



# **iJRASET**

International Journal For Research in  
Applied Science and Engineering Technology



---

# **INTERNATIONAL JOURNAL FOR RESEARCH**

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

---

**Volume: 4**

**Issue: IV**

**Month of publication: April 2016**

**DOI:**

**[www.ijraset.com](http://www.ijraset.com)**

**Call: ☎ 08813907089**

**E-mail ID: [ijraset@gmail.com](mailto:ijraset@gmail.com)**

# **Designing Logistics information System: Theoretical Background and Literature Review**

D. Arunkumar<sup>1</sup>

\*<sup>1</sup>Final year MBA, Department of Management Studies, Anna University, BIT Campus, Tiruchirappalli.

**Abstract**—*Logistics is the system of people and things that are involved in getting a product from the place where it is made to the person who buys it. Information system is an interactive structure of people, equipment, methods, and control, designed to create information flow in the required format for the user to make the decision to reduce the risk element. This paper aim is to designing Logistics Information System in theoretical underpinning and also discussed characteristics of Logistics Information System. In review of 40 papers related to Logistics Information System also discussed.*

**Keywords:** *Information sources, logistics system, characteristics, theoretical*

## **I. INTRODUCTION**

Logistics is that part of the supply chain process that plans, implements and controls the effective forward and reverse flow and storage of goods, services, and related information between the point of origin and the point of consumption, in order to meet the customer's requirements (**Reji ismail, 2008**). Logistics is the process of planning, implementing and controlling the efficient, effective flow and storage of goods, services and related information from the point of origin to the point of consumption for the purpose of conforming the customer requirements (**Americian council of Logistics management, 2011**). Logistics essentially a planning process and an information based activity. The science of planning, organizing and managing activities that provide goods or services

Logistics information system (LIS) involves the integration of information, transportation, inventory, warehousing, material handling and packaging. Logistics information system, information can be as lifeblood of a logistics and distribution system. The effectiveness and accuracy of distribution systems depend on the transfer of information. Logistics information system holds the whole system and coordinates all the components of logistics operations: planning and coordination and operation. Planning and coordination defines nature and location of customers that supply chain operations seek top match to planned product and services and promotions (**Shivani Dubey and Dr.Sunayana Jain, 2014**). A logistics information system links up the logistical activities. It integrates a number of information sources, including the order information, purchasing information, production information schedule, the packaging information schedule, the transport and warehousing information, the distribution information, the payment information and the delivery information. It serves to enable logisticians retrieve date as and when it is required, process data through the system and analyse data. (**Voortman.C, 2004**).

LIS is an information system that provides management with relevant and timely information related to logistics. Implementing information technology in retail outlets to bring number of benefits in that industry. LIS as a computer-based information system that supports every aspect of the logistics management process, which involves the coordination of activities, such as scheduling, inventory replenishment and material flow planning. Through Information System, suppliers, manufacturers, and customers are integrated into a logistics network for efficient supply chain management. The global nature of logistics now requires information systems that enhance inventory control, track orders and materials and monitor resource utilization. Information systems and computer technologies are vital to the development of an organization willing to understand and attain to customers' requirements and needs. The ability of a company to optimize its logistics costs and levels of customer service is affected by the LIS it uses. Add that these systems are extremely important in reducing inventory and lead time along the supply chain. The effectiveness and accuracy of distribution systems depend on the transfer of information. Logistics information system holds the whole system and coordinates all the components of logistics operations: planning and coordination and operation. Planning and coordination defines nature and location of customers that supply chain operations seek top match to planned product and services and promotions.

# International Journal for Research in Applied Science & Engineering Technology (IJRASET)

## II. REVIEW OF LITERATURE

**Anil Gurung, (2013)** Analysed impact of Information Technology on logistics and identify the technologies used and their benefits on logistics.

**Md. Salah Uddin Rajib, Md. Shariful Alam and Md. Shamsul Arefin, (2010)** Conducted a case study for casual relationship of success through Logistics information system. For success of information system only combines with resources of an organization and human knowledge.

**Veranda Tilokavichai and Peraphon Sophatsathit, (2011)** Explored the interrelationship between ERP and Information System and identified the missing link between ERP and IS. Factors also identified to influence the user satisfaction by using ERP and IS.

**Varanya Tilokavichai, Peraphon Sophatsathit and Achara Chandrachai, (2012)** Analysed the factors of LIS usage that affecting Logistics Performance Management under uncertainty and also proposed model called TAM model for LIS adoption.

**Soo Wook Kim, (2004)** Proposed a strategies for LIS utilization and find out the relationship between Corporate and LIS and also discusses the factors affecting for LIS utilization.

**Yu Liu, (2012)** Examined the behavioural factors that target to use LIS. Customer attitude is also considered to use LIS. Impact of technology towards customer behaviour is also investigated.

**Rajiv Bhandari, (2013)** Examined the technologies used in Logistics and Supply Chain Management and then impact of them. To achieve competitive advantage proper logistics system should be used to support various logistics functions.

**H.C.W. Lau, C.K.M. Lee and K.L. Choy, (2004)** Proposed an infrastructure for design and support reverse logistics system. Information system should be important one for maintain reverse logistics activities in low cost and also connects technology and managerial activities.

**David J. Closs, Thomas J. Goldsby and Steven R. Clinton, (1999)** Identified a competence and logistics strategy then determines relationship between logistics information system capabilities, competence and strategy.

**Kyungwoo Kang and Oh Kyoung Kwon, (1997)** Discussed a physical infrastructure is not sufficient for improving Logistics system and the issues to be considered for implementing Integrated Logistics Information System.

**Prabir K. Bagchi, (1992)** analysed the needs of logistics in global market place and uncover the issues for implement International LIS and framework are discussed.

**A. D. Shalini Prieya and S. Sankaranarayanan, (2015)** Identified the factors underlying the advantages of LIS and software's usage in logistics service companies.

**Shivani Dubey and Dr.Sunayana Jain, (2014)** Discussed the adoption of LIS into cloud and the benefits of integration of LIS in cloud.

**E.W.T. Ngaia, Kee-Hung Laib, and T.C.E. Chengb, (2008)** Proposed a model for LIS adoption and find out relationship between Organizational Context, Perceived benefits and Perceived barriers then discuss use of IT to support logistics operations.

**David J. Closs and Kefeng Xu, (2000)** Examined an IT practices in different industries and identify the gaps between world class logistics firms and their baseline region.

**Pablo Gonzalo Lázaro, Ruth Mateos de Cabo and Juan Carlos García Villalobos, (2015)** Discussed an implications on firm operational performance by adoption of LIS. Relationship between LIS and firm performance depends on logistics performance and flexibility.

**Dr. Anubha Vashisht and Aakanksha Uppal, (2000)** Analysed the Logistics Information System and then logistics integration with information technology that are used in different companies.

**Danilo Hisano Barbosa and Marcel Andreotti Musetti, (2010)** Examined adoption of LIS in manufacturing companies with connection of Organization variables. Organization size and operation greatly depends on LIS adoption. Large business adopt LIS is more likely than smaller business.

**Petri Helo and Bulcsu Szekely, (2005)** Discussed the software application functionality development and that benefits to supply chain management. Different management systems used for incorporating ERP functionalities in a particular platform.

**Feng Liang, (2008)** Proposed approach for reconfigurable logistics information system using soft components to support entire supply chain. LIS architecture based on soft components technology and also create new system rapidly and improve efficiency.

**Lucas D. Introna, (1991)** Discussed the impact of Information Technology on logistics and also implications.

**Stephen M. Rutner , Brian J. Gibson and Susan R. Williams, (2008)** Discussed the impact of e-commerce and ERP on LIS and tools for LIS to direct the business in right direction. In logistics organization information flow is important both inside and outside the organization.

