limited, and when the focus is on actual development in a social context. Furthermore, case studies are preferred when the units of study are complex and difficult to isolate from the real-world context. This study's research questions are primarily exploratory in nature and can completely answered by a case study in a modern business environment. The interaction between SMEs and large enterprises' supply chains is complicated; some SCM activities can have both positive and negative consequences for SMEs. As a result, the case study method is appropriate for this study.

3.2 Case selection

A suitable case selection have an impact on the research's quality in terms of its best theoretical contribution and capacity for problem solving. For a variety of factors, the business Premier Conveyors Pvt. Ltd. has been selected as a good example. It is a SME, and since its inception, it has served as a conventional subcontractor for its significant clients. As it transforms from a component supplier to a system provider, there is an increasing need for the growth of its interactions with large businesses. It is also interesting to research Premier Conveyors Pvt. Ltd.'s desire to expand by strengthening its connections with major corporations. Additionally, the participants' willingness to participate in the research of Premier Conveyors Pvt. Ltd. ensures a rich supply of data from the interviews as well as from the website and documents. Finally, as a PhD candidate in industrial management, one of the respondents had conducted research in industrial management at the organization, which provided the useful background information and a reliable source of data.

4. Data Collection

The data of the case study gathered through documentation, interview and observation.

Documentation: It is an analysis of the company's website, literature, pertinent papers, and particularly a PhD licentiate (Carlson, 2009) on the subject. It gave the necessary background knowledge and understanding of the company's circumstances as a supplier to large businesses.

Interviews: The interview is a very adaptable instrument with many uses. It may help us get a lot of information that not only informs our research but also helps us identify and rank difficulties (Walliman, 2005). We opted for a semi-structured interview, which provided predetermined responses to predetermined questions while allowing opportunity for additional development of those responses and adding more inquiries that are open-ended. It served as the primary source of information for the research.

5. Results and Discussion

This study was an empirical embedded case study describing the real world experiences of participants from multiple sectors and locations of SMEs in India engaged in Supply Chain Management activities.

1. Demographics:
   In order to conduct the study a questionnaire was send to more than 100 companies in India, and abroad from different industries and 60 representatives of the SCM, team of the respective companies agreed to participate in the study
2. The other reference was on supply chain bodies (American Production and Inventory Control Society and Chartered Institute of Procurement and Supply), data, using surveys, books, interviews with subject matter experts', journals, and my personal experiences collected in this sector.

5.1 Numerical Results

Following is the response from the SMEs' for the questionnaire submitted in Table 1:

Table 1. Percentage of SMEs' following the best practices

P.R., P.O. Tracking	ERP Applicatio	Negotiatio ns	Contracts	Demurrage	Shipment Tracking	TCO	Competitiv e Sourcing	Spend Analysis	APP	Bank Guarantee	Warranties	Risk Analysis	Hedging	Safe Payment
92%	**83%**	**72%**	**55%**	**50%**	**82%**	**42%**	**78%**	**60%**	**88%**	**68%**	**62%**	**55%**	**63%**	**53%**

Based on above responses (Table 1), it is notice that most of the SMEs' face following issues:

- They try to fulfill demand instantly to meet the delivery expectations of large companies but without considering cost factor.
- They need basic ERP tools and minimum capital investment to respond to demand due to small purchase orders.
- Management is directionless and least interested in conveying the mission of the company to the employees.
- Senior members of the team in sales and manufacturing department do forecasting most of the time to predict the sales and manufacture accordingly.
- Products are design without any feedback from other departments of the company, such as manufacturing, sales, and SCM.
- Almost 20% of the SMEs acknowledged that warehouses are located near each market stocked with an excess of inventory in anticipation of a big sale, and staffed with manual laborers who have little training.
- Trucks are unloaded when they arrive and loaded when an order comes in, without anticipating well in advance and without analyzing the risks.
- The payments and material flows poorly executed but the information exchange is link mostly to giving orders internally, accepting quotations, and sending invoices.
- Material requirements planning (MRP) takes place at an entry level including bill of material, current data and master schedule for most of the SMEs.

5.2 Graphical Results

The below Figure 1 is the graphical representation of the SMEs' using the best practices in Supply chain Management. Most of the SMEs' use tracking systems, annual procurement plans, and ERP applications but on the other hand many failed to use total cost of ownership, risk analysis, effective contract management for large contracts.

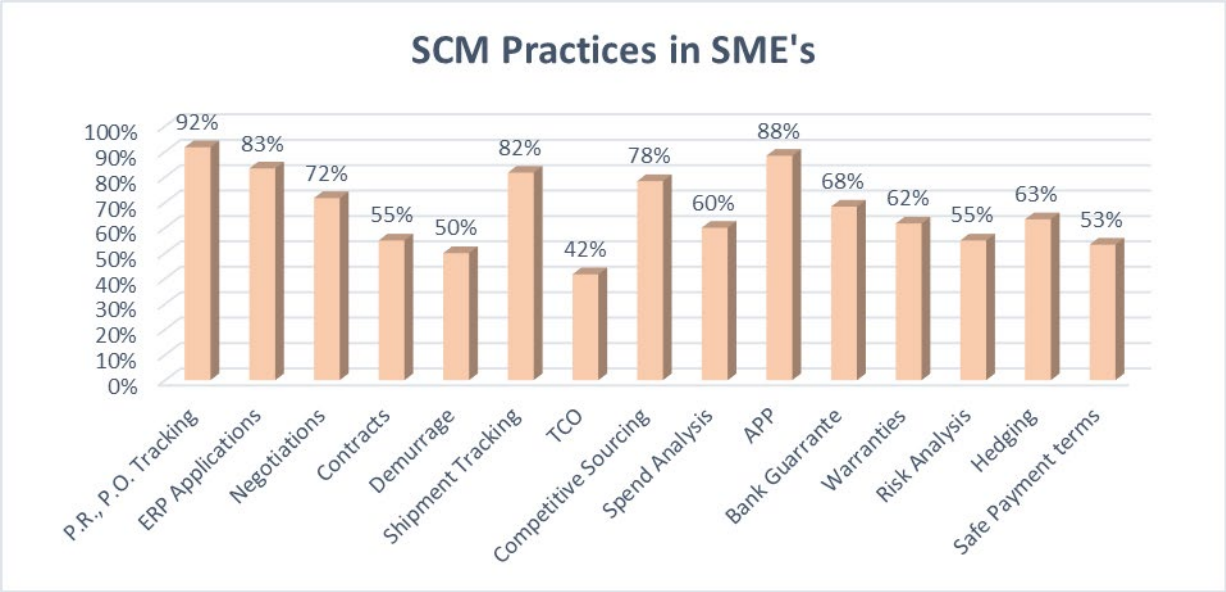

Figure 1. Analysis of SMEs for the best practices in SCM

5.3 Proposed Improvements

Supply chain management provides a strategic approach to assess supply market for all buying needs of the SMEs. It has Global Policy providing a framework and guidelines under which SCM activities shall conduct in SMEs. The following improvements includes the guidelines and procedures associated with the SCM process including supplier relationship management. The operational aspects of these improvements is link to all component entities of SMEs.

5.3.1 SCM documents and their approval

This section describe key SCM related documents; either generated by Procurement or user departments generate for SCM action. Documents are:

- Purchase Requisition (PR)
- Request for Quotation/ Request for Proposal
- Contracts
- Purchase Order (PO)
- Good Receipt - Store receiving Voucher (SRV)/ Service Entry Sheet (SES).
- Invoice

5.3.2 Strategic procurement process

Procurement of all goods and services is 100% managed through Procurement function. Procurement teams develop strategies, leverage total volume, apply Best in Class sourcing levers and negotiate best value for money aligned with approved category strategy. This is high-level strategic sourcing process, encompassing strategic sourcing activities. The Supply chain manager is responsible to set up and manage cross-functional strategic sourcing teams for all spend categories under the supply chain managers' responsibility for which a formal spend category strategy is required.

5.3.3 Annual procurement plan (APP)

The APP is a key part of SMEs risk management process. It is design to provide SMEs leadership with an overview of the nature and contents of the procurement of goods and services over a one-year period.

