Research papers published by students in year 2019

Sr. No.	Title of the paper	Name of the author/s	Name of journal	Year of publication	ISBN/ISSN
1	A study of relationship between brand equity and industrial buying behavior	Rohan P. Dahivale & **Niranjan Kulkarni**	Ajanta	2019	2277-5730
2	Impact of corporate social responsibility on financial performance of the company - a review of L&T ltd. Ahmadnagar	Sachin Suresh Bidve & **Madhuri Kakade**	Ajanta	2019	2277-5730
3	Role of GST in Indian economy	Abhay Anant Pathak & **Ujawala Lokare**	Ajanta	2019	2277-5730
4	Expatriate management: a study of cross culture adjustment and motivators with reference to MNC's under study	Manjiri Kalyankar & **Shweta Sawale**	Ajanta	2019	2277-5730
5	A study on stress management with special reference to manufacturing sector	Priyanka Ranshing & **Aishwarya Gaikwad**	Ajanta	2019	2277-5730
6	A study of influence of social media on brand image	Rohan P. Dahivale & **Abhishek Ajay Bhonjal**	Ajanta	2019	2277-5730
7	Modification of worm assembly layout using lean manufacturing principles	Rohan Dahivale & **Aniket More**	Ajanta	2019	2277-5730

Research papers published in by students in year 2017

Sr. No.	Title of the paper	Name of the author/s	Name of journal	Year of publication	ISBN/ISSN
1	A comparative study of aggregate production planning with lowest, expected and average demands	Rohan Dahivale, Dr. Vikas Inamdar, **Suryabhan Patil**	Incubation II	2017	978-93-2457-20-4

Research papers published by students in year 2016

Sr. No.	Title of the paper	Name of the author/s	Name of journal	Year of publication	ISBN/ISSN
1	A study of work-life balance among married women employees: with reference to Pune City	**Komal Gavhave** & Dr. D. B. Bharati	Kashvi-2016 (National Conference)	2016	978-93-5158-591-6
2	A study on consumer's awareness on green banking initiatives in selected public & private sector banks with special reference to Pune city	**Rohini Gujar** & Roshna Jaid	Kashvi-2016 (National Conference)	2016	78-93-5158-591-6
3	A study of demand forecasting & capacity planning	Rohan P. Dahivale, **Vaibhav Jadhav** & Dr. Vikas Inamdar	Kashvi-2016 (National Conference)	2016	978-93-5158-591-6
4	Implementation of RIFD based patient monitoring system using cloud computing	Rohan Dahivale & **Shantanu Panhale**	Kashvi-2016 (National Conference)		978-93-5158-591-6
5	Location based services using smart city development	**Amit Dattatraya Pasalkar**, Rohan Dahivale & Dr. E. B. Khedkar	Kashvi-2016 (National Conference)	2016	978-93-5158-591-6
6	Perm & cpm: implementation in production process	Rohan Dahivale & **Sourabh Dharne**	Kashvi-2016 (National Conference)	2016	978-93-5158-591-6

7	An awareness and influence of 'Swachh Bharat Abhiyan' campaign on public intentions towards cleanliness in public places: A study with reference to Pune City	Rohan Dahivale, Dr. D. B. Bharati, **Sagar Jarande**	Research Revolution	2016	2319-300x

Research Paper Published by Students in Year 2014

Sr. No.	Title of the paper	Name of the author/s	Name of journal	Year of publication	ISBN/ISSN number
1	Inventory management with respect to spare parts availability assurance across 54 channels and mother warehouse: a case study	Rohan Dahivale & **Sagar Bhosale**	Dawn: On to a New Managemen t Yug	2014	2348-0092
2	Supply chain improvement through shift in vendor location: an analytical study in an automobile industry	Rohan P. Dahivale & **Praveen Chavan**	Chronicle of the Neville Wadia	2014	2230-9667
3	A study of 'consumer and telecom service provider's interface' in Pune city	**Tushar Funde &** Rohan P. Dahivale	Paridnya The MIBM Research Journal	2014	2547-0281 (Online ISSN) & 2347-2405 (Print ISSN)
4	Employee retention through employee engagement: study special reference with retail shop in Pune	Roshna Jaid & **Snehal Kumbhare**	Paridnya The MIBM Research Journal	2014	2547-0281 (Online ISSN) & 2347-2405 (Print ISSN)
5	Inventory control by KANBAN based pull system implementation	**Virendra Konde** & Mr. Rohan P. Dahivale	Paridnya The MIBM Research Journal	2014	2547-0281 (Online ISSN) & 2347-2405 (Print ISSN)

Inventory Management With Respect To Spare Parts Availability Assurance Across 54 Channels and Mother Warehouse: A Case Study

Rohan Dahivale
Sharadchandra Pawar Inst. Of Management
rohandahivale@rediffmail.com

Sagar Bhosale
Rajgad Inst. Of Management Research& Devpt.
sagarbhosale123@yahoo.co.in

Abstract

Inventory management of spare parts is a comprehensive study done in a vehicle manufacturing company for a period of three months. The main objective behind this research is to understand the patterns of customer requirements and to ensure the parts availability in market, which ultimately results in good vehicle sales. Besides, an attempt was made to improve parts availability across the channel. Main constraints in achieving this are accurate forecasting, dealer investments, time availability and inventory requirement planning.

The company had done a survey by employing an external agency, which selected 1046 customers out of 2000. The questions were linked to sales performance. The agency found that parts availability is a major threat to the sale of the vehicles. Customers were unhappy about parts availability leading to poor brand image and losing market share. Hence the study of parts inventory management.

In this research, secondary data has been collected from ERP reports. Critical part list has been generated using Delphi method and then FSN, VED, and HML analysis has been carried out followed by application of Plan-Do-Check-Act method. To handle dealer reservations about investment in parts, researchers found out those dealers were ready to invest up to Rs 2 lakhs only. Based on this feedback the researchers made two types of kits. One called Dealer's kit and the other kit consisting of 'Company Stock at Dealer end'. Once the kits were finalized, managers started pushing dealers and customer care managers to place timely purchase orders to ensure that parts are made available at dealer's end within one month of placing orders. This has resulted in improvement in the fulfillment of dealer's order, enhanced customer satisfaction and increase in sales.

Keywords: Inventory Management, PDCA, FSN analysis, VED analysis, HML analysis

Introduction

Parts management is an important aspect of Inventory management. Non availability of parts at the dealer level or even in the company warehouses can have serious repercussions on sales, market share, profits and image of the company. Their timely availability must be ensured but without unnecessary blockage of capital. As far as possible scientific inventory control methods must be employed to control parts as it otherwise difficult to predict which part, in what quantity and at what location will be in short supply.

In the current case dealers were hesitant to keep additional parts in their inventory as they were already saddled with a lot of non-moving inventory and did not wish to block their capital any further. On the other hand there was negative feedback from end users, compelling

action and steps that would help assure timely availability of parts.

Secondary Data: (External Agency Survey done in March 2013) Negative feedback was given by customers on 'parts availability': 30% out of 743 customers who have used machine for more than 300 days.

Negative feedback was given by customers on 'parts availability': 18% out of 303 customers who have used machine up to 90 days.

Issues	Feedback from Customers: More than 300 days (%)	Feedback from Customers: Up to 90 days (%)
Unavailability Of Spare Parts	30	18
Service Quality And TAT	19	17
Product Quality	17	15
Service Center Location Proximate	10	9
Technically Qualified Personnel	6	8
Remote Care Related	5	7
Weight Of Parts	5	7
Cost Of Spares	3	5
High Cost	2	4
Issue With Hydraulics	1	4
Space Related	1	3
Warranty/ Claim Related	1	3
Total	**100**	**100**

(Table 1: Improvement Areas in Service for Overall Customers)

Concepts

Selective inventory control is an essential part of inventory management which emphasizes on variations in methods of control of inventory. Important selective inventory control methods are:

FSN (Fast moving, Slow moving and Non-moving) **Analysis**

This classification relates to consumption pattern of parts. Items are classified into FSN on the basis of the date of receiving v/s date of issuing materials in the store.

VED (Vital, Essential and Desirable) **Analysis**

The VED analysis is done to determine the criticality of parts and their effect on production and other services. It is specially used for classification of spare parts. If a part is vital it is given 'V' classification, if it is essential, then it is given 'E' classification. If part is not so essential and alternate part can be used, the part is given 'D' classification. For 'V' parts, a large stock of inventory is generally maintained, while for 'D' parts, minimum stock is enough.

HML(High, Medium and Low) **Analysis**

HML analysis includes classification based on the per unit value of the parts. The management decides the cut off prices for the three

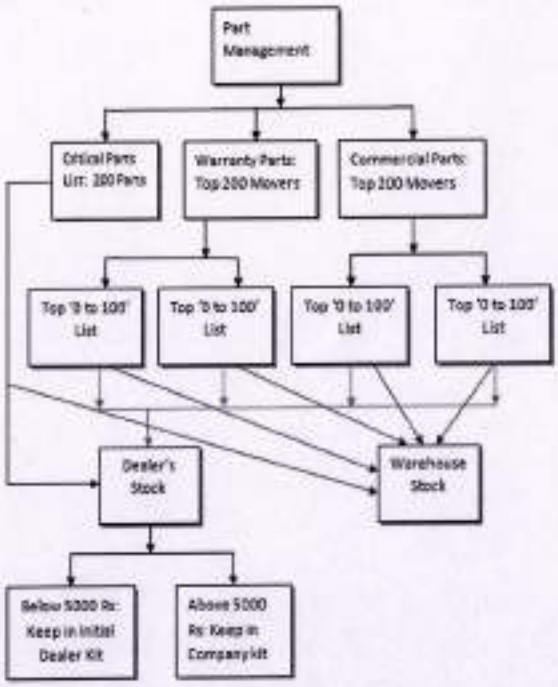
categories of parts. This analysis helps determine storage and security requirements. All High value parts are accorded greater security and tighter controls in purchases, storage and issues.

Objectives of the study

- To ensure the availability of right spare parts, at right time, at right locations across the channel.
- To ensure the availability of right spare parts, of right quantity at warehouses.
- To increase the sale of spare parts.

Data analysis and interpretation

PLAN



(Figure 1: PLAN Activity)

Critical and top fast mover parts are in consideration. Top Movers are further divided into 2 segments. Parts under warranty and commercial top 100 parts and all critical parts are kept at dealer's end. Parts costing below Rs. 5000 are kept in Initial Dealer Kit and above Rs. 5000 are kept in Company kit.

DO

I) Action for Initial Dealer Kit (IDK) at dealer and Customer Care (CC) end

1. A circular was sent to dealers informing them about IDK parts.
2. Dealer was asked to undertake Physical verifications and order for parts in shortage
3. Dealer to send the non-moving parts back to store.

II) Actions for IDK at Warehouse and procurement end

1. Max stock level enhanced for these parts and their availability ensured at Head Office
2. Store team instructed to dispatch these parts on same day of requisition
3. Store team to ensure immediate payment for parts returned

CHECK

I) Check for IDK at dealer and CC end:

1. Customer Care Managers (CCM) to prepare list of non-available parts by 23rd day of every month and place an order for the same
2. Managers have selected zone wise Auditors who will conduct Audit on every 25th day of the month.
3. From Head Office, researchers have provided simple format and procedure for Audit.

II) Check at dealer and CC end:

1. Monthly physical stock verification.

III) Check for IDK at Warehouse and procurement end:

1. Fortnightly Purchase Order report for IDK parts.
2. Store team to publish the report on FFR for every month.

ACT

Auditor and HO to make a list of remedies which will ensure that the order has been placed for 'stock out' parts.

Planning team to update the stock norms based on the requirements and to keep sufficient stock at warehouse.

Plan (Planning and Analysis for Selection of 'Critical' Spare Parts)

FSN Analysis

Based on last one year's data, researchers have classified parts as follows:

FSN Category	Movement Of Parts Considered	Number of Parts (Total 2059)
Fast moving	> 42 times for commercial parts and 7 times for warranty parts	219
Slow moving	0 to 42 times for commercial parts and 0 to 7 times for warranty parts	968
Non moving	Not moved since last 1 year	872

Table 2: FSN Analysis for Total 2059 Parts

VED Analysis Done By Using Delphi Method

VED analysis was carried out on a total 2059 parts.

Vital – This list was prepared based on inputs from Customer Care Manager and technical desk and consist of items which if not available will lead to breakdown of machine and consequent losses.

Essential – These part lists are taken from ERP system. These parts are listed under warranty parts. The non-availability of these parts do not cause breakdown, but customer may ask for immediate replacement as machine is under warranty.

Desirable – All the remaining parts are taken as desirable..

VED Category	Number of Parts(Total 2059)
VITAL	269
ESSENTIAL	150
DESIRABLE	1640

Table 3: VED Analysis for Total 2059 Parts

Final Selection of Critical Parts

After FSN and VED analysis was carried out on 2059 parts, a final list of crucial parts was prepared consisting of 'fast moving' 'vital parts' and few parts that are 'fast moving as well as vital parts'.

Researchers have selected total 418 such parts. The availability of these parts if assured would lead to elimination of a majority of customer complaints: .

FAST MOVING PARTS	149
VITAL PARTS	200
FAST MOVING and VITAL PARTS	69
TOTAL	**418**

Table 4: Final Selection of Critical Parts

Two Main Kits Generated From 418 Line Parts

After this researchers created 2 Kits, which would manage overall parts availability in the field. Researchers had considered dealer's constraints and other practical problems at their end and therefore included in their kit low value parts.

Categorized Line Parts Distribution	No of line parts
Dealer Kit	127
Company Kit At Dealer End	213
Special Kit	26
Total Number Of Line Parts Categorized	35
Common Parts	17
Final total	**418**

Table 5: Categorization of 418 Critical Parts

HML Analysis Done For the Parts Which

Need To Be Kept In Dealer Kit

Researchers have suggested following price levels for HML categorization: The parts which cost more than Rs. 30000 to be kept in special kit. Parts ranging from Rs. 5000 to Rs. 30000 to be kept as company kit while those costing less than Rs. 5000 being low valued items to be kept in dealer's stock.

Table 6: HML Analysis for Total 418 Parts		
HML Category	**Price Cut Off(In Rupees)**	**Total 418**
High	Above Rs. 30000 (15% parts from total list)	0
Medium	Rs. 5000-30000 (50% parts from total list)	51
Low	Less than Rs. 5000 (35% parts of total list)	367

DO: Format for Dealer Kit Ordering Parts

Researchers created a simple format for knowing stock levels and reordering levels at dealers' end based on Excel. The data would help them place timely purchase orders. .

Dealer Code	D26
Dealer Name	ABC
Number of machines	0
CCM Name	Mr. XYZ
Date	5/5/2013

Table 7: Format Suggested For Dealer Kit Ordering Parts		
Part Code	SF0301054	2001EAA00290N
Part Description	NUT HEX M18X2X15.8X10	BUCKET BOLT
Gross Net Dealer's Price	27.35	49.55
For 10 machines Quantity	26	23
Total value (In '000 Rupees)	711.15	1139.66
Quantity that should be available at dealer's end	20	50
Available Quantity at dealer's end	00	03
F-Full available, P - Partial Available, N - Not available	N	P
Balance / Not available Quantity	00	00
Order Number	523	416
Order Quantity(1.5.13 to 2.6.13)	2640	1890
Previous Order Pending Quantity	00	210
Total Quantity	2640	2100
Total value	72209.28	155043.89

CHECK : Audit Format

Researchers selected auditors from available man power based on their experience and Head of Department's recommendations.

These auditors were requested to audit data on below listed data/criteria and thus ensure timely ordering of parts.

Dealer Code	CFS0016	CFG0081	CFS0033
Dealer's Name	ABC Pvt. Ltd	LMN Pvt. Ltd	PQR Pvt. Ltd
Dealer's Head Office location	Muzaffarpur	Ahmedabad	Madurai
Zone	East	West	South
Date Of Audit	28/5/2013	22/5/2013	30/05/2013
Machine population	39	50	12
How many parts are fully available with dealer?	90	89	86
How many non-available parts ordered at Head Office?	30	71	52
Value of the ordered parts	0.45Lakhs	2.02 Lakhs	1.86 Lakhs
How many "non-available parts" are not ordered till time? (with reason)	41	Order placed and parts Received	55
Target date/ Remarks (If Any)			
Category	Order Placed	Order Placed	Order Placed

Table 8: Format Suggested For Audit

ACT: Dealer Kit Part Status - Follow Up Taken With Customer Care Manager

Researchers have taken follow up with auditors and dealers to complete the parts ordering. As is evident the problems were being resolved over time.

Dealer Kit Status	**10/6/13**	**In %**	**22/6/13**	**In %**	**5/7/13**	**In %**
Bank Guarantee Issue	7	12.96	6	11.11	4	7.41
Not Replied	9	16.67	7	12.96	-	0
Order to be Placed	17	31.48	9	16.67	10	18.52
Order Placed	21	38.89	32	59.26	40	74.07
Total Dealers	54	100	54	100	54	100

Table 9: Dealer Kit Part Status

Warehouse Stock Summary

Researchers ensured that parts are available at warehouse and that the inventory department has kept up to increased stock levels. Availability of parts in warehouse and timely supply to respective buyers were verified.

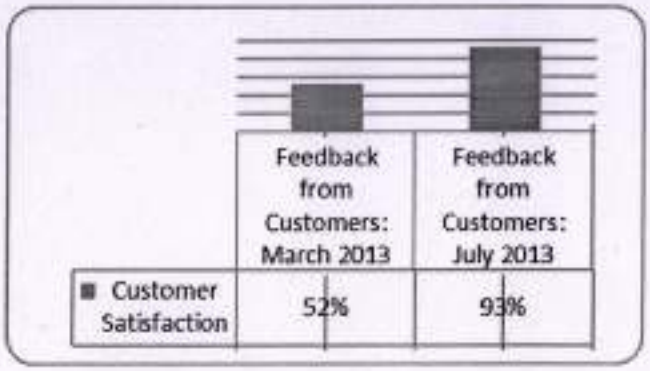
Warehouse stock summery (On Dates)	10.6.13	22.6.13	5.7.13	17.7.13
Total no of line parts	418	418	418	418
Available at Efficient stock level	253	268	298	403
Less than Efficient stock	165	150	120	15

Table 10: Warehouse Stock Summary

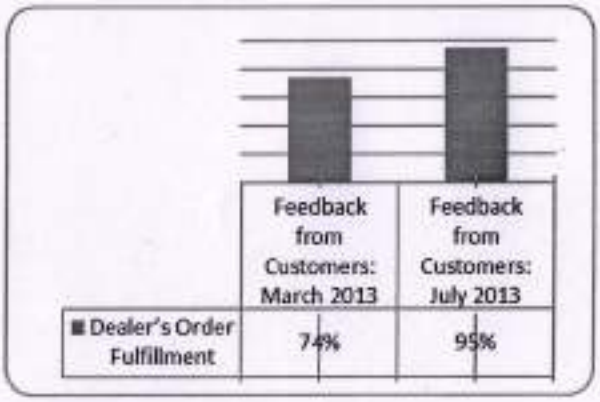
RESULTS

	Parameters	Feedback from Customers: March 2013	Feedback from Customers: July 2013
Result 1	Customer Satisfaction	52 %	93 %
Result 2	Dealer's Order Fulfillment	74 %	95 %

Source: External Agency Survey done in March 2013 and July 2013



GRAPH: Comparison of Customer Satisfaction

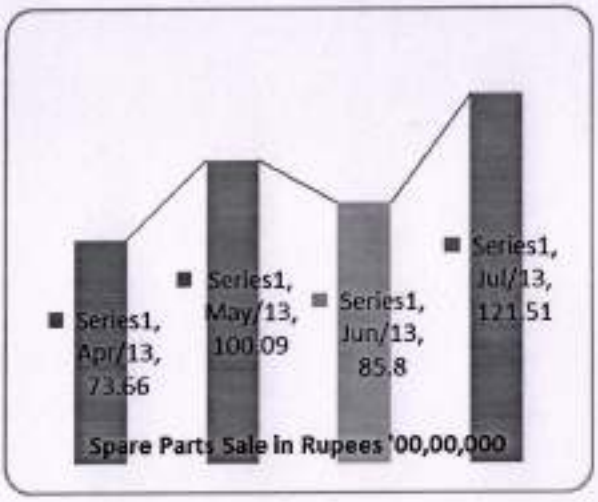


GRAPH: Comparison of Dealer's Order Fulfillment

Result:

Sr. No.	Month	Sales Revenues In Rupees (Lakhs)
1	April 2013	73.66
2	May 2013	100.09
3	June 2013	85.8
4	July 2013	121.51

Source: External Agency Survey done in March 2013 and July 2013



GRAPH IMPROVEMENT in Spare Parts Sale

company and the external agency cannot be mentioned.

Due to constraints researchers were not able to take into account all parts moving in market

A change in the trend of parts requirement will lead to non-moving inventory.

Abbreviations

BO: Back Order
CCM: Customer Care Managers
FFR: First Fill Ratio
IDK: Initial Dealer Kit
CC: Customer Care

Conclusion

1) By dealer's inventory management activity, researchers have pushed fast moving parts in dealer inventory due to which almost all customer orders are served immediately. Post research survey done in July 2013 indicates a significant improvement in customer satisfaction which has increased from 52% to 93%.

2) Researchers have controlled fast moving parts at warehouse end. Inventory department has enhanced stock levels for these parts at warehouse and have ensure that there are no 'stock out' conditions. This has resulted into 95% dealer's order fulfillment, which earlier was 74%.

3) Due to inventory management and control activity, company has given action and check plans to dealers about spare parts stock at their end, this has in turn improved their business. There is definite increase in dealer's profit as they are avoiding non availability of spare parts at their end. Company has seen drastic improvement in sales from 73.66 lakh rupees to 121.51 lakh rupees.

Limitations of the study

Although this is a true case study, on account of reasons of confidentiality, the name of the

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2014 Vol-1 Issue -1 JAN 2014

"Supply Chain Improvement Through Shift In Vendor Location: An Analytical Study In An Automobile Industry"

Author: Mr. Rohan P. Dahivale (Assistant Professor)
Co-Author: Mr. Praveen Chavan (Student)
Address: Rajgad Institute of Management Research Development, Dhankawadi, Pune

Abstract:

Supply Chain Management (SCM) is the new buzzword is today's world. The main objective of this research is to study the supply chain improvement through Value Analysis technique and to analyze its affects on entire supply chain system. SCM comprises of material flow, cash flow, information flow right from tier two suppliers to ultimate customer. In this research we have tier one supplier & Original Equipment Manufacturer (OEM) transaction only which involves material & information flow and worked on shift of supplier location.

In this research we analyze the existing supply chain transaction between supplier & OEM with considering various factors like inventory trend in number of days & also inventory in value, type of material packaging, transportation terms and freight costs. From this analysis we want to test the scope of improvement from supply chain point of view if we shift supplier location from existing one. Improving productivity is crucial factor in facing the challenge of competition & this involves driving down the cost of all aspects of business activities. Since there is maximum scope of cost reduction in the area of materials, doing the job of efficient & effective management of materials is seen as the key to higher productivity.

The expected result is improvement in the supply chain in terms of quality & quantity of raw material, inventory reduction, packaging improvement without any further investment.

Keywords: *Supply Chain Management, Inventory Management, Value Analysis*

CONCEPTS

The literature of SCM has exploded during last decade; it is a new buzz word for the current business models. SCM focuses all activities involved in production and delivering a final product or service, from the various sub-tiers to end customers, its theoretical framework originated from multi-echelon inventory models (Clark and Scarf 1960). The idea of cost-cost tradeoffs was introduced showing that the lowest total cost might be achieved by pursuing the lowest cost of each logistics process constituent. Hence, the concept of logistics integration was introduced by Bowersox (1969).

The idea of SCM is to evaluate the process of planning, implementing and controlling the movements of materials and finished goods all the way into end users.

Copra and Meindl (2001) defines the objective of SCM is to maximize the overall value of each of the chain. This is in accordance with what Siem (2005) has stated, SCM strives to get "the right things to right places at the right times for maximum profits"

OBJECTIVES OF THE STUDY

1. To study and observe the supply chain process of an automobile company.
2. To analyze the effect on shift in vendor location.
3. To analyze improvements in supply chain management.

DATA & DATA ANALYSIS: Vehicle Manufacturing Company at Chakan produces variety of models. There is in house production of vehicle engine only, rest of the child parts are procured from tier one suppliers. Being an OEM, company procure child parts, components & subassemblies needed for production from vendors & sale the finished products i.e. vehicles to customers. Hence the major functions at company, Chakan are purchasing of child parts & assembly of the same. All purchase related activities are looked after by department SCM which is considered as backbone of the plant as it ensure the right material, in the right quantities, with the right delivery (time and place), from the right source, and at the right price with the help of smooth supply of material, information & money along the whole chain right from supplier to ultimate customer. There is commodity wise procurement of child parts at company namely Casting & Forging, Electrical & Proprietary, DAC, Trim and Sheet Metal researchers have done research in electrical & proprietary commodity which encompasses parts pertaining to electrical system, ignition system, lighting system and engine assembly parts. Vendor group is having two different plants one at Nasik and another at Chakan, Pune. Vendor group keep supplying carryover parts of Chakan plant along with child parts from their old Nasik plant. Also they have established new plant at Chakan for supplying wiring harnesses to trucks. The below table furnishes details of child parts supplied by vendor. Also below table furnishes information regarding transportation of material from supplier end to Company

Part No	Description	Vendor CODE	Vendor Location
1801CA0480N	ROOF LAMP WIRING HARNESS	DV043B	Nasik
1801EA0160N	HIGH MOUNTED STOP LAMP W/H	DV043B	Nasik
0098780	EARTH CABLE -VE MDI SC/DC	DV043B	Nasik
1401CA0751N	BATTERY CABLE POSITIVE	DV043B	Nasik
1401CA0741N	BATTERY CABLE NEGATIVE	DV043B	Nasik
7905UAP00161N	WIPER MOTOR HARNESS	DV043D	Pune
7905UAP00061N	W/H GPS	DV043D	Pune
7905EAP00171N	WIRING HARNESS DBV vendor	DV043D	Pune
7905UAP00190N	WIRING FOR SPEEDO GROUND	DV043D	Pune
7905FAU00041N	W/H AIR PRESSURE TRANSDUCER	DV043D	Pune
7905UAQ00011N	W/H AIR FILTER CLOG SENSOR	DV043D	Pune
7905UAP00071N	W/H GPS Speaker	DV043D	Pune

V code	Location	INCO terms	Transporter	Approximate distance from Company
DV043B	Nasik	Ex works	Third party	250 KM
DV043D	Chakan	Free delivery	Vendor's own	5 KM

INCO terms mean (IN-warding Condition) terms:

Mainly there are two types of INCO terms. These are as follows:

- Ex works – Company picks consignment from Vendor end through third party logistics.
- Free delivery – Vendor delivers consignment to Company through his own transport.

INCO terms for vendor Nasik are Ex-works where material is delivered to Company through Transportation Company which is having collaboration with Company logistics. Vendor used to deliver material at Transportation Company's warehouse which then subsequently gets delivered to Company.

INVENTORY DATA

Inventory is commonly used to describe the goods and materials that any firm holds for certain purpose. In other word stock is commonly used to describe the capital invested in a business. Generally raw material inventory is important from purchasing point of view. Inventory management is a science primarily about specifying the shape and percentage of stocked goods. How much to carry? Is the main question in inventory management, as one has to keep this inventory value as low as possible to have less investment of capital in material at the same time one has to ensure that there will not be any production loss due to non availability of raw material with right material, at right time & right place. The generic formula for calculating this inventory value or quantity, below mentioned are considered.

- Average Daily Demand (ADD).
- In Transit Lead Time (ITLT) - in days.
- Vendor Response Time (VRT) - in days.
- Internal Lead Time (ILT) - in days.
- Safety Stock (SS) - in days.

So minimum inventory which need to be carried is calculated as:
Minimum Inventory = ADD * (VRT+ITLT+ILT+SS)
The same formula is applied for vendor Nasik, the data we found is furnished in below tables.
Inventory in no of days & value in rupees involved when parts are supplied from Nasik plant.

