



DSS (Decision Support Systems) in Indian organised Retail Sector

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DSS (Decision Support Systems) in Indian Organised Retail Sector

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Abstract

Indian organised retail industry is poised for growth. Rapid state of change due to speedy technological developments, changing competitive positions, varying consumer behaviour as well as their expectations and liberalized regulatory environment is being observed in organized retailing. Information is crucial to plan and control profitable retail businesses and it can be an important source of competitive advantage so long as it is affordable and readily available. DSS (Decision Support Systems) which provide timely and accurate information can be viewed as an integrated entity providing management with the tools and information to assist their decision making. The study, exploratory in nature plans to adopt a case study approach to understand practices of organized retailers in grocery sector regarding applications of various DSS tools. Conceptual overview of DSS is undertaken by reviewing the literature. The study attempts to describe practices and usage of DSS in operational decisions in grocery sector and managerial issues in design and implementation of DSS.

Comparison across national chain and local organized retailer in grocery sector reveals that national chain having implemented ERP partially are mostly using the same for majority of operational decisions like inventory management, CRM, campaign management. Two local players use spread sheets and in house software to make the above operational decisions. The benefits realized remain the same across the retailers. Prioritization as well as quantification of benefits was not communicated. The issues of coordination, integration with other systems in case of ERP usage, training were highlighted. Future outlook of DSS by the respondents portrayed a promising picture.

Keywords: Decision Support System, Enterprise Resource Planning, Operational Decisions, Organised Retailing

DSS (Decision Support Systems) in Indian Organised Retail Sector¹

Introduction

Retailing as simply defined is the end process of supply chain management where there is a direct interaction with the end-user or the customer. Hence forth availability, assortment, display, proper handling of product plays a vital role in a competitive world. Organised retail stores are characterized by large professionally managed format stores. They provide goods and services that appeal to customers, in an excellent ambience that is conducive for shopping, created based on consumer preference analysis, and offer good value as some of the benefits of large-scale purchases are passed on to consumers. In India, retail has its deep root since long back –and that is why India is being known as “Nation of Shopkeepers” with about 12 million retailers by 2003². Organised retailing contributes 2% to the total Indian retail sector and expected to increase to 5%, by 2010. Retail sector forms 10-11% of GDP³. It is attractive in terms of investment, employment opportunity, and usage of technology. Indian organised retail industry was worth Rs. 13,000 crore in the year 2000 and was expected to grow by 30 per cent in the next five years touching Rs. 45,000 crore in 2005. ⁴ Food and personal care amounted to Rs. 1000 crore in 2000.

Retailing is in a rapid state of change due to speedy technological developments, changing competitive positions, varying consumer behaviour as well as their expectations and liberalized regulatory environment. In such a scenario, information is crucial to plan and control profitable retail businesses and it can be an important source of competitive advantage so long as it is affordable and readily available. DSS (Decision Support Systems) which provide timely and accurate information can be viewed as an integrated entity providing management with the tools and information to assist their decision making.

In west, retail businesses have been the early adopters of Information Technology (IT). As there is a need to capture accurate information and make it available not only within the store but send it to warehouse, distributors and manufacturers in real time to

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² Euromonitor.com,2004

³ Retail Management-An Asian Perspective Draft Monograph,2006

⁴ <http://www.indiainbusiness.nic.in/india-profile/ser-retail.html>

manage the short shelf life of some goods in grocery sector and costs of inventory, varied DSS tools have been adopted by organised retailers. VMIs- vendor managed inventory systems, Scanner at the counters- point of sales systems, RFID- radio frequency identification, OLAP (online analytical processing), supply chain management systems, forecasting systems, CRM- customer relationship management systems, ERP- enterprise resource performance system etc. are the tools used by organized retailers in developed nations.

Most retailers collect and have access to huge amount of data, collected from day to day operations e.g. customer loyalty data, retail store sales and merchandise data, demographic projection data etc. Currently retailers are data rich but information poor. There is a great potential to develop systems that enable analysts and decision makers to manage, explore, analyze, synthesize and present data in a meaningful manner for decisions.

