

Production Planning through Operation Management integrated with Work Place Layout, Inbound Supply Chain and Inventory Management System for the highest Productivity

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Abstract—Now days industries are to adapting new and more and more technologies and methodologies but by these approaches they are reaching at a limited percentage of productivity and efficiency. We are working for an emergence of Systematic process & integrating these major strategies for the better efficiency and the productivity. We are integrating planning of production through a system of Operation Management merging with subsystems of this process as Work Place Layout, Inbound Supply Chain and Inventory Management System for the better productivity. With work place Well-designed workplaces eliminate waste and help to optimize material, people, and information flow it can control & Create high-performance work spaces or manufacturing divisions involves much more than moving machines and people closer together. The job flows in arrangement with worth streams rather than according to purposeful teams or department. Inbound supply chain refers to the transport, storage and SCM of goods coming into a business to the manufacturing point by which we can eliminate and reduce the lead time of inventory. Inventory is one of its main resources and belongs to a speculation that is fixed up until the item is sold or used in the production of an item that is sold. It also costs money to store, track and insure inventory. Inventories which are mismanaged can create momentous economic problems for a industry, whether the unprofessional conduct results in an inventory glut or an inventory deficiency. To controlling this process, we are integrating Operations management is concerned with converting materials and labor into goods and services as efficiently as possible to maximize the profit of an business it also consists that the direction of business practices to create the highest level of effectiveness possible within an business.

Keywords—Production Planning, Operation Management, Inbound Supply Chain, Work Place Layout, Inventory Management, Supply Chain Management, Manufacturing.

INTRODUCTION

This dissertation belongs to generate highest productivity which involves some well-designed sequenced planning process these are interconnected strategies to reach highest productivity. We are integrating three process together in sequenced planning procedure first we applied a proper base as operation management it will work like a platform for the other implementing technologies in which we are implementing work place layout planning/management/design which will need we will apply as per requirements for the highest productivity. In next we will implement the inbounds or you can say inner supply chain management system for the preventing shortage of the raw material and it will also help for the keep store smartly managed and it will maintain a minimum level of inventory for controlling the over inventory, short supply time of raw material and over inventory. In another next planning we are implementing the inventory management for the inventory wastage and decreasing inventory carrying cost. Inventory carrying cost can help to boost the financing conditions of the company it will help to achieve higher productivity. These methodologies will perform the planning under the platform of the operation management the function of operation management is in that dissertation is to only control the overall process which can effect on planning in Work place design/planning/management, Inbound interconnected supply chain management and inventory management.

After successfully implementation this methodology can achieve the highest productivity. Inventories that are mismanaged can create significant financial problems for a business, whether the mismanagement results in an inventory glut or an inventory shortage. To scheming this method, we are put together operation management is with materials and production into supplies and services as efficiently as possible to take advantage of the profit of an business it also consists that the administration of business practices to create the highest level of efficiency possible within an organization. These approaches they are reaching at a limited percentage of productivity and efficiency. We are working for an emergence of Systematic process & integrating these major strategies for the better



Figure 8-Functional Process

efficiency and the productivity. We are integrating planning of production through a system of Operation Management merging with subsystems of this process as Work Place Layout, Inbound Supply Chain and Inventory Management System for the better productivity. With work place Well-designed workplaces eliminate waste and help to optimize material, people, and information flow it can control & Create high-performance work spaces or manufacturing divisions involves much more than moving machines and people closer together. The work flows in arrangement with importance streams rather than according to efficient teams or departments. Inbound supply chain refers to the transport, storage and SCM of goods coming into a business to the manufacturing point by which we can eliminate and reduce the lead time of inventory.

Operations management is primarily concerned with preparation, uniting and supervising in the contexts of production, manufacturing or the SCM of services. As such, it is SCM-absorbed, ensuring that an society successfully turns inputs to outputs in an resourceful manner. The inputs themselves could represent everything from materials, apparatus and technology to human resources such as employees or labors.

Examples of the types of duties or profession allocations this involves are procurement (acquiring goods or services from external sources), handling relations with those involved in events, and educating a company's sustainability with esteem to its use of capitals.

Basically, getting everything 'just right' and receiving everything 'just right' is exactly what inventory management is all about. Good record management is all about having the right amount of product, at the right value, at the right time, and in the right place.

Right Amount- Stocking the right amount is truly important. If you order too little, your customers will start looking away when you're out-of-stock of popular items. But if you order too much, there's a chance you'll be fixed with lots of extra stock that you'll be forced to sell at clearance prices or risk contribution them become obsolete. In a poll by GetApp, defendants were asked how they total when to reorder... and a resounding 46% of them decided based on physical from previous months! If you're part of that 46%, you'd want to kind sure you've got the right data - which means looking for a solution that'll habitually track your record movements as much as possible. In fact, even if you're chose to use approximating software (15%) or formulas (13%), you're still going to need material from the preceding months. (If you're wondering about the remaining 26%, they selected "Other" - we're still betting physical from previous months' factor in somewhere though!)

