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A Merged Approach and Allegation of Reverse Engineering and Reverse Supply Chain Management on shop floor of process industry

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Abstract - Ecological and fiscal issues have significant impacts on Reverse Supply Chain Management (RSCM) and are consideration to shape one of the developmental keystones of sustainable supply chain. Business Process This paper describes the various approaches and operations which may be proved helpful in rearrangement of available resources in a brake manufacturing unit by making reuse of rejected material. It unfolds the different opportunities not only for efficient and effective utilization of resources but establishment of new valuable information system also by having practical hands on Reduce & Reuse.

Keywords: - Introduction, SCM, RSCM, BPR, Integrated approach, Company Profile, Frame of Work, Results & conclusion, Reference.

I. INTRODUCTION

Organizational theorists propose that the organization of the future will be networked across functions and designed around business processes rather than functional hierarchies. Business Process Reengineering (BPR) is now being offered as a paradigm of organizational change necessary in order to achieve the required flexibility and competitiveness of the networked organization. Reengineering is a subterfuge determined organizational inventiveness, basically reexamine and redesign business practice with the intention of accomplishing competitive step forward in quality, receptiveness, expenditure, customer fulfillment and other critical process performance measures. In this research paper we offer an appraisal of BPR vision focusing upon the use of informational techniques to facilitate a shift way from linear sequential work organization towards parallel work and multidisciplinary team work.

II. SUPPLY CHAIN MANGEMENT

SCM refers to the management of materials, information and funds across the entire chain of supply i.e. from suppliers through manufacturing and distribution to the final consumer. It concludes basically three types of management:-

- Management of Information: - It controls and follows all types of information from raw material to the final finished product and after that presenting it in the plate of customer.
- Management of Logistic: - The process of design, performance and efficient control, storage of products from start point to the final stage i.e. consumption.
- Management of Relations: - It's the establishment of co operations, mutual understanding among various department within an organization and with suppliers, customers etc.

III. REVERSE SUPPLY CHAIN MANAGEMENT/REVERSE LOGISTICS:-

What is Reverse Logistics?

Logistics is defined by The Council of **Logistics Management** as:

"The process of planning, implementing, and controlling the efficient, cost effective flow of raw materials, in-process inventory, finished goods and related information from the point of origin to the point of consumption for the purpose of conforming to customer requirements." It explains the process of planning, implementing and controlling the cost effective flow of raw materials, in process inventory, finished goods and related information from the point of origin to the point of consumption for the purpose of confirming to customers requirement. RSCM is the return course/ business due to product recovery, overstock from a closed loop supply chain.

Common RSCM Activities:-

DELIEVERS OF RSCM:-

- Economics** - This program brings direct gain to companies from dwindling on the use of raw material from adding values with recovery or firm reducing disposal costs.
- Legislation** - It refers to any jurisdiction indicating that a company should recover its product or accept them back. E.g. In European countries there has been an increase of environmental related legislation & manufacturing take back responsibility.

- C. **Corporate Citizenship:-** It concerns a set of values that impel a company to become responsible engaged with reverse logistics.

What is Reengineering?

- **Reengineering** is the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical contemporary measures of performance such as cost, quality, service and speed.
- **Process** is a structured, measured set of activities designed to produce a specified output for a particular customer or market. It implies a strong emphasis on how work is done within an organization. “(Davenport 1993).

Components of BPR: - The three components of re-engineering are as follows:

1. Reintegrating the Tasks: Combine smaller process sub-tasks and sub-activities into larger, integrated units and packages. The management should reduce the number of parts, components, segments and constituents in products and processes as well as reduce the number of parts in products and processes.

2. Reintegrating the Labour: Allow the workers to perform and co-ordinate larger rather than smaller portions of the process. The management should encourage multi functionality, job rotation, de-specialization and integrated process design.

3. Reintegrating the Knowledge: Knowledge is the ability to coordinate one's actions purposefully one is specialized, atomized and reduce to a machine appendage one cannot coordinate action, but only perform single and simple and commands. There need for an integrated rather than specialized education.

How can BPR be applied to an organization?

- a. **The Initiation stage:** Project teams are assigned, performance goals, project planning and employee notification are set.
- b. **The Diagnosis stage:** Documentation of processes and sub-processes takes place in terms of process attributes (activities, resources, communication, roles, IT and costs).
- c. **The Redesign stage:** New process design is developed by devising process design alternatives and through brainstorming and creativity techniques.
- d. **The Reconstruction stage:** Management technique changes occur to ensure smooth migration to the new process responsibilities and human resource roles.
- e. **The Evaluation stage:** The new process is monitored to determine if goals are met and examine total quality programs.