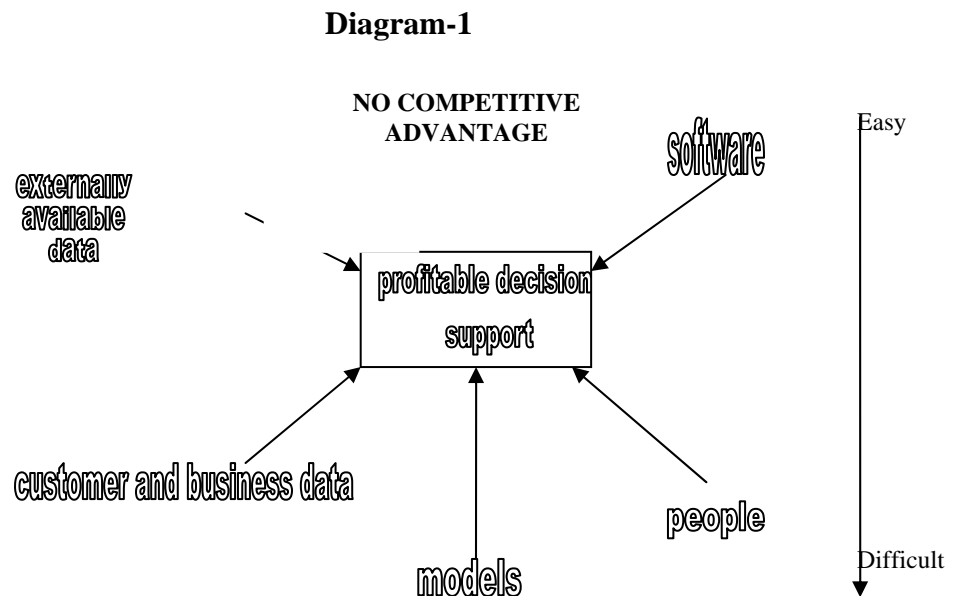
Retail managers are in a constant need for right kind of information for making effective decisions. Modern advancements in ITES (Information Technology Enabled Services) and communication has permitted deployment of DSS (Decision Support Systems). DSS can be defined as computer based systems that help decision makers to confront ill structured problems through direct interaction with data and analysis models.⁵ DSS is computer enabled methodology for using the database.

DSS are basically characterized by three capabilities; dialogues, data and modeling- the emphasis of each varies from organization to organization. DSS includes a wide variety of systems, tools and technology that support decision making. EIS(electronic information system),ESS(Electronic support system),GIS(geographic information system),OLAP(online analytical processing),software agents, knowledge discovery system and group DSS – all can be considered as DSS .Broadly two major categories⁶ of DSS namely enterprise wide DSS and desktop DSS exist . Enterprise wide DSS are linked to large data warehouses and serve several decision makers in a company whereas desktop single user DSS are small systems residing on individual manager's personal computer. Thus it is an interactive computerized system that gathers and

⁵ John R Beaumont, "An Overview of Decision Support System for Retail Management", Journal of Retailing Vol 64 No 4 Winter 1988 pp361-373

⁶ <http://dss.cba.uni.edu/glossary/dssglossary.html>

presents data from a wide range of sources, typically for business purposes. The organization needs to pool in both internal and external data, software, customer data, models and trained people to appreciate and use the systems for decision making which will help build sustainable competitive advantage. This can be depicted in the following diagram-1⁷.



As seen from the above, external data and software alone would not provide competitive advantage, but organization's own customer and business data, models which convert data into useful information and people, who will operate the systems, analyze outputs and make decisions based on the information provided—all these would be required for competitive edge. Companies need to make decisions faster, across more channels and product lines, leverage more data, under greater regulatory demands and competitive pressures, and with more complicated constraints and trade-offs. DSS entails development of approaches for applying information systems, technology to increase the effectiveness of decision makers.

⁷ Andy Thompson & Jonathan Walker, "Retail Network Planning- Achieving Competitive Advantage through Geographical analysis" *Journal of Targeting, Measurement and Analysis for Marketing*, May, 2005;13,3;ABI/INFORM Global, Pg. 250.

Each sector with unique characteristics poses very different challenges to an organization; hence in-depth understanding of one sector would provide deeper insight into the requirement of DSS to enable managers in that sector to take effective decisions. The proposed study aims at understanding DSS, its application in grocery sector and issues arising out of implementation of DSS in Indian retail grocery sector.

Objectives

The study being exploratory in nature adopted a case study approach to understand practices of organized retailers regarding applications of various DSS tools. An in-depth study would enable to understand current nature of DSS tools being applied to arrive at operational decisions, benefits realized thereof, to understand the problems arising out of using DSS and future outlook. Hence, the objectives of the research study are:

- 1) To provide a conceptual overview of DSS, possible applications of organized retail formats in grocery sector,
- 2) To understand practices and usage of DSS for operational decisions in grocery sector
- 3) To discuss managerial issues in design and implementation of DSS.

The focus is on store level operational decision-making assuming strategic decisions would be centralized and taken by the head office of an organised retail chain. In this age of information explosion, a plethora of operational level solutions have emerged that support transactions. Competitive strategy however requires linking information with intelligence. Hence nature of tools deployed impact on the processes and perceptions of users about its benefits and issues were explored.

Methodology

In order to address the aforesaid objectives, we first reviewed available current literature on DSS in organized retail. This would help us in understanding;

1. What is DSS and How DSS has been applied in organized retailing?
2. How DSS is applied in developed world?
3. What varied tools are being employed?

On the basis of the literature review, conceptual understanding about DSS was developed.

Practices in Indian context were studied by looking at DSS applications in organized grocery retailing. Convenience purposive sampling was taken up. Two national players and two local players in Ahmedabad were selected. Store managers in charge of operations of these retail outlets were interviewed to understand current deployment of DSS tools in their operational decisions viz. inventory management, sales forecasting, supply chain management, CRM(Customer relationship management), category/ assortment management, campaign and promotion management. An in-depth interview guide (lead questions) was used for personal interviews (appendix-1) with store managers. Perceptions about usefulness of the tools in operations were tapped and problems encountered were probed. Websites of the suppliers of DSS tools to organized retailers were visited (surfing) to understand availability of various tools and perspectives /observations of IT suppliers were compiled.

Literature review

Scanning the relevant literature on DSS applications in organized retailing; brief overview is presented in the following section.

Gallegos, Frederick(1999) describes applicability of DSS in a wide variety of applications of semi-structured and unstructured problems confronting managers and offers categorization of DSS into model-oriented and database oriented DSS. Decision support systems allow people at many levels to systematically analyze problems before making a decision. In the process, these systems extend the range and capability of the decision-making process, increasing its effectiveness.

Eom, S B, Lee, S M, Kim, E B, Somarajan, C(1998) report 271 published applications of DSS in organizations in a survey of DSS applications between period 1988-1994. It was found that there appears to be more creative applications of optimization and suggestion models and a decrease of representation models. Moreover, group decision support systems, executive support systems, and knowledge-based systems applications are becoming more prevalent in many organizations. Three non-MS/OR tools: viz graphics, artificial intelligence, and visual interactive modeling; are emerging as powerful DSS tools.

In their subsequent study- an extension of previous study for the period 1995-2001, they identified two hundred ten published applications. To examine the development pattern of a specific DSS over time, they proposed a framework to classify the articles/applications into various categories according to: (1) the area of application; (2) the year of publication in each area of application; (3) the distribution of underlying tools in DSSs; (4) a classification based on Alter's taxonomy; and (5) the management level (operational, tactical, or strategic) for which the DSS was designed.

Adam, Frederic, Fahy, Martin, Murphy, Ciaran(1998) provides a framework of classification of DSS usage across organizations. They have classified the organizations studied, based on the extent to which they used DSS for different decision situations using two specific measurements: DSS spread and DSS complexity. The results obtained suggest that the framework which was developed by the authors is useful for categorizing the degree of maturity of organizations regarding their usage and development of actual DSS applications.

Alan Montgomery (2005) has discussed implementation challenges of Decision Support Systems in Pricing for retail managers. With the evolution/explosion of quality data and computing ability, retail managers have desired to implement demand based management. Demand based management uses statistical models to predict consumer price response using historical information. Many firms are offering software to perform price optimization. The article discusses contribution of academic research to implementation of these systems and raises likely concerns of developers and users. It also raises practical and research challenges for using transaction data for developing pricing DSS for retailers.

Nikitas et. al.(2000) suggest that any DSS for strategic, tactical or operational planning is based on interaction of information systems and decision models and progressive transformation of data into information and knowledge. They have illustrated a DSS for supply chain planning (SCP) decisions. The SCP system has an embedded decision engine that uses a two-stage stochastic program as a paradigm for optimization under uncertainty. The system has been used for decision making in diverse domains, including automotive manufacturing and consumer products.

The role of model-based decision making is gaining increasing acceptance as organizations try to gain a competitive advantage. The progress in information systems development has led to a natural coupling between the data modeling, symbolic modeling and “What-if” analysis phases of a decision support system (DSS). DSS tools help companies automate an enterprise-wide assessment of cause and effect. The software monitors "soft" factors, which indicate whether a certain strategy has been successful, as opposed to operational measures. These tools can help in creating a culture of management based common views and goals.

Leonard Lodish (1982) describes components of marketing strategy development through DSS for retailing. The goal of the DSS system is to improve marketing strategy and marketing resource allocation for a large multi store, multi department retailer. However he warns that effectiveness of the system will depend on willingness on the part of managers to adapt. DSS evolves constantly as its users and developers interface, generate problems, questions and desires.

Little (1989) suggest that DSS must be simple, robust, easy to control, adaptive, as complete as possible and easy to communicate with.

DSS in retailing

Decision support "represents one of the key enabling technologies allowing corporations to unlock useful information hidden away in databases." Decision support queries need to be executed against large databases which often grow into the "hundreds of gigabytes" range. The technology is prohibitively expensive, except for the largest retailers such as Walmart, it is difficult to implement. Walmart uses a three - terabyte database using a competing parallel processing product from Teradata, a unit of AT&T Global Information Solutions, formerly NCR. It is expected that technology - based competition and innovation is escalating because of competitive pressures in retail industry. Technology is viewed as one way of competing but needs to become more affordable. According to Sheldon Leitch, a principal at Toronto - based Ernst & Young, who tracks the retail industry⁸, "there are three things retailers need to do well: build in a front end at the point - of - sale, segment the market by demographics and build so - called merchandise allocation systems".

⁸ Slofstra, Martin, " Tandem takes DSS to retailers," *Willowdale*: Mar 30, 1994.Vol.20, Iss. 7; pg. 1, 2 .

Thus DSS range from what if spread sheet and simulation analyses to “expert system”- applications of artificial intelligence. While developing the DSS in the organization, it is very essential that views of different stakeholders are taken into consideration. For example; executives and professionals are the users, MIS managers are the developers managing the process of development and installation, Information specialists build and develop systems, system designers who create and assemble technology on which DSS are based and researchers who study DSS and its process. Thus following are the key characteristic requirements⁹ of DSS: As managerial decisions are always made with organisation’s own culture, routine and operating procedures, DSS should have **adaptability**. System must allow **integration** of organisation’s routine, procedures and policies. System should **facilitate** communication among decision makers and **provide mechanism** for conflict resolution. System must **allow** and **support** both **analytic** and **holistic** perspectives viewing overall problem, focusing on few assumptions, issues or implications. System must help **solve** unprogrammed, unstructured problems. It should **possess** easy **interactive query facility**. It should **support** rather than **replace** managerial judgment.