## International Journal for Research in Applied Science & Engineering Technology (IJRASET)

- Ndeda bernadette jadamba, (2014)** Analysed the impact of LIS performance in international humanitarian organizations and challenges facing for implementing for LIS. It provides value for an organization and adequate support of logistics functions.
- Chieh yu lin, (2006)** Analysed the information systems to help for coordinate the supply chain network in logistics service providers and also identify the factors for both internal and external criteria affects innovation in LIS for logistics service providers.
- Yandra Rahadian Perdana, (2012)** Examined use of agricultural LIS to support supply chain in right time at right place then utilization of agriculture LIS can be benefits for global market place and decision making for customer and producer point of view.
- Dr. Pratyush Tripathi and Deepak Tiwari, (2014)** Studied the role of inventory management techniques that leads to retailer's sale and customer satisfaction. Customer faced problems for inventory management techniques adopted by retailers.
- Asiegbu, Ikechukwu F and PoweiDaubry M, (2012)** Analysed the inventory policy adopted for manufacturers and retailers. Both of them not adopt same inventory policy because reasons varied from manufacturer to end user.
- Abisoye Opeyemi A, Boboye Fatoba, and Abisoye Blessing, (2013)** Design a computerized inventory management system to maintain stock level for supermarkets and transaction updates, decision making.
- Hsi-Mei Chen, (2009)** Analysed problem solving related inventory management and design Integrated Inventory Management System to increase inventory control effectiveness. This design constitutes software agents to cooperate with each other.
- IKitheka Samson Samuel, and Gerald Ochieng Ondiek, (2014)** Studied the automation of inventory management and the impact of performance in supermarkets and also discussed inventory management automation used in supermarkets.
- Cynthia Wallin, M. Johnny Rungtusanatham and Elliot Rabinovich, (2006)** Analysed the inventory management approaches deciding for a particular firm and impact of profitability and its success in market place.
- H. Amoozad-khalili, R. Tavakkoli-Moghaddam and N.Shahab-Dehkordi, (2010)** Deliberated the application of RFID in manufacturing, retail, inventory, logistics and supply chain and benefits of using RFID in each section also discussed.
- Samir K. Srivastava, (2007)** Studied the impact of RFID application in logistics and supply chain and also obstacles to implement of RFID in retail outlet for Indian scenario.
- Swapnil Pande and Terry Collins, (2007)** Analysed implement IT in retail supply chain to improve efficiency of business. IT implementation in small firms will increase demand agility and also centralized inventory control model suggested to reduce bullwhip effect.
- Lakshmi Narayana K, Ajata Shathru Samal and P Nagaraja Rao, (2013)** Understand the consumer behaviour and satisfaction level towards organized and unorganized retail formats.
- Varanya Tilokavichai, Peraphon Sophatsathit and Achara Chandrachai, (2012)** Analysed the impact of logistics performance management in retail outlet and investigates the factors influence on Logistics Performance Management (LPM). Relationship between LPM and IS also measured.
- Satish Kumar Singh, Dr. Pratyush Tripathi and Dr. P.K. Jain, (2012)** studied the factors that impact on consumer behaviour towards organized retailing and also customer awareness, and perception about buying criteria in different formats.
- Jabir Ali and Sanjeev Kapoor and Janakiraman Moorthy, (2010)** Analysed the consumer preferences towards food and grocery products in retail chain and also to make good decision about product and market attributes.
- Shailesh Pandey and Dr. Vipin Chand Rai, (2014)** Studied the consumer behaviour towards retail outlets in India and also strategies adopted by small retailers to attract customers.
- Saroja S, (2012)** Studied the how information technology is useful to both customers and retailers and the benefits also discussed.
- S.Ramesh Babu, P.Ramesh Babu and Dr.M.S.Narayana, (2012)** Analysed the role of latest technologies like RFID in retailing and discussed how to achieve competitive advantage in Indian scenario.
- Ms. Vijaya Jacqueline, (2012)** Research about the factors contributing to popularize organized retail formats and study consumer performance towards organized retail format with position to retail management.
- Rama Krishna Prasad. Y, (2011)** Research about the growth and development food and grocery retailing then effect of consumer characteristics, situational factors and store format attributes was discussed.
- L.Shanthi, (2011)** Research about consumer awareness, customer faced problems, retailers attitude towards traditional and modern retail formats.
- Priya. S, (2013)** Research about application and impact of technology innovation in retail industry and investigate problems, challenges, and awareness about RFID in retail business.