Conventional Approach	BPR
Functional departments	Process Teams
Division of labor	Empowered employees
Controlled people	Multidimensional work
Training of employees	Education of employees
Compensation for skill and time spent	Compensation for results
Advancement based on ability	Advancement based on performance
Managers supervise and control	Managers coach and advice
Protective organizational culture	Productive organizational structure
Hierarchical organizational structure	Horizontal (flat) structure
Executives as scorekeepers	Executives as leaders
Separation of duties and functions	Cross-functional teams
Mass production	Mass customization

IV. INTEGRATED APPROACH

In fragmented and competitive markets, enterprises seek to win customers by competing not only on price but also on factors like reliability, product variety, speed of delivery & product features. There is Critical Success Factor (CSF) which enables companies to gain competitive advantage by simultaneously providing high levels of Reliability, improved product features, lower delivery periods and a price that matches to a competitor providing inferior products. BPR is fundamentally rethinking intended to achieve dramatic improvements in organizational performance by tackling cross functional business processes, human resources and information technology all together.

Rapid BPR Methodology implemented in RBI:-

Stage 1: Preparation: - Appropriately begins with the development of an executive consensus on break through business goals and objectives that signify the raison of this Re-engineering project. This stage also clearly establishes the essential linkage between the break through business goals and the Re-engineering process performance parameters regarding schedule, risk and organizational change. This stage also brings together the Re-engineering team and brings from the initial change management plan.

Stage 2: Identification: Develops a customer-oriented model of business, identifies strategic value-added processes and maps organizations, resources and volumes to specific processes and priorities and recommends specific processes as the highest impact Re-engineering targets.

Stage 3: Vision: Looks for break through opportunities in the processes, analysis and structures them as “vision” of radical change.

Stage 4: Solution: It's actually divided into two nearly parallel sub-stages, one to develop the technical design to implement the visions and the "social" design which organizes and structures the human resources that will staff the Re-engineering process.

Stage 5: Transformations: Realizes the process vision, launching, pilot and full production versions to the new processes. Thus, this model provides more or less a linear process of undertaking re-engineering exercise.

V. COMPANY PROFILE

Roulunds Braking (India) Pvt. Ltd. is leading manufacturer of Disc Brakes Pads in India, is known for Global quality Asbestos free passenger vehicles Disc brake pads. Started its production recently in 1998 under name Hilton Roulunds (India) later changed to Roulunds Braking (India) and have state of the art manufacturing facility at Sonapat in state of Haryana. The company is continuously supplying its friction material to highly competitive European Market / USA Market or we can say that company is 100% export oriented unit. The company products are well accepted in the global market because of its quality, competitiveness and delivery commitment. The company is a wholly owned subsidiary of **MAT** (Midwest-Air Technologies), based at USA, MAT is Investment Company. The company total manpower is 1200 and turnover is 220 Billion P.A. It comprises the huge utilization of Hydraulic as well as Mechanical Presses for production. It uses asbestos free technology for friction lining materials. It comprises the huge utilization of Hydraulic as well as Mechanical Presses for production.

FRAME OF WORK:-

Data Analysis of Four Wheeler Brake Mfg... from R.B.I. for Integration of BPR & RSCM				
SR. N.	COMPLAINTS	OPERATIONS	COUNTER MEASURES	IMPROVEMENTS
1	Spots	PRESSING	Foreign material entrapping, under layer creation	Cleaning of punches regularly.
2	Porosity		Less weight of powder mix, improper temp.	Proper setting of balance; adequate knowledge of m/c parameters to operators.
3	Broken Edges		Wrong Recipe selection	Proper Training to operators before operation.
4	Cracks		Groove not clear; Improper Handling	Ensure proper cleaned groove before each operation.
5	Surface Burris Appearance		Improper Bumping	Proper pressure setting regularly, Display pressure on panel of m/c
6	Cake / friction shifting		Under cutting / looseness of guide pins	Provided an attachment for proper tightening of pins.