Advantages of DSS are: faster data accessibility, stock availability resulting into no lost sales due to stock outs, better choice of assortments, timely distribution, tracking buying patterns of consumers and quick decisions.

Having seen the DSS applications in marketing and organized retail in western context, this paper now outlines findings of DSS applications in Indian organized retail Grocery sector.

Findings

- Profile of the sample retail outlets: Convenience store¹⁰ as the name signifies, are stores that provide a high level of convenience to their customers in terms of convenient location and extended operating hours . They mostly deal in food and other essential items. Small self-service formats located in crowded urban areas. Department stores are very large stores which are usually multi-tiered and stock a vast range of products in separate departments. The variety of merchandise

⁹ Little, John D. C.,” Decision Support Systems for Marketing Managwers” *Journal Of Marketing*, 1979,43(summer):9-26.

¹⁰ A J Lambha” The Art of Retailing” 2003, Tata Mcgraw Hill , 476p.

stocked is very wide with broad variety and deep assortment and high service level and organized into separate departments for displaying the merchandise. It provides a one stop shop catering to varied consumer needs. In our sample, three of the stores were departmental store and one was a convenience store as seen in the table given below.

Retail Outlet	AMPM	STAR BAZAR	BIG BAZAR	ADANI
Retail Format	Convenience	Departmental	Departmental	Departmental

Big bazaar¹¹ of Pantaloon Group had entered with four 'Big Bazar' discount stores, introducing the concept of hyper market - discount stores - for the first time in India in 2004. Big Bazar stores, modeled on the lines of overseas retail stores such as Wal-Mart, sell around 1,30,000 branded and non-branded goods at discounts ranging from 6 to 60%.

Star Bazaar¹²: The Star India Bazaar resembles big bazaar in size and spread of its merchandising basket. The economies of scale available to it, is translated into low prices for customers, who can pick from a wide selection of staples, fresh goods, consumer durables, household products, apparel, luggage and much more. "We aim to be the cheapest in the market," according to company spokesperson. Each product category has several choices on offer. For example, rice is available in 10-12 varieties. Considering the options and the discounts, it tries to create the mass-market appeal. The aim is to target middle and the upper-middle classes with low prices. Besides offering a 5-7 per cent discount over the 'maximum retail price' (MRP) for most of the brands that it stocks, the store also makes available its own private line of products, where prices are way below the discounted prices of its branded products.

ANPM: It is a local store operating in a basement located in a catchment area of upper middle class families representing cosmopolitan culture. It is a convenience store and facing competition from national players like star bazaar and big bazaar and Adani- local chain of stores in the same catchment area .The approximate floor area is 800-1000 Sq ft.

¹¹ <http://www.pantaloon.com/html/bigbazaar.htm>, accessed on 16/06/2006.

¹² http://www.tata.com/trent/articles/20050127_trent.htm, accessed on 16/06/2006

Adani's chain¹³: Adani Retail Limited is the largest supermarket chain of the Western India. Quality, Service, Convenience, Satisfaction and Assured Benefits are the backbone of the Adani Retail Limited. ARL currently have 15000+ SKUs, with the major categories of FMCG, Household goods and Appliances, Apparels, Gifts & Articles, Luggage & related items and catering 2,50,000+ families across the state of Gujarat. At present Adani Retail operates in 9 Cities across the State of Gujarat with the chain of 47 stores. ARL is having 27 stores in Ahmedabad, 10 stores in Baroda, 3 in Surat, 2 in Rajkot, one each in Anand, Gandhinagar, Mundra, Nadiad & Navsari. ARL operates through the format of Neighbourhood Store, Supermarket Store, and Hypermarket Store. ARL plans to continue its journey to reach total 19 cities with the store strength of 60+ in the state of Gujarat. ARL also plans to expand its operation in the neighbouring states of Rajasthan, Madhya Pradesh, Maharashtra and Chhattisgarh.