Right Cost- You don't want to be paying more for your harvests than you have to, but lower prices aren't always better. Independents often potential price amount breaks - you just have to order 20% more stock to save 10% - and you may find by hand digging into your reserves to make this acquisitions.

But is that the best outstanding for your occupational? After all, buying stock is only the beginning. There's a whole host of categorical costs attached to your products. The more stock you have on pointer, the more you'll have to spend on storing facilities while snowballing your risk of having crops going out-of-date.

A good example of design absolutely affecting a company's employee charisma and retaining rates can be found in Clifford Chance's new Canary Wharf offices. while the world's major law firm stimulated its offices accessible of the urban area of London and into Canary Wharf in 2003, it desirable to find a way to convince current personnel to make the change with it.

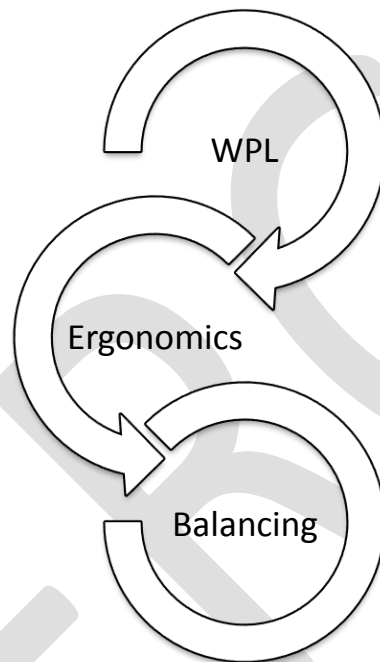


Figure 2- Work Place Layout Functions

Gensler treated Allen & Overy managers to a day on the London Eye helm in order to inspiration ideas for the law firm's new workplaces outside of the characteristic corporate setting. The new office's design merged a 24/7 coffee shop, a full refectory that also helped as a large conference room, a sky-lit spinning pool on the eighth ground with opinions of the docks, a full-time gym with coaches, a travel action, a bank and a coiffeuse, among other amenities. The client required to find and keep the best aptitude, and didn't want employees to worry about discovery time to deal with private matters and shops. The thinking was, "If you're going to give me 10 hours a day as a lawyer, then I'm going to give you all of this." The new office project providing a high-performance effort situation that services both staffs and clients.

LITERATURE REVIEW

Chris Vosssays that in hispaper reviews the use of case study investigation in operations management for theory development and testing. It draws on the works on case research in a number of disciplines and uses examples drawn from operations organization research It provides guidelines and a roadmap for operations running researchers wishing to design, develop and conduct case-based research Case research has steadily been one of the most powerful research methods in operations administration, particularly in the development of new theory. This is particularly true in today's atmosphere.

LEDA V. ROTH AND LARRY J. MENOR wrote in their research paper offers visions concerning a research agenda for service operations management (SOM). First, we stimulate the need for a SOM agenda. The urgency for SOM research is driven by the needs

of the fast rising and evolving service sector of our national economy and the dearth of linked processes management research. Second, we offer a theoretical outline that paints a broad-based picture of key architectural elements in the SOM study landscape.

Ibrahim H. Garbie says that Ergonomics is anxious with making the workplace as efficient, safe and comfortable as possible. Effective request of ergonomics in work system design can achieve a balance between worker physiognomies and task demands. This can enhance operator productivity, provide worker safety and bodily and mental well-being and job satisfaction. Many research studies have shown optimistic effects of applying ergonomic values in workplace design, machine and tool design, environment and facilities design. there has to be a determination of how the info will be gathered.

Uday Apte, says that the facility sector represents the largest and the fastest growing segment of the economies of the United States and other industrialized countries. For example, in 2006, services accounted for roughly 83% of the total service in the United States. The sheer size and ongoing growth of the service sector and of service jobs, the lack of significant productivity development within services, and a late start in the research on the operational issues of services make service processes an important and fertile area of research.

Dr. K. CHANDRASEKAR involved in competitive business environment, organizations can no longer afford to waste the potential of their workforce. There are key factors in the employee's workplace environment that impact greatly on their level of motivation and performance.

PROPOSED METHODOLOGY

In proposed methodology, we are applying this for the increasing manufacture with the help of three major tools

- Work Place Layout
- Inbound Supply Chain
- