



ISSN 2278 – 0211 (Online)

ISSN 2278 – 7631 (Print)

SAP Supply Chain Performance Evaluation of Dr. Reddy Labs

Kuruganty Seetha Ram Babu

Research Scholar, JNTU Hyderabad, India

A. V. Satyanarayana Rao

Professor Emeritus, Department Of Business Management, Osmania University, Hyderabad, India

Abstract:

Technological advancements and highly demanding customer needs intensified global competition which has brought a paradigm shift in the organization's approach in running a business. Since business environment is changing at a rapid pace, organizations started adapting to integrated enterprise-wide systems, enterprise resource planning (SAP) for competitive advantage. SAP's collection of cross functional integration of the business applications within the firm and across the network of the firm comprises the supply chain. However, supply chain management (SCM) is being recognized as the management of partner relationships across the supply chain. Most effective supply chain networks are dynamic in nature, distributed in architecture and leverage sophisticated real-time analytics.

Key words: SAP, SCM, Dr. Reddy labs, Inventory, Profits

1. Introduction

Markets have become highly transparent with more focus in meeting demands of the customer needs and requirements [4] and the rate of change of business at global scenario is highly dynamic [5]. The implementation of ERP packages has provided an opportunity for organizations to re-engineer business processes and enhance the decision-making process. The know-how of “putting it altogether” to provide an end-to-end functional system is an important obstacle that should not be underestimated, especially if one is considering integration with current large-scale enterprise resource planning (ERP) software systems like SAP [1], If the proper Coordination mechanisms are not in place across the various functions, the process will be neither effective nor efficient[8].

Many organizations have reported dramatic improvements from SAP R/3 implementation. New initiatives in resources planning, electronic commerce and extended supply chain drive the trend among corporations towards integrating strategic business applications. ERP systems assist enterprises in automating and integrating corporate cross-functions such as inventory control, procurement, distribution, finance and project management. Through information sharing, SCM enables supply-chain partners to work in close coordination to facilitate supplier-customer interactions and minimize transaction cost [2]. Short response times and availability of quick information, to enable individual stakeholders to plan, organize and control their supply chain activities.

2. Literature Study

Inventory is one of the most common information shared between supply chain partners. According to [9] indicate, inventory and communication are economic substitutes. To implement echelon-based inventory control, the upstream company should monitor the inventory levels at the downstream of the supply chain and produce only if the inventory position is low, so that the upstream company can determine when and what to produce and downstream companies will improve the service level with minimum inventory [10]. [11] Studied extensively on currently running “Supply Chain Management” system for the logistic and manufacturing companies. The outcome of the research was currently running system needs to be integrated with other “Line of Business” systems like ERP to capture the changing aspects of organization, market and demand & supply. Developed a SAP R/3 based ERP architecture in an effort to create a value oriented supply chain that enabled a high level of integration and communication among all supply chain processes [15]. Further Integrating SAP web functionality with SCM is identified as a key to improving supply chain level processes [12]. A web based solution will provide all the involved parts with simultaneous access to all the Electronic Commerce information [13]. Many B2B and B2C ecommerce are using cloud for productivity gain and efficient supply chain management. Cloud computing allows companies to access IT-based services such as infrastructure, applications, platforms, and business processes via the Internet [14].

Supply Chain Management gave visibility across operational activities from demand forecasting, to the sourcing of raw materials, through to manufacture and dispatch and thus increased improved communication within internal and external business networks with enhanced industry clock speeds [6]

3. Objectives

- Understand the mySAP SCM system overview
- Performance Analysis of Dr. Reddy Labs using various ratios.

4. Methodology

Following formulae are used

- Inventory Turnover Ratio = Cost of Goods Sold / Average Inventory
- Gross Profit Ratio = (Gross Profit / Net Sales) * 100
- Gross Profit = Net Sales – Cost of Goods Sold
- Operating Profit Ratio = (Operating Profit / Net Sales) * 100
- Net Profit Ratio = (Net Profit after Tax / Net Sales) * 100
- Return on Investment = Net Profit after Tax / Share Holders Funds
- Earnings per Share = Net Profit after Tax – Preference Dividends / Number of Equity Shares
- Working Capital Turnover Ratio = Cost of Goods Sold / Net working Capital
- Debt Equity Ratio = Outsiders Funds / Share Holders funds
- Where Operating profit = Gross Profit – Operating Expenses
- Operating Expenses = Office Expenses + Administrative Expenses + Selling Expenses + Distribution Expensed + Depreciation
- Share Holders Funds = Equity Share Capital + Preference Share Capital + Reserves and Surplus + Accumulated Profits + Fictitious Assets
- Net Working Capital = Current Assets – Current Liabilities
- Outsiders Funds = Long Term Loans