The following table-1 gives information about the sample stores.

Table-1

Store/Profile	ANPM	STAR BAZAR	BIG BAZAR	ADANI
When opened?	2001	2004	2004	1998
Store Size(Area):	800-1000 Sq Ft	55,000 Sq ft(Grocery)	100,000-1,60,000 Sq ft(Entire floor area)	2000-5000 Sq ft (Average Store Size)
Average footfall(day, week, month):	NA	Variation across weekdays and weekend	Variation across weekdays and weekend	NA
Average billing amount (grocery)	100 Rs/day approx	450 Rs/day	450-500 Rs/day	250-300 Rs/day
# of categories:	NA	150 approx	150-200	NA
# of SKUs	NA	6000	8000	NA
# of vendors:	10-15	30-40	60-80	30-40
Location Catchment area	Judges Bungalow Road	Satelite Area	On a highway near Hare Rama Hare Krishna Temple	Judges Bungalow Road
Contribution of private label brand	NA	85%(staple foods)	80-85%(staple foods)	NA

¹³ http://www.adanigroup.com/comp_b2c.html, accessed on 12/06/2006.

All the stores visited are in proximity to each other in a radius of 5 kms. They are catering to same catchment area on western part of the city and three being located in a posh residential area and one on a highway but in a close proximity of residential areas.

- Usage of DSS for operational Decisions for sample respondents :

ANPM

Functional area	Sales forecasting	Inventory management	Visual Merchandizing	Addition of new skus	Compaign management	Inbound logistics	
Type of DSS used	spread sheet	one store so spread sheet is used for managing inventory	margins provided by specific player but as store is not big so there is no DSS system in used	on the basis of sales and turnover	promotional offer given by company	spread sheets	
IT /SW Tools	customized package for item listing and bar code reader for billing						
Time taken to implement DSS	As DSS used in anpm are very need specific so there is no specific time limit set up for this						

STAR BAZAR

Functional area	Sales forecasting	Inventory management	Visual Merchandizing	Addition of new skus	Compaign management	Inbound logistics
Type of DSS used	erp package	pos /erp package	decision taken on top selling agents and margins	through their own customised software	Managed by head office	Packages by Pos(point of sale) Pune and now shifting to erp
IT /SW Tools	Bar code reader ,vb based programme,special wifi enabled swiping introduced recently , pos software (customized software) , special survilience tag for avoiding theft from the store					
Time taken to implement DSS	erp package implementation takes two three years ,whereas software catering to specific requirement takes takes 3-6 months					

BIG BAZAR

Functional area	Sales forecasting	Inventory management	Visual Merchandizing	Addition of new skus	Compaign management	Inbound logistics	Other
Type of DSS used	in-house software /recently shifting to erp gradually	EOQ level managed through item replenishment	gondolas placed on the basis of negotiation done with the manufacturer	requirement of the store /demand supply mechanism used	in house package	shifting to erp	
IT /SW Tools	special surveilance system in place ,vb based packages ,proper erp mechanism environment is being developed						
Time taken to implement DSS	erp implementation takes longer time then normal inhouse softwares						

ADANI

Functional area	Sales forecasting	Inventory management	Visual Merchandizing/Dis play	Addition of new skus	Compaign management	Inbound logistics
Type of DSS used	inhouse package roq level (return on quantity level) maintained	stock replenishment check is being done at the end of the day	margins and top selling items are most important criteria and stock replenishment dss tools are used for this purpose	promotion and selling pitch provided by the company	company based promotions	stock replenishment packages
IT /SW Tools	vb as front based and sql as backend inhouse software packages are taken into consideration while pursuing specific decision					
Time taken to implement DSS	three to six months					