Part Number	Description	Supplier	SS (Days)	ITLT (Days)	ILT (Days)	VRT (Days)	Total
1401CA0 751N	Battery Cable Positive	Vendor-Nasik	7	2	1	2	12
1401CA0 741N	Battery Cable Negative	Vendor-Nasik	7	2	1	2	12
1801CA0 480N	Roof Lamp Wiring Harness	Vendor-Nasik	7	2	1	2	12
1801EA01 60N	High Mounted Stop Lamp W/H	Vendor-Nasik	7	2	1	2	12
0098780	Earth Cable -Ve Mdi Sc/Dc	Vendor-Nasik	7	2	1	2	12

Part No	Description	Supplier	Total	ADD	LL	Moving Average Price	Monthly Requirement
1401CA0751 N	Battery Cable Positive	Vendor-Nasik	12	250	3000	153.56	460680
1401CA0741 N	Battery Cable Negative	Vendor-Nasik	12	250	3000	117.44	352320
1801CA0480 N	Roof Lamp Wiring Harness	Vendor-Nasik	12	100	1200	43.85	52620
1801EA0160 N	High Mounted Stop Lamp W/H	Vendor-Nasik	12	100	1200	28.16	33792
0098780	Earth Cable -Ve Mdi Sc/Dc	Vendor-Nasik	12	100	1200	18.77	22524
						Total (Rs.)	**921936**

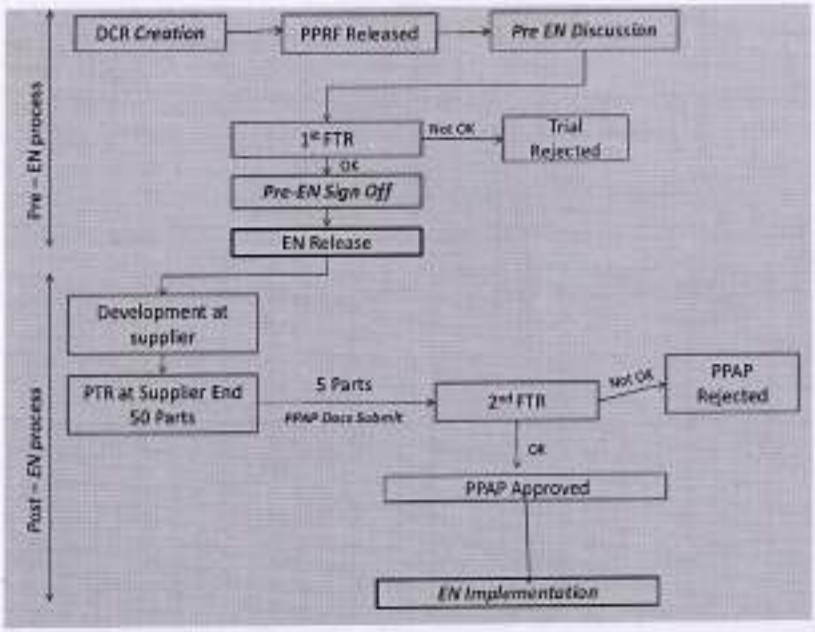
After analyzing the data researcher have following findings

- Child parts supplied by vendor Nasik plant are having more inventories, so the capital blocked in the same is more.
- More freight cost involved during the transport from Nasik to Chakan.
- Packaging of child parts is corrugated box leading to quality issue & scrap generation.
- More follow up from buyer in getting the material till it reaches the destination.
- Possibilities of material damage in transit & due to more material handling.
- Restricts more fluctuations in body trim in plan.
- Supply chain is little bit complicated because of involvement of third party logistics.
- No synchronizing at vendor end between production & supply of parts i.e. there is time lag.

In order to overcome above mentioned issues, it was necessary to find out what else would do the job. After successive discussion with other members from commodity, researchers conclude that the only option that can sort out all above mentioned problems is to start supply of all parts from vendor Chakan plant instead of vendor Nasik plant.

Researchers have discussed the entire subject with vendor with help of the concern buyer & convinced them to start supply from their Chakan plant by explaining the consequences of the switch over. They agreed in the same & acknowledge their consent.

Then there is need to follow Company standard procedure for this switch over, this process is known as EN – Engineering change Notice. Following is the process flow EN.



Terms involved in EN process are as follows:

- DCR – Design Change Request
- PPRF – Proto Parts Request Form
- FTR – Fitment Trial Run
- PTR – Production Trial Run

- PPAP – Production Part Approval Process
- PSW – Parts Submission Warrant

After successful completion of EN process, Vendor Chakan commenced supply of material to Vehicle Manufacturing Company.

Below are the major consequences observed after commencing supply from Chakan plant:

- Packaging Improvement
- Inventory reduction
- Freight cost reduction
- Less in transit damages
- Vendor code elimination

PACKAGING IMPROVEMENT

Packaging is the science, art, and technology of enclosing or protecting products for distribution, storage, sale, and use. Packaging also refers to the process of design, evaluation, and production of packages. Packaging can be described as a coordinated system of preparing goods for transport, warehousing, logistics, sale, and end use. Packaging contains, protects, preserves, transports, informs, and sells.

Vendor was supplying child parts through corrugated boxes from their Nasik plant. It is one time activity of supply through non returnable boxes as once it is used could not be recycled over period of time. From vendor Nasik to Company Chakan supply in returnable packaging is not possible because of the difficulties in movement of empty returnable bins from Company to vendor. There are chances of holding of material dispatches due to non availability of returnable bins at right time & at right location which may result into vehicle production loss which is not acceptable at all.

Consequences of these non returnable packaging are:

- It may causes quality issue to battery cables & wiring harnesses
- It is resulting into scrap generation at Company
- Unnecessary cost incurred in corrugated boxes.
- It becomes undesirable for material movement not only from Nasik to chakan but also during in plant material movement.
- Indirectly affecting environment due to tree cutting required for manufacturing of boxes

Supply from Chakan plant has reduced the considerable distance between vendor & customer from 250 km to 5 km. This has got simplified movement of empty bins from Company to vendor which is much easier task than earlier one. So vendor is supposed to commence supply of battery cables & wiring harnesses through returnable packaging i.e. Bins. They provided packaging sign off for each child part in standard format prepared by Company team, that packaging sign off was signed by vendor representative & by members of different departments viz. SCM, Production, Quality Assurance once it got finalized.

After successive completion of formalities, procurement of child parts through returnable bins started.

Change in INCO terms

Drawbacks of Ex-works are as follows:

- This system is little bit complex.
- It requires much follow up with transporter & driver by buyer which is hectic & non value adding task.
- Also cost associated in this transaction is more than actually required.
- There are possibilities of optimal utilization of vehicle capacity. Vehicles are not loaded to their full capacities.
- There is less synchronization between production at vendor end & dispatch of material resulting into time lag.

While INCO terms for vendor Chakan plant is free delivery so it is possible to overcome above mentioned drawbacks of Ex-works.
Below table furnishes the 'Transport Cost' Company is paying annually

Freight rate/ Trip	No of trips / Month	Freight cost / Month	Freight cost / Year
3000	10	30000	3,60,000

Hence, after shifting vendor to Chakan there would be saving of Rs. 360000 per year.

INVENTORY REDUCTION

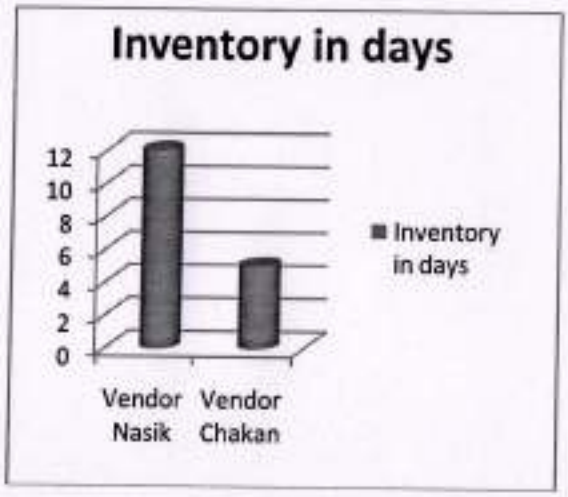
In case of vendor Chakan there is different scenario, no of days & inventory value have been reduced marginally:

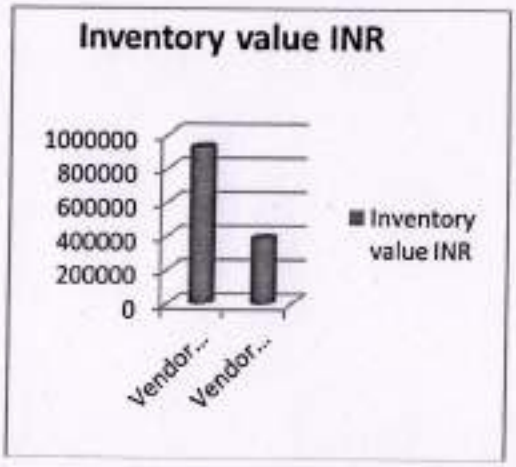
Part No	Description	Supplier	SS (days)	ITLT (days)	ILT (days)	VRT (Days)	Total
1401CA 0751N	BATTERY CABLE POSITIVE	Vendor-Pune	1.5	0.5	1	2	5
1401CA 0741N	BATTERY CABLE NEGATIVE	Vendor-Pune	1.5	0.5	1	2	5
1801CA 0480N	ROOF LAMP WIRING HARNESS	Vendor-Pune	1.5	0.5	1	2	5
1801EA0 160N	HMSL W/H	Vendor-Pune	1.5	0.5	1	2	5
0098780	EARTH CABLE -VE MDI SC/DC	Vendor-Pune	1.5	0.5	1	2	5

Part No	Description	Supplier	Total	ADD	Lower limit	MAP	Value
1401CA 0751N	BATTERY CABLE POSITIVE	vendor-Pune	5	250	1250	153.56	191950
1401CA 0741N	BATTERY CABLE NEGATIVE	vendor-Pune	5	250	1250	117.44	146800
1801CA 0480N	ROOF LAMP WIRING HARNESS	vendor-Pune	5	100	500	43.85	21925
1801EA0 160N	'HMSL W/H	vendor-Pune	5	100	500	28.16	14080
0098780	EARTH CABLE -VE MDI SC/DC	vendor-Pune	5	100	500	18.77	9385
						Total (Rs.)	**384140**

So due change in supply from Nasik to Chakan there is reduction in days as well as in inventory carrying value as shown in below table:

Supplier	Inv in days	Inventory value INR
Vendor Nasik	12	921936
Vendor Chakan	5	384140
Reduction	7	537796





FINDINGS: Once shifting supply of wiring harnesses from Nasik plant to Chakan plant there is lot of improvement in various parameters. Below table furnishes the before & after situations of parameters once commencing supply from Chakan plant:

Parameter	Before	After
Location	Nasik	Chakan
Distance	250 km	5 km
Inventory In Days	7	3
Inventory Value	Rs.921936	Rs.384140
Packaging	Corrugated	Returnable
INCO Terms	Ex-works	Free delivery
Transport Cost	Rs.3.6 lac/year	Rs. 0
In Transit Damage	More	Zero
Follow Up	More	Less

CONCLUSION The manufacturing industry in India as well as other parts of the world is witnessing the most challenging period it has experienced in recent history. However this is the time for these firms to have a close look at their operations. It is a time to initiate performance improvement programs without losing any more time. The case study shows that such initiatives will not only pay back but will help the organizations build much needed advantage over competition and retain profitability.

LIMITATIONS OF THE STUDY

1. Since this is a special activity, there was some restriction to share information.
2. Supply chain process becomes time consuming process and hence sometimes it affects on monthly targets also.
3. Before trying any method or technique proper knowledge is required otherwise wastage of raw material & other resources becomes greater cause of concern.

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"A Study of 'Consumer and Telecom Service Provider's Interface' In Pune City"

Tushar Funde, *Student, Rajgad Institute of Management Research Development, Dhankawadi, Pune. E-mail id : tusharfunde11@gmail.com*

Rohan P. Dahivale, *Assistant Professor, Rajgad Institute of Management Research Development, Dhankawadi, Pune. E-mail id : rohandahivale@rediffmail.com*

ABSTRACT

Telecom industry is a crucial factor to realize the socio-economic objectives in India. The Indian Telecom industry is passing through a vibrant transitional phase and clearly undergoing the operation of market forces of demand and supply. The booming telecom industry has been attracting large amount of investments in India & is an important tool for socio- economic development for a nation.

The numbers of subscribers are very rapidly increasing and there is need to study the interface between telecom service providers and customers. To achieve the customer satisfaction there is need to analyze the customer's perception so as there should not be gap between the telecom service provider's performance and customer's perception.

The challenges in front of telecom service providers include attracting their subscribers by providing high quality of services with competitive charges for services. With the increase in the cost of acquisition of new customers, telecom service providers continually seek new ways to gain, retain and increase their existing subscriber base.

This study investigates the interface and may provide the telecom manager useful guidelines to understand their customer behavior. The study uses a survey of Pune city customers.

Keywords : consumer behavior, telecom service provider, brand image, service delivery, network experience

OBJECTIVES OF THE STUDY

1) To investigate the 'consumer and service provider' interface.
2) To study the brand image of service providers according to consumers.
3) To analyze the service delivery experience of consumers.
4) To understand the network experience about the service providers.

RESEARCH PROBLEM/STATEMENT OF PROBLEM

The number of telecom service providers and their subscribers are rapidly increasing. There is cut throat competition among service providers to retain existing customers and gaining new ones. To achieve customer satisfaction there is need to study behavior of consumers. There is facility of 'number portability' so now customers can easily change their existing service provider. The area of study includes network experience, service delivery experience of consumers also the brand image of the existing service providers.

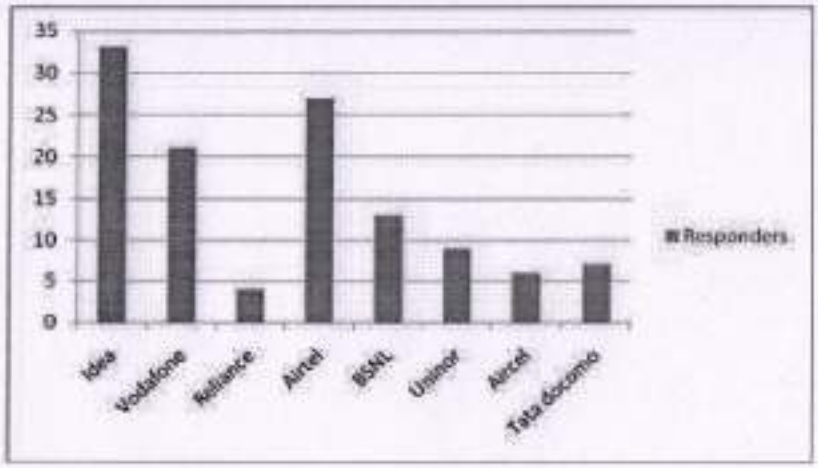
RESEARCH DESIGN

S. no.	Parameter	Description
1	Type of research	Descriptive Research
2	Research Instrument	Structured Questionnaire
3	Survey period	15 May to 15 July 2014
4	Type of product	Telecom Service
5	Universe	Population of Pune City
6	Population	All People who using telecom service in Pune City
7	Sampling Method	Non Probability Convenience Sampling
8	Primary sources	Questionnaire, observation, interview and field survey
9	Secondary sources	Book, Journal, Articles, Magazines
10	Measurable scale used	Nominal, Ordinal, Interval scale.
11	Rating Scale	Likert Scale 1 to 7 (1= Worst, 7 = Excellent)
12	Total Responders	120

DATA ANALYSIS & INTERPRETATION

Q. 1) Your Mobile Service Provider's Name.

	Idea	Vodafone	Reliance	Airtel	BSNL	Uninor	Aircel	Tata docomo	Total
Responders	33	21	4	27	13	9	6	7	120
Percentage	27.5	17.5	3.3	22.5	10.8	7.5	5.0	5.8	100 %

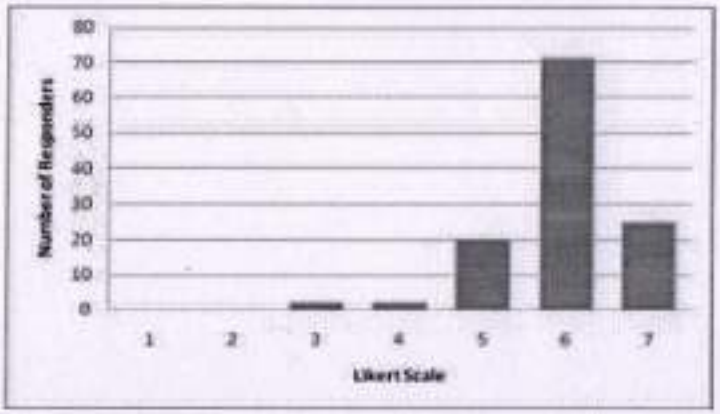


Interpretation :

In our survey we found that Idea, Ariel, Vodafone are top 3 Service Providers in Pune city.

Q. 2) Advertisements & Promotions of my operator provide true, relevant & complete information.

Scale	1	2	3	4	5	6	7	Total
Responders	0	0	2	2	20	71	25	120
Percentage	0	0	1.6	1.6	16.7	59.2	20.9	100 %

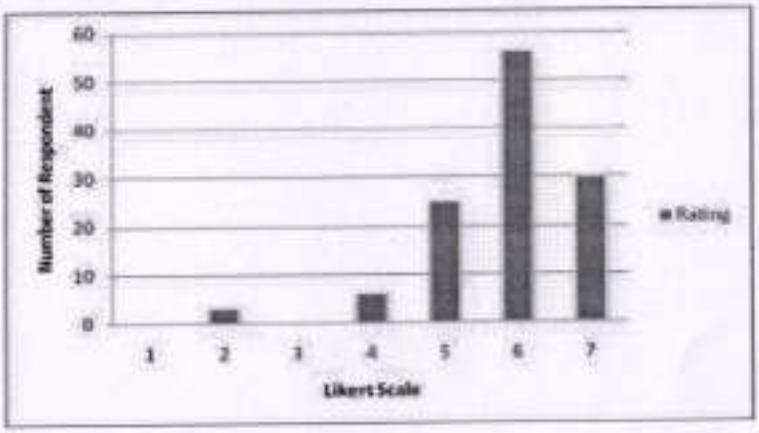


Interpretation :

Advertisement & promotion activities are important in conveying various offers and plans from operators to consumers. In our survey we found that operators provide necessary relevant information to consumers.

Q.3) My operator provides variety of offers that suits my needs.

Scale	1	2	3	4	5	6	7	Total
Responders	0	3	0	6	25	56	30	120
Percentage	0	2.5	0	5.0	20.9	46.6	25	100 %

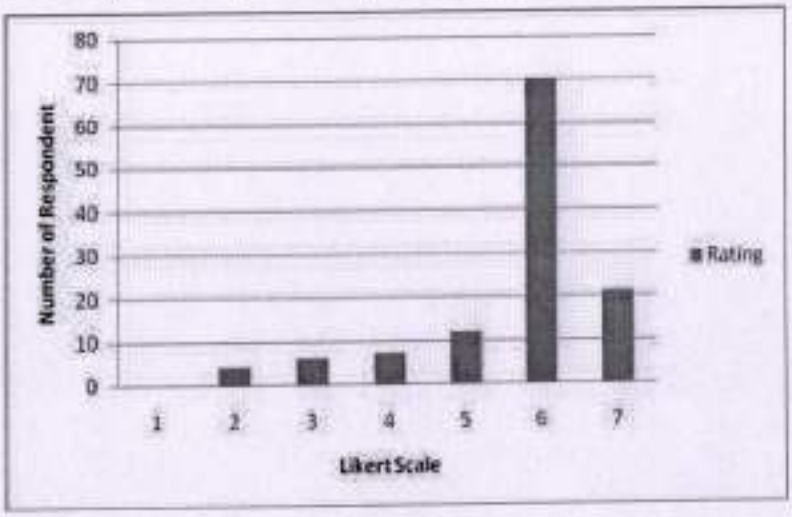


Interpretation :

All consumers' choice is special. Customer's choice is individually separate from other customer for example calling, SMS plans, and data service, night plans etc. Operator generally provides customized service. In our survey we found that the level of experience to the consumer is 'near to excellent' and at likert scale 6.

Q.4) I feel valued being associated with my operator.

Scale	1	2	3	4	5	6	7	Total
Responders	0	4	6	7	12	70	21	120
Percentage	0	3.3	5.0	5.8	10.0	58.3	17.5	100 %

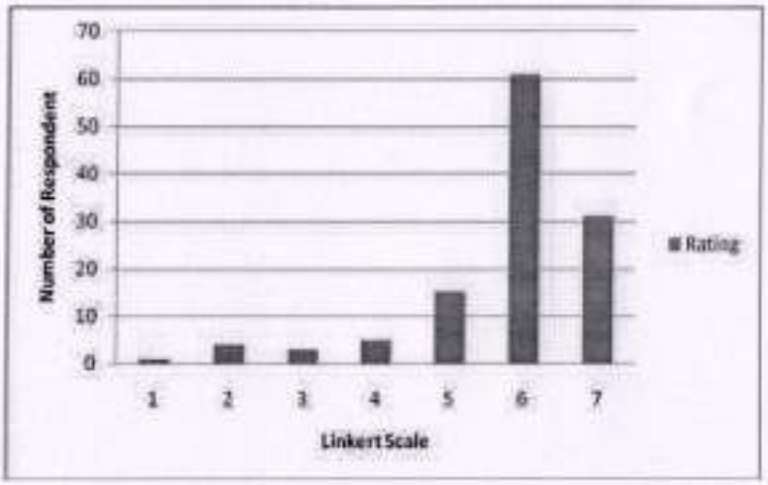


Interpretation :

Service Providers represents name or brand. There are top brands associated with results in consumer feel proud in being associated with their operators.

Q.5) My operator is trustworthy and reliable.

Scale	1	2	3	4	5	6	7	Total
Responders	1	4	3	5	15	61	31	120
Percentage	0.8	3.3	2.5	4.2	12.5	50.8	25.8	100 %

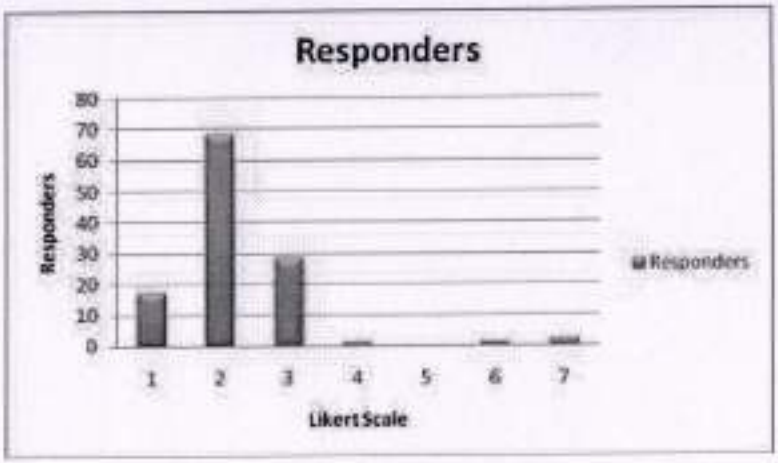


Interpretation:

Recently number portability is easily available for consumer, so they can easily switch to other service providers. In this scenario we found that most of the consumer feels that their operator is trust worthy and reliable. In our survey we found that operators are reliable and trustworthy.

Q.6) My operator is transparent and keeps me fully updated.

Scale	1	2	3	4	5	6	7	Total
Responders	17	68	28	1	0	1	2	120
Percentage	14.1	56.6	23.3	0.8	0	0.8	1.6	100 %

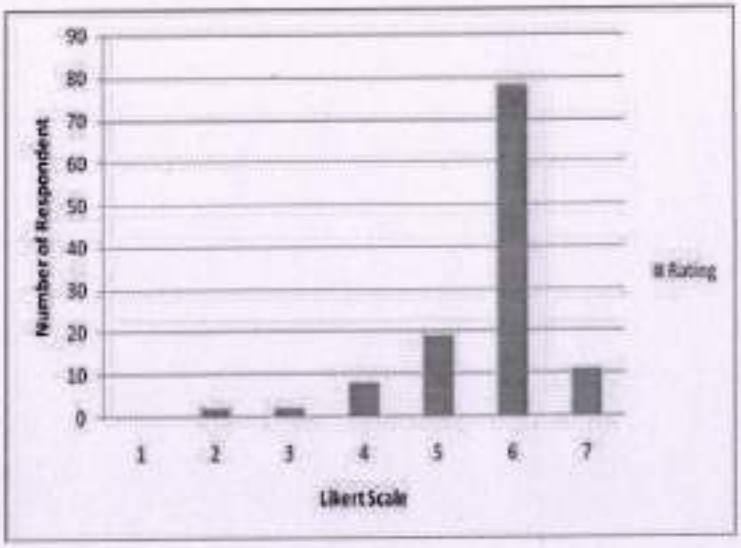


Interpretation :

There are various service offered by service providers like net pack, SMS pack etc. service providers need to be transparent in the area of new plans, bill shades and service outage etc In our survey we found that, service providers need to improve in this service and be more transparent.

Q.7) My operator consistently delivers all services.

Scale	1	2	3	4	5	6	7	Total
Responders	0	2	2	8	19	78	11	120
Percentage	0	1.6	1.6	6.6	15.8	65	9.1	100 %

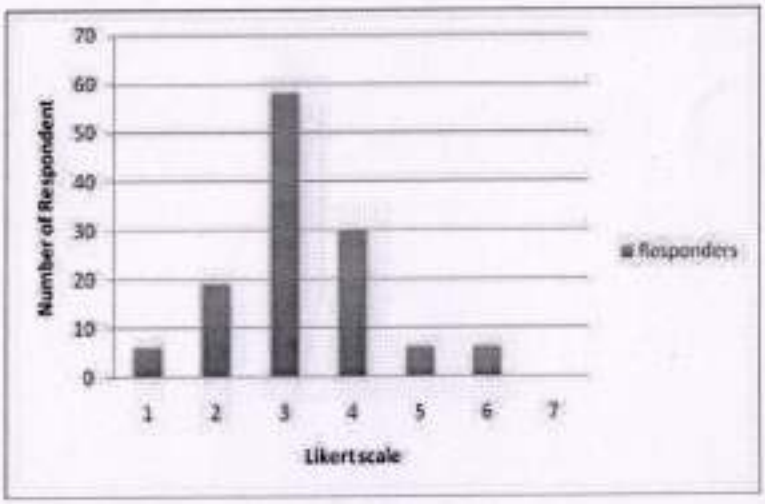


Interpretation:

Service as per commitment or as promised by provided by service

providers **Q.8) Pricing is competitive and provides value for money.**

Scale	1	2	3	4	5	6	7	Total
Responders	6	19	58	30	6	6	0	120
Percentage	5.0	15.8	48.3	25	5.0	5.0	0	100 %



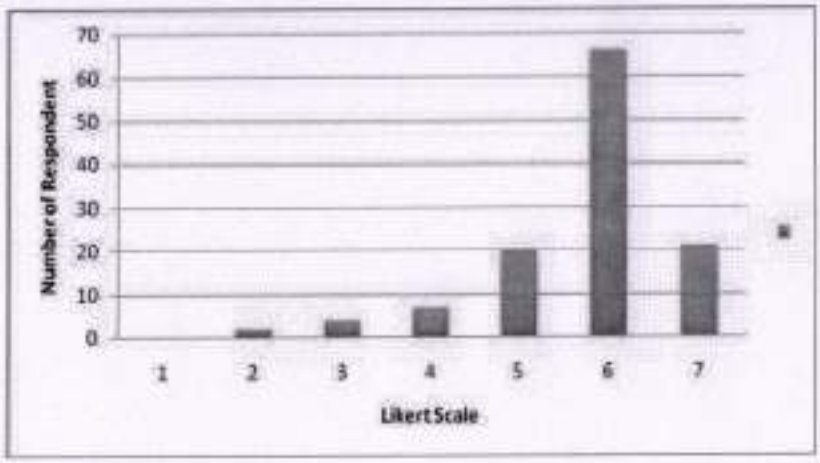
Interpretation:

There is variation in prices provided by telecom operators. Variation is there in message pack, net pack and local or STD calling rates. This price changes drastically from operator to operator.

We found that price must be competitive and should provide value for consumer money.

Q.9) My current tariff plan is clear and easy to understand.

Scale	1	2	3	4	5	6	7	Total
Responders	0	2	4	7	20	66	21	120
Percentage	0	1.6	3.3	5.8	16.7	55	17.5	100 %

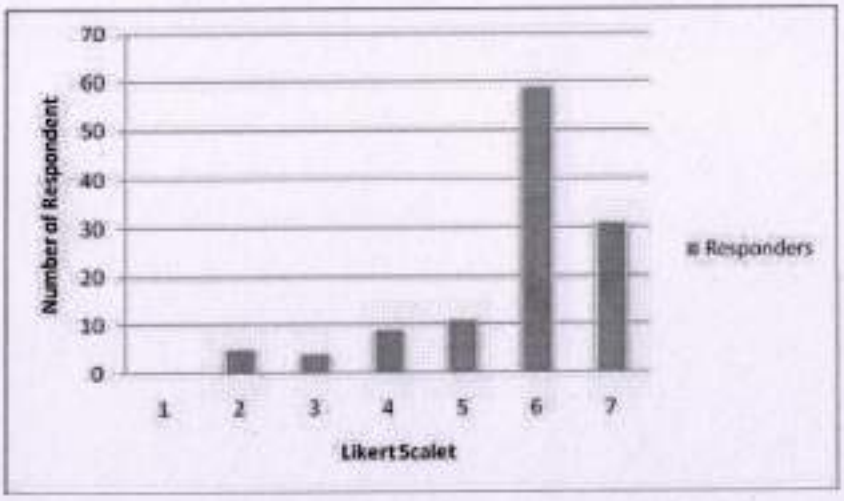


Interpretation:

Consumers are very much clear about their current tariff plan.

Q.10) My experience about 'purchase or change' in service.

Scale	1	2	3	4	5	6	7	Total
Responders	0	5	4	9	11	59	31	120
Percentage	0	4.2	3.3	7.5	9.1	49.1	25.8	100 %

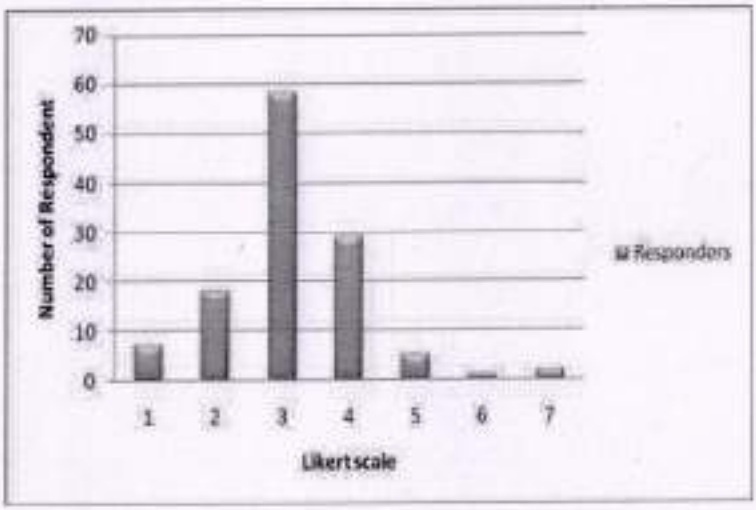


Interpretation :

Service providers are keen to sell their additional plans to consumer. In our research we found that service providers better service in purchasing or change in service.

11) My operator's quality of Indoor Network Coverage.

Scale	1	2	3	4	5	6	7	Total
Responders	7	18	58	29	5	1	2	120
Percentage	5.8	15	48.3	24.1	4.2	0.8	1.6	100 %

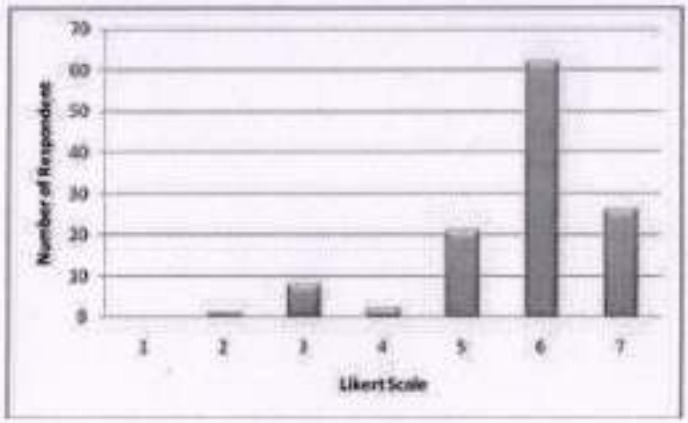


Interpretation:

There is scope of improvement in quality of indoor network coverage as we found that service providers are lacking in this area of service.

Q.12) My operator's quality of Outdoor Network Coverage and also while travelling or roaming.

Scale	1	2	3	4	5	6	7	Total
Responders	0	1	8	2	21	62	26	120
Percentage	0	0.8	6.6	1.6	17.5	51.6	21.6	100 %

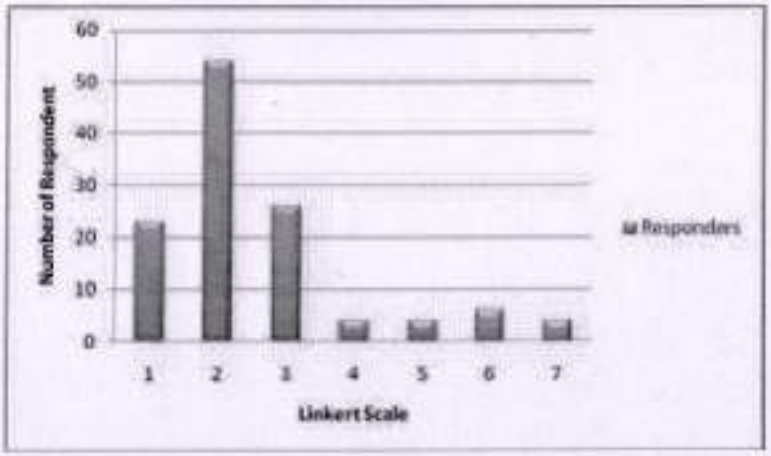


Interpretation :

In our survey we found that, consumer are happy about the operator's quality of outdoor network coverage.

Q.13) Call Connectivity Experience.

Scale	1	2	3	4	5	6	7	Total
Responders	23	54	26	4	4	6	4	120
Percentage	19.1	45	21.6	3.3	3.3	5.0	3.3	100 %

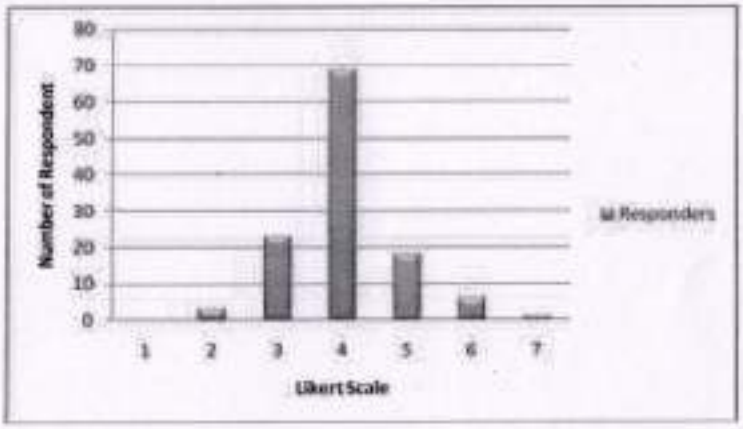


Interpretation :

Many times consumers face problem like long time to connect, frequent beeps while trying to dial etc. this also includes people period like New Year's event or festival days. We found that there is need to improve in this area.

Q.14) Call Quality Experience.

Scale	1	2	3	4	5	6	7	Total
Responders	0	3	23	69	18	6	1	120
Percentage	0	2.5	19.1	57.5	15	5.0	0.8	100 %

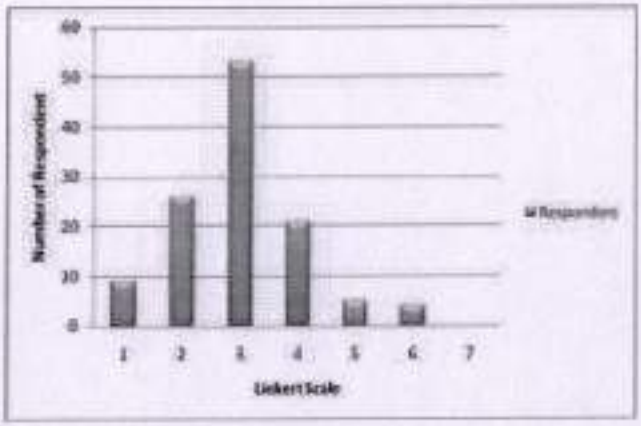


Interpretation:

Consumer do face problem like no call drops, free from disturbance, echo, cross connections etc. we found that consumer are not that much satisfactory about call quality provided by operator.

Q.15) Data service experience.

Scale	1	2	3	4	5	6	7	Total
Responders	9	26	53	21	5	4	0	120
Percentage	7.5	21.6	44.1	17.5	4.2	3.3	0	100 %

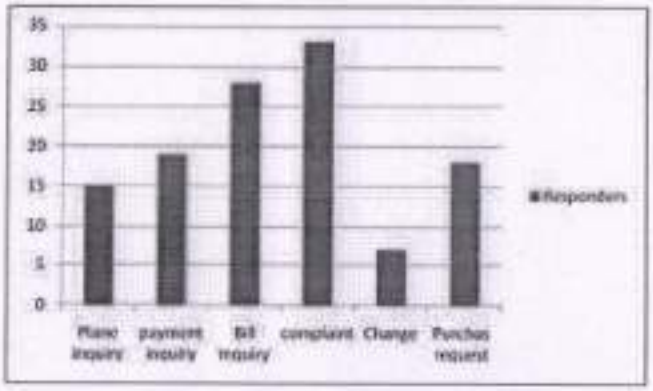


Interpretation:

Especially in evening and Saturday, many of the consumers do face problem like lack of connectivity in call and internet service.

Q.16) In Past 6 months, for which issue(s) have you contacted the operator?

	1	2	3	4	5	6	Total
	Plane inquiry	payment inquiry	Bill inquiry	complaint	Change	Purchas request	
Responders	15	19	28	33	7	18	120
Percentage	12.5	15.8	23.3	27.5	5.8	15	100 %

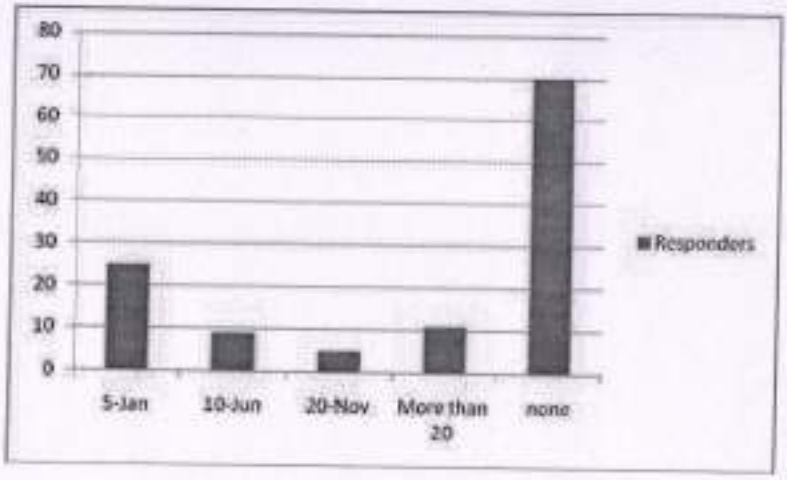


Interpretation:

In our survey we found that, maximum times consumer are contacting their operators for the purpose of their complaints followed by Bill enquiry.

Q.17) How many times have you approached your operator in the past 6 months?

	1	2	3	4	5	Total
	1-5	6-10	11-20	More than 20	none	
Responders	25	9	5	11	70	120
Percentage	20.8	7.5	4.2	9.1	58.3	100 %

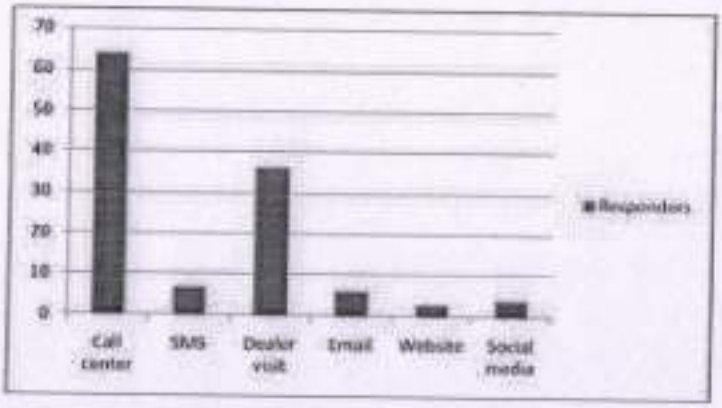


Interpretation:

In our survey we found that frequency of consumer of meting their operator is less.

Q.18) Which chanel (s) you used?

	1	2	3	4	5	6	Total
	Call center	SMS	Dealer visit	Email	Website	Social media	
Responders	64	7	36	6	3	4	120
Percentage	53.3	5.8	30	5.0	2.5	3.3	100 %

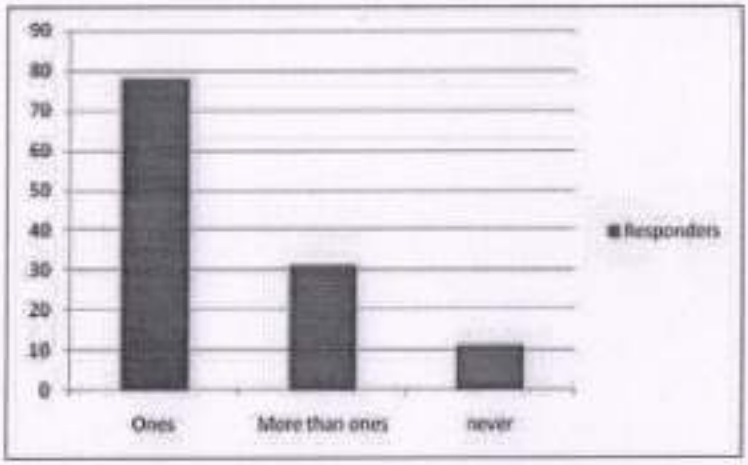


Interpretation :

Consumer are using the option of call center to contact their operator followed store and dealer visit and SMS.

Q.19) How many times did you need to follow up for the same issue?

Scale	1	2	3	Total
	Ones	More than ones	never	
Responders	78	31	11	120
Percentage	65	25.8	9.1	100 %

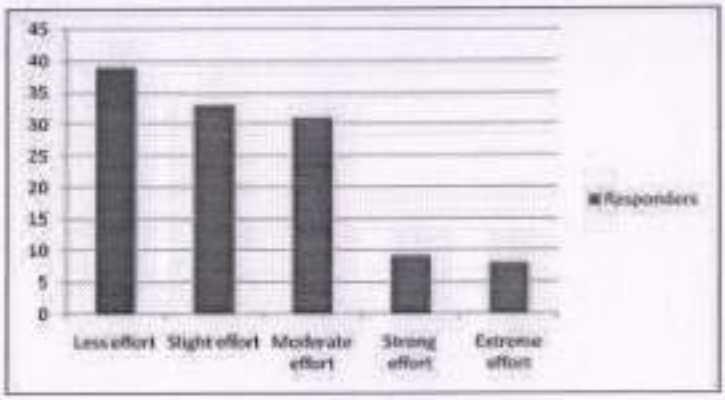


Interpretation :

For the follow up purpose of the same issue or complain, consumer experience is good as maximum customers need to contact just once.

Q.20) On a scale of 1-5, rates the amount of effort you had to put to solve your queries/ requests/complaints.

Scale	1	2	3	4	5	Total
	Less effort	Slight effort	Moderate effort	Strong effort	Extreme effort	
Responders	39	33	31	9	8	120
Percentage	32.5	27.5	25.8	7.5	6.6	100 %

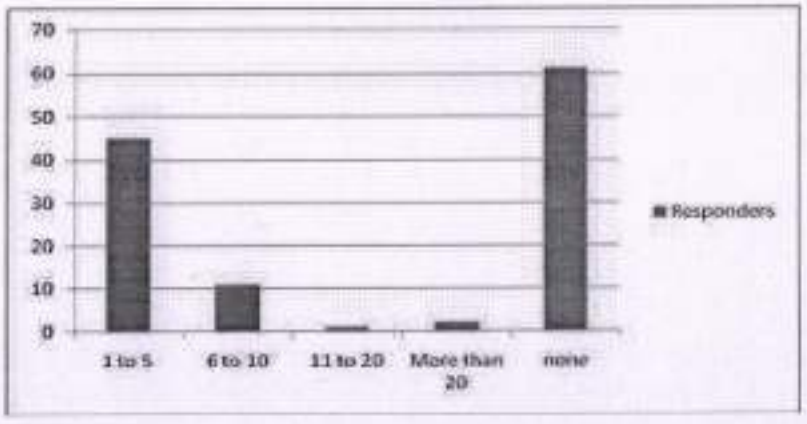


Interpretation:

The amount of effort consumer put to solve their queries or requests are slight effort.

Q.21) How many times you have raised complaints in past 6 months ?

	1	2	3	4	5	Total
	1-5	6-10	11-20	More than 20	none	
Responders	45	11	1	2	61	120
Percentage	37.5	9.1	0.8	1.6	50.8	100 %

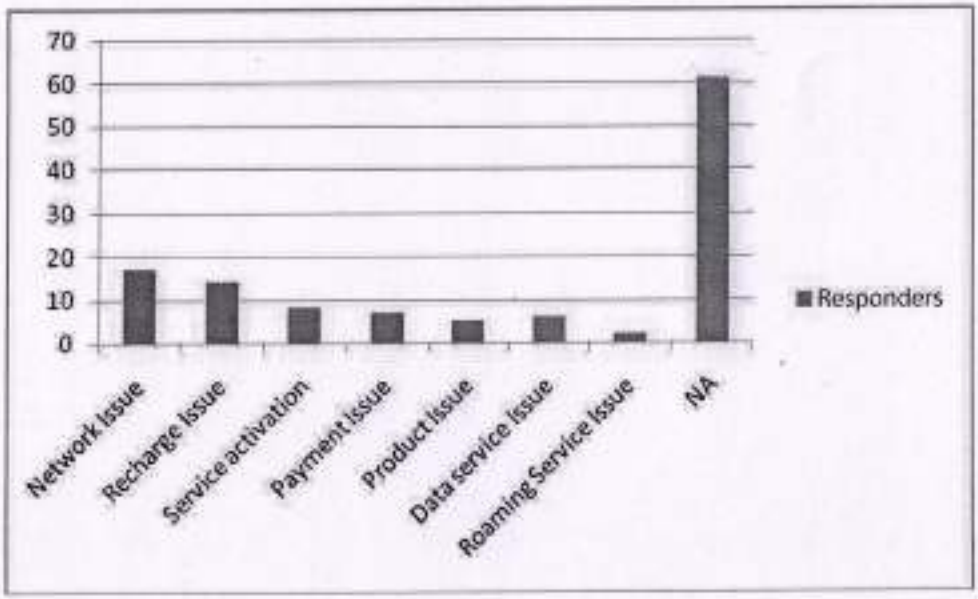


Interpretation :

In our survey we found that many consumers have never raised any sort of complaints in past 6 months.

Q.22) Regarding which issue you raised the complaint?

	1	2	3	4	5	6	7	8	Total
	Network Issue	Recharge Issue	Service activation	Payment Issue	Product Issue	Data service Issue	Roaming Service Issue	NA	
Responders	17	14	8	7	5	6	2	61	120
Percentage	14.1	11.66	6.6	5.8	4.2	5.0	1.6	50.8	100 %

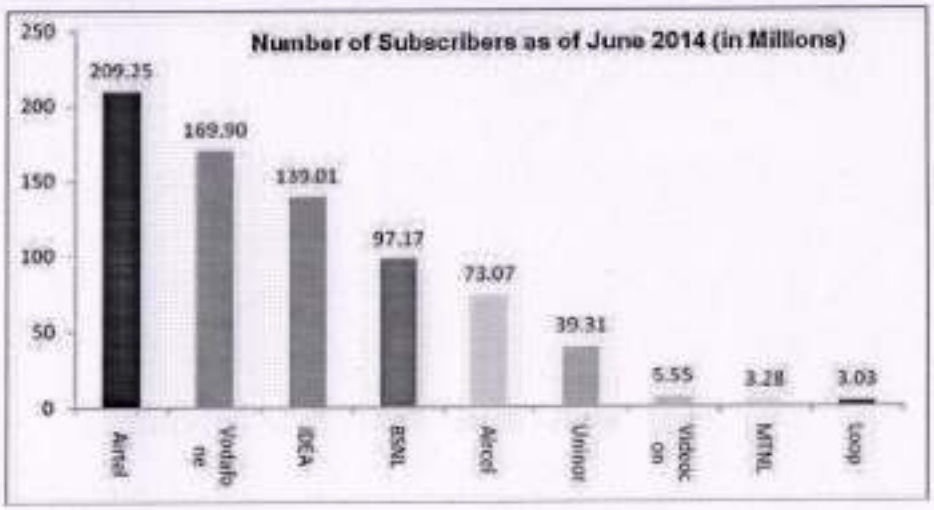


Interpretation:

Nearly 50% of the total responders never raised the complaints till date.

Maximum complaints raised by consumers are about network issues followed by recharge issues and service activation issues.

SECONDARY DATA INTERPRETATION



[Source: http://www.coai.com/]

Interpretation:

GSM SUBSCRIBER FIGURES JUNE-2014	
1	Total number of GSM Subscribers as of June 2014 - **739.57 million**
2	The GSM Subscribers increased by **6.48 million** in June 2014 (**0.88% increased** from previous month)
3	Maximum GSM Subscribers - **Airtel - 209.25 million**

CONCLUSION

This study investigates the interface between consumer and telecom service providers. Researchers found that the brand image of the service providers is near to excellent according to consumer's perception as maximum customers feel proud and feel that their operators are reliable and trustworthy. There is scope of improvement in call connectivity and service delivery area in pricing, indoor network coverage, call quality, connectivity & data service.

LIMITATIONS OF THE STUDY

1) Time period of the report was limited for two month only.

2) Some data is confidential due to we cannot take actual figure for to do proper research study.

3) The sample of 120 respondents may constitute a limitation due to its smallest nature of sample.

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Employee Retention through Employee Engagement : Study Special reference with Retail Shoppe in Pune

Prof. Roshna Jaid, *Assistant Professor, Rajgad Institute of Management Research & Development, Pune, Maharashtra, E.mail id : roshna.jaid@gmail.com*

Miss. Snehal Kumbhare *- MBA 2nd Year Student, E-mail id : sadawartesnehal@gmail.com*

Abstract

Employee engagement leads to commitment and psychological attachment and reflects in the form of high retention (low attrition) of employees. The level of engagement in employees can be enhanced by identifying its drivers (influential factors) and work on them. For the purpose of study, the drivers of the employee engagement are identified and hypotheses have been formulated. The relationship between employee retention and employee engagement is examined from the response to separate questionnaires from 100 employees from different retails Shoppe like DMart, CROMA, BigBazar, Central Malls, Season Mall who are chosen based on random sampling.

The object of research paper study is to finds that the employee retention can be improved by increasing the level of employee engagement and focusing on few non-financial drivers. Practical implication of this study is the retention can be improved without financial expenditure when there are economic constraints. Organizations can design good practices in the light of findings to retain their best talent (highly skilled and specialized human resources) without much financial burden.

Key words : Employee Engagement, Employee Retention, Employee Satisfaction, Financial Benefits, Non Financial Benefits.

INTRODUCTION

Background of Study :

We've seen it happen many times. An organization that provides top wages and benefits loses a great employee to a competitor for no apparent reason. Of course, some employee turnover is to be expected, but if your company is truly engaging your employees, there is no good reason for the unexpected loss of quality staff members. Many companies already know that wages and

benefits are important to employees, but compensation alone is not enough to keep the highly skilled, motivated and experienced workforce your business needs to excel.

About Retails :

Retail is the sale of goods and services from individuals or businesses to the end-user. Retailers are part of an integrated system called the supply chain. A retailer purchases goods or products in large quantities from manufacturers directly or through a wholesale, and then sells smaller quantities to the consumer for a profit. Retailing can be done in either fixed locations like stores or markets, door-to-door or by delivery. In the 2000s, an increasing amount of retailing is done using online websites, electronic payment, and then delivered via a courier or via other services.

Retailing includes subordinated services, such as delivery. The term "retailer" is also applied where a service provider services the needs of a large number of individuals, such as for the public. Shops may be on residential streets, streets with few or no houses or in a shopping mall. Shopping streets may be for pedestrians only.

Retail Sector & Pune :

Pune has come a long way in recent times. The thriving IT market, automobile boom, strong student community, rising service sector, robust estate market and increase in the number of professionals have led to a sharp expansion of the city. This rapid urbanization, and the new demands of Pune's global citizens, has led to a rise in the number of malls, offering high-end brands.

The retail sector in Pune was earlier confined to a few markets which were unorganized, chaotic and crowded. In the last two years, however, the rise in modern retail outlets can be seen across the city. Koregaon Park Plaza, Inorbit, Phoenix Market City, Pulse, Kumar Pacific Mall and Amanora Town Center are the new ones that have joined the already existing malls like Jewel Square, S.G.S Mall, Mariplex, Central and Ishanya, to name a few. In a scenario where five malls have opened in the last one year. In Pune city presently 24/25 malls are available in different city of Pune.

Objective of Research :

To Understand, Analyze & find that the employee retention can be improved by increasing the level of employee engagement and focusing on few non-financial drivers.

REVIEW OF LITERATURE

Employee engagement-Meaning & definitions Employee engagement is defined as employees' willingness and ability to help their company succeed, largely by providing discretionary effort on sustainable basis (Perrin's Global work study, 2003). Another study (Scarlett survey) views it as measureable degree of an employees' emotional attachment to their job, colleagues and

organization that profoundly influences their willingness to learn and perform at work. The employee engagement is an emergent working condition and a positive cognitive, emotional and behavioral state directed toward organizational outcomes (Shuck & Wollard, 2009). Gallup (which is known as authority on employee engagement) relates employee engagement to a positive employee's emotional attachment and employee's commitment (Demovsek D, 2008). Thus the employee engagement make employees emotionally bonded to their organization and tend them to become passionate about their work and hence results in improvement of employee retention.

Impact on Employee Retention Employees are assets of any organization and organization always try to avoid losing the key performers. Employee retention can be defined differently as per the context of its usage. It can be represented mathematically in percentage such as retention level is 87%, which means the organization could keep its 87% of its employees with them for a specified period which is normally taken as a year. In other context employee retention refers to the ability of an organization to retain its employees. In this case the employee retention is considered as a strategy, based on the effort by which the organization attempts to retain the employees. Employee retention involves taking measures to encourage employees to remain in the organization for the maximum period. Whereas retention management has become major source of competitive advantage in the modern rapidly globalizing business world (Vaiman, 2008).Randenbush, S.W. &Bryk, A.S. (2002) argue that the employee turnover affects family, organization and society. It brings stress in family as relocation of family and employee will become necessary and financially related issues in connection with the relocation also arise. For organization it may lead to disruption of service to clients and dissatisfaction of employees due to extra workload. When an employee with critical skills to support the society leaves the organization, it impacts the society badly. With retention a growing concern for organizations, understanding the factors that drive commitment and loyalty among employees is essential for managing increasing turnover risk in the months and years ahead, (Mark Royal, Hay Group News release, 2011). As per Corporate Leadership Council report (2008) the highly engaged organizations have the potential to reduce the staff turnover by 87%, the disengaged are four times more likely leave organization than average employees. It was observed that the employee retention can be improved by improving employee engagement.

Role of HRM in Employee Engagement & Retention:

Human Resources Management (HRM) play important role in retention of employees.HR managers have to identify the right retention strategies which their employees perceive to be effective. Good HRM practices in the area of compensation, reward, career development, supervisors' support, and culture and work environment can help to improve retention (Meyer

and Allan, 1991; Solomon, 1992; Snell and Dean, 1992). Many organizations now utilize extensive range of human resources management factors that influence employee commitment and retention (Stein, 2000; Beck, 2001; Clarke, 2001; Parker and Wright, 2001). According to them, the factors which influence employee retention are work environment, supervisor support, organization image, employee value match, remuneration, reward and recognition, employees' career development etc.Hay Group study(2011) has identified five key factors that differentiate "stayers" (those committed to the company more than two years) from "leavers" (those planning to leave in two years or less).The key factors are confidence in the organization and leadership, room for employees to grow, a fair exchange between organization and employee, an environment for success and authority and influence. Factors influencing engagement include work environment, rewards and recognition, career development, supervisor/leader, compensation/remuneration, and employee- organization value match.

Work environment is considered one of the most important factors in the employee retention (Zeytinoglu & Denton, 2005) and people strive to work and to stay in those corporations that provide good and positive work environment (Ramlal 2003). Study by Wiesenberger and Associates (1993) suggest that employees' view regarding organization is strongly concerned to their relationship with supervisor. Recognition from bosses, team members, co-workers and customers enhance the loyalty and retention. Several studies have highlighted the linkage between rewards and employee retention and it has been the most I important factor for attracting and retaining the talent (Williams and Dreher, 1992; Watson Wyatt, 1999; Willis, 2000; Tower Perrin, 2003; Mercer, 2003). Career development is also very important for employee retention. Employees are keen to advance in their career, organization desires to strengthen their bond with employees must spend on development of employees (Hall & Moss, 1988). Study by Prince (2005)also advocates that to gain competitive advantage, organization requires talented and productive employees and the latter need career development to enhance and cultivate their competencies.Freyermuth (2007) also recommends that the organization must groom leaders to support the employees and to build the work environment where workers want to stay.

RESEARCH METHODOLOGY :

- Scope, Sample & Methodology:

Area of the study is a different Retail Malls / Shopee available in Pune area. In Pune 24 total malls / shopee's available, whose employee strength is near about 3000. Only 5 malls were targeted for the research & from that I selected 100 employees, distributed questionnaire to all got reply from 78 employees. Sample size took for this research is 78. Random sampling technique used for research.

- Research period : From 2010 – 2013 for evaluating Non financial drivers .
- Drivers of the Employee Engagement:

Initially few drivers of employee engagement were identified with help of literature review. Based on the impact analysis, followings drivers were shortlisted like drivers of engagement, communication, rewards & recognition, compensation and benefits, manager/supervisor relationship, career development, teamwork, role clarity, work environment and work life balance, action plans are drawn and implemented only for drivers with non-financial support. Many action plans were implemented on these drivers - communication, rewards & recognition, manager and supervisor relationship, teamwork, role clarity and work environment, few of them to mention are on spot appreciations, green cards, silver cards, star of the month, town hall meetings, skip level meetings, one to one meetings, CEO'monthly meetings, open door policy, department steering committee meetings, internal coordination committees, team activities, team building exercises, reporting channel streamlining, induction of HR buddy to each department to improve the HR process and HR helpdesk etc. Questionnaires were classified in four groups.

- Hypotheses :

HO (Null Hypothesis) : There is no significant impact of implementation of action plans for non-financial drivers to the level of engagement of employees.

H1 : There is significant improvement in the level of employee retention due to increase in the level of employee engagement.

The hypotheses have been tested and the results have been arrived at.

- Data sources: Quantitative research technique is used and this study is descriptive in nature. Both primary and secondary data have been used in this study. Primary data was collected through a questionnaire and secondary data was collected from documentation section of each department.
- Instrument Development

Even though a number of instruments are available that measure the retention level of employees, they are not customized for retails sector. After long discussions with senior management team and representatives from shops, following are influencing factors of retention were identified. Then in response to exit interview questions the influencing factors were analyzed. Based on analyses discussions the final questionnaire for evaluating the retention was formed. As the focus of the study is on improving retention through employee engagement, the level of employee engagement was also evaluated.

- Reliability Test : The data collected thorough questionnaire was subjected to reliability test, which shown strong internal consistency among the given items and hence satisfied.
- Data collection After preparing both questionnaires the data was collected for finding out the initial level of engagement and retention of employees. After this asked, to the manager of the retail shopee to implement many engagement boosting activities. Manager was implemented on the drivers which don't require financial support. The hypotheses have been formulated for the purpose of the study. The result was studied in comparison with original scores and the hypotheses were tested.
- Data analysis Initial levels of engagement of employees were evaluated from the response given by the 100 employees from 5 malls to the questionnaire which contains four parts. Similarly the initial levels of employee retention also were evaluated by administrating another questionnaire with four parts. Change in the level of employee engagement was evaluated after implementing the action plans decided in the expert and management meeting. Paired t-test used to test the hypotheses.
- Limitation of the study is that it has not gone in details to analyze the impact of each drivers separately, instead had a holistic approach.

RESULTS AND DISCUSSIONS

The data obtained is subjected to statistical testing and the results obtained were analyzed and the discussions follow.

Impact of Morale boost plans /non-financial drivers on employee engagement H1: There is no significant impact of implementation of action plans for non-financial drivers to the level of engagement of employees. From the following data analysis & interpretation, null hypothesis H1 rejected. This means, there is a significant association or impact of the implemented action plans to the level of engagement of employees. Even though the implemented action plans were only addressed the non-financial drivers of employee engagement it has made a significant improvement in the level of employee engagement.

Impact of the employee engagement on employee retention. H1: There is significant improvement in the level of employee retention due to increase in the level of employee engagement (H1).

1. FIGURES AND TABLES

Table 1: Drivers of Employee Engagement

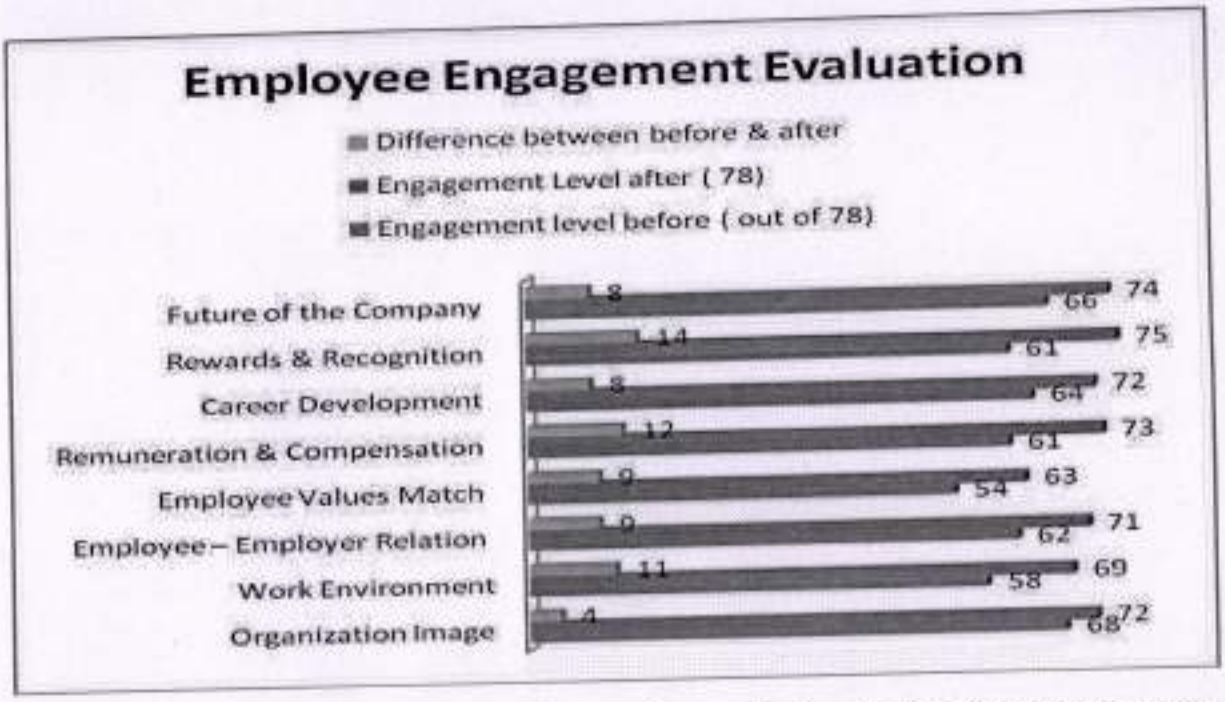
Sr. No	Main Drivers	Selected Drivers
1	Communication	Communication
2	Rewards & Recognition	Rewards & Recognition
3	Manager / Supervisor relationship	Manager / Supervisor Relationship
4	Teamwork	Teamwork
5	Role Clarity	Role Clarity
6	Work Environment	Work Environment
7	Career Development	
8	Compensation & Benefits	
9	Work Life Balance	

Table No 2 : Main Factors influencing Retention of Employee

Sr. No	Influencing Factors (By Different Studies)	Selected Factors (Based on Exit Interview)
1	Organization Image	Organization Image
2	Employee – Organization Value Match	Work Environment
3	Remuneration & Compensation	Employee – Employer Relation
4	Work Environment	Employee Values Match
5	Relation between Manager & Employee	Remuneration & Compensation
6	Career Development	Career Development
7	Job Security	Rewards & Recognition
8	Decision taking power	Future of the Company
9	Flexi timing	
10	Work Content	
11	Personal Factors	
12	Future of the Company	

Table. No 3: Employee Engagement Level Evaluation

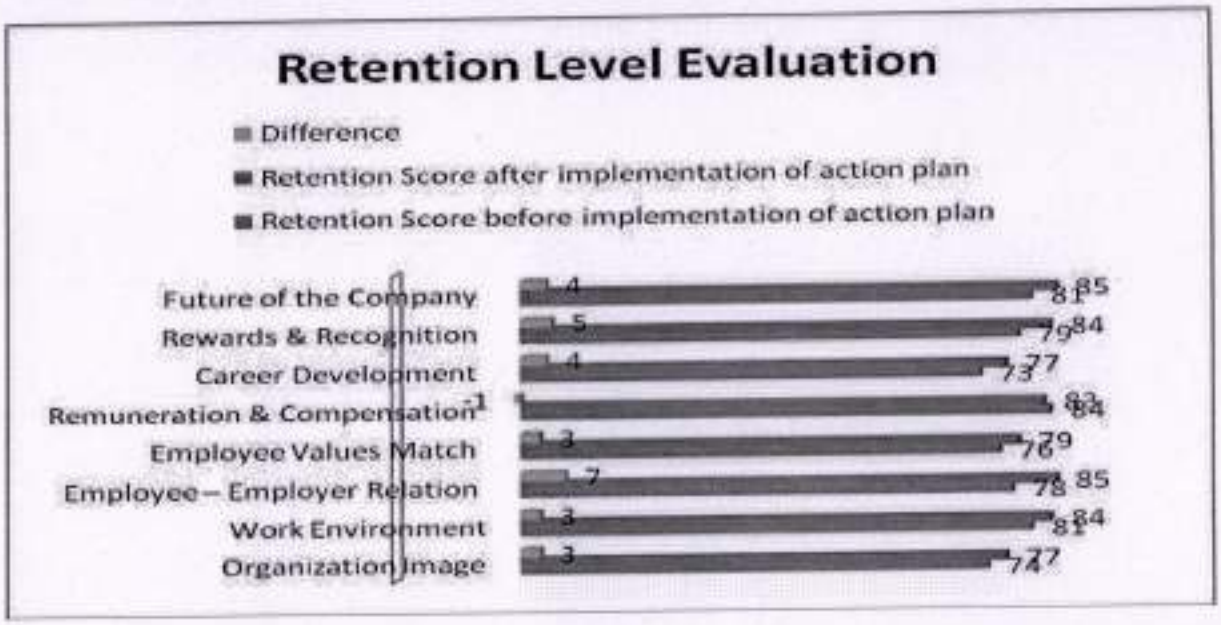
Sr. No	Engagement Factors	Engagement level before (out of 78)	Engagement Level after (78)	Difference between before & after
1	Organization Image	68	72	4
2	Work Environment	58	69	11
3	Employee – Employer Relation	62	71	9
4	Employee Values Match	54	63	9
5	Remuneration & Compensation	61	73	12
6	Career Development	64	72	8
7	Rewards & Recognition	61	75	14
8	Future of the Company	66	74	8



Interpretation : Table shows that the difference between before & after of engagement level of employee for their retention evaluation.

Table No. 4 Retention Level Evaluation (Employee Perceived Score)

Sr. No	Engagement Factors	Retention Score before implementation of action plan	Retention Score after implementation of action plan	Difference
1	Organization Image	74	77	3
2	Work Environment	81	84	3
3	Employee – Employer Relation	78	85	7
4	Employee Values Match	76	79	3
5	Remuneration & Compensation	84	83	-1
6	Career Development	73	77	4
7	Rewards & Recognition	79	84	5
8	Future of the Company	81	85	4



Interpretation : Above table shows that the retention scores – employee perceived before & after implementation of action plan for the employees.

CONCLUSION

The present study conducted in light of high employee turnover rate in retail sector. The study brought out how employee retention can be improved by improving engagement level of employees. There was statistical evidence in the study to confirm that the employee retention can be improved by addressing non-financial drivers of employee engagement like communication, recognition, employee-employer relationship, work environment, future of the company, career development Therefore it has given a very positive message that even without financial expenditure the employee engagement and hence retention can be improved. As such the future studies can be conducted in two directions: one to find the impact of non-financial drivers on the employee engagement and retention and the other to include financial drivers of employee engagement and have an elaborate study of the impact of engagement drivers on employee engagement and retention.

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Pune-411005

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Inventory Control by Kanban Based Pull System Implementation

Virendra Konde, *Student, Rajgad Institute of Management Research Development, Dhankawadi, Pune. E-mail : vir96konde@rediffmail.com*

Mr. Rohan P. Dahivale, *Assistant Professor, Rajgad Institute of Management Research Development, Dhankawadi, Pune*

ABSTRACT

Business organizations today are facing great competitions & challenges as the economy is growing. The growth & the downfall of the company depend upon how it uses its resources. There is need to control Inventory and Smooth Flow of Information.

In manufacturing industry, almost 60% of total cost is constituted by the inventory. Kanban system which is one of the tools to maintain inventory at optimum level is used in various man-ufacturing organizations. This system helps in fulfilling all the above mentioned characters, that is, it provides smooth flow of information, 'pull technology' in production (material movement) and hence helps in maintaining the inventory at optimum level.

Kanban system has been implemented and observed firstly for 8O43 piston line, which is re-lated to power steering product. Also after gaining positive results from the system at 8O43 piston line as well as positive feedback from top management, there was a time to give training to other cell leaders and operators related to different part's cells to implement the system suc-cessfully there and for achieving positive results in return.

Keywords : KANBAN, Pull system, Inventory Control, Kanban Cards]

CONCEPTS

Kanban is a scheduling system for lean and just-in-time(JIT) production. Kanban is a system to control the logistical chain from a production point of view, and is not an inventory control system.

Kanban was developed by 'Taiichi Ohno', at Toyota, as a system to improve and maintain a high level of production. Kanban is one method through which JIT is achieved.

Kanban became an effective tool in support of running a production system as a whole and it proved to be an excellent way for promoting improvement. Problem areas were highlighted by reducing the number of kanban in circulation. One of the main benefits of Kanban is to establish

an upper limit to the work in progress inventory, avoiding overloading of the manufacturing system.

Kanban Origins

In the late 1940s, Toyota started studying supermarkets with the idea of applying shelf-stocking techniques to the factory floor. In a supermarket, customers obtain the required quantity of product at the required time; no more and no less. Furthermore, the supermarket stocks only what it expects to sell within a given time frame, and customers take only what they need, since future supply is assured.

Taiichi Ohno stated that to be effective, kanban must follow strict rules of use. Toyota, for example, has six simple rules, and close monitoring of these rules is a never-ending task, thereby ensuring that the Kanban does what is required.

Kanban Cards

Kanban cards are a key component of kanban and they signal the need to move materials within a production facility or to move materials from an outside supplier in to the production facility. The kanban card is, in effect, a message that signals depletion of product, parts or inventory that, when received, the kanban will trigger the replenishment of that product, part or inventory.

Consumption therefore drives demand for more production, and demand for more products is signaled by the kanban card. Kanban cards therefore help create a demand-driven system. Kan-ban cards, in keeping with the principles of kanban, simply convey the need for more materials. A red card lying in an empty parts cart conveys that more parts are needed.

The Contents of the Kanban

Kanban	Part Name	Part Number	Kanban Number
Work Station (From)	Work Station (To)	Quantity	Container Number

No. of Kanban cards = (Expected demand during lead time + Safety stock) / Size of the container.

The Kanban system is flexible system. This system can be easily adjusted to fit the current way. The system is operating because card sets can be easily added or removed from the system. If the workers find that are not able to consistently replenish the item on time, an additional con-tainer of material with the accompanying Kanban cards can be added. If it is found that excess containers of material accumulate, card sets can be easily removed thus reducing the amount of inventory.

Advantages of Using the Kanban System

- Flexibility
- Focus on continuous delivery
- Reduction of wasted work / wasted time
- Increased productivity & efficiency
- Team members' ability to focus

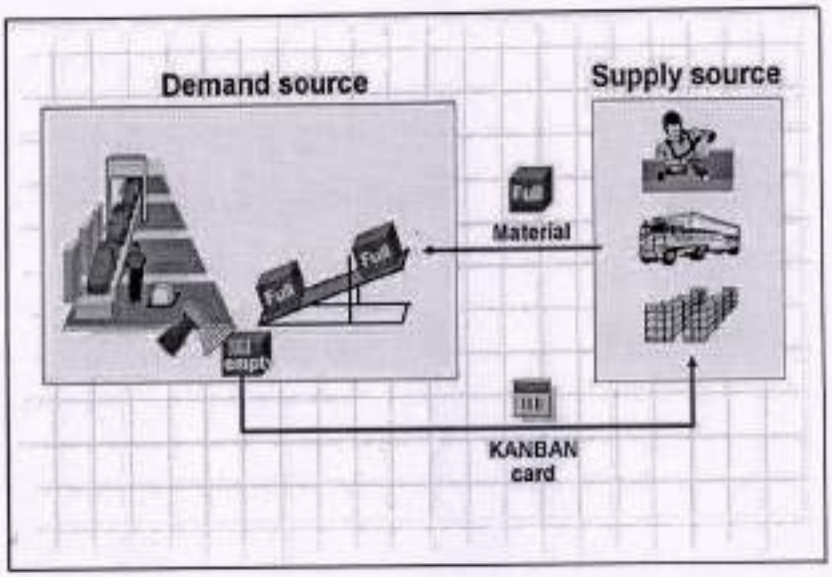

Figure: Operating principle of Kanban System

OBJECTIVES OF THE STUDY

1. To study the current inventory & production system.
2. To design the Kanban card for flow of information.
3. To implement Kanban card to convert present push system of material movement into pull system.

RESEARCH PROBLEM AREA

Economists and business analysts alike have long recognized the central role played by swings in inventory accumulation during cyclical contractions in the economy. The importance of understanding inventory behavior cannot be overstated when analyzing business cycles. Although it is easy to see how inventories are important in cyclical fluctuations, other aspects of inventory behavior remain poorly understood. For example, to what extent have firms lived up to much

lauded "just-in-time" inventory management techniques? If inventory holdings truly have fall-en, what does this imply about the role of inventories in future cyclical fluctuations?

One such tool used to control the inventories is Kanban system. The Japanese refer to Kanban as a simple parts-movement system that depends on cards and boxes/containers to take parts from one work station to another on a production line.

The essence of the Kanban concept is that a preceding process should only deliver components to the succeeding process as and when they are needed, so that there is no storage in the produc-tion area. Within this system, workstations/store along production lines only produce/deliver desired components when they receive a card's signal and an empty container, indicating that more parts are needed in production. In case of line interruptions, each work-station will only produce enough components to fill the container and then stop. In addition, Kanban limits the amount of inventory in the process by acting as an authorization to produce more inventories.

Since Kanban is a chain process in which orders flow from one process to another, the produc-tion or deliveries of components are pulled to the production line, in contrast to the traditional forecast oriented method where parts are pushed to the line. An attempt has been made in this project to understand and implement the Kanban system in inventory control so as to make sure that components flow as well as information flow should be smooth to meet the requirements of the shop floor. So to overcome these problems, this topic was selected.

RESEARCH DESIGN

S N	Parameter	Description
1	Type of research	Analytical Research
2	Nature of Research	Quantitative
3	Sources of data collection	Primary and Secondary sources
4	Primary sources	Observation, interview and field survey
5	Secondary sources	Books, Journals, Articles, Magazines Company Data Sheets
6	Data interpretation	Mathematical Calculations using formulas.

DATA ANALYSIS & INTERPRETATION

Before implementing the Kanban system, study of their present manufacturing process, ma-chines, the types of parts they were manufacturing, the types of parts they were outsourcing etc was done. At initial stage, researchers concentrated on a product called power steering. For

manufacturing power steering cellular manufacturing process was being used. Cellular Manufacturing is based on the principle of Group Technology.

By studying present scenario of production, researchers found that the technology they were using for movement of components or materials or parts was Push technology. It means that the moment parts were manufactured by the preceding process; they were got delivered to suc-ceeding process. Though there was no requirement of parts at succeeding process, it was got delivered by the preceding process.

The safety inventory they were maintaining at shop floor is quite less than that of heat treatment plant, because heat treatment plant was having operations like Hardening and Carburizing, which were having cycle time of 12hours and 36 hours respectively.

Due to such long cycle time they were keeping large amount of safety stock for heat treatment plant. As it has already said that the number of inventory they were maintaining was totally flexible quantity and it was varying according to the monthly predicted demand of product (e.g. 8O43 power steering) by customers.

To Design the Kanban Card for Smooth Flow of Information

Use of Pull technology principle and card mechanism of Kanban system will help in overcoming the above mentioned weaknesses of the production practices in the company. Hence, researchers started to implement Kanban system for power steering. As it has mentioned that power steering is a combination of various parts like, piston, nut, worm, end cover etc. research-ers took first piston part for implementation of Kanban system because of its complex nature of manufacturing.

Also, there were three types of piston which are 8O43 piston, MO33 piston and 8O33 piston. Because of the more demand, 8O43 piston was selected. Initial stage of implementing the Kan-ban system, is to design a Kanban card. With the help of discussion with respective cell leader, production manager, guide, etc. researchers designed Kanban cards. The type of Kanban system which was going to implement there, was Double Kanban system. In that, the Withdrawal Kan-ban card was denoted by yellow sheet while the Production Kanban card was denoted by green sheet. Two different colors were used to avoid the confusion of users of the cards. The contents which are shown in Kanban card was according to need and requirement of a cell leader, oper-ators and casuals.

Followings are the meaning of terms used in Kanban card.

1. Production Kanban card: This card should be at output side of process. (Items ready for Dispatch)
2. Withdrawal Kanban card: This card should be at input side of process. (Items to be received for Processing)

3. Item Description and part number denotes the information about type of component which is to be kept in that particular trolley. e. g. Piston 8O43
4. One trolley should contain one card.
5. Subsequent process should pull material from preceding process with exchange of cards. e. g. Hardening process should pull trolley of piston from piston carburizing cell.
6. Trolley Capacity: This is the optimum number of quantity of component which should be kept in one particular trolley, to which that card is attached. Trolley should not contain less than or more than that particular trolley capacity. e. g. For 8O43 Piston, Trolley Capacity = 48
7. Location From: This is the location from where information is sent.
8. Location To: This is the location at which information is collected. e. g. Information (Kan-ban card) is sent from Heat Treatment Plant (Hardening) and is collected at Piston Carbu-rized Cell.
9. Issue Number: This is denoted by 'a/b'. Where 'a' is the number of that particular card and 'b' is the total number of cards. e. g. 1/3

The formula for calculating number of Kanban is as bellow:

$$K = DL (1+S) / C$$

Where, K = Number of Kanban

D = Demand per hour

L = Lead Time or Replenishment Time of Kanban in

hours S = Safety Requirement (10%)

C = Size of Container or Kanban (According to Thumb Rule, it is nearly 10% of Daily Demand)

As it has mentioned that according to Thumb Rule, the size of container is nearly 10% of daily demand, but by considering the material carrying cost and the holding cost, it was not possible to take it as 10% of daily demand so we took it as an optimum balancing figure. The size of container we had considered was depending on the size and weight of parts which had to trans-fer as well as the distance between two cells where the parts had to transfer. As hardening and carburizing operations were at heat treatment plant, also some cells related to power steering product were at plant-2 while some were at plant-3, so taking size of container as only 10% of daily demand for long distance movement of parts was quite uneconomical. Hence, after

considering all these things, we found the final container sizes for each type of parts of power steering like, piston, sector shaft, worm, nut, etc.

As a sample example, the calculation of number of Kanban as well as inventory, according to formula given above, for 8O43 hard piston cell is shown bellow. e. g. Lead time for 8O43 hard piston = 3.55 hours

Demand per hour = 10

Size of container = 48

Safety requirement = 10%

Number of Kanban = [10 * 3.55 * (1 + 0.1)] / 48

= 0.79 / hour

= 0.79 * 16 / day

= 12.60 ~ 13 / day

Also, total inventory per day = 13 * 48

= 624 / day

Though, there were some variances in between practically implemented and theoretically calculated values of inventory, they had kept practically implemented value of inventory as it is for most of the parts. That was, because to satisfy or to give response to customer's sudden require-ment. So, that excess inventory was coming under the opportunity cost. While they had also done some slight changes in practically implemented inventory value for some parts, according to their theoretically calculated value.

To Implement Kanban Card to Convert Present Push System of Material Movement into Pull System

After designing of Kanban card, the actual working or use of that card was started. Dual Kanban system was implemented for 8O43 piston cell. In this system two types of card were used, first one is Production Kanban card and second one is Withdrawal Kanban card. Production Kanban card should be use at the output side, while Withdrawal Kanban card should be use at the input side of cell. As there was a cellular manufacturing used for the production in the company, the pistons were also produced through different cells.

The production of 8O43 piston was through following stages.

1. Raw materials for 8O43 piston were supplied from store to soft piston cell.
2. After processing at soft piston cell, the outputs of that cell were supplied to heat treatment

plant for carburizing operation. The cycle time for carburizing operation was 36 hours.

3. In this stage, carburized materials or parts were supplied to piston carburized cell for further processing.
4. After getting processed, they were supplied to again heat treatment plant for hardening operation. The cycle time for hardening operation was 12 hours.
5. This is the stage of production of finished 8O43 piston, where hardened materials or parts from heat treatment plant were supplied to piston hard cell for some final processing.
6. At this stage, the finished 8O43 hard pistons were supplied to washing and after getting washed, they were ready for final assembly operation.
7. After assembling of different parts at assembly section, the final power steering products were supplied to dispatch area, where products were ready for dispatching.

These all are the key stages which should be considered while implementation of Kanban system. As Kanban system is based on a Pull technology, researchers started implementing it from dispatch to assembly, assembly to hard piston cell, hard piston cell to heat treatment plant (hardening), heat treatment plant to piston carburized cell, piston carburized cell to again heat treatment plant (carburizing), heat treatment plant to soft piston cell & from soft piston cell to store at the end.

First researchers found the total number of models of power steering which were stored at dispatch for final delivery to the customers and collected information about the inventory or stocks they were maintaining for each of the total models. After discussing with the guide and supervisor of dispatch area, researchers divide total stocks into optimum batch size or lot size. This was the size which should be considered as trolley capacity in Kanban card. The inventory or stocks of a final product which they were maintaining at dispatch area was based on their practical experiences and monthly predicted demand of products from customers. It was not based on any theoretical formula of calculating number of Kanban which researchers have already mentioned above.

Following table gives information about types of power steering model, total stocks of respective model, trolley capacity and number of Kanban cards for each model.

Model Name	Total Stock Quantity	Trolley Capacity	Number of Kanban cards
8O43-302	700	100	7
8O43-303	160	40	4
8O43-806	300	60	5
8O43-169	300	60	5
8O43-294	100	25	4
8O43-215	100	25	4
8O43-810	50	25	2
8O43-820	30	15	2
8O43-821	30	15	2
8O43-805	30	15	2
8O43-804	30	15	2
8O43-826	200	50	4
8O43-244	50	25	2

Note : The figures of Total Stock Quantity which have given in the table was based on the monthly predicted demand plan in the month of July.

The figures of stock quantity, trolley capacity and number of Kanban which have mentioned above are totally flexible and it will be adjusted according to the customer demands.

After deciding optimum trolley capacity and number of Kanban for each of the model of power steering, researcher handed over the calculated number of Kanban cards to supervisor of dispatch area and also explained the whole procedure to him about the functioning of this system. As per the functioning of Pull technology, dispatch area (succeeding process) had to pull material from assembly area (preceding process), so researcher also explained the each and every terms and functioning of Kanban system to assembly in-charge, supervisor and operators.

The inventory they were keeping for each cell was as follows:

- For Hard Piston Cell,

  8O43 RH = 144 & 8O43 LH = 96

- For Piston Carburized Cell,

  8O43 RH = 144 & 8O43LH = 96

- For Soft Piston Cell,

  8O43 = 144

- For Hardening Cell of Heat Treatment

  Plant, 8O43 RH = 288 & 8O43 LH = 192

- For Carburizing Cell of Heat Treatment

  Plant, 8O43 = 288

With the help of quantity of inventories which have been mentioned above & capacity of trolley, I calculated the numbers of Kanban for each respective cell and for each sub-types of 8O43 piston were calculated. These are given bellow:

- For Hard Piston Cell,

  8O43 RH = 3 & 8O43 LH = 2

- For Piston Carburized Cell,

  8O43 RH = 3 & 8O43LH = 2

- For Soft Piston Cell,

  8O43 = 3

- For Hardening Cell of Heat Treatment

  Plant, 8O43 RH = 6 & 8O43 LH = 4

- For Carburizing Cell of Heat Treatment

  Plant, 8O43 = 6

Note: The mentioned data of number of Kanban cards and stock of inventory was according to the monthly predicted demand in the month of July.

After implementing the Kanban system from dispatch to assembly and from assembly to machining centre according to the Pull technology, it was implemented to store. In that, raw materials or parts were pulled by the soft piston cell from store. Here also, the functioning of

the system was explained to each and every concerned person. While implementing Kanban system from soft piston cell to store, withdrawal card was kept at the input side of cell, which was giving withdrawing signal to store. For that optimum number of Kanban cards and trolley capacity was decided by discussing with guide and concerned persons which was 2 and 40 respectively.

Dispatch	Kanban card (for different models)
↓	
Assembly	Withdrawal Kanban (Trolley C. = 48)
↓	
Hard Piston Cell (output)	Production Kanban (Trolley C. =48)
↓	
Hard Piston Cell (input)	Withdrawal Kanban (Trolley C. = 48)
↓	
Hardening (output)	Production Kanban (Trolley C. =48)
↓	
Hardening (input)	Withdrawal Kanban (Trolley C. = 48)
↓	
Carburized Piston Cell (output)	Production Kanban (Trolley C. =48)
↓	
Carburized Piston Cell (input)	Withdrawal Kanban (Trolley C. = 48)
↓	
Carburizing (output)	Production Kanban (Trolley C. =48)
↓	
Carburizing (input)	Withdrawal Kanban (Trolley C. = 48)
↓	
Soft piston Cell (output)	Production Kanban (Trolley C. =48)
Soft Piston Cell (input)	Withdrawal Kanban (Trolley C. = 40)
↓	
Store (Raw material)	

FINDINGS

There was a difference in practically implemented and theoretically calculated inventory value of different parts of power steering. They have kept practically implemented value of inventory

as it is for most of the parts of power steering as an opportunity cost to satisfy customer's sudden demands.

They have made few changes in inventory value of some parts of power steering according to the theoretically calculated value of the inventory.

RECOMMENDATIONS

1. A more detail study should be done to avoid excess of inventory in order to reduce opportunity cost.
2. As implementation has been done for the piston cell, it can be implemented to other cells as well as for the other products.
3. Implementation of basic Kanban card has been done but in future, Barcode Kanban card system can be implemented to control system centrally.

LIMITATIONS OF THE STUDY

1. Since this is a special activity, there was some restriction to share information.
2. Calculation of daily demand for different components on every production line is a time consuming process.
3. In some cases concern person did not give desired information at the required time and also some were showing resistance to change. It means, they were opposing to the implementation of new system.
4. Kanban system includes the manual intervention & hence it is not possible to eliminate the errors 100%.

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THE PROCESS MODEL FOR SHOP FLOOR MANAGEMENT IMPLEMENTATION MEASURING PROCESS EFFECTIVENESS USING CPM/PERT IN A TEXTILE INDUSTRY

Mr. Rohan P. Dahivale
Assistant Professor
Rajgad Institute of Management Research Development, Dhankawadi, Pune
Contact No.: 9921613494 Email Id: rohandahivale@rediffmail.com

Mr. Sagar Kondekar
Student (MBA) Rajgad Institute of Management Research Development, Dhankawadi, Pune
Contact No.: 8380015427 Email Id.: sagar_kondekar@rediffmail.com

ABSTRACT

Growing effects of the globalization in various business environments affects the textile manufacturing industry in terms of effective and yet efficient overall performance. Therefore in planning, scheduling and controlling a production activities, project management techniques (PERT and CPM) are used.

Researchers have shown here some simple Operations Research methods those can be used to achieve better performance. The methods of CPM and PERT were used to analyze a production process.

The objective of the paper is to eradicate wasteful space and thereby fixed costs associated with them. Further, secondary objectives are to form a more effective and logical layout with a better flow of materials, more robust manufacture by repositioning of functions and machinery, and an increased focus on value added activities.

This paper defines the scope of shop floor management, to sketch a basic structure in terms of an overall process reference model as well as to feature new and modified layout to improve its execution. At the end of the research, the result is expected to help to understand more the concept of CPM and PERT methods in reducing the project completion time.

Keywords: CPM, PERT, Textile Industry, Material Flow, Layout, Process Cycle Time

INTRODUCTION

The Program (or Project) Evaluation and Review Technique (PERT), is a statistical tool, commonly used in project management. PERT is designed to analyze and represent the tasks involved in completing a given project. First developed by the United States Navy in the 1950s, it is commonly used in conjunction with the critical path method (CPM).

PERT is a method to analyze the involved tasks in completing a given project, especially the time needed to complete each task, and to identify the minimum time needed to complete the total project. During project execution, however, a real-life project will never execute exactly as it was planned due to uncertainty. It can be ambiguity resulting from subjective estimates that are prone to human errors or it can be variability arising from unexpected events or risks. The main reason that PERT may provide inaccurate information about the project completion time is due to this schedule uncertainty. This inaccuracy is large enough to render such estimates as not helpful.

Critical path method (CPM) is an algorithm for scheduling a set of project activities. It is an important tool for effective project management. The critical path method (CPM) is a project modeling technique developed in the late 1950s by Morgan R. Walker of DuPont and James E. Kelley, Jr. of Remington Rand.

CPM is commonly used with all forms of projects, including construction, aerospace and defense, software development, research projects, product development, engineering, and plant maintenance, among others. Any project with interdependent activities can apply this method of mathematical analysis. Although the original CPM program and approach is no longer used, the term is generally applied to any approach used to analyze a project network logic diagram.

The essential technique for using CPM is to construct a model of the project that includes the following:

- A list of all activities required to complete the project
- The time (duration) that each activity will take to complete

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- The dependencies between the activities
- Logical end points such as milestones or deliverable items

Using these values, CPM calculates the longest path of planned activities to logical end points or to the end of the project, and the earliest and latest that each activity can start and finish without making the project longer. This process determines which activities are "critical" (i.e., on the longest path) and which have "total float" (i.e., can be delayed without making the project longer). In project management, a critical path is the sequence of project network activities which add up to the longest overall duration. This determines the shortest time possible to complete the project. Any delay of an activity on the critical path directly impacts the planned project completion date. A project can have several, parallel, near critical paths. An additional parallel path through the network with the total durations shorter than the critical path is called a sub-critical or non-critical path.

CPM analysis tools allow a user to select a logical end point in a project and quickly identify its longest series of dependent activities (its longest path). These tools can display the critical path (and near critical path activities if desired) as a cascading waterfall that flows from the project's start (or current status date) to the selected logical end point.

In manufacturing engineering, process layout is a design for the floor plan of a plant which aims to improve efficiency by arranging equipment according to its function. The production line should ideally be designed to eliminate waste in material flows, inventory handling and management. In process layout, the work stations and machinery are not arranged according to a particular production sequence. Instead, there is an assembly of similar operations or similar machinery in each department (for example, a drill department, a paint department, etc.)

OBJECTIVES OF THE STUDY

1) To determine the activities involved in the manufacturing process.
2) To analyze the effect on the shop floor layout.
3) To analyze the influence of CPM and PERT in the textile industry.

DATA & DATA ANALYSIS

Researchers have analyzed the shop floor layout and made significant changes in layout. The details of the textile manufacturing sections with sub departments and number of machines are as follows.

Textile Section Details are as follows

1) Laser section (total 3)
   - Laser machine 1to Laser machine 3
2) Straightening section
   - Straightening machine 1(capacity up to Thickness=10 mm, Length=3000mm, Width=1500 mm)
   - Straightening Machine 2 (Capacity up to Thickness=10 mm, Length=1500mm, Width=1000 mm)
   - Straightening Machine 3 (Capacity up to Thickness=3 mm, Length=1000mm, Width=500 mm)
3) Bending Section
   - Bending machine 1(320 Ton)
   - Bending machine 2(320 Ton)
   - Bending machine 3(150 Ton)
   - Bending machine 4(150 Ton)
   - Bending machine 5(180 Ton)
4) Punching Section
5) Tapping Section (total 2)
   - Tapping machine 1& Tapping machine 2

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6) Spot Welding (total 3)
   - Spot welding 1 to Spot welding 3
7) MIG/MAG Welding (total 12)
   - Welding station No-01 to Welding station No-12

BEFORE

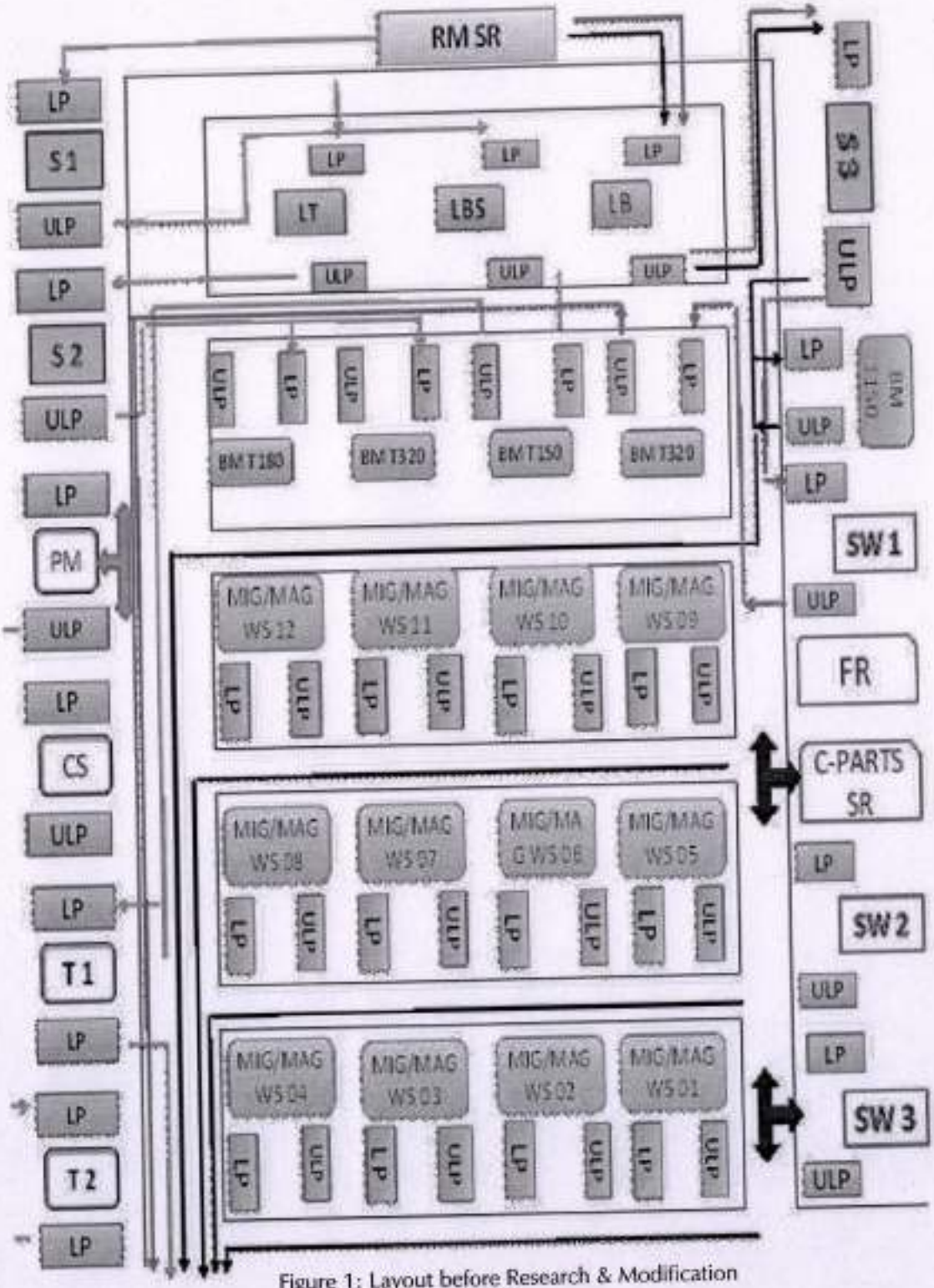

Figure 1: Layout before Research & Modification

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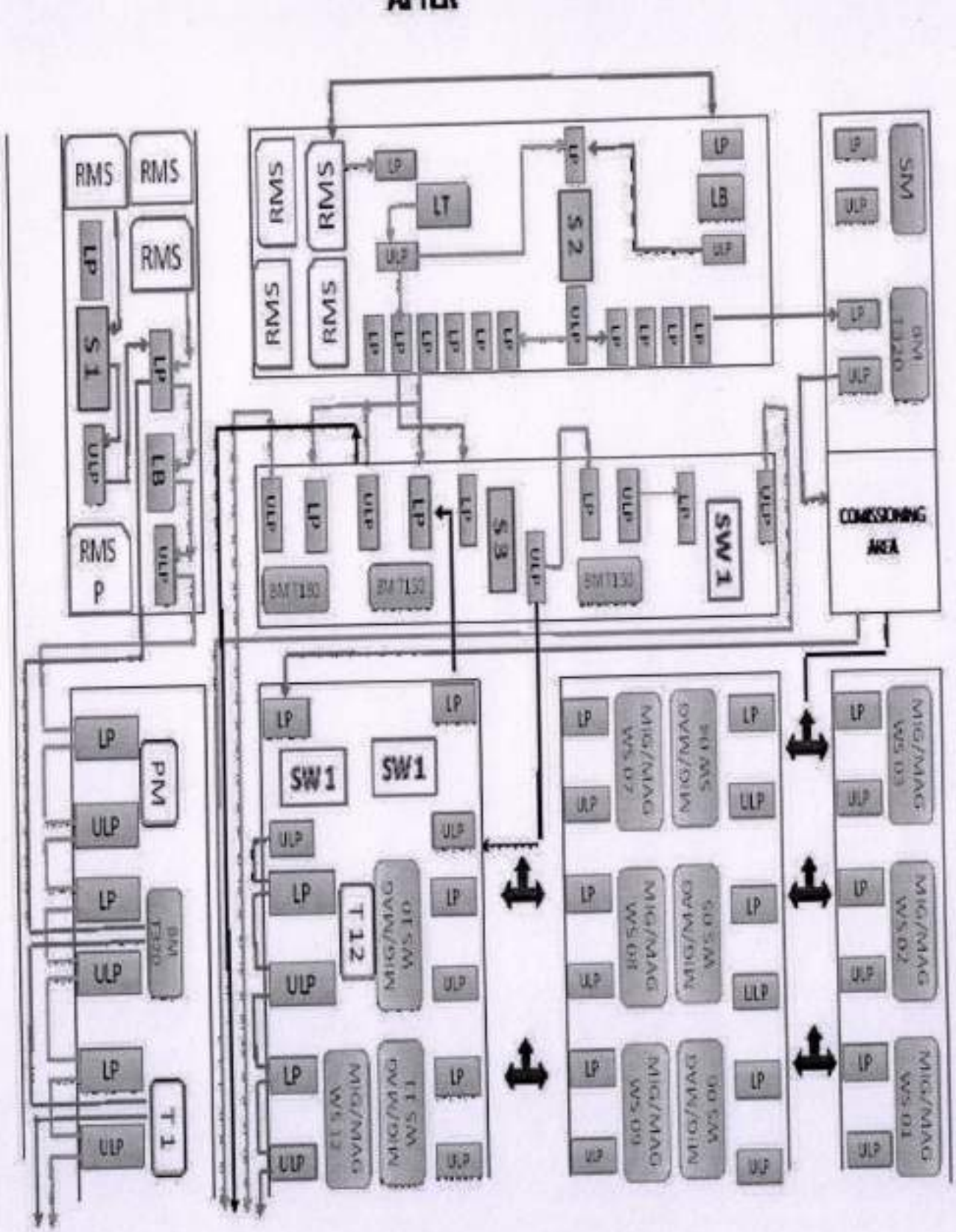

Figure 2: Layout after Research & Modification

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Abbreviations used in layouts are as follows

SN	Abbreviations	Meaning	SN	Abbreviations	Meaning
1	S	Straightening	10	LT	Laser Trump
2	LP	Loading Pallet	11	LBS	Laser By-Stronic
3	ULP	Un- Loading Pallet	12	LB	Laser Bystar
4	BM	Bending Machine	13	CS	Crimping Section
5	SW	Spot Welding	14	RMS	Raw Mat Storage
6	WS	Welding Stations	15	SM	Shearing Machine
7	T	Tapping	16	P	Purchasing
8	PM	Punching Machine	17	RMSR	Raw Material Storage Racks
9	C PARTS SR	C Part Storage Rack	18	FR	Fasteners Rack

Material flow in department is as follows

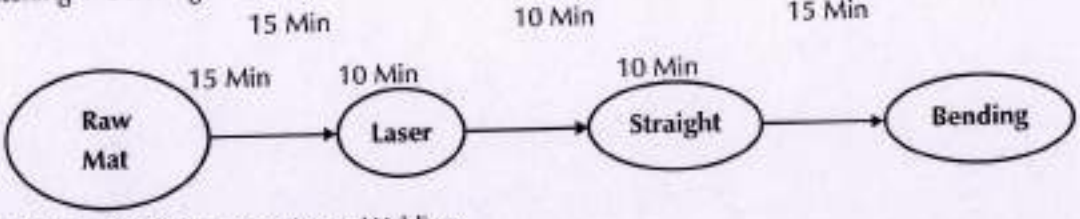
Material Flow Description	Percentage
Laser + Straightening + Bending + Powder coating	10%
Laser + Straightening + Bending + Tapping + Welding + Powder coating	10%
Laser + Straightening + Bending + Welding + Powder coating	25%
Laser + Straightening + Powder coating	05%
Straightening + Laser + Bending + Tapping + Powder coating	25%
Laser + straightening + Punching + Bending + Tapping + Powder coating	25%
Total	**100%**

Critical Path Method (CPM)

Researchers have studied and analyzed the various process paths and the time required to process using CPM. After analyzing, time required before and after research, the significant time reduction in total process time is the output of the research.

BEFORE (before research)

Laser + Straightening + Bending



Laser+ Straightening + Bending + Tapping + Welding

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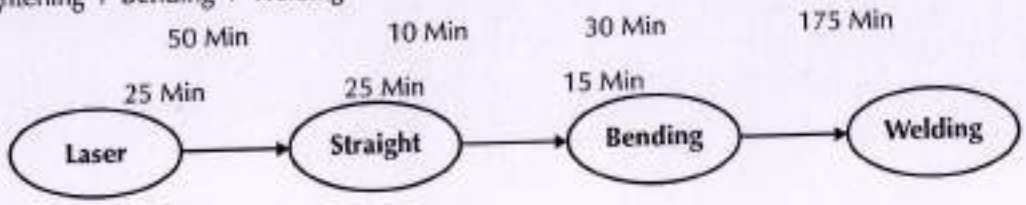
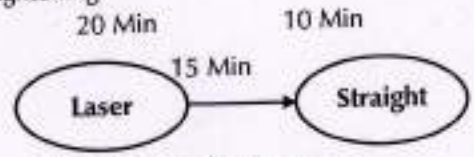
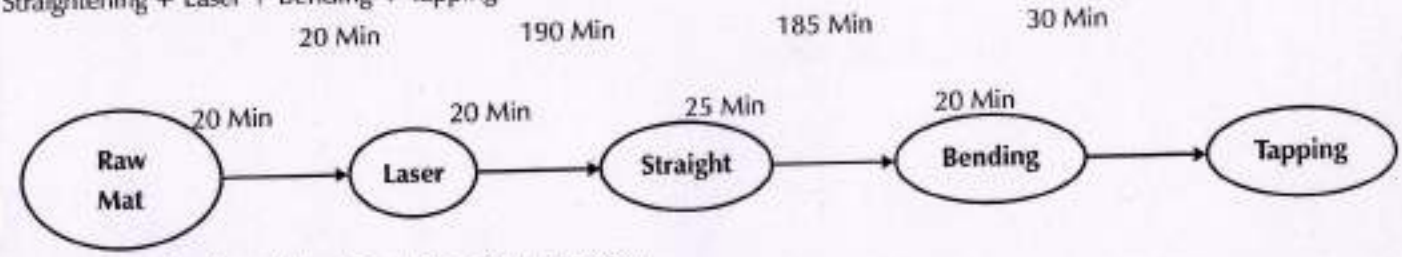
Laser+ Straightening + Bending + Welding



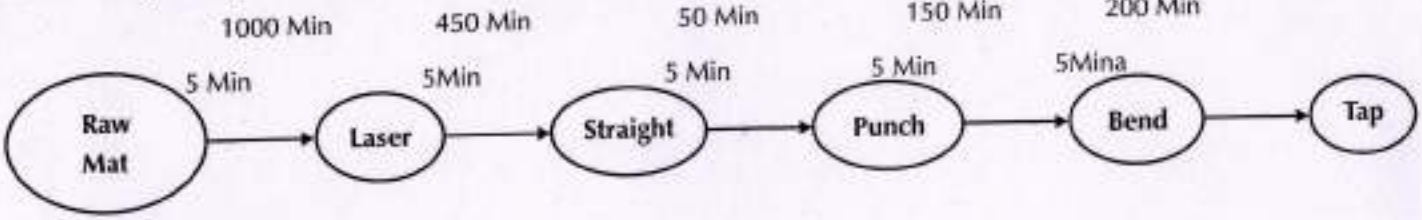
Laser + Straightening



Straightening + Laser + Bending + Tapping

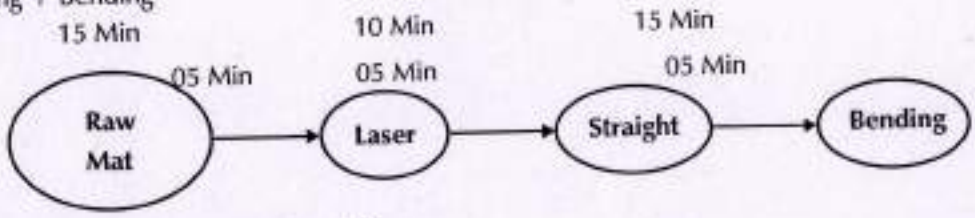


Laser + Straightening + Punching + Bending + Tapping

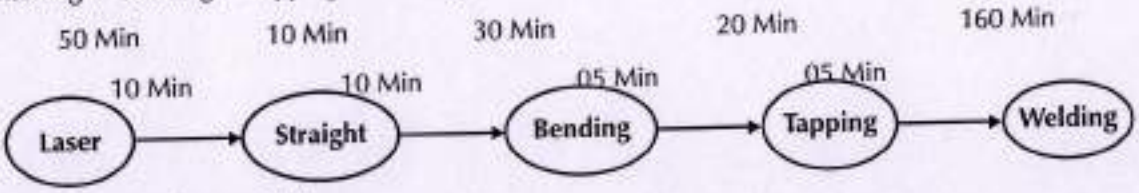


AFTER (After research)

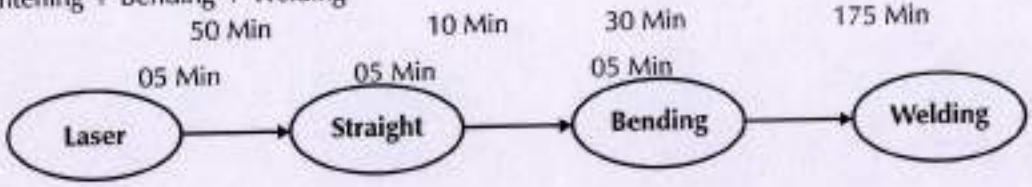
Laser + Straightening + Bending



Laser+ Straightening + Bending + Tapping + Welding



Laser+ Straightening + Bending + Welding



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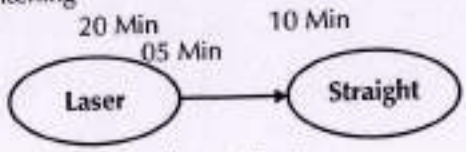
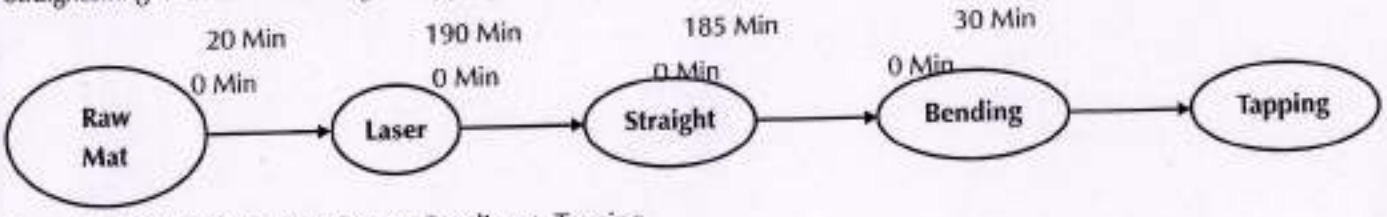
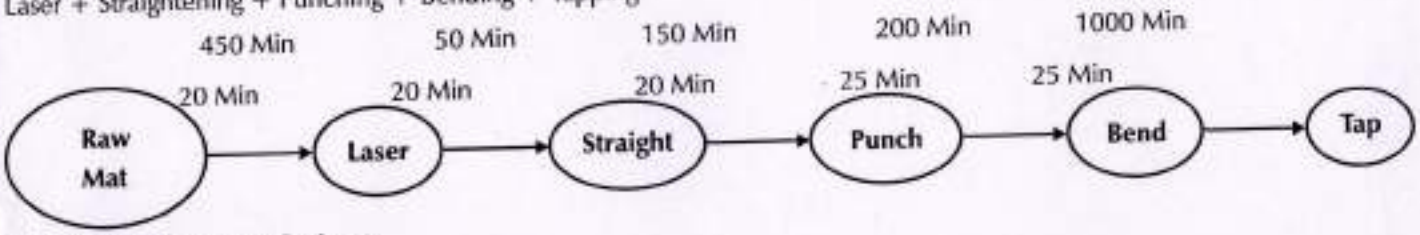
Laser + Straightening



Straightening + Laser + Bending + Tapping



Laser + Straightening + Punching + Bending + Tapping



Process Time Calculations

Before (Before Research)

	Material Flow Description	Percentage	Process Time
A	Laser + Straightening + Bending + Powder coating	10%	1.25 Hrs
B	Laser + Straightening + Bending + Tapping + Welding + Powder coating	10%	06 Hrs
C	Laser + Straightening + Bending + Welding + Powder coating	25%	5.5 Hrs
D	Laser + Straightening + Powder coating	05%	0.75 Hrs
E	Straightening + Laser + Bending + Tapping + Powder coating	25%	8.5 Hrs
F	Laser + straightening + Punching + Bending + Tapping + Powder coating	25%	32.7 Hrs
	Total Time		**54.7 hours**

Process Time calculations

After (After Research)

	Material flow description	Percentage	Process Time
A	Laser + Straightening + Bending	10%	0.9 hours
B	Laser+ Straightening + Bending + Tapping + Welding	10%	5 hours
C	Laser+ Straightening + Bending + Welding	25%	4.7 hours
D	Laser + Straightening	05%	0.6 hours
E	Straightening + Laser + Bending + Tapping	25%	7.0 hours
F	Laser + Straightening + Punching + Bending + Tapping	25%	31.25 hours
	Total Time		**49.45 hours**

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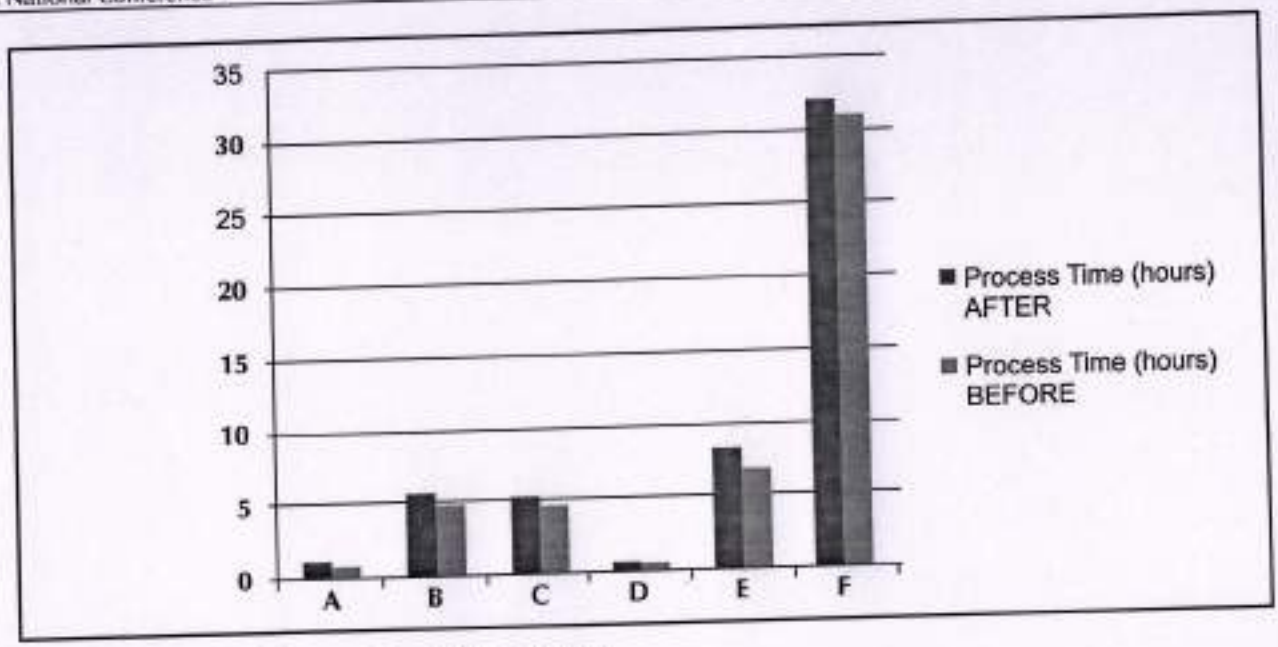
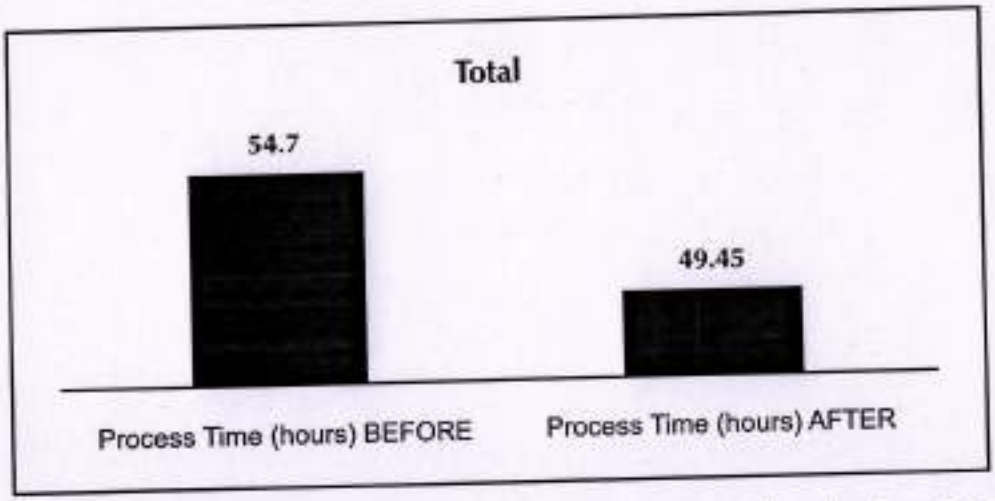


Graph 1: Comparison of Total Process Time (Before & After).

CONCLUSION



By discussing related scientific research, the formal definition for shop floor layout shop floor layout. The process model is designed to prevent abnormalities, to ensure highly reactive decision making and to facilitate continuous efficiency improvement have been described more in detail. It is important to understand this approach as a consistent guideline rather than a catalogue of tools to be implemented. The main benefit achieved due to efficient shop floor management is total process time required id improved by 9.60%. Also Dedicated cell management for different sub departments is achieved.

FUTURE SCOPE FOR RESEARCH

1. To study effect on Productivity.
2. To study internal logistics process and flow.

LIMITATIONS OF THE STUDY

1. Since this is a special activity, there was some restriction to share information.
2. Before trying any method or technique proper knowledge is required otherwise wastage of raw material & other resources becomes greater cause of concern.

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3RD AND 4TH MARCH, 2016

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CONTENTS

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"An Empirical Study of Green HR Practices of certain Automobile Organizations of PCMC"

Prof. Roshna Jaid, Assistant Professor, roshna.jaid@gmail.com
Mr. Sagar Jarande, Student, sagar.jarande45@gmail.com
Rajgad Institute of Management Research & Development, Dhankawadi Pune 43.

Abstract:
Green Human Resource management is a new emerging concept in today's scenario. We are entering a green economy and so the impact of our daily activities on environment and our desire to go green has expanded from just individuals to organizations. Organizations today believe that employees must be inspired, empowered and environmentally aware of greening in order to carry out green management initiatives. The purpose of this paper is to present literature review of Green HR practice and report the results of a survey on Green HR practices in certain automobile organizations in India.
Structured questionnaire designed for capturing data on sections of organizations using green HR practices in automobile organization in PCMC. Questionnaire Pilot – tested based on feedback of practicing HR professionals & finalized questionnaire sent to HR. Most of Automobile industries in PCMC Pune achieved greatest benefit to implementation of Green HR practices. They said Green HR practices improved employee morale & greatest barrier to cost of implementation.
This study is important for the current scenario of Organizations in 21st Century eco friendly environment. It gives the new insight for other organization implementation of Green HR practices.

Keywords: Green HR, Green Organization, Green Human Resource Management.

Introduction:

Green HRM:

Green HRM has got different meaning for different people, Ashok Ramachandran, Director HR Vodafone Essar Ltd defines green HR as using every employee touch point to espouse sustainable practices and raise employee level of awareness, Anjana Nath Regional Head HR, Fortis healthcare ltd defines Green HR as environment- friendly HR initiatives leading to better efficiencies, lesser cost and heightened employee engagement levels.
It involves undertaking environment friendly initiatives resulting in greater efficiency, lower costs, and better employee engagement and retention which in turn help organization to reduce carbon footprints by the means of

- Electronic filling
- Car sharing

- Job sharing
- Teleconferencing
- Online training
- Flexible working hours
- Tele- commuting

Green HRM is the use of HRM policies to promote the sustainable use of resources within organizations and, more generally promotes the causes of environment sustainability. This paper focuses on role that HR processes play in translating green policy into practice. This paper also examines the nature and extent of green HR initiatives undertaken by different automobile companies across Pune region.