4 years of secondary data is used in study and is obtained from Annual reports

Scope of Study: is confined to Dr. Reddy Labs Pharma Company located in Hyderabad

5. Company Profile

Dr. Reddy's labs began as a high quality API manufacturer in 1984 and went international in 1991. Dr. Reddy labs value proposition to customers is derived from an optimal operating system in which operations, product development, inventory and marketing & sales are fully integrated though SAP. Operations and the supply chain are aligned to ensure high availability, pull based replenishment of products at the retail level and superior inventory turns to customers. It provides affordable and innovative medicines in all major therapeutic areas like gastro-intestinal, oncology, pain management, cardiovascular, dermatology, diabetes, etc. Recently they have focused into the rural markets in India to ensure the expansion.

Dr. Reddy labs, due to its efficient utilization of technology in SAP and SAP SCM, effective production processes, skill competencies and committed work force to high productivity became the third best Pharma company in India in national ranking 2012 according to MBASchool, Leonard Barton (1992) suggests that the tacit knowledge developed by skill engineers with an efficient production process over an extended period of time may become a source of advantage for the firm [5]. No wonder Dr. Reddy Labs belongs to this category of firms. Ranked as the best Company to work for in biotech and pharmaceutical industry in India and had bagged the award for 3 consecutive years

6. SAP

SAP has developed several generations of technologies that perform integration tasks of moving data between applications. SAP ERP is based on services based architecture, the SAP NetWeaver platform. This platform includes the tools that form the application's foundation and toolkits for new development and integration. The SAP Business Suite consists of SAP ERP and applications such as SAP CRM, SAP SCM, and SAP SRM. SAP's collection of business applications including SAP R/3 and the SAP Business Suite have been adopted by thousands of companies around the world. Some of those companies rely on SAP for every need and find substitutes only when SAP solutions fall short.

7. SCM

According to Mentzer, et al [7], "Supply chain Management (SCM) is defined as the systematic, strategic coordination of the traditional business functions and the tactics across these business functions within a particular company and across businesses within the supply chain, for the purpose of improving the long-term performance of the individual companies and the supply chain as a whole". Supply chain management (SCM) is the process of planning, implementing and controlling the operations of the supply chain with the purpose of satisfying customer requirements as efficiently as possible. SCM is the integration of key business processes from end-user through original suppliers that provides products, services, and information that add value for customers and other stakeholders (Global Supply Chain Forum).

Various activities are performed and coordinated within an organization, and every company should have supply chain relationships with other supporting organization, "Successful SCM requires cross-functional integration within the firm and across the network of firms that comprise the supply chain" [8]. Successful SCM requires integrating with key members of the supply chain for standardization of business processes which enables managers from different organizations in the supply chain to use a common language and link-up their organizations' processes effectively.

As global competition intensifies in response to tougher trading conditions, supply chain members from manufacturer to retailer are striving to attain process efficiencies that enable them to drive down costs and provide competitive advantage. [3] States that technologies have the potential to support the information flow and affect many of the dimensions of SCM such as cost, quality, delivery, flexibility and ultimately profits of the firm. They support the communication and coordination of the economic activities between separate units of an organization and collaboration along the supply chain by enabling better information processing, sharing [4] and faster responsiveness by making available online, real-time information networked around the organization and giving full supply chain visibility.

8.mySAP Supply Chain Management

SAP is the world's largest enterprise software company. The ability of SAP to deliver customer centric, open, personalized and collaborative inter-enterprise solutions on demand is the foundation of mySAP.com.

Applications for SCM include

- SAP Advanced Planner and Optimizer (SAP APO) that improves demand forecasting and increases production efficiency.
- SAP Logistics Execution System (SAP LES) that enables the efficient flow of goods along the supply chain with greater speed and accuracy.

mySAP SCM Planning solution offers a complete suite of tools for strategic to operational planning. It is part of the SAP APO and includes collaboration and integration functionality. The considerable flexibility of the mySAP SCM solution allows to setup company-specific business processes and planning rules. Following are the three main scenarios that represent the basic planning needs within the supply chain.

- Collaborative demand planning
- Collaborative supply and distribution planning
- Sales and operations planning

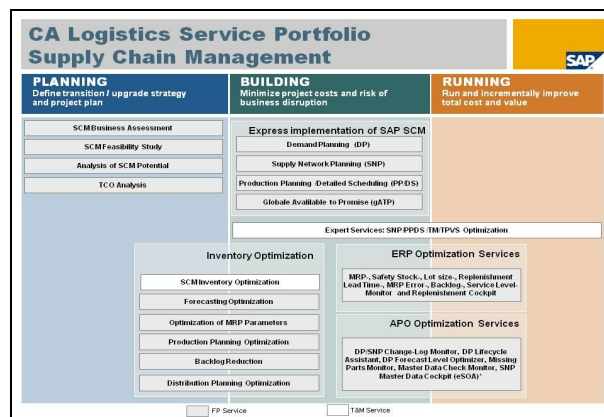


Figure 1: SCM, Source SAP AG

8.1. Collaborative Demand Planning (CDR)

CDR, Historical data is used to drive forecasting, promotion planning and demand planning. CDR uses information to create forecasts and carry out lifecycle planning through Statistical methods, Causal analysis using multiple linear regression, Composite forecasting Promotion planning is performed to include marketing activities, offering further collaboration possibilities with retailers or distributors.

8.2. Collaborative Supply and Distribution Planning (CSDP)

CSDP, partners within the supply chain can concurrently plan procurement, manufacturing and transportation, while integrating supply chain partners for collaboration. Supply Planning satisfy the demands and safety stock requirements in an optimal way, explodes the bills of material (BOMs), spreads production among resources, makes decisions about sourcing, creates allocations for customers and organizes the procurement of semi-finished goods or raw materials.

Based on the demand plan, Safety Stock Planning is carried out first. It enables to assign optimal safety stock and target stock levels to all inventories throughout the supply network. The system calculates safety stock calculations on lead times, forecast and supply variability and customer service levels.

- The Supply Planning heuristic calculates requirements for the sources of the products while taking quota arrangements, lead times, calendars and lot-sizing rules into account.
- The Supply Planning optimizer generates a feasible supply plan with minimal costs, considering all resources and constraints in the supply network. It uses linear optimization and multi-integer linear programming techniques based on simplex-based algorithms and branch and bound methods.
- Capable to Match matches a large set of prioritized customer demands (forecasts or orders) to a set of categorized supplies, taking into account the current production and transportation capabilities in a multistage production environment.

Distribution Planning consists of deployment, which considers the available products and satisfies the real demands based on flexible rules and the transport load builder, which fills transport vehicles in an optimal way. Deployment uses push and pull logic to recommend transports when the available-to-deploy quantity can adequately cover the demand. If demand exceeds supply, deployment uses fair-share logic to fulfill the open sales orders, safety stock, and forecast requirements in an optimal way.

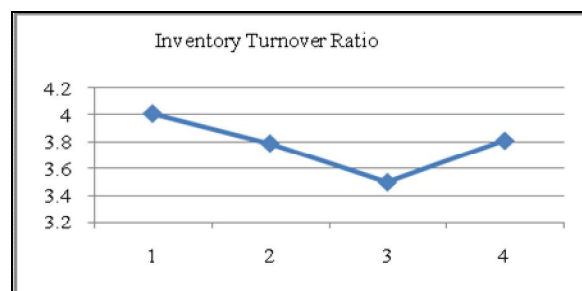
8.3. Sales and Operations Planning (S&OP)

The point of origin is the creation of a sales plan in SAP Strategic Enterprise Management (SAP SEM), part of mySAP Business Intelligence (mySAP BI). The sales plan allows creating marketing activities in the SAP Customer Relationship Management (SAP CRM). Marketing Planner will support the fulfillment of these plans. The results are transferred to SAP APO which will help collaborative demand and supply, and distribution planning.

9. Analysis And Interpretation

9.1. Inventory Turnover Ratio (ITR)

ITR is computed by dividing the cost of goods sold by the average inventory. An average inventory is determined by adding the beginning and ending inventories and dividing by two. The decline in the inventory turnover indicates the stocking of more goods. ITR measures the velocity of conversion of stock into sales. A high ITR indicates efficient management of inventory because more frequently the stocks are sold and the lesser amount of money is required to finance the inventory. A low ITR indicates an inefficient management of inventory.