In addition to this, it establishes a framework for monitoring and reviewing procurement performance. This would also lead to ensuring the integrity and fairness of procurement processes, while helping enhance transparency and accountability.

The APP shall present to the senior leadership as a part of the Annual Operating Plan (AOP) approval process.
The APP contents are as follows;

(a) Critical / major goods and services items sourcing strategy.
(b) Estimated cost of procurement of items covered in (APP)
(c) Key contracts overview.
(d) Risks and opportunities.

5.3.4 SCM committee (SCMC)

New macro-economic realities dictate the need for sustained efforts to reduce manufacturing and operating costs as well as further strengthen the cash flow. The SCM function is a vital part of the above agenda.
SCMC would regulate and oversee the functioning of the SCM.
The SCMC establish and operate under the direct purview of the Senior Manager in the department. The SCMC has no authority inherent in its composition other than to advise the SCM on matters referred by supply chain manager to the SCMC, in its meetings.
All the SCMC members, from SCMs, report to the Senior Manager in the department in the context of any SCMC related business, irrespective of their functional reporting lines.

5.3.5 Original documents handling and tracking

SCM department should date stamp all hard documents received from third party and other departments within the company to facilitate tracking and evidence of the documents receipt dates.
SCM department should maintain a formal logbook to record any movements of original documents to and from SCM. At the minimum, this record should capture the date stamp, document type, purpose of movement and the receiver acknowledgement validated by their employee IDs and signature.
The responsibility for safeguarding the original documents, including proper filing, lies with that SMEs' component entity, which would be responsible for the associated statutory audit and tax return.

5.3.6 Custom clearance

SCM department is responsible for the custom clearance process for all imported items, in coordination with the requesting functions.

5.3.7 Legal matters

Legal disputes with vendors are very sensitive issue and addressed strictly in the manner set out in the following clauses: The SCM, as applicable, look into the associated contracts and see if any dispute resolution method is set out there. If here is such a method available, then that to follow in the first instance. In case of amicable settlement of the dispute, the dispute resolution mechanism put in place with approval of the Senior Manager as applicable, with formal alignment with the SCM and the Finance. If the dispute cannot be resolved amicably then the matter must refer to the CEO with copy to the Finance.

The SCM would have thirty days to resolve the issue. If the issue cannot be resolved within thirty days or positive developments have not taken place then the matter shall refer to the Finance Manager with appropriate communication to the Senior Manager. Any further action from this point onwards would require the approval of the SCM.

5.3.8 Procurement reports

Timely analytical reports are essential for ensuring an optimized procurement function that contributes to overall lowering of cost of goods and services procured.
Such reports are also required to manage effectively SMEs' Cash Flows.
The SCM team issue the following reports;

- Monthly Procurement Update
- Monthly - PR/PO Cycle time
- Monthly – Materials Availability
- Monthly – Material PPV

- Monthly – Demurrage report
- Quarterly - Status of Open P.O.s.
- Quarterly Submission to SCM of multi-year contracts.

5.4 Validation

Validation of the expected benefits from the implementation of best practices in Supply Chain Management for SMEs are as follows:

- The procurement cycle time reduce by 3 days.
- P.O. tracking status provides exact information of the order.
- Purchase request-tracking help in identifying the status of enquiries.
- Demurrage reports are helpful to avoid unnecessary landing cost that is charge by seaports and airports for stocking the shipments without clearance for more than stipulated time.
- Activities within purchase dept. are streamlined and traceable.
- There is proper coordination between purchase dept., stores, and logistics dept.
- Effective negotiations strategies such multiple round negotiation and e-auctioning with suppliers saved the cost by at least 2.5%.
- Tracking the finished products and its types helped to know the manufacturing needs.
- Tracking of shipments helped the SCM to understand the status of delivery.
- Time required in preparation of shipping documents to export the materials reduced to 2 days from 3 days if involved suppliers to review before submission.
- Dispatch dept. provided continuous updates for customers on shipment.
- Knowledge of (Incoterms 2020) is helpful to understand the company and customer's side risks.
- Inspections by dispatch team before dispatching help the company to ship the defect free conveyors.
- Inspection Knowledge to the stores team help the company in receiving defect free spares and materials.
- Inventory tracking saved the year-end inventory calculation time from 4 weeks to 3 weeks of finance team depending on size of organization and inventory stacked.
- Stacking help in accident free and effective moment of forklift to move the materials in and out of stores.
- The codes assigned to spares and materials considering its, type, material, use, etc. for identification.
- Fast moving and consumable items identify and order with 10% extra buffer to avoid production cuts.
- Material request made compulsory to take the materials from the store.
- Issue vouchers created and signed by the receiver of materials or spares.