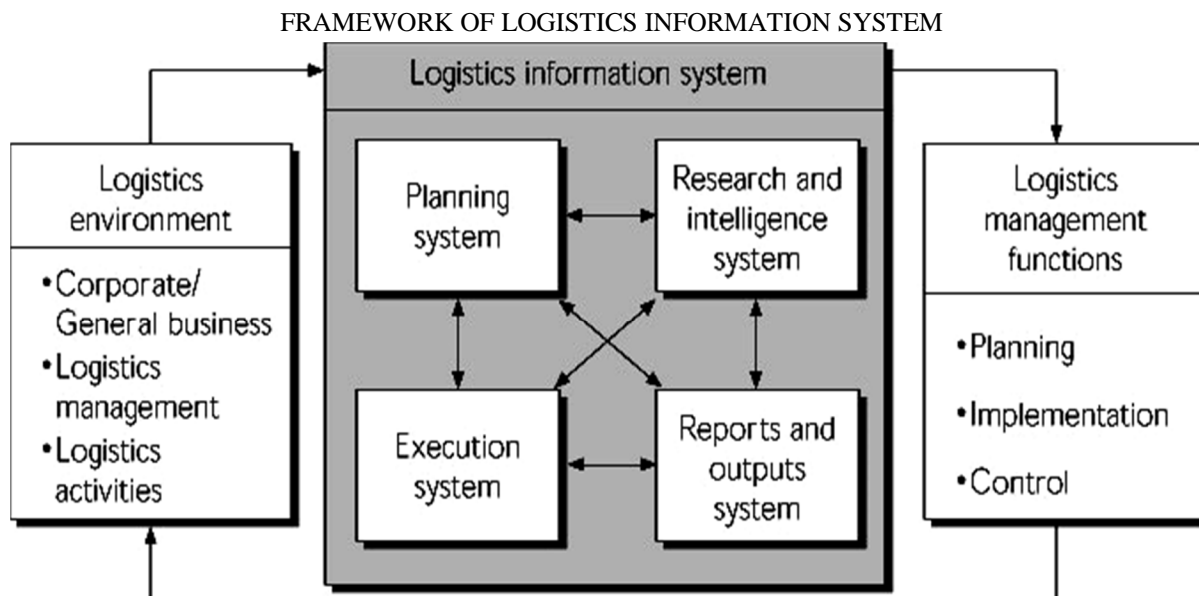
# International Journal for Research in Applied Science & Engineering Technology (IJRASET)

## III. THEORETICAL STUDY

### A. Elements of Logistics Information System

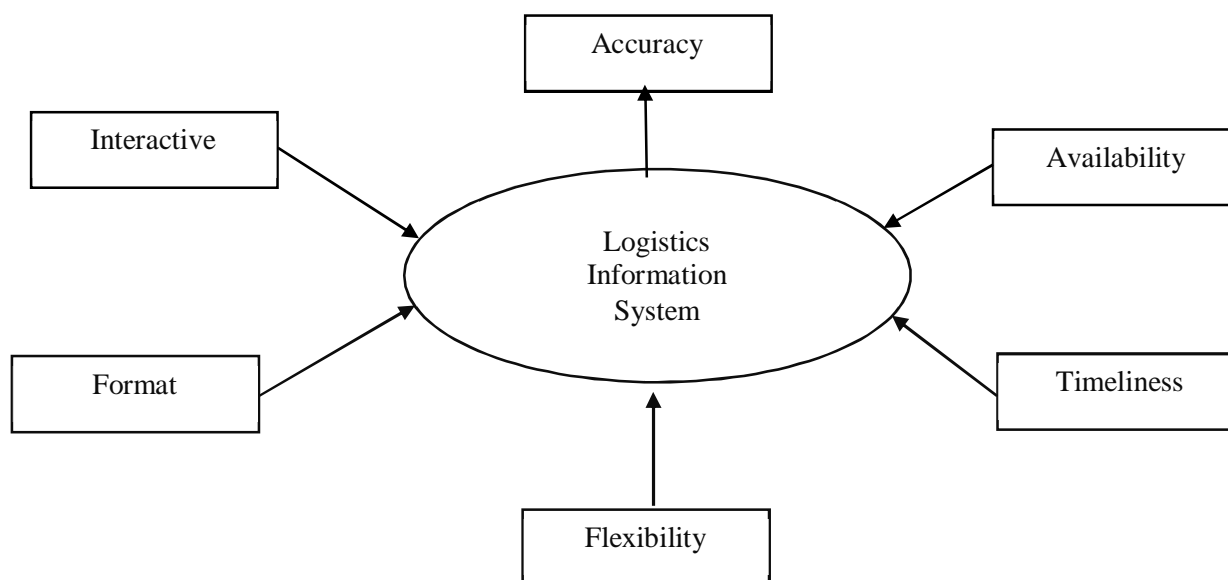
Logistics Information System basically consists of the following elements:

- 1) Information sources
- 2) Information collection system
- 3) Storage
- 4) Processing
- 5) Retrieval
- 6) Report Formatting



**SOURCE:** Management of Business Logistics, Chapter 12, 7<sup>th</sup> Edition.

### CHARACTERISTICS OF LOGISTICS INFORMATION SYSTEM



# International Journal for Research in Applied Science & Engineering Technology (IJRASET)

## IV. DISCUSSION

Logistics information system framework having input consists of logistics environment such as logistics activities and output as logistics functions then intermediate process having execution system. Information sources consists of two basic resources, namely external customers and internal departments of an enterprise. Information may be fed into system through e-mail, Electronic data interchange. Information Storage such as CD, Hard disk, and magnetic tapes. Using microchips instant processing of data with great accuracy is possible. Data retrieval is possible at user terminals spread across systems. The appropriate software designed for the installed system makes it possible to generate reports for users in the required formats.

## V. CONCLUSION

In this paper designing logistics information system framework and also characteristics of Logistics Information system was discussed. Non value added system output capabilities may be identified and taken out of the system to reduce investment cost. It is also determine the rate at which information and technology investment is influenced by order processing. It is obvious, that the trend is becoming new among manufacturing companies in all over the world. For using logistics Information System, personnel need to be trained and devices need to be maintained.

## REFERENCES

- [1] A. D. Shalini Prieya and S. Sankaranarayanan. (2015). Investigation of Factors Underlying the Benefits of Logistics Information System. *Twelfth AIMS International Conference on Management* (pp. 2401-2410). Kozhikode: AIMS International. Retrieved from aims-international.org
- [2] Abisoye Opeyemi A, Boboye Fatoba, and Abisoye Blessing. (2013). Design of a Computerized Inventory Management System for Supermarkets. *International Journal of Science and Research (IJSR)*, 02(09), 340-344.
- [3] Amercian council of Logistics management. (2011). Logistics Management. In V. sople. Mumbai.
- [4] Anil Gurung. (2013). A Survey of Information Technologies in Logistics Management. *Southwest Decision Sciences Institute*, 618-626.
- [5] Asiegbu, Ikechukwu F and PoweiDaubry M. (2012). Are Consumer Goods Manufacturers and Retailers Favored by the Same Inventory Policy? The Case of Port Harcourt. *International Journal of Business, Humanities and Technology*, 02(06), 68-73.
- [6] Chieh yu lin. (2006). Factors affecting the innovation in logistics information systems for logistics service providers in taiwan. *Journal of information and optimization sciences*, 27(03), 629-648.
- [7] Cynthia Wallin, M. Johnny Rungtusanatham and Elliot Rabinovich. (2006). What is the "right" inventory management approach for a purchased item? *International Journal of Operations & Production Management*, 26(01), 50-68.
- [8] Danilo Hisano Barbosa and Marcel Andreotti Musetti. (2010). Logistics information systems adoption: an empirical investigation in Brazil. *International Journal on Industrial Management & Data Systems*, 110(06), 787 - 804.
- [9] David J. Closs and Kefeng Xu. (2000). Logistics information technology practice in manufacturing and merchandising firms – An international benchmarking study versus world class logistics firms. *International Journal of Physical Distribution & Logistics Management*, 30(10), 869-886.
- [10] David J. Closs, Thomas J. Goldsby and Steven R. Clinton. (1999). Information technology influences on world class logistics capability. *International Journal of Physical Distribution & Logistics Management*, 27(01), 4-17.
- [11] Dr. Anubha Vashisht and Aakanksha Uppal. (2000). Logistics information system. Retrieved from internationalseminar.org
- [12] Dr. Pratyush Tripathi and Deepak Tiwari. (2014). A study of inventory management techniques applied by organized retailers and its effect on customer satisfaction and retailer's financial performance with special reference to Bhopal and Indore City. *International Journal of Innovation and Applied Studies*, 08(02), 788-799.
- [13] E.W.T. Ngaia, Kee-Hung Laib, and T.C.E. Chengb. (2008). Logistics information systems: The Hong Kong experience. *international journal on Production Economics*, 113(05), 223-234.
- [14] Feng Liang. (2008). Reconfigurable Logistics Information System Based on Soft Components Technology. *Journal on Scientific and management*, 01(01), 153-158.
- [15] H. Amoozad-khalili, R. Tavakkoli-Moghaddam and N.Shahab-Dehkordi. (2010). Influence of Radio Frequency Identification Technology in Logistic, Inventory Control and Supply Chain Optimization. *International Journal of Medical, Health, Biomedical, Bioengineering and Pharmaceutical Engineering*, 04(09), 394-399.
- [16] H.C.W. Lau, C.K.M. Lee and K.L. Choy. (2004). Implementation of logistics information system to support reverse logistics: a case study. *International Journal of Logistics Systems and Management*, 01(01), 112-126.
- [17] Hsi-Mei Chen. (2009). IIMS: an integrated inventory management system based on software agent. *International Journal of Business Information Systems*, 04(01), 105-124.
- [18] IKitheka Samson Samuel, and Gerald Ochieng Ondiek. (2014). Inventory Management Automation and The Performance of Supermarkets in Western Kenya. *International Journal of Research in Management & Business Studies*, 01(04), 09-18.
- [19] Jabir Ali and Sanjeev Kapoor and Janakiraman Moorthy. (2010). Buying behaviour of consumers for food products in an emerging economy. *British Food Journal*, 112(02), 109-124.
- [20] Kyungwoo Kang and Oh Kyoung Kwon. (1997). Integrated logistics information system in Korea. *International journal on Logistics Information Management*, 10(01), 43-51.
- [21] L.Shanthi. (2011). *A Study on customer perception, satisfaction and retailers service in traditional and modern retail stores in coimbatore*. PhD thesis, Bharathiar School of Management and Entrepreneur Development, Department of MBA, Coimbatore.
- [22] Lakshmi Narayana K, Ajata Shathru Samal and P Nagaraja Rao. (2013). A Study on consumer buying behaviour towards organized and unorganized retail

## International Journal for Research in Applied Science & Engineering Technology (IJRASET)

- stores in bangalore city. *International Journal of Management Research & Business Strategy*, 02(03), 01-14. Retrieved from <http://www.ijmrbs.com>
- [23] Lucas D. Introna. (1991). The Impact of Information Technology on Logistics. *International Journal of Physical Distribution & Logistics Management*, 21(05), 32-37.
- [24] Md. Salah Uddin Rajib, Md. Shariful Alam and Md. Shamsul Arefin. (2010). A Case Study on Integrating Logistics Information Systems with the Corporate Resources. *7th International Conference on Innovation & Management*, 1595-1600.
- [25] Ms. Vijaya Jacqueline. (2012). *A Study of retail management in organized retail outlets in mumbai with reference to customer behaviour*. PhD thesis, S.N.D.T Women's University, Department of Commerce, Mumbai.
- [26] Ndeda bernadette jadamba. (2014). *Logistics Information System and performance of international humanitarian organizations in kenya*. PhD Thesis, school of Business, University of Nairobi, Master of Business Administration, Kenya.
- [27] Pablo Gonzalo Lázaro, Ruth Mateos de Cabo and Juan Carlos García Villalobos. (2015). Logistics Information System Adoption and Firm Performance in the Suppliers Automotive Industry in Spain. *Social Science Research Network*, 1-16. doi:10.2139/2626400
- [28] Petri Helo and Bulcsu Szekely. (2005). Logistics information systems: An analysis of software solutions for supply chain co-ordination. *International Journal on Industrial Management & Data Systems*, 105(01), 05-18.
- [29] Prabir K. Bagchi. (1992). International Logistics Information Systems. *International Journal of Physical Distribution & Logistics Management*, 22(01), 11-19.
- [30] Priya. S. (2013). *A Study on application of technology innovation in retail industry with special reference to RFID applications in marketing*. Anna University, Chennai, Department of MBA, Chennai.
- [31] Rajiv Bhandari. (2013). Impact of Technology on Logistics and Supply Chain Management. *IOSR Journal of Business and Management (IOSR-JBM)*, 02, 19-24. Retrieved from [www.iosrjournals.org](http://www.iosrjournals.org)
- [32] Rama Krishna Prasad. Y. (2011). *A Study of consumers retail choice format and patronage behaviour in food and grocery retailing*. PhD Theis, Acharya Nagarjuna University, Department of Commerce and Business administration, Andhra Pradesh.
- [33] Reji ismail. (2008). *Logistics Management*.
- [34] S.Ramesh Babu, P.Ramesh Babu and Dr.M.S.Narayana. (2012). Retail Technology: A competitive tool for customer service. *International Journal of engineering science & advanced technology*, 02(01), 110-116.
- [35] Samir K. Srivastava. (2007). Radio frequency identification technology in retail outlets: Indian scenario. *International Journal of Manufacturing Technology and Management*, 10(01), 71-91
- [36] Saroja S. (2012). Information Technology – Key Success Factor in Retail. *Gyan Jyoti e-journal*, 01(02), 01-10.
- [37] Satish Kumar Singh, Dr. Pratyush Tripathi and Dr. P.K. Jain. (2012). Buying Behavior of Customers in Organized Food Retailing-A Review. *Current Trends in Technology and Science*, 03(01), 06-15.
- [38] Shailesh Pandey and Dr. Vipin Chand Rai. (2014). Consumer Behavior towards Retail Outlets in India - Literature Review. *International Journal of Engineering and Management Research*, 04(02), 228-231.
- [39] Shivani Dubey and Dr.Sunayana Jain. (2014). Logistics Information System and Cloud Computing. *Researchjournali's Journal of Computer Science*, 01(01), 01-07.
- [40] Soo Wook Kim. (2004). Corporation's Characteristics and LIS (Logistics Information System) Strategies. *Seoul Journal of Business*, 39(05), 49-80.
- [41] Stephen M. Rutner , Brian J. Gibson and Susan R. Williams. (2008). The impacts of the integrated logistics systems on electronic commerce and enterprise resource planning systems. *Transportation Research*, 39(05), 83-93.
- [42] Swapnil Pande and Terry Collins. (2007). Strategic implementation of information technology to improve retail supply chain in India. *International Journal of Logistics Systems and Management*, 03(01), 85-100.
- [43] Varanya Tilokavichai, Peraphon Sophatsathit and Achara Chandrachai. (2012). Analysis of Linkages between Logistics Information Systems and Logistics Performance Management under Uncertainty. *European Journal of Business and Management*, 04(09), 45-54.
- [44] Varanya Tilokavichai, Peraphon Sophatsathit and Achara Chandrachai. (2012). An empirical analysis of the impact of information systems in logistics performance management of retail firms. *Journal of Business and Retail Management Research*, 07(01), 74-84.
- [45] Veranda Tilokavichai and Peraphon Sophatsathit. (2011). An Organization-Wide Analysis of ERP and Information Systems Interrelationship for Logistics Support. *Journal of System and Management Sciences*, 01(01), 59-68.
- [46] Voortman.C. (2004). *Global Logistics Management*. Cape Town: Juta and CO Ltd.
- [47] Yandra Rahadian Perdana. (2012). Logistics Information System for Supply Chain of Agricultural Commodity. *International Congress on Interdisciplinary Business and Social Sciences*. 65, pp. 608-613. Jakarta: Elsevier Ltd.
- [48] Yu Liu. (2012). *Emerging Technologies for Information Systems, Computing and Management* (Vol. 236). (W. E. Ma, Ed.) Hangzhou, China: Springer New York Heidelberg Dordrecht London.



10.22214/IJRASET



45.98



IMPACT FACTOR:  
7.129



IMPACT FACTOR:  
7.429



# INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089  (24\*7 Support on Whatsapp)