7	Curved Pads	PRESSING	Overheating/ failure of coolant system	Ensure proper cooling of operation regularly
8	Gap creation b/w two layers		Operator negligence; improper placing	Proper monitoring; Training to operators regularly
9	Dent on Plate		Application of excess pressure on pads	Ensure the proper working of pressure gauge
10	Flushness		Generation of high pressure; Tool wear out	Regular checking of tool tip; Provision of heat dissipation.
11	Cavity Thickness		Power failure/ breakdown	Ensure uninterrupted power supply
12	Counter Thickness	POWDER MIXING	Improper weight of powder, operator negligence	Employ one man for balancing
13	Unclear gap b/w layers		Improper mixing of powder	Ensure proportionate of powder
14	Rusted / Green pads	CURING	Moisture presence at plate	Plate cleaning before curing; checking of process parameters
15	Pressure Drop page	GRINDING	Pressure Pump failure	Regular checking of pump before each operation.

16	Low Thickness	GRINDING	Wrong Recipe selection; Lack of Knowledge	Provided training to operators about recipe and parameters
17	Setup Failure		Unskilled Operator	Provision of all necessary guidelines on machine table.
18	Gap creation b/w shim and plate	SHIM FIT	Poor quality material used; improper cleaning of pads	Ensure proper cleaning of pads after each stroke; use always good quality material
19	Back Plate Failure	ASSEMBLY	Improper Tool selection; O/S, U/S of Tool	Ensure physically checking of tool after each stroke
20	Clip Damage		Excess pressure on rivets	Ensuring of sufficient pressure on rivets
21	Burrs on Shim Plate		Excess Inventory on Working Table; Mishandling	Elimination chances of inventory creation.

22	Wire Clip Missing		Operator Negligence	Proper Monitoring of each operation
23	Without Punch		Operator Negligence	Ensure proper accessories fitment after each operation
24	Line Mark on Shim		Operator Mishandling	Ensure proper handling of pads.
25	Wrong Printing	FINISHING	Operator Negligence; Less skilled operator	Provision of regular training about the product and ensure right stamp for right pad



Products of RBI

VI. Results & Conclusion:

A passionate customer focus, superior process design and a strong motivated leadership are vital ingredient to the procedure for the success of any business organization. BPR is the way that every organization should adopt to attain their fundamentals for success. Neither it provide a sensation cure on a tray nor a painless quick fix, rather it promotes arduous hard work and activate the people involved to not only the alteration what they do but targets at varying their basic way of thinking itself. In this paper I have attempted in evolving a structured approach to reengineering.

References:-

- [1].Feldmann Clarence.G, (1998),The Practical Guide to Business Process Reengineering using IDEF0., Dorset House Publishing, New York.
- [2].Chouinard Marc, 2005, "Integration of reverse logistics activities within a supply chain information system", Computers Industry, Vol.56, pp.105-124.

- [3].Gonzalez-Torre, 2004, "Environmental and reverse logistics policies in European bottling and packaging firms", International Journal Production Economics, Vol.88, pp.95-104.
- [4].Manganelli, Raymond.L., Klein, Mark.M., (1994), The Reengineering Handbook: A Step-by-Step Guide to Business Transformation., American Management Association, New York
- [5]Subramanian Muthu, Larry Whitman, and S. Hossein Cheraghi (1999) the 4th Annual International Conference on Industrial Engineering Theory, Applications and Practice November 17-20, 1999, San Antonio, Texas, USA
- [6].Mayer, Richard.J., Dewitte, Paula.S., (1998), Delivering Results: Evolving BPR from art to engineering.
- [7].Kumar Sanjay, 2007, "Optimization of Material", Industrial Engineering Journal, Vol.36, No.8, pp.32-34.
- [8].Jeremy F. Shapiro, 2004, "Challenges of strategic supply chain planning and modeling", Computers and Chemical Engineering, Vol.28, pp. 855–861.
- [9].Korpela Jukka, 2001, "An analytic approach to supply chain development", International Journal Production Economics, Vol.71, pp.145-155.
- [10] Grover Varun, 1994, "Exploring the Seven of Information Technology Enable Business Process Re-engineering", IEEE transactions on Engineering Management, Vol.41, No.3, pp.276-283.
- [11].Dr dale S. Rogers and Dr Ronald s Tribben- Lembke (University of Nevada Reno, Centre for Logistic Management) "Going Backwards: Reverse Logistics Trends and Practice".
- [12].Arvind Jayant, P. Gupta, S.K.Garg "Perspectives in Reverse Supply Chain Management(R-SCM): A State of the Art Literature Review".
- [13].Sunil Chopra, Peter Meindl, July, 2007,"Supply Chain Management", New Delhi, Edition 3.