Year	Year	Reddy Labs
2008 – 2009	1	4.01
2009 – 2010	2	3.79
2010 – 2011	3	3.5
2011 - 2012	4	3.81

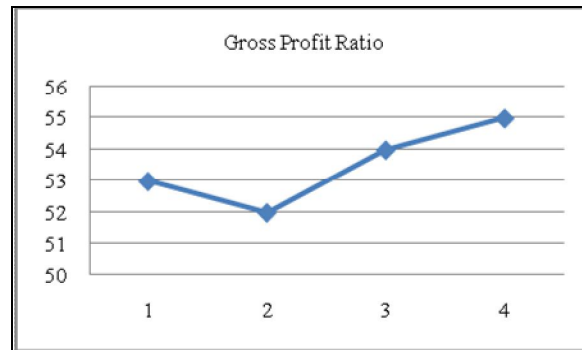
Table 1

From the table and the graph it can be observed that ITR in the year 2008-2009 is 4.01 and gradually decreased to 3.5 in 2010-2011 and then increased to 3.81 in 2011-2012

9.2. Gross Profit Ratio (GPR)

GPR measures the relationship of gross profit to net sales which is represented as a percentage. GPR is one of the very important ratios for measuring profitability of a firm. High GPR indicates better profitability position by increase in sales and less cost on operations of goods sold.

Gross Profit is excess of net sales over cost of goods sold



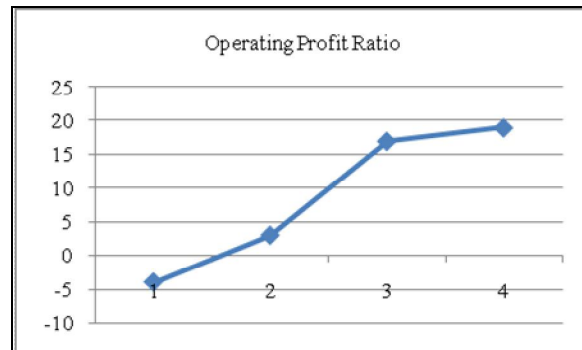
Year	Year	Reddy Labs
2008 – 2009	1	53
2009 – 2010	2	52
2010 – 2011	3	54
2011 - 2012	4	55

Table 2

From the table and the graph it can be observed that GPR for Reddy labs in the year 2008-2009 is 53% and decreased to 52% in the year 2009-2010 and then gradually increased to 55% in the year 2011-2012

9.3. Operating Profit Ratio (OPR)

OPR is calculated by dividing operating profit by net sales. Higher the OPR is said to be more favorable and indicates better operating efficiency.



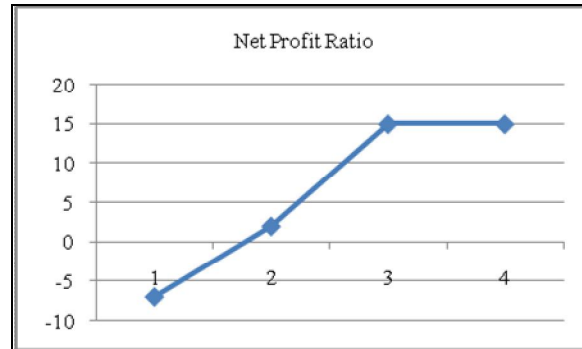
Year	Year	Reddy Labs
2008 – 2009	1	-4
2009 – 2010	2	3
2010 – 2011	3	17
2011 - 2012	4	19

Table 3

From the table and the graph it can be observed that OPR in the year 2008-2009 is (4) and gradually increased to 19 in the year 2011-2012. Since OPR gradually increased, Reddy Labs Operating Efficiency has improved and it is better.

9.4. Net Profit Ratio (NPR)

NPR establishes a relationship between net profit after taxes and sales which indicates the efficiency of the management in manufacturing, selling, administrative and other activities of the firm. This ratio is the overall measure of firm’s profitability. Higher NPR indicates the better profitability of the firm.



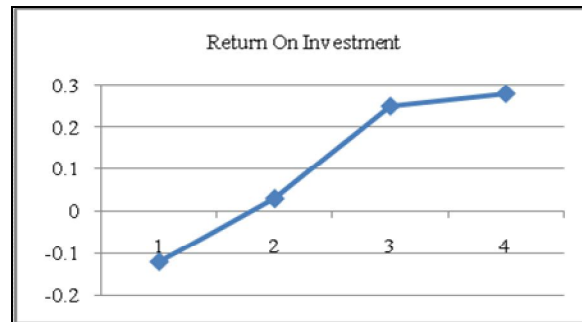
Year	Year	Reddy Labs
2008 – 2009	1	-7
2009 – 2010	2	2
2010 – 2011	3	15
2011 - 2012	4	15

Table 4

From the table and the graph it can be observed that NPR in the year 2008-2009 is (7) and gradually increased to 15 in 2010-2011 and 2011-2012. Since NPR gradually increased indicates better profitability of the firm.