About Pune & PCMC Industrial Growth:

Pune is one of the premier industrial centers of Maharashtra. It is home to one of the world's three largest two-wheeler manufacturers, Bajaj Auto. Other global automobile names like Telco, Mercedes Benz and Bajaj Tempo also have huge manufacturing facilities here. Apart from the auto giants, a large number of engineering, electronic and electrical industries have set up base in the large, medium and small scale sectors. The industrial township of Pimpri Chinchwad, adjacent to the main city, is dotted with over 4,000 manufacturing units. This vast and well established industrial base has imbibed the city with a 'professional' ethos and work culture Pimpri-Chinchwad and surrounding area is a major industrial hub and hosts one of the biggest industrial zones not only in India but in the entire Asia. The city is a home to the Indian operations of major automobile companies and several other industries. There are thousands of engineering units of various sizes including those of the major auto manufacturers, and as such, this area is often referred to as the 'Detroit of East'.

Objectives of Study:

1. To examine the status & extent to which certain automobile organizations in PCMC have adopted green HR practices.
2. To empirically investigate perception of HR professionals of the drivers & barriers towards implementation of Green HR for positive outcome.
3. To present the results of empirical analysis of certain organizations.

Research Methodology:

Empirical Analysis Research method used for the research. Structured questionnaire prepared for collecting data, questionnaire pre tested, modified and used as a data source. Questionnaire carrying four parts:

1. Profile of Organizations
2. Application of Green HR practices
3. Perception of barriers to implementation of Green HR practices

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4. Perception of Drivers to implementation of Green HR practices

As we are not aware how many organizations / companies from PCM implemented Green HR practices, Total questionnaire circulated to 100 companies & 57 companies reverted back to questionnaire. Questionnaire sent through e-mail to HR professionals of these organizations. Asked respondent to complete and revert questionnaire. All the companies HR professionals reverted their feedback. Most of the study done on basis of literature review & took reference of survey conducted y SHRM on Green Workplace survey. Summary of the sample characteristics presented in Table formats from Table No I to Table no VII.

Hypothesis:

H_0: There is No significance difference exists between the perceived benefits and barriers of adopting Green HR practices on the basis of Size of Company.

H_a: There is significant difference exist between the perceived benefits and barriers of adopting Green HR practices on the basis of Size of Company.

Results & Analysis: Comprehensive Table: Table 1: Profile of Organizations

	Frequency	Percentage
No of Employees		
1-100	9	15.79
101-1000	21	36.84
1001-5000	27	47.37
Total	57	100.00

Interpretation: Above table represents profile of organizations, out of 57 companies 27 having more than thousand employees in their organization. Below those 21 companies to have 100 to 1000 employs in the organizations.

Table 2: Profile of the respondents

	Frequency	Percentage
Position		
HR/ Personnel- Vice President / director	27	47.3684211
HR/ Personnel- Training manager	21	36.8421053
other	9	15.7894737
	57	**100**
Age		
<30	11	19.2982456
30-35	16	28.0701754
35-40	13	22.8070175
>40	17	29.8245614

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	57	**100**
Education		
Bachelor Degree	18	31.5789474
Master Degree	39	68.4210526
	57	**100**
Working Experience		
< 10 years	12	21.0526316
11-15 Years	34	59.6491228
> 15 years	11	19.2982456
	57	**100**

Interpretation: Above table is likely to show the respondents profile. Respondents were HR professionals from different organizations. Approximately 30% respondents were of 40& above age. Most of them had a Master degree certificate & about 60% were having 11-15 years of experience in HR / work experience.

Table 3: Significant differences based on Company Size on Demonstration of Green Practices

Table No. 3					
Demonstration of Green HR Practices	**Small (Mean)**	**Medium (Mean)**	**Large (Mean)**	**F Value**	**Significant Difference (Turkey's)**
Green Efforts included in newsletter of organization	2.88	3.71	3.88	134.6	
They are part of organizations stated goals	2.88	3.76	4.22	57.87	
It is included in organizations mission / Vision	3.11	4.04	4.25	84.20	Small, medium< large

Interpretation:

Above table interpret the demonstration of green practices in small, medium & large organizations – ANOVA test used for comparing the means of respondents on three stated aspects. Multiple comparison analysis of mean differences to be evaluated help of Tukey's test – it showed that there is no much difference between large & medium size of organizations, but there is difference between small & large size companies. Large size companies are more committed towards green practices that small sized.

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Table 4 : Mean Ratings to Potential Drivers to Green HR Practices			
Potential Drivers	**Mean**	**S.D**	**Ranking**
Contribution to Society	4.35	1.67	1
Environmental Consideration	4.05	1.57	3
Economic Considerations	3.7	1.81	4
Health & Safety Considerations	4.29	1.34	2
Public Relations Strategy	3.35	1.12	6
Competitive Advantage	3.19	1.34	7
Market Share Improvement	3.52	1.54	5
Note : The Factors were measured on a five point scale, with 1= S>D and 5= S.A			

Interpretation:

Above table shows mean ratings of the Potential drivers for green HR practices. Driver's perceptions were rated on five point scale. Based on responses "Contribution to Society" had highest mean score 4.35 than the others. One can say that the Contribution to society is the main driver to green HR practices.

Table 5 : Mean Ratings of Potential Barriers to Implementation of Green HR Practices			
Potential Barriers	Mean	S.D	Ranking
Cost of Implementing Programme	3.17	1.67	1
Cost of Maintaining Program	3.05	1.57	2
Lack of Support by Management	2.87	1.37	4
Lack of Support by Employees	2.91	1.32	3
Note : The Factors were measured on a five point scale, with 1= S>D and 5= S.A			

Interpretation:

Above table shows Potential Barriers for implementation of Green HR practices, HR from Large sized organizations perceived that the cost of implementation & cost of maintenance are the major barriers for implementation of green HR practices.

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Table 6 : Significant Differences Based on Company Size in Positive Outcomes of Green HR Practice					
	Small (Mean)	Medium (Mean)	Large (Mean)	F Value	Sig Diff(Turkey's)
Positive Outcomes					
Improving Employee Morale	2.68	4.46	4.48	61.87	
Stronger Public Image	2.47	2.98	5	186.78	
Increased Consumer/ Customer Confidence	2.38	2.47	4.87		Small, Large < Medium
Increased Employee Loyalty	1.8	1.85	3.84	24.64	Large < Medium
Increased Brand Recognition	1.46	2.24	3.48	33.86	Small, Large < Medium
Gained Competitive Advantage	1.5	1.68	2.98	21.04	
Increased Workforce Productivity	1.21	1.68	3.21	30.64	
Increased Employee Retention	1.7	2.44	3.12	5.18	

Interpretation:

Above table shows that the implementation of green HR practices in large, medium & small size organizations perceived that, the Positive outcome for the company building stronger public image in market with improving employee morale of the organizations.

Table 7 : Significant Differences according to Company Size					
	Small (Mean)	Medium (Mean)	Large (Mean)	F Value	Sig Diff (Turkey's)
DRIVERS					
contribution to Society	1.6	4.45	4.96	187.64	
Environmental Considerations	2.42	2.85	4.87	64.34	
Economic Considerations	1.78	2.44	4.58	165.53	Small, Large <Medium
Health & Safety Considerations	1.21	1.96	3.68	45.15	Small, Large <Medium
Public relations strategy	2.45	2.74	2.87	6.71	Large < Medium
Competitive Advantage	1.63	2.84	2.45	11.18	Small, Large <Medium

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BARRIERS					
Cost of Implementing Programme	3.4	4.31	4.68	38.45	Medium>Large, Small
Cost of Maintaining Program	2.64	4.65	4.87	347.43	Medium>Large, Small
Lack of Support by Management	2.45	2.84	4.31	287.73	Medium>Large, Small
Lack of Support by Employees	2.31	2.45	3.67	26.58	Medium>Small

Interpretations: Above table depicts the size of company matters a lot in a perception of drivers and barriers for implementation of green HR practices. The interpretation shows that there is a significant difference of opinion according to size of the company on different aspects like contribution to society, Environmental Considerations, Health & Safety Considerations. There is no significance difference between large & medium but small size companies shows greater difference.

Findings & Conclusions:

This paper presented survey & result of the certain automobile organizations from PCMC area regarding Status of Green HR practices in their companies. Study is based on three main objectives framed by the researcher.

From analysis & interpretation of the certain companies, observed that the efforts are made by the organizations for green HR practices through Newsletters & publications of company. Some are in process / planning to adopt Green HR practices.

Study also identified the drivers & barriers for the implementation of Green HR practices. Based on empirical result researcher found that the major driver of Green HR practices is Contribution to Society, Health & Safety Considerations followed by Environmental & Economic considerations. Barriers to perceive green HR practices in organizations – first & foremost important "cost of implementation", " cost of maintaining" for smooth adoption of Green HR practices.

For the same one need create proper awareness among employees for adopting such programs. The result showed that there is significant difference between large & small size of companies' perception on the benefits/ positive outcome & barriers of implementation of green HR practices. From above all interpretation, findings researcher understood that there is difference in positive outcome like employee morale increases, public image building to. Lastly different size of the company may have different benefit & hurdles of implementing Green HR practices effectively & efficiently.

Further researcher can take in depth analysis of companies on basis of Revenue generated or on basis of working type of organizations.

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"A Study of Effectiveness and Conflicts Management with Reference to Distribution Channel of LED Manufacturing Company in PUNE Region"

Mr. Rohan Dahivale (Assistant Professor), rohandahivale@rediffmail.com ,9921613494

Mr. Shrikant Bhoj (Entrepreneur, All-nutrition-food), shrikantbhoj@gmail.com, 9890096147

Rajgad Institute of Management Research & Development, Pune

Abstract

The study is to understand to Study of Effectiveness and Conflicts Management with Reference to Distribution Channel of LED Manufacturing Company for Pune region by conducting the survey.

LED market is growing now a day, for this its distribution and promotion is the most crucial part in increasing the market share of the company.

The entire research has been carried out in different phases for fulfilling the objectives, sample size of 120 responders have been analyzed. The research also helps in identifying the segment strategies, target market selection strategies, positioning strategies and pricing strategies.

Keywords: *[Distribution channel, conflict management, LED product]*

1] INTRODUCTION

Channel conflict occurs when manufacturers (brands) disinter mediate their channel partners, such as distributors, retailers, dealers, and sales representatives, by selling their products directly to consumers through general marketing methods and/or over the Internet. Some manufacturers want to capture online markets for their brands but do not want to create conflicts with their other distribution channels. The Census Bureau of the U.S. Department of Commerce reported that online sales in 2005 grew 24.6 percent over 2004 to reach US$86.3 billion.[1] By comparison, total retail sales in 2005 grew 7.2 percent from 2004.[1]These numbers made the online marketplace attractive to manufacturers, but raised the question of how to participate without harming existing channel relationships.

According to Forrester Research and Gartner from 2007, despite the rapid growth of online commerce, an estimated 90 percent of manufacturers did not sell their products online. Of these, 66 percent identified channel conflict as their single biggest issue. However, results from a survey show that click-and-mortar businesses have an 80% greater chance of sustaining a business model during a three-year period than those operating just in one of the two channels.

E-commerce is the most popular second distribution channel because of its low overhead expenses and communication costs. This advantage is also a disadvantage, since consumers

can also communicate less expensively and more easily with one another in the online marketplace. Therefore, price and product differentiation is more challenging in online markets.[2]

Channel conflict can also occur when there has been over production. This results in a surplus of products. Newer versions of products, changes in trends, insolvency of wholesalers and retailers and the distribution of damaged goods also affect channel conflict. In this connection, a company's stock clearance strategy is important.

To avoid a channel conflict in a click-and-mortar business, it is necessary to ensure that both traditional and online channels are fully integrated. This reduces possible confusion with customers while providing the business benefits of a dual channel.[3][4][5][6]

Manufacturers today sell their products through a broad array of channels. Since most manufacturers sell through several channels simultaneously, channels sometimes find themselves competing to reach the same set of customers. When this happens, channel conflict is virtually guaranteed. In turn, such conflict almost invariably finds its way back to the manufacturer.

Channel conflict comes in many forms. Some are mild, merely the necessary friction of a competitive business environment. Some are actually positive for the manufacturer, forcing out-of-date or uneconomic players to adapt or decline. Other conflicts, however, can undermine the manufacturer's business model. Such high-risk conflicts generally occur when one channel targets customer segments already served by an existing channel. This leads to such a deterioration of channel economics that the threatened channel either retaliates against the manufacturer or simply stops selling its product. The result is disintermediation, in which the manufacturer suffers.

2] OBJECTIVES OF THE STUDY

1. To Study the effectiveness of distribution of LED Manufacturing Company.
2. To analyze conflicts between the distribution channel and LED Manufacturing Company.
3. To understand the satisfaction of distributors of LED Manufacturing Company.
4. To provide suggestions order to minimize the channel conflicts.

3] SWOT ANALYSIS

STRENGTHS	WEAKNESSES
• New, innovative technology. • Offers consumers positive ROI, over time. • Technology still progressing. • Ability to constantly innovate. • Wide range of quality products & service • High efficiency of Lights	• Price Pressure • Low market share • Many competitors with lower prices • Less Awareness, Not very well-known • Distribution Network •

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OPPORTUNITIES	THREATS
• Ability to sustain in the Market & commitment. • Government regulations for energy efficiency. • Market Expansion. • Demand of LED Lights. • Universal "Green Push"	• Large well-established competitors. • Market Expansion. • Demand of LED Lights

4] RESEARCH DESIGN

Sr. No.	Parameter	Description
1	Type of research	Descriptive Research
2	Nature of Research	Qualitative & Quantitative
3	Research Instrument	Structured Questionnaire
4	Survey period	21 May to 21 July 2015
6	Method of data collection	Sample Survey Method
7	Population	Retailers, Wholesalers & Distributors of Lighting Product in Pune City
9	Sampling Method	Non Probability Convenience Sampling
10	Primary sources	Questionnaire, observation, interview and field survey
11	Secondary sources	Book, Journal, Articles, Magazines
12	Measurable scale used	Nominal, Ordinal, Interval scale.
13	Question Type	Close ended, Multiple Responses, Ranking Scale
14	Rating Scale	Likert Scale
17	Total Responders	120

5] DATA INTERPRETATION NAD ANALYSIS

Q1) What is your type of Business?

	Franchisees	Distributors	Retailers	Total
Responders	12	3	105	120
Percentage (%)	10	2.5	87.5	100 %

Q. 2) Duration of Channel partnership with LED manufacturer:

	Less than 1 Year	1 to 2 Years	More than 2 Years	Total
Responders	65	34	21	120
Percentage	54.16	28.33	17.5	100 %

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DATA ANALYSIS (Q.3 – Q.9):

Likert Scale: 1 to 5 is used which indicates:

Scale 1 to 5	Delighted (1)	More than satisfied (2)	Satisfied (3)	Less than satisfied (4)	Disgusted (5)

Parameter	1	2	3	4	5	Mean	Median	Mode	SD
Mode of delivery	35	73	8	1	3	1.8	2	2	0.773
Mode of Payment	51	39	16	9	5	1.98	2	1	1.110
Cost of Products	7	14	72	12	15	3.11	3	3	0.967
Numbers of assortment	40	32	25	20	3	2.28	2	1	1.163
Lead time	46	41	29	3	1	1.93	2	1	0.891
Execution of promo-offers	12	15	23	52	18	3.40	4	4	1.179
Display of products	35	73	8	1	3	1.86	2	2	0.773

Likert Scale: 1 = Always, 2 = Sometimes, 3 = Never (Q. 10 to 15)

Parameter	1	2	3	Mean	Median	Mode	SD
Understanding of channel's exact requirements	46	63	11	1.70	2	2	0.624
Two-way effective vertical communication	55	47	18	1.69	2	1	0.716
Issues handling regarding complaints about product	39	28	53	2.11	2	3	0.867
Issues handling regarding complaints about payments	22	37	61	2.32	3	3	0.765
Emergency issues handling about escalated customer complaints	27	26	67	2.33	3	3	0.819
Company's responsiveness during implementation of commitments	18	47	55	2.30	2	3	0.716

Likert Scale: 1 = **Highly frequent**, 2 = **Less Frequent**, 3 = **Rarely Occur** (Q. 16 to 21)

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Question	1	2	3	Mean	Median	Mode	SD
After sales service issue	22	38	60	2.31	3	3	0.763
Unscheduled & delay in delivery	25	42	53	2.23	2	3	0.771
Product avalibility after customer order	55	40	25	1.75	2	1	0.777
Opening new Distributor for same area	60	40	20	1.66	2	1	0.745
Promoptional activities by company	83	30	7	1.36	1	1	0.590
Initiative to dissolve conflicts	27	72	21	1.95	2	2	0.630

6] FINDINGS

1. LED Manufacturing Company is making and Covering more and more market to reach to the end user or consumers.
2. Distributor and retailers are very much happy with delivery of the products and they feel more reliable with the distribution ship of LED Manufacturing Company.
3. There are various brands available in the market in comparing with those brand retailers and distributors says that the cost of the product is appropriate with the quality of the product.
4. There are various brands available in the market in comparing with those brand retailers and distributors says that the cost of the product is appropriate with the quality of the product.
5. The lead time if most important in every supply chain. If there is problem in the lead time, then this will affects on product. In our supply chain we have great lead time with retailers and distributors.
6. Today's sales of product are based on the promo offers. Customers are attracted to the form offers and discount offers. LED Manufacturing Company are not focusing on the promo offers. They are maintaining the higher class products for the customers.
7. Especially the issues on the emergency basis are handled by the high priority. Retailers and franchises are happy with the customer supports provided to the customer.

7] SUGGESTIONS

1. LED Manufacturing Company has most of the time fails to responsiveness during implementation of commitments.
2. In our survey the researcher found that after sales service issues less. This shows the quality of the product.

3. Very little time it happens that unscheduled & delay in delivery. The retailers and franchises say that distribution channel taking care of this issue and they try to improve the service.
4. LED Manufacturing Company has taken initiative in the solve the conflicts but retailers and franchises said sometimes they failed to solve the conflicts. LED Manufacturing Company has to concentrate on this issue.
5. The quality of LED Manufacturing Company products is good, but on the other hand prices are high. In India price is the main factor while buying products, so company should update the price with market change.
6. The promotion of LED Manufacturing Company lights is not so effective, so company should also focus in this part.

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A study on Work–Life Balance among Married Women Employees: with reference to Pune city

Miss. Komal J. Gavhane (Student) **Dr. D. B. Bharati** (Director)

Rajgad Institute of Management Research & Development, Pune 43
Email id: komaljgavhane@gmail.com & drdbbharati@gmail.com
Phone No:. 9766451250,

Abstract:
Family–work conflict (FWC) and work–family conflict (WFC) are more likely to exert negative influences in the family domain, resulting in lower life satisfaction and greater internal conflict within the family. This research paper has identified several variables that influence the level of WFC and FWC. Variables such as the size of family, the age of children, the work hours and the level of social support impact the experience of WFC and FWC. However, these variables have been conceptualized as antecedents of WFC and FWC; it is also important to consider the consequences these variables have on psychological distress and wellbeing of the working women. The sample size selected for the research paper is of a total of 90 married working women of age between 20 and 50 years. WFC and FWC Scale were administered to measure WFC and FWC of working women. The obtained data were analyzed using descriptive and inferential statistics. Carl Pearson's Correlation was used to find the relationship between the different variables. The findings of the study emphasized the need to formulate guidelines for the management of WFCs at organizational level as it is related to job satisfaction and performance of the employees.

Keywords: ***Married, women, work-life balance, employed***

INTRODUCTION

Indian families are undergoing rapid changes due to the increased pace of urbanization and modernization. Indian women belonging to all classes have entered into paid occupations. At the present time, Indian women's exposure to educational opportunities is substantially higher than it was some decades ago, especially in the urban setting. This has opened new vistas, increased awareness and raised aspirations of personal growth. This, along with economic pressure, has been instrumental in influencing women's decision to enter the work force. Most studies of employed married women in India have reported economic need as being the primary reason given for working.

Women's employment outside the home generally has a positive rather than negative effect on marriage. Campbell *et al* studied the effects of family life on women's job performance and work attitudes. The result revealed that women with children were significantly lower in occupational commitment relative to women without children; contrary to expectation, women with younger children outperformed women with older children. Murkowski

studied psychosocial determinants of stress and well-being among working women. The significance of the work-related stressors was evidently greater than that of the stressors associated with the family function, although the relationship between family functioning, stress and well-being was also significant.

Work–life balance

An increasing number of articles have promoted the importance of work–life balance. This highlights the current concern within society and organizations about the impact of multiple roles on the health and well-being of professional women and its implications regarding work and family performance, and women's role in society. The following variables influencing the experience of work–life balance were identified while reviewing the international literature.

a. The multiple roles performed by women
b. Role strain experienced because of multiple roles, i.e., role conflict and role overload
c. Organization culture and work dynamics: Organizational values supporting work–life balance have positive work and personal well-being consequences
d. Personal resources and social support: Several studies confirmed the positive relationship between personalities, emotional support and well-being
e. Career orientation and career stage in which women careers need to be viewed in the context of their life course and time lines
f. Coping and coping strategies: Women use both emotional and problem-focused coping strategies to deal with role conflict.

Work–family conflict and family–work conflict

Work–life balance is the maintenance of a balance between responsibilities at work and at home. Work and family have increasingly become antagonist spheres, equally greedy of energy and time and responsible for work–family conflict (WFC). These conflicts are intensified by the "cultural contradictions of motherhood", as women are increasingly encouraged to seek self-fulfillment in demanding careers; they also face intensified pressures to sacrifice themselves for their children by providing "intensive parenting", highly involved childrearing and development. Additional problems faced by employed women are those associated with finding adequate, affordable access to child and elderly care.

WFC has been defined as a type of inter-role conflict wherein some responsibilities from the work and family domains are not compatible and have a negative influence on an employee's work situation. Its theoretical background is a scarcity hypothesis which describes those individuals in certain, limited amount of energy. These roles tend to drain them and cause stress or inter-role conflict. Results of previous research indicate that WFC is related to a number of negative job attitudes and consequences including lower overall job satisfaction and greater propensity to leave a position.

Family–work conflict (FWC) is also a type of inter-role conflict in which family and work responsibilities are not compatible. Previous research suggests that FWC is more likely to

exert its negative influences in the home domain, resulting in lower life satisfaction and greater internal conflict within the family unit. However, FWC is related to attitudes about the job or workplace. Both WFC and FWC basically result from an individual trying to meet an overabundance of conflicting demands from the different domains in which women are operating.

LITERATURE REVIEW:

WORK STRESS: ITS RELATION WITH WFC AND FWC

Work stress is usually conceptualized as work-role conflict, work-role overload, and work-role ambiguity. Each has the potential to affect WFC. With respect to work-role conflict, the more conflict among work roles, the greater the chances that stress will spill over and cause negative behaviors that interfere with fulfilling family roles. Role overload is the result of having too many things to do in a given time period. As time is constrained by having too many tasks to accomplish at work, the employee may need to use time allocated to the family role which could cause WFC. Work-role ambiguity occurs when workers are unsure of what is expected of them in a work role. As uncertainty concerning work roles increase, employees use more mental energy to decipher it. This requirement may drain mental energy and attention needed for their family roles. Carlson and Kacmar found that role overload and role conflict were predictors of WFC, yet did not find significant results for role ambiguity.

Kandel *et al.* studied the nature of specific strains and stresses among married women in their marital, occupational and house work roles. They found that strains and stresses are lower in family roles than in occupational and household roles among the married women. These have more severe consequences for the psychological well-being of women than occupational strains and stresses. Strains predicted distress through role-specific stress, with strains deriving from contribution of role-specific stress. Chassin *et al.* found three types of conflicts in their study research on a sample of 83 dual worker couples with pre-school children. These are: (1) conflicts between demands of multiple roles, (2) conflict between role expectations of self and spouse, and (3) lack of congruence between expectation and reality of roles. The authors felt that self-role congruence in women leads to better mental health.

OBJECTIVE OF THE STUDY:

1. To study the basic concepts of work life balance.
2. To understand the concept of family work conflicts.
3. To study various factors those could lead to WFC and FWC among married women employees.

RESEARCH METHODOLOGY:

SAMPLE DESIGN & SAMPLING TECHNIQUES:

The sample consisted of a total of 90 married working women of age between 20 and 50 years. Thirty married working women were selected using simple random sampling

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technique from each setting, i.e., industrial setting, school setting and hospital setting. The women who were married at least for 3 years, living with spouse and engaged in work for at least 1 year were included in the study. The obtained data were analyzed using descriptive and inferential statistics. Carl Pearson's Correlation was used to find the relationship between the different variables.

SAMPLING INSTRUMENTS:

The WFC and FWC Scale is a 10-item, 7-point Likert scale, which measures WFC and FWC of working individuals. The participants are asked to indicate the extent to which they agree with each item. The responses range from 1 (strongly disagree) to 7 (strongly agree). Higher scores indicate high level of work/family conflict, while lower scores indicate low levels of work/family conflict. The coefficient alpha of the scale ranged from 0.82 to 0.90. The scale was found to have good content, construct and predictive validity.

DATA ANALYSIS & INTERPRETATION WITH RESULT:

Table 1: Scores of women on work–family conflict and family–work conflict

WFC & FWC Scores	N = 90			
	Mean	SD	Range	
			Min	Max
Work - family Conflict	22.73	6.55	6	33
Family Work Conflict	17.01	7.14	5	30

Interpretation:

The mean age of the respondent was 38.70 (SD 8.66) years. Nearly half (44.4%) of the women employees were aged between 41 and 50 years; majority (83.3%) were Hindus from urban background (72%). With regard to number of children, 41.1% of the women had one child showing trend in small family system and 26.7% had two children. Nearly 70% of the women were working to support their families, 20% of the respondents were working because they were career oriented, and 10% were working to fulfill their personal financial needs. The mean scores of WFC and FWC among the women [Table 1] show that the women scored highest in WFC (Mean 22.73; SD=6.55) and lowest in FWC (Mean 17.01; SD=7.14).

Table 2

Variables	WFC		F	WFC		F
	Mean	SD		Mean	SD	
Age of the children(years)						
0 to 1	23.2	9.2	3.246	11.2	5.28	4.424
2 to 5	17.88	4.19		15	5.04	

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6 to 10	26.9	3.38		19.6	8.15	
11 and above	22.64	6.03		18.42	6.9	
Education of Women						
Below SSL	23	5.81	3.546	19.53	7.4	4.266
SSL	26	0		22	0	
Diploma	25.29	6.52		13	6.15	
Graduation	18.44	6.09		16.55	6.67	
Post Graduation	22.07	6.77		19.21	6.55	
No of Children						
No Child	23	9.66	0.38	10.23	4.88	9.07
One child	22.89	5.67		19.4	6.53	
Two Child	23.37	5.96		19.16	7.31	
Three Child	21.18	6.67		13.75	5.11	
Nature of Work						
School	20.4	6.38	3.367	18.26	6.36	8.713
Hospital	24.69	6.98		13	6.18	
Industry	23.2	5.72		19.76	7.18	
Dual Roles Demand & expectation from Husbands						
Yes	15.5	2.88	4.638	16.5	1.73	4.553
No	22.15	7.36		15.48	7.46	
Sometimes	24.96	3.5		20.25	5.84	
Reasons for Working						
Support Family	23.55	6.42	5.524	17.69	7.71	2.211
Financial	29.25	3.77		9	3.46	
Career Oriented	18.16	5.03		15.88	4.66	
Just wanted to work	23.6	6.94		18.8	5.54	
P<0.05, P<0.01, P<0.001						

Interpretation :

One-way ANOVA – Background variables and work–family conflict and family–work conflict

The result of one-way analysis of variance (ANOVA) [Table 2] on the ratings of WFC and FWC across the different categories of the women showed significant (F=3.246; P<0.05) WFC and FWC (F=5.424; P<0.01) among the women whose eldest child was in the age group of 6–10 years. Similarly, women belonging to different educational attainment, especially SSLC background, differently rated their WFC (F=3.456; P<0.05) and FWC (F=4.226;P<0.01). Further, high FWC was found among those who were having one child, whereas less FWC was found among those not having children. However, the rating among different groups on FWC was statistically significant (F=9.07; P<0.001). There were significant variations in the group means of women working in different settings on WFC

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(F=3.376; P<0.05) and FWC (F=8.713; P<0.001). The women working in hospital setting reported higher WFC compared to those working at school or industry setting. FWC was more among the women working in industry, when compared to those working in school and hospital setting. FWC (F=4.638; P<0.05) and WFC (F=3.553; P<0.05) were significantly high among the women whose husbands demanded dual roles from working women. The women working due to financial needs scored significantly high WFC (F=5.254; P<0.01) in comparison with the other groups.

Table 3

Interco relation among the work–family conflict and family–work conflict with background variables

Background Variables	WFC	FWC
Age	-0.036	0.189
Overall Work Experience	-0.004	0.193
Age of eldest Child	-0.071	0.211
No. of Children	-0.072	0.002
Correlation is significant at the 0.05 level (2 tailed test)		

Interpretation:

The above results also indicate that age of the children was positively correlated (P<0.05) with FWC of the working women. However, non-significant relationships were found between age of the women, overall work experience, and number of children on WFC and FWC. In addition, non-significant relationship was also found between the age of the eldest child and WFC.

Interco relation among the work–family conflict and family–work conflict with background variables

DISCUSSION

The present study was aimed at exploring the factors which lead to WFC and FWC among married women employees working in different settings. WFC and FWC were found to be more among the women having the eldest child between 6 and 10 years. Moreover, the age of the children was significantly positively correlated with FWC among the working women. The findings of the study support the earlier studies that age of the children is related to more WFC and FWC among married women employees.

Workplace characteristics also contribute to higher levels of WFC. In the present study, women working in hospital setting reported more WFC, whereas FWC was found to be more among those women working in industrial setting. Researchers have found that the number of hours worked per week, the amount and frequency of overtime, an inflexible work schedule, unsupportive supervisor, and an inhospitable organizational culture for balancing work and family increase the likelihood of women employees to experience conflict between their work and family roles.

Dual role demands and expectation from working women by husbands was significantly related to high WFC and FWC among the working women in the present study. According to Sharma, the support and involvement of husband positively relates to lower levels of role conflict experienced by the married working women. Carlson *et al.* found that experience of work demands negatively influenced family responsibilities in more instances than family demands that influenced work responsibilities. Job-parent conflict was reported to be the most often experienced conflict among the women.

Survey in West showed that young women are expected to combine a career with motherhood. In Indian context, a lot of women, especially those from the lower middle class, are seeking the job market today because they have to augment the family income. They have to provide a better life for their families, pay their children's tuition fees and plan a better future for them. In the present study, it is seen that the women working due to financial needs reported higher WFC when compared to those working for other reasons. In that case, woman needs to be careful not to bring home her frustration and unhappiness, which can affect family relationships.

FUTURE DIRECTIONS

It is critical for work and family research to fully understand the conditions under which the married women employees experience conflict between their roles. There is a need to consider working environment, job satisfaction, family support and number of working hours in the future research. Future studies should also continue to refine the methodology used in the area of work–family research. In order to attain in-depth understanding of one's work and family life, researchers who study work–family roles should include multiple perspectives such as job stress, quality of life, mental health, and work demands. In addition, it is necessary to explore multiple waves of data collection over a longer period of time to better understand the changing nature of work family roles over time. Longitudinal studies need to be conducted to examine how the stages of life (e.g., marriage, child birth, and child rearing) affect work and family concerns. It is clear from the current study that married women employees indeed experience WFC while attempting to balance their work and family lives. Thus, organizations need to formulate guidelines for the management of WFCs since they are related to job satisfaction and performance of the employees.

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"A study on customer's awareness on Green Banking initiatives in selected public and private sector banks with special reference to Pune City"

Miss. Rohini Gujar (Student), **Roshna Jaid** (Assistant Professor)
Rajgad Institute of Management Research & Development, Pune 43
Email id: rohinigujar.rj21@gmail.com Phone No. – 7743815178, 9860570696

Abstract:
According to **Clark Schultz (2012) Green** banking means promoting environmental-friendly practices and reducing your carbon footprint from your banking activities. According to **Pravakar Sahoo and Bihoo Prasad Nayak (2008)** there has not been much initiative in this regard by the banks and other financial institutions in India though they play an active role in India's emerging economy, so it is suggested to initiate to promote green banking in India. The concept of green banking helps to create cleaner and greener future as Green Banking has direct impact on the environment. This paper has been made to study level of consumer satisfaction and awareness regarding "Green banking services "initiative taken by various Public and Private sector banks in India, Pune The study aims to identify the opinion and awareness of bank employees and customers as regards to green banking concept in public and private sector banks. It is necessary to identify various initiatives taken by bank on the concept of green banking in order influence customer and make them user friendly. Researcher will study the impact of gender on green initiatives taken by public and private sector banks. Whether they face any technical procedural problems as well as administrative problems. The authors have used SPSS technique as a statistical method.

Key words: Green Banking, Environment, Customer satisfaction

Introduction:

The financial institutions influence the economic growth and development of the country both in terms of Quality and Quantity, there by adopting various strategies for economic growth. As environmental issues gain greater attention, pressure is being placed on all industries, including financial institutions to implement Green Initiatives. Banking sector plays a crucial and decisive role in promoting environmentally sustainable and socially responsible investments as it increases the value and lowers loss ratio as higher quality loan portfolio results in higher earnings.

Thus, encouraging environmentally responsible investments and prudent lending should be one of the responsibilities of the banking sector. The Green initiatives taken by Banks or a concept of

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Green banking means using all of the banks resources with responsibility and care, avoiding waste and giving priority to choices that take sustainability into account. It also means promoting environmental-friendly practices and reducing your carbon footprint from your banking activities.

The reasons for going green are manifold, and the key among them are: increasing energy consumption and energy prices, growing consumer interest in environmentally-friendly goods and services, higher expectations by the public on Bank's environmental responsibilities and emerging stricter regulatory and compliance requirements. This comes in many forms. Using online banking instead of branch banking. Paying bills online instead of mailing them. Opening up CDs and money market accounts at online banks, instead of large multi-branch banks. Or finding the local bank in your area that is taking the biggest steps to support local green initiatives. It is an umbrella term referring to practices and guidelines that make banks sustainable in economic, environment, and social dimensions. It aims to make banking processes and the use of IT and physical infrastructure as efficient and effective as possible, with zero or minimal impact on the environment. Green banking refers to how environmentally friendly your bank is, and how committed to green and ethical policies they are.

Objectives:

1. To study & understand the Green Practices implemented by selected private & public banks in Pune.
2. To analyze the awareness about the implemented green practices of Banks amongst customers.
3. To suggest the measures for creating awareness & technological changes amongst customer regards with green practices.

Current Scenario:

- SBI will introduce "green-channel banking" at more of its branches to promote paperless work and to facilitate faster transactions for customers, SBI sources said Asia Pulse [Rhodes] 11 May 2011.
- The Institute for Development and Research in Banking Technology (IDRBT), which is an arm of RBI, is all set to introduce guidelines for green funds under which banks are given instruction to set up green funds and have a chief green officer to extend concessional loans to players undertaking environment-friendly projects. The banks on their parts are currently examining the guidelines and might come up with specific policies very shortly, Chief Executive.
- To help financial institutions eliminate the use of couriers to carry tapes to an offsite location, IT1 offers secure online backup and recovery solutions. Our cost-effective data encryption solution encrypts and compresses data so files can be safely transmitted to an

offsite server or electronic vault, again eliminating the need for couriers.

Data Analysis and Interpretation

1. Respondent having sound educational background with some degree of awareness w.r.t green products were targeted and approached for the study. Among 100 respondents 42 were Male and 58 were Female. Respondents were mainly from public sector banks like SBI, PNB and BOI and from Private Banks ICICI, HDFC and AXIS bank. From Public banks we got 59 respondents whereas from private banks we got 41 respondents. All the bank considered for the study were top rated banks so these banks are chosen from public and private banking sector as per latest facts and figure published by .N.S.E
2. Out of the respondents approached in SBI ,77 % were using green banking products but were not aware of the terminology „ Green banking" and remaining 23 % were quite aware of the green banking services provided by the Bank. Likewise from PNB 77 % were not aware of the terminology Green Banking and therefore were explained but they were using green banking products like ATM , online banking etc but remaining 23 % were aware of the green banking concept. It was founded that 92 % of BOI respondents were not aware and only 8 % were aware. Among Private sector banks from ICIC bank 88 % were not aware of the term but remaining 12 % were aware of the green banking concept. From HDFC bank 90 % were not aware of the term but remaining 10 % were aware of the green banking concept and lastly from Axis 96 were not aware and 4 % were aware about Green banking activities.
3. From the above data With reference to first definition (V13) i.e. "Green banking means using all of the banks resources with responsibility and care, avoiding waste and giving priority to choices that take sustainability into account Green banking means using all of the banks resources with responsibility and care, avoiding waste and giving priority to choices that take sustainability into account. 33 % of the respondents were in favour of this definition while 67 % are not in favour. 49 % people were in favour (V14)„Green banking refers to how environmentally friendly your bank is, and how committed to green and ethical policies they are and remaining 51 % were not in favour of this definition and only 18 % were in favour of third definition (V15)i.e. "Sustainable development or Green Banking denotes development that does not reduce the possibilities and choices for the future generations, at the same time ensuring continuity of economic progress for the present generation" remaining 82 % doesn't feel the same.

Although all the definitions are similar in meaning, but have explained green banking concept in a different way but majority people i.e. 49 % agrees with (V14) Green banking refers to how environmentally friendly your bank is, and how committed to green and ethical policies they are. And majority people i.e. 82 % dis agree with (V15) Sustainable development or Green Banking

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denotes development that does not reduce the possibilities and choices for the future generations, at the same time ensuring continuity of economic progress for the present generation.

Green banking Initiatives by Banks and its awareness among their customers.

Green Initiatives	Aware	Not Aware
1. Green Checking	88%	12%
2. Green Loans	56%	44%
3. Green Mortgages	45%	55%
4. Green CDs	36%	64%
5. Controlled use of energy	67%	33%
6. Facility of e-statement registration by which banks will donate a book to needy	64%	36%
7. Reduced wastage of papers and Energy through Net banking aproach	67%	33%
8. Use of Solar powered ATMs	34%	66%
9. Energy – efficient branches and loans	68%	32%
10. Providing recyclable debit cards and credit cards	47%	53%
11. High- efficiency lighting	55%	45%
12. Using recycle paper or recycle waste	47%	53%
13. Bonds and mutual funds meant for environmental investments	44%	56%
14. Clean Development Mechanism(CDM) related services working on climate change	45%	55%
15. 50% waiver in processing fee of cars that use alternate mode of energy like electricity and CNG.	25%	75%
16. Conducting Workshops and Seminars for Green banking	50%	50%
17. Bank Environmental Policy	36%	64%
18. Online Bill Payment	81%	19%
19. Cash Deposit System	84%	16%
20. E – Investment Services	76%	24%
21. Communicate through the Press.	31%	69%

Table: 2

From the above data we can see that green initiatives like Communication through Press, Bank environmental policy, Concession on energy savings, Solar ATMs, Green CDs are few green banking initiatives that are still not introduced by the respective banks according to the respondents. As per the data 60 % of the respondents agree these initiatives are still not initiated. However, these concepts are new in India therefore it can be the probable reason for poor awareness level among consumers. The case could be that even though few green banking strategies are initiated by the bank ,customers are not aware. As for instance, SBI was the first

in India to start introducing Solar power ATMs but 60 % of the respondents don□t know this and „Pockets by□ ICICI is first in India to carry out a slew of banking services on the social media site, Face book. So bank should design a strong strategies to promote these green banking initiatives as done in other countries. While in some green initiatives more than 60 % of the respondents were in favor that green products are provided in their banks like Green Checking, Controlled use of energy, Facility of e-statement registration by which banks will donate a book to needy, Online Bill Payment , Cash Deposit System, E – Investment Services, Net Banking , Energy efficient branches.

4. **Hypothesis Statements**

Ho1 There is no significant difference in the awareness for E – Statement initiatives w.r.t gender.

Ho2. There is no significant difference in the awareness level for Net banking initiatives w.r.t male and female customers.

Ho3. There is no significant difference in the green initiative for Green loans w.r.t gender.

Hypothesis	Initiatives	Significant Value	Result
H1	E – Statement	.502	R*
H2	Green Loans	.183	R*
H3	Net Banking	.132	R*

Above table shows the result for the entire three hypothesis which were rejected at 95% LOS. The data was analyzed in SPSS wherein, cross tabs□s ,Chi square test was applied for hypothesis testing. Additionally in 1 2nd and 3rd hypothesis, study reveals the details of the Chi square value of E – Statement Green Loans and Net Banking which shows that Genders have no impact for all the parameters of hypothesis with respect to green banking which means that both of them have same awareness level with respect to Green Banking.

5. Obstacles experienced by respondents in availing green banking services

Obstacles	Difficulty in operate	No difficulty in operate
Data Security and Privacy	21%	79%
Lack of education	26%	74
Technical Issues	38%	62%
Traditional approach	13%	87%
Lack of infrastructure	14%	86%

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Table:3

According to the above table, majority of the respondents i.e. 38 % of the respondents have technical issues. 26 % of the respondents favour towards lack of education while 87 % of the respondent have no difficulty in adopting latest technology and Infrastructure.

Conclusion:

With Go Green mantra permitting, the banking sector too has adopted sustainable practices in all spheres of life. Green Banking is a Multi-stakeholders' Endeavour where banks have to work closely with government, NGOs, IFIs/IGOs, Central Bank, consumers and business communities to reach the goal. From the above research we can see that green initiatives like Communication through Press, Bank environmental policy, Concession on energy savings, Solar ATMs, Green Cds is not familiar in Green initiatives by the bank as per the respondents. From the above data we can see that green initiatives like Communication through Press, Bank environmental policy, Concession on energy savings, Solar ATMs, Green Cds is not familiar in Green initiatives by the bank as per the respondents.

There is definitely a huge opportunity in clean, renewable energy technologies, emissions reduction and reduced-carbon transportation which can be slowly and steadily be achieved if we get cooperation from all sectors of the economy and bank being an integral part of our economy must lead from the front.

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A Study of Demand Forecasting & Capacity Planning

Rohan P. Dahivale (Assistant Professor), Rajgad Institute of Management Research & Development, 9921613494, rohandahivale@rediffmail.com

Vaibhav Jadhav (Production Trainee), UGC Supply Chain Solution, Wing, 9503733029

Dr. Vikas Inamdar, (Director), IMCC, Mayur Colony, Pune, directorimcc@vsnl.net

Abstract

Forecasts are becoming the lifetime of business in a world, where the tidal waves of change are sweeping the most established of structures, inherited by human society. Demand forecasting is predicting future demand for the product. In other words it refers to the prediction of probable demand for a product or a service on the basis of the past events and prevailing trends in the present.

Capacity planning is the process of determining the production capacity needed by an organization to meet changing demands for its products. Effective capacity is the maximum amount of work that an organization is capable of completing in a given period due to constraints such as quality problems, delays, material handling, etc.

The research is carried out to get an insight into the understanding of demand forecasting and capacity planning. This further helps to get knowledge about demand prediction and planning of the available capacity in optimum manner.

Keywords: [Production Planning & Control, Demand forecasting, capacity Planning]

1] Introduction

Demand forecasting is the art and science of forecasting customer demand to drive holistic execution of such demand by corporate supply chain and business management. Demand forecasting involves techniques including both informal methods, such as educated guesses, and quantitative methods, such as the use of historical sales data and statistical techniques or current data from test markets. Demand forecasting may be used in production planning, inventory management, and at times in assessing future capacity requirements, or in making decisions on whether to enter a new marketDemand forecasting is predicting future demand for the product. In other words it refers to the prediction of probable demand for a product or a service on the basis of the past events and prevailing trends in the present.

Capacity planning is the process of determining the production capacity needed by an organization to meet changing demands for its products. In the context of capacity planning, design capacity is the maximum amount of work that an organization is capable of completing in a given period. Effective capacity is the maximum amount of work that an organization is capable of completing in a given period due to constraints such as quality problems, delays, material handling, etc.

Capacity is calculated as (number of machines or workers) × (number of shifts) × (utilization) × (efficiency).

Production planning is the planning of production and manufacturing modules in a company or industry. It utilizes the resource allocation of activities of employees, materials and production capacity, in order to serve different customers.

Different types of production methods, such as single item manufacturing, batch production, mass production, continuous production etc. have their own type of production planning. Production planning can be combined with production control into production planning and control, or it can be combined and or integrated into enterprise resource planning.

2] Objectives Of The Study :

1. To study the demand forecasting and capacity planning.
2. To track the error of the demand forecasting with the help of tracking signal.
3. To analyze the inter-relation between demand and capacity.
4. To study the plan, schedule & control activities of production processes through aggregate planning.

3] Research Problem/Statement of Problem :

In this production company where this case is taken, UGCL is batch manufacturing process industry mainly having various types of products and their demands are fluctuating every week as customer requirement. So it becomes very much difficult to predict the demand for the particular product and ultimately it becomes very much cumbersome to do the capacity planning. It also makes an impact on the cost and delivery.

3.1 RESEARCH DESIGN

S N	Parameter	Description
1	Type of research	Descriptive Research
2	Nature of Research	Qualitative & Quantitative
3	Survey period	1 November 2015 to 31 December 2015
4	Sources of data collection	Primary and Secondary sources
5	Primary sources	Interview, Observations
6	Secondary sources	Book, Journal, Articles, Data Sheets
7	Data interpretation	Graphs
8	Statistical software Package	Ms Excel

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4] DATA ANALYSIS & DATA INTERPRETATION

4.1 Demand Forecasting

- Purpose of forecast: To use the resources in optimum manner.
- Time horizon: 12 weeks.
- Forecasting technique: Linear trend equation

  $Ft = a + bt$

  Where, t= specified number of time periods from t=0

  Ft= Forecast for period t

  a= value of Ft at t=0

  b= slope of line

Week	$\sum$ T	$\sum$ t*t	Demand in units		Forecast demand
t		t*t	y	ty	
1	1	1	7650	7650	7881
2	3	5	7830	15660	8061
3	6	14	6240	18720	8241
4	10	30	9700	38800	8422
5	15	55	10350	51750	8602
6	21	91	8400	50400	8782
7	28	140	7850	54950	8963
8	36	204	9430	75440	9143
9	45	285	10300	92700	9323
10	55	385	11500	115000	9504
11	66	506	9870	108570	9684
12	78	650	7350	88200	9864
13					10045
14					10225
15					10405
16					10585
17					10766
18					10946
19					11126
20					11307
21					11487
22					11667
23					11848
24					12028

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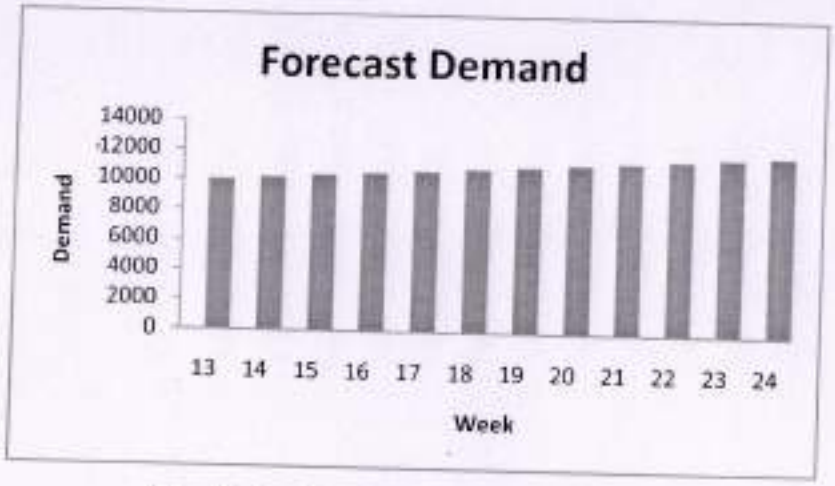

Graph No.1 Week Vs Demand Forecast

Interpretation:

From the above graph, we can conclude that forecasted demand gradually increased over the certain time period that can be calculated by the given formula as stated above. The time horizon for the demand forecasting is twelve weeks and the linear equation forecasting technique has been used. The main purpose is to use the optimum resources.

4.2 Tracking the Demand Forecasting Error

FORECAST ERROR (FE)

1) Sum of Forecast Error (SFE) $SFE = \sum_{i=1}^{n} \varepsilon i$	**2) Mean Absolute Deviation (MAD)** $MAD = \frac{1}{n} * \sum_{i=1}^{n} \lvert \varepsilon i \rvert$
3) Mean Absolute Percentage Error (MAPE) $MAPE = \frac{1}{n} * \sum_{i=1}^{n} \frac{\lvert \varepsilon i \rvert}{Di} * 100$	**4) Mean Squared Error (MSE)** $MSE = \frac{1}{n} * \sum_{ki=1}^{n} \varepsilon i^2$
5) Tracking Signal (TS) $TS = \frac{SFE}{MAD}$	

Week	Demand in units	Forecast demand	Forecast Error	SFE	SFE	Absolute Deviation	Cums. Abs Dev
t	y						
1	7650	7881	-231	-231	-231	-231	-231
2	7830	8061	-231	-462	-462	231	0
3	6240	8241	-2001	-2463	-2463	-2001	-1770
4	9700	8422	1278	-1185	1262	-1278	-3279

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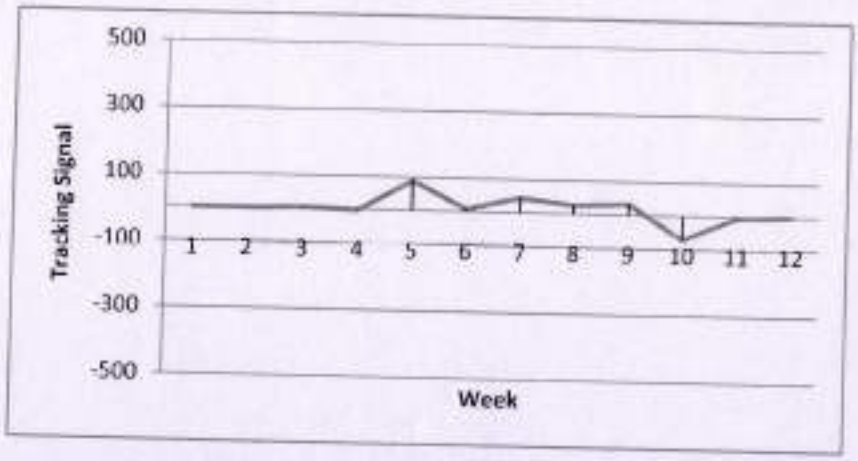
5	10350	8602	1748	563	8517	1748	470
6	8400	8782	-382	181	2737	382	2130
7	7850	8963	-1113	-932	9603	1113	1495
8	9430	9143	287	-645	4503	287	1400
9	10300	9323	977	332	4463	977	1264
10	11500	9504	1996	2328	7282	-1996	-1019
11	9870	9684	186	2514	861	186	-1810
12	7350	9864	-2514	0	0	-2514	-2328
Total	**106470**	**106470**	**0**	**0**	**36072**		

Week t	MAD	Absolute Error %	MAPE	Squared Error	MSE	Tracking Signal
1	-231.00	-3.02	-3.02	53361	53361	1.0
2	0.00	-5.90	-5.97	53361	53361	0.0
3	-590.00	-39.47	-16.13	4004001	1370241	4.2
4	-819.75	13.01	-8.85	1633284	1436002	-1.5
5	94.00	82.29	9.38	3055504	1759902	90.6
6	355.00	32.58	13.25	145924	1490906	7.7
7	213.57	122.33	28.83	1238769	1454886	45.0
8	175.00	47.75	31.20	82369	1283322	25.7
9	140.44	43.33	32.55	954529	1246789	31.8
10	-101.90	63.32	35.62	3984016	1520512	-71.5
11	-164.55	8.72	33.18	34596	1385429	-5.2
12	-194.00	0.00	30.41	6320196	1796659	0.0
Total		364.95				



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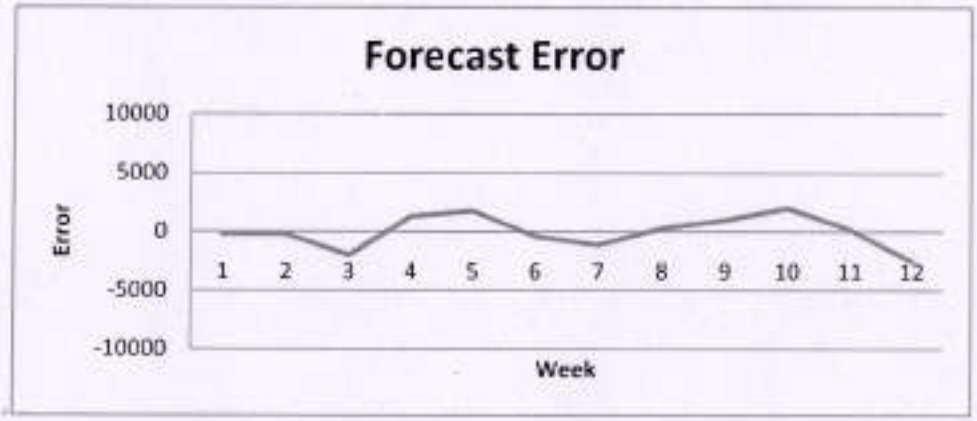
Graph No.2 Week Vs Tracking Signal

Interpretation:

This graph shows tracking of the error for the forecasted demand; it has been useful to verify the accuracy of the forecasted demand for the first twelve weeks where we consider the actual demand. This error has been calculated by the linear regression method where we calculate the sum of the forecasted error against the mean absolute deviation. From the above graph we can interpret that there is a sudden change in the tracking signal in fifth, seventh, eighth, ninth and tenth weeks; so we will have to pay attention for the these five weeks.



Graph No.2.1 Week Vs Error

Interpretation:

This graph is error against the weeks; it is useful to see the forecasted demands are within certain limit or not. From the above graph shown there is fluctuating change in the error over the twelve weeks has been observed. This forecast error has been calculated to verify the error of the predicted demand.

4.3 Capacity Planning

A) Available Capacity

Week	Demand in units	Hrs/unit of production	Demand in hrs	No of Working days	Working hrs/day	No of workers	Capacity available hrs	Capacity Demand Gap in hrs
1	7650	0.08	612	6	8	13	624	-12
2	7830	0.08	626.4	6	8	13	624	2.4
3	6240	0.08	499.2	6	8	10	480	19.2
4	9700	0.08	776	6	8	16	768	8
5	10350	0.08	828	6	8	17	816	12
6	8400	0.08	672	6	8	14	672	0
7	7850	0.08	628	6	8	13	624	4
8	9430	0.08	754.4	6	8	16	768	-13.6

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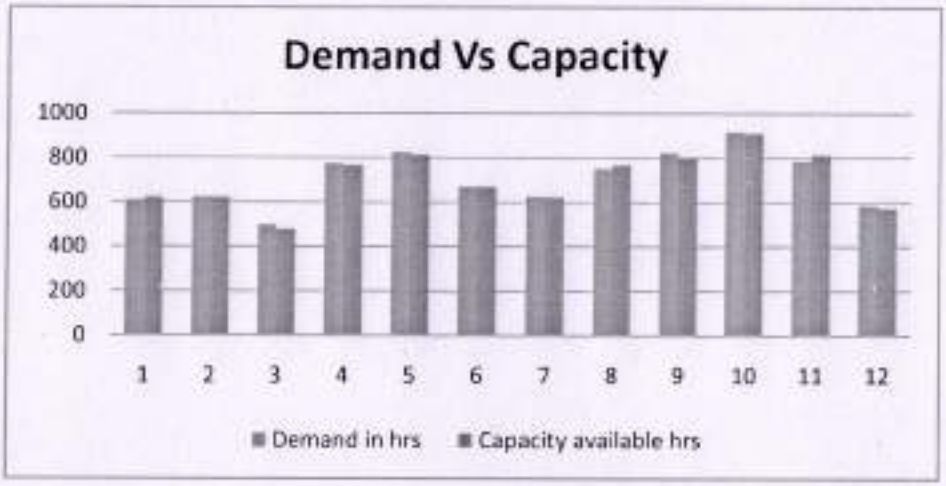
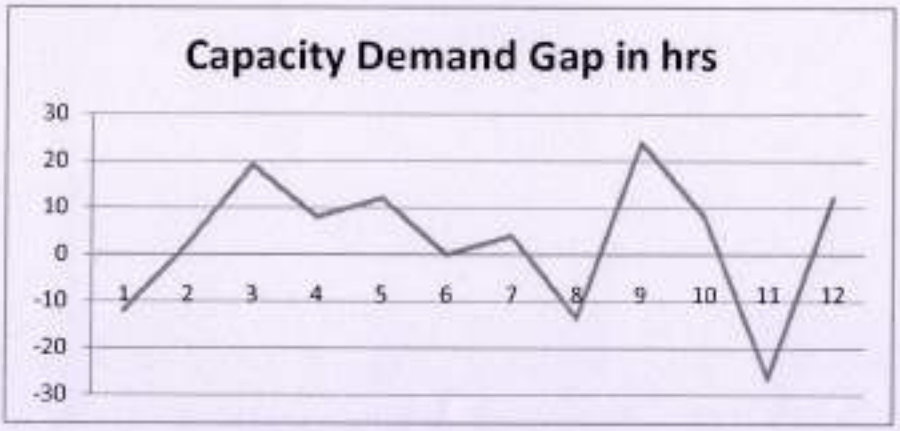
9	10300	0.08	824	5	8	20	800	24
10	11500	0.08	920	6	8	19	912	8
11	9870	0.08	789.6	6	8	17	816	-26.4
12	7350	0.08	588	6	8	12	576	12



Graph No.3 Demand Vs Capacity

Interpretation:

The above graph is actual demand versus available capacity; it shows the actual demand has been satisfied with the available capacity but where it's not fulfilled the extra capacity has to utilized and when there is extra capacity available that has been utilized for certain maintenance or other work.



Graph No.4 Capacity Demand Gap in hrs

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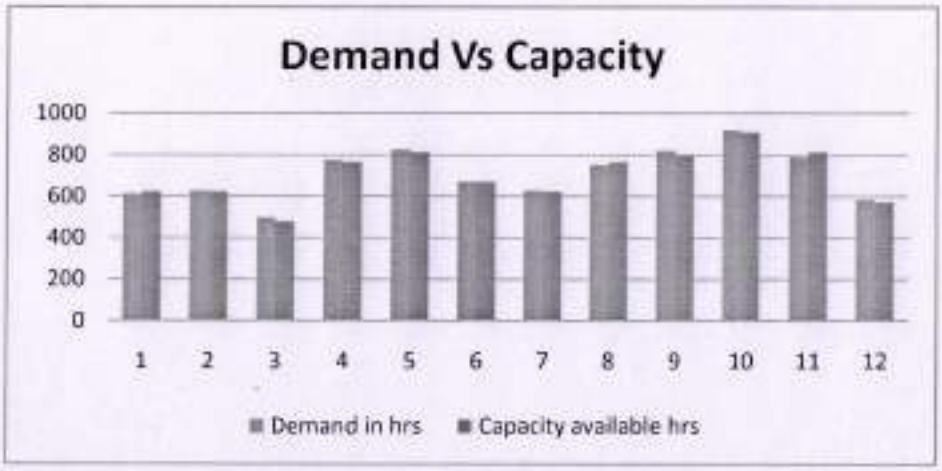
Interpretation:
The above graph shows the gap between the capacity and demand; where the positive side shows the extra capacity time available after the fulfillment of demand and negative side shows there is a need of the capacity to fulfill the demand.

A) Required Capacity

Week	Demand in units	Hrs/unit of production	Demand in hrs	No of Working days	Working hrs/day	No of workers	Capacity available hrs	Capacity Demand Gap in hrs
13	7650	0.08	612	6	8	13	624	-12
14	7830	0.08	626.4	6	8	13	624	2.4
15	6240	0.08	499.2	6	8	10	480	19.2
16	9700	0.08	776	6	8	16	768	8
17	10350	0.08	828	6	8	17	816	12
18	8400	0.08	672	6	8	14	672	0
19	7850	0.08	628	6	8	13	624	4
20	9430	0.08	754.4	6	8	16	768	-13.6
21	10300	0.08	824	5	8	20	800	24
22	11500	0.08	920	6	8	19	912	8
23	9870	0.08	789.6	6	8	17	816	-26.4
24	7350	0.08	588	6	8	12	576	12



Graph No.5 Demand Vs Capacity

Interpretation:

The above graph is predicted demand versus required capacity; it shows the predicted demand has been satisfied with the required capacity but where it's not fulfilled the extra

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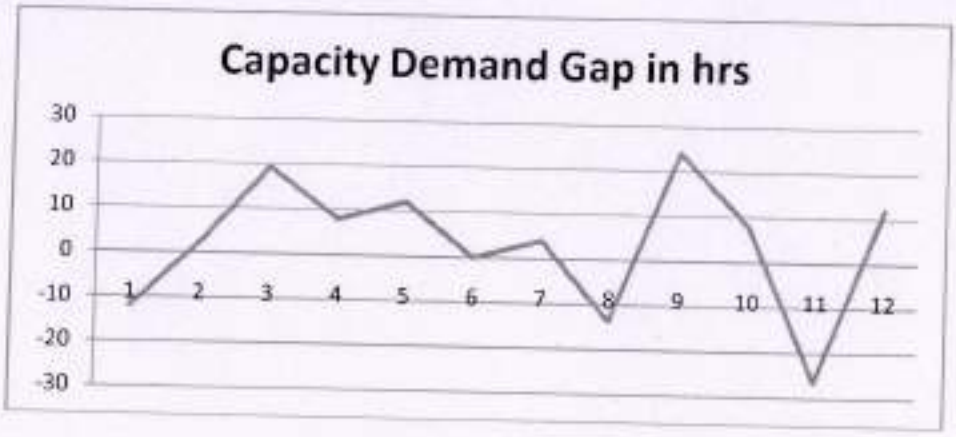
capacity has to utilized and when there is extra capacity available that has been utilized for certain maintenance or other work.



Graph No.5.1 Capacity Demand Gap in hrs

Interpretation:

The above graph shows the gap between the capacity and demand; where the positive side shows the extra capacity time available after the fulfillment of demand and negative side shows there is a need of the capacity to fulfill the demand.

5] Findings :

1. The project data helps to specify & identify the forecasting of demand for the particular product over the certain period of time.
2. According to demand forecasting it is useful to determine the demand and forecast error for the future period which has been also tracked by trend linear equation.
3. The available capacity planning has been done for the actual demand which will be helpful to decide the gap between the demand and the capacity.
4. Once the demand have forecasted, the required capacity planning has been done for the forecasted demand which will be helpful to decide the gap between the demand and the capacity.
5. The actual demand has been satisfied with the available capacity but where it's not fulfilled the extra capacity has to utilized and when there is extra capacity available that has been utilized for certain maintenance or other work.
6. From the above data analysis; the gap between the capacity and demand; where the positive side shows the extra capacity time available after the fulfillment of demand and negative side shows there is a need of the capacity to fulfill the demand.
7. Demand forecasting and Capacity planning are interrelated and interdependent to each other.

6] Recommendations :

1. The management has to pay attention towards the demand and demand forecasting.
2. Organization has to use the resources carefully as to do the capacity planning according to the demand and also have to find out the bottlenecks from the process flow diagram.
3. If more time required fulfilling the demand then organization will have to increase the capacity.
4. The various processes have critically verified & its completion time will be minimized.
5. Work break down structure will help to improve the quality of work.

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"Implementation of RFID based patient monitoring system using cloud computing."

Rohan Dahivale, Assistant Professor, rohandahivale@rediffmail.com
Shantanu Panhale, Tata Communication Limited, panhale.shantanu@yahoo.com

ABSTRACT

In this paper, I have described the basic concept which is based on cloud computing for manipulating the human activities. This system can monitor Patient's movement, location by using RFID Based sensors. The sensor data is then widely spread to the Clouds. From that, Life care services such as emergency service, care givers can monitor and has immediate response in case of emergent situations like heart attack

With this system patient information and data can be accessed globally and resources can be shared by a group of hospitals rather than each hospital having a separate IT infrastructure. It can provide a flexible platform for public-health departments to upload real-time health data in a timely manner.

Keywords: [cloud computing, RFID,* patient monitoring system*]

Introduction : Health monitoring system using cloud uses Eye-OS an open source web desktop tool that acts as the cloud where all sensor data are stored rather than storing it in the local machine. The process of uploading the sensor data to the cloud is done through software as a service (SaaS) a service provided by cloud to reduce the complexity of storing data in the local machine. All human activity data captured from sensors are transmitted to the Cloud Gateway. The gateway classifies data into health data stores in a database. The filtering module filters redundant and noise data to reduce communication overhead before sending to the Cloud. The filtered data are then updated to the cloud database. The data in the cloud are then accessed by doctors, nurses, care- takers and also by other hospitals, by this way patients can have better care at low cost.

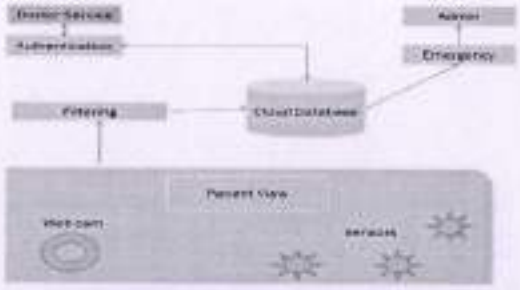

Figure1: System Architecture

In the existing system no voice enhanced services were and also used to know the health condition of the patients, so the doctors were not able to provide immediate aid to the patients. As computers became more prevalent, scientists and technologists explored ways to make large-scale computing power available to more users through time sharing, experimenting with algorithms to provide the optimal use of the infrastructure, platform and applications with prioritized access to the CPU and efficiency for the end users. [1]

Technical Specification :

Working of Cloud computing

"A Cloud is a type of parallel and distributed system consisting of a collection of interconnected and virtualized computers that are dynamically provisioned and presented as one or more unified computing resources based on service-level agreements established through negotiation between the service provider and customers and can be ubiquitously accessed from any connected devices over the internet"

Cloud computing has computational and sociological implications. In computational terms cloud computing is described as a subset of grid computing concerned with the use of special shared computing resources. For this reason it is described as a hybrid model exploiting computer networks resources, chiefly Internet, enhancing the features of the client/server scheme. From a sociological standpoint on the other hand, by delocalizing hardware and software resources cloud computing changes the way the user works as he/she has to interact with the "clouds" on- line, instead of in the traditional stand-alone mode.

Working of The Rfid :

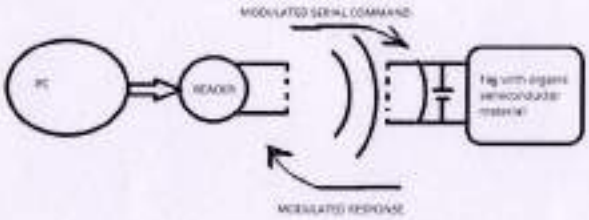

Figure2: RFID Block diagram

Audio frequency identification (RFID) technology is making a major impact on the health care industry. By attaching radio frequency tags to people and objects, RFID technology can provide identification, tracking, location, security and other capabilities. These capabilities directly affect the major issues currently experienced by health care organizations while also helping to drive down costs. It is able to correctly identify a patient and know where that patient is at all times results in improved safety and bed placement. The simplest RFID system has three major components:

- An RFID Tag- Transponder

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- An RFID Reader-Transceiver.
- A predefined protocol for the information transferred

An antenna is connected to the RFID reader to communicate with the transponders. It sends out the electromagnetic field in a short range. The RFID tag is activated when it passes through a radio frequency field and sends out the programmed response. The RFID tag has a small computer chip that is programmed with the information that uniquely identifies the tag. The RFID tag can be passive or active. A passive RFID tag does not contain its own power source; rather, it absorbs energy propagated from a RFID reader's antenna to supply all the power it needs to wake up its chip and communicate with the RFID reader. Unlike passive RFID tag, an active RFID tag has built with a battery inside it to energize the tag. Because active RFID tag uses an internal battery, its signal strength is a lot higher than passive tag and therefore can be read from a further distance.

VPC (Virtual Private Cloud):

A **Virtual Private Cloud (VPC)** is a private cloud existing within a shared or public cloud. A virtual private cloud is similar in concept to a virtual private network (VPN). A VPN can be used to send data over a public network such as the Internet through a private tunnel that cannot be enter" by data that is not properly encrypted.

Implementation Constraints:

In this section we are going to discuss the implementation constraints of the system. Mainly there are three stages while designing the system.

1. Initial stage: In this case if there is no input to the sensors then obviously the output will be null. In this stage we are going to store the patient details using there Unique RFID tag. We are providing each individual tag to each individual patient. So that it will be easy to access their details. We are assigning Doctors to each patient this information is also stored in database that which doctor is assigned to which patient.

We are using cloud to store the database so that data can be access globally and it will not remain limited to the local area only.

If sensors doesn't get any input i.e. input is null then obviously there is no data to process so output will also be null.

2. Intermediate stage: In this stage we are going to discuss a stage if there is some input for sensors. Let us assume that sensors received input X and then it gives output X'.

This stage indicates your card is read by reader. There can be two possibilities either card is valid or it is invalid. In case of valid input it will give valid output. While in case of invalid input it will be the failure output.

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3. Final condition:

I: Input State:

This is the case where the reader has already read some data. when application initiates no input is taken there is only one button is present to select the port for RFID.
This data is then sent to the cloud via internet connection.

F: Final State:

When the process completes then there is no input for reading and it exits. When it exits there is no tag for sensing and finally the application exits.

Failure State

This case will occur if there is some invalid input given to the system. When the card doesn't get read properly then this state may happen. So in this case the output will be null.

Algorithmic Implementation:

Algorithm for login window:
Step1: Start
Step2: Create class as LOGIN.
Step3: Insert text field and two buttons on login window.
Step4: if credential is correct go to step 5 else go to step 6.
Step5: open port selection window.
Step6: print message "enter correct credential".
Step7: Stop.

Algorithm for port selection window:

Step1: create class as port selection.
Step2: Insert two combo box one is for selecting port and second is for selection camera.
Step3: If port, camera are not selected or wrong port, camera are selected then go to step 4,else step 5
Step 4: print message "please choose correct port".
Step 5: open main GUI window.
Step 6: stop.

Algorithm for patient registration window

Step 1: create class as patient registration
Step 2: Insert three button for insert ,update, delete and no. of text field as per our need for storing patient data in the database (cloud).
Step 3: done different types of validation on tell no. email address text field.
Step 4: if patient id is already present then display message "patient data is already present".

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Step 6: if any text field is empty then display message" not allowed to insert data" else goto step 7

Step 7: display message" patient data inserted successfully".

Step 8: stop

Algorithm for Doctor Registration window

Step 1: create class as Doctor registration .

Step 2: Insert three button for insert ,update, delete and no. of text field as per our need for storing patient data in the database (cloud).

Step 3: done different types of validation on tell no. email address text field.

Step 4: if patient id is already present then display message "Doctor data is already present".

Step 6: if any text field is empty then display message" not allowed to insert data" else goto step 7

Step 7: display message" Doctor data inserted successfully".

Step 8: stop

Algorithm patient monitoring window:

Step 1:ceate class as patient monitoring

Step 2:take one field for camera live streaming which shows patient live activity, two field for patient activity.

Step 3: allocate time clock between two activity. if patient performed one activity then he have to performed second activity within that time slap only,eg after taking a breakfast patient have to take medicine within 15 min only.

Step 4: if the allocate activety not performed by the patient within time stamp only(patient activity not sensed by RFID sensor) then immediately message will goes to doctor mobile no .then goto step 6 else goto step 7.

Step 5: Doctor will turn on camera. and see patient movement.

Step 6: Doctor will assume that patient is performing his activity regularly and cloud databse will update regularly.

Step 7:stop.

SCENARIO DESIGN

Our general system deployment is shown in Figure. The patient's house includes a kitchen, a bed-room, and a living room. RFID based sensors and cameras are deployed in the patient's house to collect sensory data and video. We deploy a cloud gateway in the living room to collect data from all sensors and cameras. It connects to the Cloud via Internet high speed router. Doctors, nurses, and patient's relatives (e.g. his daughter) can access easily via Web Browser.

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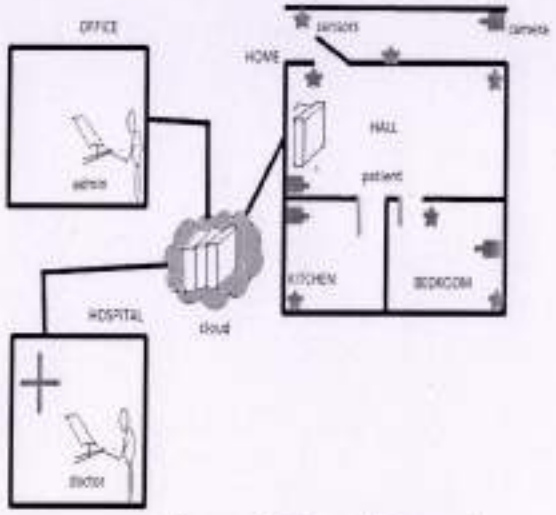

Figure 3: Overall Scenario

The above figure, i.e. figure 3 shows how we collect data from RFID based sensors and cameras and deploy to the Cloud.

A home network is deployed with RFID based sensors and cameras to detect user's activity as illustrated in Figure . We customized our test-bed room as a patient's home environment with a living room, a kitchen, and a bedroom.

We use a Active RFID tag attached on the patient's right hand to detect his activity such as taking medicine, reading book, eating, brushing. In each room, we deploy a RFID Reader to detect if the patient is in the room. A web camera is attached on the wall of the living room and the kitchen to detect his movement such as watching TV, doing exercise. The home gateway is deployed at the patient's home to collect and transmit raw data from RFID based and cameras to the Cloud.

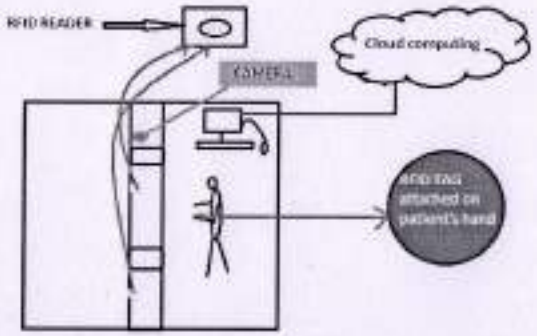

Figure 4: Overall system deployments at test-bed room.

A sample scenario is implemented in order to show how our System supports a patient. It works as follows:

At 7 o'clock in the morning, the patient enters the kitchen and has breakfast. When he enters, the RFID tag sends a sensed signal to the System. System detects he is in the kitchen. While he is waiting for breakfast, he sits on the chair and looks at the TV. System detects his posture by collecting data from the camera and inferring the activity. So it sends a command to turn on the TV.

After breakfast, the patient reads a book in the bedroom. Detecting that the patient is reading, system turns off the TV so that he can focus on the book. Later, system recognizes that he did not take medicine for today by checking the activity database which it has recorded. So it sends a sound reminder "Take medicine please!" to him. When the patient performs those two actions, it updates to the database so that it will not reminder him later on.

Practical Analysis:

We have checked different RFIDs and their specification and plotted the result into the table as follows

We have selected GP-20 as per our convenience.

We have done the experiment with our collogue and checked all the output of all the possible inputs as follows:

SN	Position	Range	Angle	Result
1	3 cm	10 cm	90	Successful
2	7 cm	10 cm	150	Successful
3	8 cm	10 cm	180	Unsuccessful
4	15cm	10 cm	90	Unsuccessful
5	10 cm	10 cm	130	Successful

Table 1: RFID Specification

SN	Name	Cost	No of Ports	Read Distance
1	ALR-8800	2000 EUR	4	10 m
2	ALR-8800 devc	2200 EUR	4	17m
3	ALR-9650-devc	2495 EUR	4	25m
4	GP-20	3000 RS	1	10 cm

Table 1: RFID Specification

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"Location Based Services Using Smart City Development"

- **Amit Dattatray Pasalkar**: Arambh Technology, apamit51@gmail.com
- **Rohan Dahivale,** Assistant Professor, rohandahivale@rediffmail.com
- **Dr. E. B. Khedkar,** Dean, Management faculty, SPPU, Director, D Y Patil School of Management, Lohegoan, Vice Chancellor, Ajinkya D Y Patil University

Abstract :

A location-based service (LBS) is a Real Time Geographical Data Manipulate through Smart Phone. Location-based services can be query-based and provide the end user with useful information such as "Where is the nearest ATM?" or they can be push-based and deliver coupons or other marketing information to customers who are in a specific geographical area. Location based services Using Smart City Project .It is also common that some tasks are only meaningful to be performed at a specific location, so it would be useful physical, social, institution and economic infrastructure location based service to enhance efficiencies and competitiveness of cities. Therefore, in this research we implement a location-based services integrated technology with smart city Project. To distinguish our work from existing ones that rely solely on the GPS technology, this application can be further extended to be used in many other scenarios which comprise both indoor and outdoor environments, such as guiding in public transportation systems or tourist attractions

Keywords: [Google Map, GPS, GIS, ICT]

Introduction :

Cities all around the world work with developers and Government to make city living better, whether it's improving the efficiency and Competitiveness Planning, energy, security, transport economy planning through proper management control & optimization, which becomes more powerful as smartphone penetration continues to increase. Apps and well-implemented technology can help cash-strapped governments save money and, be more efficient. We put together a list of the technology that we want to see in every major city.

By seamlessly collecting advanced data related to power, security, occupancy, water, temperature and more, our Smart Buildings algorithms are giving managers more comprehensive insights and control of their buildings — ultimately allowing them to properly utilize costs& power raise efficiencies, and optimize systems.[1]

Location based services (LBS) are services offered through a mobile phone and take into account the device's geographical location. LBS typically provide information or entertainment and utilizing the ability to make use of the location of the mobile device LBS are services, which are enhanced with and depend on information about a mobile station's position. Location information by itself is not the ultimate service, but if location information is combined with content, useful services may be developed.[2]

Wireless Sensor Networks (WSNs) have been attracting increasing interest for supporting a new generation of ubiquitous computing systems with great potential for many applications such as surveillance, environmental monitoring, health care monitoring or home automation. However, the communication paradigms in WSNs differ from the ones associated to traditional wireless networks, triggering the need for new communication Protocols.[3]

The Global Positioning System (GPS) is a space-based navigation system that provides location and time information in all weather conditions, anywhere on or near the Earth where there is an unobstructed line of sight to four or more GPS satellites. The system provides critical capabilities to military, civil, and commercial users around the world. GPS has the ability to calculate the position, time, and velocity of any GPS receiver. It does so using a process of triangulation, which works on the premise that you can find any position if the distance from three other locations is also known.[4]

A geographic information system (GIS) is a computer system for capturing, storing, checking, and displaying data related to positions on Earth's surface. GIS can show many different kinds of data on one map. This enables people to more easily see, analyze, and understand patterns and relationships.

Objective :

The objective of the paper is concerned with the concept of how Location Based service can be implemented effectively, and how can it be prominent in developing Smart city and in other developing countries. It is concerned with how ICT (Information and Communication Technology) will be helpful in the smart city and hence the economic development of the country

Location Based Service in Smart city Overview :

The smart cities evolution starts with strategy formulation and city master planning. The first step is to undertake a thorough assessment of the city's characteristic and demographic profile such as Social, Physical and Economical. Though this can be done using conventional approaches and mechanisms, using LBS and analyzing location data can enable city administrators to perform an accurate assessment that is more specific than generic. Location is a vital component of a networked society. LBS present a lucrative opportunity for the local administration to enhance its performance by leveraging location and citizen intelligence. Currently, citizen information and data, that are an asset for driving improvements in services and administrative performance, are largely underutilized. It is imperative for local authorities to pro-actively start identifying customer requirements and address them in a systematic manner to deliver more effective, targeted and better services to citizens and communities. LBS, if implemented in a standalone manner, can be beneficial for operators, businesses and citizens

As they focus on targeting the right people at the right location and at the right time.LBS function by pushing or/and pulling services into the mobile device of the user. Push services refer to location services that use position Coordinates of the mobile device to give alerts such as weather information and service messages. On the other hand, pull services are those wherein the user requests for location-based information through a specific application, such as navigating to a specific location in the city by usingmap service. Therefore, LBS can be considered as an amalgamation of the internet, GIS and mobile devices. Geo-fencing is done through a software program which utilizes radio frequencyidentification (RFID) or GPS for defining geographical boundaries. Once a device enters into the defined geographical area, messages ornotifications can be pushed to the device. [2][6]

Geolocationing is providing location based services. Common locationing technologies include GPS, Wi-Fi, Cellular, Bluetooth, Infrared, and Radio Frequency Identification (RFID), GIS. The applicable environment for these technologies varies, and their locationing accuracy also varies according Application uses.Locationing accuracy can also be improved by combining two or more location technologies.

The proposed System location-based application

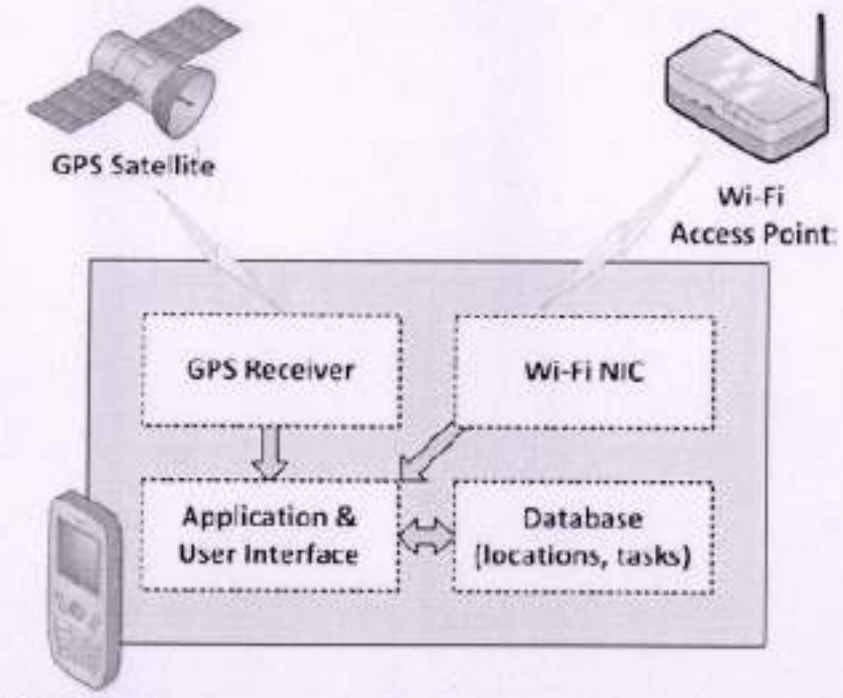

Fig.1 Schematic diagram of the proposed location-based services[7]

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The schematic diagram of our location-based personal services application is shown in Fig. 1. This application employs four hardware/software components in the smartphone, described as follows. The smartphone is built-in with both a GPS receiver and a Wi-Fi network interface card, which can receive radio signals from GPS satellites and Wi-Fi APs, respectively. Based on the GPS readings and the information from the Wi-Fi APs, the application can perform geo locationing to estimate the current location of the user. The database is designed to store personal-meaningful Locations and location-based tasks, which are stored in separate tables. If a location-based task exists in the database, then the application will compare the currently sensed location with the location associated with the task.

The proposed System location-based application

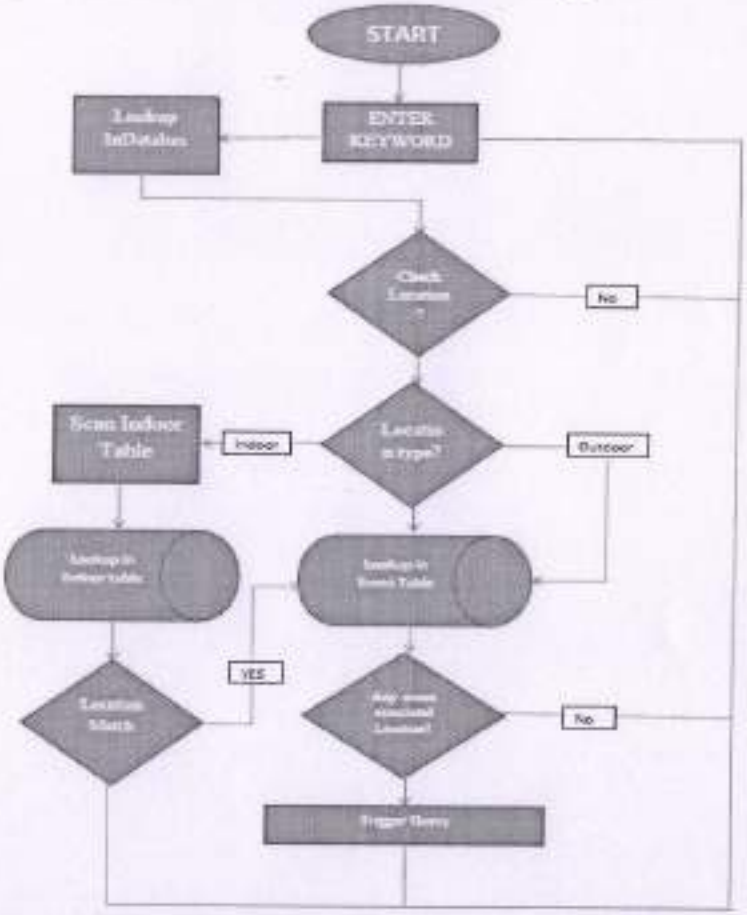

Fig.2 flow operation location based services[7]

In our proposed social-assisted operating model, indoor & outdoor locations established (visited and then AP-scanned) by a user can be uploaded to a location database server if the user decided that the location information is safe to be shared with his/her social group. As a

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consequence, users of the same social group can download the shared location information to their smartphones and use them for future locationing. It should be noted that in this operating model, those locations to be shared require a unified naming scheme. it is feasible to design the user interface that forces the creator of a location to pin-point the location on the Google Maps. Therefore, the GPS Coordinates of the location can be saved in the location database. The flow of operation of this operating model is shown in Fig. 2 User Enter Keyword(keyword Related location,goods,services)then checked which location it should be indoor Or outdoorif Location is indoor then scan indoor database table then cheeked related event location match then trigger query then execute query or if location is outdoor table then cheeked in outdoor table database then cheeked related event matched trigger query then process query.

Application of Location based service (LBS) in Smart city

Location Based services useful Business, Government, Transport and Healthcare sector

1) **Location Based Services is Business Sector**
   E-commerce , Shipping other sector that helpful location based service to identify Nearby Local business, Promoting business ,searching identify needs fulfillment of needs & demands.

2) **Location Based Services In Transport Sector**
   Transport Industry shipping Goods & services to evaluated real time tracking location enhance transparence & reduce cost & time.
   Public & private transport using Location based services smart Phone evaluated access schedule tracking real time location of transport.

3) **Government Sector use of Location based services**
   Public transport manager will heat maps to plan & update route to manage & handling to be proper way disaster &emergency situation utilize manage resources using Location based service. Manage Traffic, avoid traffic jams.

4) **Healthcare sector use location based services**
   Ii Improving Responses times for emergency services with increased indoor & outdoor tracking this will increase response time ambulance
   Use to proper tracking sensing location based service with calculated nearby location.

Conclusion :

In this research, we implemented a Location Base Services & its application usage smart city development in various fields like Government, Transport, Business, Healthcare & many other application. Cloud computing is the upgrading technology& in the future it is becoming so popular. Location based services characteristics that will shape the future of smart cities.

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Location-based services are widespread today. We use them to planning And managing efficient resource proper way utilize resorces.Compared with the application, our application takes full advantage of the ubiquitous WLAN infrastructure to achieve better accuracy in indoor locationing Furthermore, our application gives users a unified user experience because all the established personal-meaningful locations can be displayed on the Google Maps UI, regardless of the location types. Location based services characteristics that will shape the future of smart cities. Location-based services are widespread today.
We use them to planning and managing efficient resource proper way utilize resources.

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- " Using Google Earth for Internet GIS" Andrew Henry
- " Location based services" FICCI
- "A location-based personal task reminder for mobile users "Chi-Yi Lin & Ming-Tze Hung

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"PERM & CPM: Implementation in Production Process"

Prof. Rohan Dahivale, Assistant Professor, Rajgad Institute of Management Research & Development, Pune
Mr. Sourabh Dharne, Student, RIMRD, sourabhdharne11@gmail.com

Abstract :
CPM is commonly used with all forms of projects, including construction, aerospace and defense, software development, research projects, product development, engineering, and plant maintenance, among others. Any project with interdependent activities can apply this method of mathematical analysis. Although the original CPM program and approach is no longer used, the term is generally applied to any approach used to analyze a project network logic diagram.
During project execution, however, a real-life project will never execute exactly as it was planned due to uncertainty. It can be ambiguity resulting from subjective estimates that are prone to human errors or it can be variability arising from unexpected events or risks. The main reason that PERT may provide inaccurate information about the project completion