6. Conclusion

The research carried out and the current best practices indicate that the effectiveness of processes within SCM and cost optimization of small and medium-sized enterprises can improve by developing effective supply chain strategy aligning with organizational strategy and business strategy. In conclusion, every process in the supply chain management right from recognition of need to successful delivery to the customers is streamlined. In addition, by setting up policies and procedures applicable to the company has reduced the cost of SCM, and overall business cost.

References

Agresti, Categorical Data Analysis, 2nd ed., John Wiley and Sons, New York., 2000.

Anja, S. - Thomas, B. - Sascha, K., International entrepreneurship: Towards a theory of SME Internationalization. Journal of International Business and Economics, 9 (1), pp. 1 – 12, 2009.

Androniceanu, A., The three-dimensional approach of Total Quality Management, an essential, 2017. strategic option for business excellence. Amfiteatru Economic, 19(44), 61-78, 2017.

Arend, R. J., and Wisner, J. D., Small business and supply chain management: is there a fit?,
Journal of Business Venturing, 20, 403-436, 2005.

APO Asian Productivity Organization, Asian cases on supply chain management for SMEs. Report of the Symposium on Supply Chain Management for Small and Medium Enterprises. 11 - 14 December 2001. Taipei, Republic of China, 2002.

Aragon-Correa, J. A. - Hurtado-Torres, N. - Sharma, S. - Garcia-Morales, V. J., Environmental strategy and performance in small firms: A resource-based perspective. Journal of Environmental Management, 86 (1), pp. 88

- 103. 94 Vivien Kerekes - János Felföldi APSTRACT Vol. 14. Number 3-4. 2020. pages 89-96. ISSN 1789-7874, 2008.

Basher, V., Vendor selection and quota allocation by using fuzzy topics and linear programming. Master of Engineering in Production Engineering. University of Delhi, India, 2010.

Baymout, M., Supply Chain Management for Small and Medium Size Enterprises. International Journal of Advancements in Research and and Technology, Volume 4, Issue 5, 2005.

Chow, W. S., Madu, C. N, Kuei, C-H., Lu, M. H., Lin, C., and Tseng. H., Supply chain management in the US and Taiwan: An empirical study. The International Journal of Management Science, 36, pp. 665 – 679, 2008.

Carlsson, I., Meeting increased logistical demands: Developing as a small and medium-sized system supplier. Dissertation. Linköping University, Sweden., 2009.

Dyerson, R. - Harindranath, G. - Barnes, D., National survey of SMEs use of it in four sectors. The Electronic Journal Information Systems Evaluation, 12 (1), pp. 39 – 50., 2009.

Ebrahim, N. A. - Ahmed, S. - Taha, Z., RandD networking and value creation in SMEs. Department of Engineering Design and Manufacture, Faculty of Engineering, University of Malaya, Kuala Lumpur, 2008.

Ellegaard, C., Small company purchasing: A research agenda. Journal of Purchasing and Supply Management, 12, pp. 272 – 283, 2006.

Fawcett, S. E. - Magnan, G. M. - Mccarter, M. W., Benefits, barriers, and bridges to effective supply chain management. Supply Chain Management: An International Journal, 13 (1), pp. 35 – 48, 2008.

Gourova, E., Knowledge management strategy for small and medium enterprises. Proceedings of the International Conference on Applied Computer Science, pp. 639-648, 2008.

Gupta, K., A practical guide to needs assessment. San Francisco: Pfeiffer, 1999.

Hashim, M. K., SMEs in Malaysia: A brief handbook. Malaysia: August Publishing Sdn. Bhd, 2007.

Hong, P. - Jeong, J., Supply chain management practices of SMEs: From a business growth perspective. Journal Enterprise Information Management, 19 (3), pp. 292 – 302, 2006.

Jitesh, J. T. – Deshmukh, S. G., Supply chain management in SMEs: Development of constructs and propositions. Asia Pacific Journal of Marketing and Logistics, ResearchGate. 2008.

Ketchen, D. J. Jr., Rebarick, W., Hult, G. T. M., and Meyer, D., Best value supply chains: A key competitive weapon for the 21st century. Business Horizons, 51, pp. 235 – 243, 2008.

Koh, S. C. L, Demirbag, M., Bayraktar, E., Tatoglu, E., and Zaim, S., The impact of supply chain management practices on performance of SMEs. Industrial Management and Data Systems, 107(1), pp. 103 – 124, 2007.

Lagrosen, S., Customer involvement in new product development: A relationship marketing perspective. European Journal of Innovation Management, 8 (4), pp. 424 – 436, 2007.

Lapide, L,. Benchmarking best practices [Electronic version]. The Journal of Business Forecasting, 24(4), 29, 2006.

Lazarica, M, The virtual enterprise - Opportunity for SMEs in the digital economy. Annals, Economic Science Series, XV, pp. 501 – 505, 2009.

Li, S. - Subba Rao, S. - Ragu-Nathan, T. S. - Ragu-Nathan, B, Development and validation of a measurement instrument for studying supply chain management practices. Journal of Operations Management, 23, pp. 618 – 641, 2005.

Melnyk, S. A. - Lummus, R. R. - Vokurka, R. J. - Burns, L. J. - Sandor, J. , Mapping the future of supply APSTRACT Vol. 14. Number 3-4. 2020. pages 89-96. ISSN 1789-7874 Supply Chain Management Practices For Smes 95 chain management: A Delphi study. International Journal of Production Research, 47 (16), pp. 4629 – 4653, 2009.

O'Gorman, C, The sustainability of growth in small and medium-sized enterprises. International Journal of Entrepreneurial Behaviour and Research, Vol. 7 No. 2, pp. 60-70, 2001.

Pittaway, L., - Morrissey, B., Buyer-supplier relationships in small firms: The use of social factors to manage relationships. Lancaster University Management School Working Paper, 2004.

Quayle, M., A study of supply chain management practices in UK industrial SMEs. Supply Chain Management – An International Journal, Vol. 8 No. 1, pp. 79-86. Richardson (1995): Logistics help for the challenged. Transporation and Distribution, Vol. 36, No. 1, pp. 36-46, 2003.

Stock, J. R., - Boyer, S. L, Developing a consensus definition of a supply chain management: A qualitative study. International Journal of Physical Distribution and Logistics Management, 39 (8), pp. 690 – 711, 2009.

Swanson, B. L., Watkins, K. E., and Marsick, V. J, Qualitative research methods. In R. Swanson and E. Holton III (Eds.), Human Resource Development: Research Handbook (pp. 88-113). San Francisco: Berrett-Koehler, 2014.

Szira, Z, The Situation of the SME Sector in Hungary. Management, Enterprise and Benchmarking – In the 21st Century. Budapest, Hungary, pp. 107 – 118, 2014.

Tan, K. C, Supply chain management: Practices, concerns, and performance issues. Journal of Supply Chain Management, 38 (1), pp. 42 – 53, 2002.

Thakkar, J. - Kanda, A. - Deshmukh, S. G., Supply chain management for SMEs: A research introduction. Management Research News, 32 (10), pp. 970 – 993, 2009.
Thakkar, J. - Kanda, A. - Deshmukh, S., Supply chain management in SMEs: development of constructs and propositions. Asia Pacific, Journal of Marketing and Logistics Vol. 20 No. 1, pp. 97-131., 2008.
Thoo A. C. – Abu B. A. H. – Amran R. – Rohaizat B, Adoption of supply chain management in SMEs. Elsevier Ltd, JIBES University, Jakarta, International Congress on Interdisciplinary Business and Social Science, 2012.
Walliman, N., Your Research Project (2nd ed.). London: Sage, 2005.

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