- ERP package implementation: ERP (Enterprise resource planning) provides seamless integration of all functions such as sales forecasting, merchandising, point of sale, distribution, logistics, pay roll, accounting front and back office store systems and merchandising etc. of a retail operation. The success of ERP solution depends on synergy between technology and management. Factors to consider while choosing the right system for ERP are; magnitude of retail operations, number of locations and expectations from the system. Benefits of erp are customer profiling and analysis, targeted communications, loyalty programmes and other customer relationship initiatives, merchandise management and store localization. An integrated supply chain helps the retailer in maintaining his stocks, getting his supplies on time, preventing stock-outs and thus reducing his costs, while servicing the customer better.

Stores	ANPM	STAR BAZAR	BIG BAZAR	ADANI
ERP	No ERP	ERP implemented	ERP Implemented	Not Implemented

- It was found that varied customized DSS tools ranging from spread sheet to inhouse software packages were used for operational decisions .Even though national players had implemented ERP package ,there was a tendency to use in house packages like POS (point of sale) or VB (visual basics) based packages. For campaign management decisions intuitive judgement was used or decision from head office was followed. It was observed that national players were willing to invest in IT tool for 1) Surveillance to avoid losses due to shop lifting and 2) To reduce the waiting time for billing by introducing WIFI enabled swipe equipments.
- The typical decisions involved in adopting decision support systems/ERP generally are: Type of software platforms, Networking , Operating system ,Retail applications- applications to what decisions?, Type of hardware- point of sale systems, barcoding system, main computer system ,Server and Nodes .
- Benefits of DSS were realized by the sample respondents. It was found that even though they generally agreed on the benefits, they were unable to prioritize and quantify the benefits: Superior coordination, higher profitability, diagnostic help in identifying problem areas, high morale of employees, help for maintaining

relationship with stakeholders , streamlining of operations, productivity enhancement , reduction in stock out situations, systematic planning of inventory resources due to accurate forecasting and enhancement of impulse purchase due to application of dss to merchandising and display.

There seemed a general agreement on realization of benefits but no system was in place to measure the benefits at present (or it was not shared).

- Issues of DSS: Following key issues were faced by respondents .Two national chains, which had implemented ERP partially, faced similar type of problems with respect to ERP implementation- system integration problems and need for proper training for the operational staff as well as motivation to adopt change.

System integration problems: A major challenge faced by a local chain retailer was that of implementing ERP. Because of the differences in systems followed by different suppliers and manufacturers, integration between suppliers and manufacturer and the outlet was a major challenge. Also in ERP implementation phase, as few modules were implemented, that also created problems with the existing system of data.

Manpower problems: Man power at the operational level is always reluctant to change for erp environment because there is always a fear of downsizing in ERP implementation. Low level of computer education of persons in charge of floor operations results in poor service to the customer and inaccurate data handling. It is feared that training costs would increase.

Tracking problems: Inaccurate data handling resulting in improper data management which becomes a major bottleneck in stock replenishment

Collaboration and co-ordination problems: Problem faced in coordinating with different vendors using DSS tool on different platform (like visual basic, fox pro, oracle etc)

Local chain having their own systems- either developed in house or sourced from domestic supplier also faced problems because of the high employee attrition rate - resulting in frequent training to new employees.

DSS system ideally should provide counter checks in terms of warning or pop ups so that wrong entry /mistake can be identified instantly.(such a provision exist in ERP as experienced by a sample respondents.)

- Perspectives of suppliers of DSS:

It was found that in the short term, IT needs of the organised retailer would revolve around his ability to service the customers in a better manner by using CRM and OLAP tools, and to reduce costs by using Web-based systems of vendor management and CPFR(collaborative planning and forecasting) tools. It was observed that retailers need to understand how information technology would support the efficient implementation of the revised systems and procedures in terms of computer systems, hardware, software and networking. Retailers also need to understand how the IT systems would be integrated and networked across the country's stores and the head office of the retailer. With the projected growth of organised retailing in India, large to mid-sized retailers will have to upgrade their IT systems and take into consideration the technology trends — some of which are currently nascent, but which will evolve to become important assets for the future.