9.5. Return On Investment (ROI)

ROI is a relationship between net profit after interest and tax and the proprietor funds. ROI is one of the most important ratios used for measuring the overall efficiency of a firm. Higher ROI indicates better results and focus on efficiency of profitability.



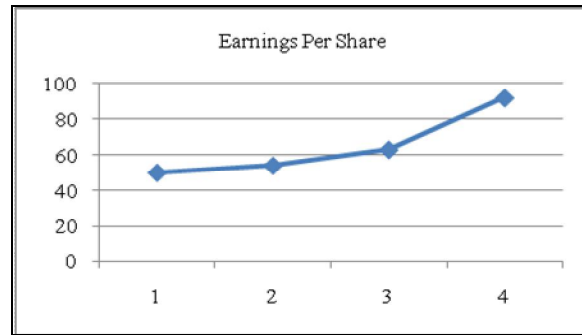
Year	Year	Reddy Labs
2008 – 2009	1	-0.12
2009 – 2010	2	0.03
2010 – 2011	3	0.25
2011 - 2012	4	0.28

Table 5

From the table and the graph it can be observed that ROI in the year 2008-2009 is (0.12) and gradually increased to 0.28 in the year 2011-2012. Since ROI gradually increased, it interprets efficiency of profitability of Reddy Labs increased.

9.6. Earning Per Share (EPS)

EPS is a small variation of return on equity capital. EPS is a good measure of profitability and when compared with EPS of similar other companies, it gives a view of the comparative earning power of a firm. Greater EPS indicates greater earnings power of the firm.



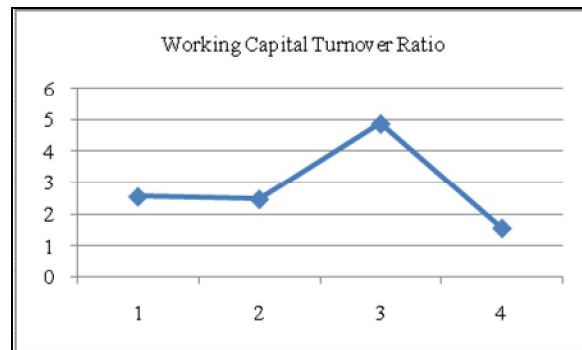
Year	Year	Reddy Labs
2008 – 2009	1	50
2009 – 2010	2	54
2010 – 2011	3	63
2011 - 2012	4	92

Table 6

From the table and the graph it can be observed that EPS for Reddy labs in the year 2008-2009 is 50 and gradually increased to 92 in the year 2011-2012. It can be said there is growth in EPS which indicate earning power of the firm is better.

9.7. Working Capital Turnover Ratio (WCTR)

WCTR indicates the velocity of the utilization of net working capital. It is directly related to cost of goods sold or sales. WCTR measures the efficiency with which the working capital is being used by a firm. A higher WCTR indicates efficient utilization of working capital but while interpreting a higher WCTR is not a good situation for any firm which means low WCTR is better to the firm.



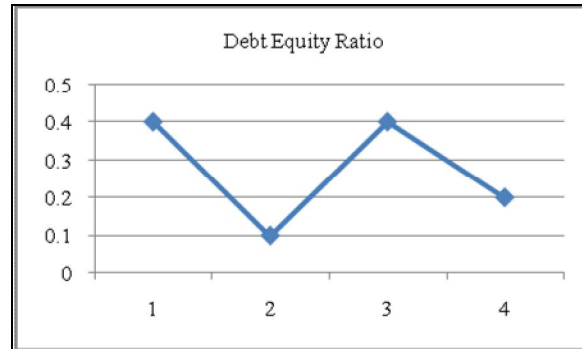
Year	Year	Reddy Labs
2008 – 2009	1	2.55
2009 – 2010	2	2.47
2010 – 2011	3	4.88
2011 - 2012	4	1.55

Table 7

From the table and the graph it can be observed that WCTR for Reddy labs in the year 2008-2009 is 2.55 and decreased to 2.47 in the year 2009-2010 and increased to 4.88 in the year 2010-2011 and decreased to 1.55 in the year 2011-2012. It can be said that utilization of working capital increased and decreased for every alternative year and finally for the year 2011-2012 low WCTR indicates better utilization of working capital.

9.8. Debt Equity Ratio (DER)

DER is also known as external – internal equity ratio. DER is calculated to measure the relative claims of outsiders and the share holders against the firm’s assets. DER indicates the relationship between the outsider’s funds and the share holder’s funds. A high DER indicates the claims of outsiders are greater than those of the owners which is unfavorable so low DER indicates better result.



Year	Year	Reddy Labs
2008 – 2009	1	0.4
2009 – 2010	2	0.1
2010 – 2011	3	0.4
2011 - 2012	4	0.2

Table 8

From the table and the graph it can be observed that DER for Reddy labs in the year 2008-2009 is 0.4 and decreased to 0.1 in the year 2009-2010 and increased to 0.4 in the year 2010-2011 and decreased to 0.2 in the year 2011-2012. It can be said that outside claims increased and decreased of the owner’s equity and finally for the year 2011-2012 low DER indicates favorable and is better for the firm.

10. Conclusion

mySAP SCM is used to manage the complex and changing flow of information, by performing timely collaborative supply chain planning, organization can achieve several benefits. Changes in market requirements can be absorbed by leveraging a partner network and adjusting business processes quickly and easily, affording more flexibility to planners. Supply chain partners gain insight into demand, inventory and capacity information across the extended supply chain network, delivering increased visibility. Optimal plans and operational schedules based on collaboration can be created. Supply chain activities can be synchronized internally and externally with plan and order driven, real-time execution of supply chain activities.

There is a overall growth rate of GPR, OPR, NPR, ROI and EPS of the firm from year to year which indicates sound overall profitability position. With increase in sales and decrease in ITR indicate generation of revenue and decrease in WCTR indicates better utilization of working capital. Decrease in DER indicates favorable condition of outsiders claim to owners equity and is better for the firm.

11. References

1. RFID and Supply Chain Management: Introduction to special issue by Tim Coltman, R Gadh and K Micheal (2008)
2. Exploring the rationales for ERP and SCM Integration J. Michael Tarn, David C. Yen and, Marcus Beaumont, (2002), Industrial Management & Data Systems, Vol. 102 Issue: 1, pp.26 – 34
3. Supply Chain Management by Sotiris Zigiariis (2000)
4. Enterprise One to One: tools for competing in the interactive age. Doubleday NY by Pepper D and Rogers MP (1999)
5. Competing on the Edge: Strategy as Structures Chaos by Brown SL and Eisenhardt KM, Harvard Business School Press, Boston
6. Clockspeed: Winning industry control in the age of Temporary advantage by Fine CH (1998) - Perseus books
7. Business Logistics/Supply Chain Management: Planning, Organizing, and Controlling the Supply Chain, by Ballou RH (2004), 5th edition edn, Pearson Prentice Hall/Pearson Educational International, New Jersey. ISBN: 0137956592
8. Supply Chain Management Processes, Partnerships and Performance by DM Lambert (2008) ISBN: 978-0-9759949-2-4
9. The Impact of Uncertainty on a Production Line., Tang, C. ManagementScience, pp. 15 1 (1990).
10. Communication and Inventory as Substitutes in Organizing Production, by Milgrom, P. and J. Roberts, Scandinavian Journal of Economics, 90, pp. 275-289, (1988).
11. Introduction Integrated Supply Chain Management for Manufacturing and Logistics Domain by P Bandyopadhyay and J Chowdary, International Journal of Scientific and Research Publications, Volume 2, Issue 12, December 2012 1 ISSN 2250-3153

12. The role of ERP tools in supply chain information sharing, cooperation, and cost optimization, by Kelle, P. & Akbulut, A. 2004. *International Journal of Production Economics* [Online].
13. Development of a web-based system for engineering change management. *Robotics and Computer-Integrated Manufacturing*, by Huang, G., Yee, W. & Mak, K. (2001) 17, 255-267.
14. Six questions every supply chain executive should ask about cloud computing. Accenture Institute for High Performance, by Schramm, T., Jonathan, W., Seng, D. & Jones, D. (2010).
15. Supply Chain Re-engineering using ERP software of SAP R/3 implementation case, *International Journal of Physical Distribution and Logistics Management*, by Al Mashari M and Zairi M (2000) 30 (3/4), 296 – 313
16. The Global Supply Chain Forum, Fisher College of Business, The Ohio State University. <http://fisher.osu.edu/scm>