The Indian experience in implementing Retail ERPs has been difficult due to the lack of trained ERP package implementers in India. Hence, the cost of implementation has gone up, as package experts have to be brought in from abroad. But this is true for all ERP implementation in India, whether in the retail sector or in the manufacturing sector. In the past, manufacturing industries also faced difficulties in implementing ERP packages specifically meant for the industry, but over time, with expertise in the packages and in their implementation building up within India, the success rates of such implementations have increased. Hence, over the next two to three years, Retail ERP expertise will grow and will be able to support the needs of Indian retailers, who in that timeframe would have progressed up the learning curve on the benefits of information technology.

Future outlook of DSS

- 1) Proper exhaustive implementation of all the modules of ERP packages: As implementation costs are very high, user tends to implement in phases which results in system integration and coordination problems. Once that is in place, many of the issues would automatically get resolved.
- 2) Need for data warehousing and Data mining: Indian retail sector is lagging behind their western counterparts in investments in information technology. Respondents were not even willing to share the investments made so far. This may inhibit the proper usage of the rich data available at point of sale. If harnessed properly, it can be used as a competitive advantage.
- 3) WIFI environment in retail outlets : At least one of the national retail chain had plans to invest in WIFI technology which would enable less time spent on queues for billing . Once foreign participation and FDI is allowed, many will adopt this technology.
- 4) Wide spread use of CRM application: With the growing use of plastic money retailers will use various loyalty programme to grab the larger share of consumer wallet .
- 5) DSS tools for visual merchandising ,pricing and campaign management –In west such tools are in use. Indian retail sector is likely to follow suit.

Conclusion

Decision Support System plays a vital role for organized retailers. There is a tremendous change in the type of DSS in retail outlet, as growth in technology results in more sophisticated DSS tools. Our study shows that even the local to national level retail outlet give at most importance to high end DSS tools, and if ROI is high companies are willing to invest heavily on support tools. Study also shows that reluctance to change and not aware about how to use specific technology also acts as stumbling block in implementation of DSS .ERP implementation is also helping companies to enhance there productivity . There is an avenue for conducting research for the study of high end DSS tools and impact assessment of usage of DSS on retail operations.

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APPENDIX-1

Discussion Guide for store managers

Store Name:

Location:

Q.1 Store Profile:

Store Name:

When opened?

Store Size(Area):

Turnover(Annual):

Average footfall(day, week, month):

Average billing(Amount):

of categories:

of SKUs:

of vendors:

Catchment area:

Q.2 Contribution of private label /total turnover-

< 10 %	10-30%	>30%

Q.3 Has this store implemented ERP package? Yes : No:

Q.4 Store Format:

Departmental store	Category special store	Discount store	Hypermarket	Super market

Q.5 For operational decisions listed below, what kind of decision support system do you use?

	Sales forecasting	Inventory management	Visual Merchandizing	Addition of new skus	Campaign management	Inbound logistics	Other
Functional area							
Type of DSS used							
IT /SW Tools							
Time taken to implement DSS							

Q.6 Do you use DSS for specific SKUs or for all? If specific then how many SKUs? What kind of collaboration, support you needed for which kind of DSS application? (Please elaborate)

Q.7 What problems did you face in implementing DSS-?

- System integration problems (please elaborate)
- Manpower problems
- Tracking problems
- Breakdowns due to power problems
- Collaboration and co-ordination problems
- Any other, please specify:

Q.8 What benefits do you perceive in using DSS in your operations?

- Efficient operations/ impact on business processes both internal and external- would you illustrate?
- Superior coordination
- Higher profits/greater profitability
- Diagnostic help in identifying problem areas
- High morale of employees/ what cultural impact have you observed?
- Helps create and sustain better and profitable relationships with customers.
- improving services and profits.
- Any other, please specify: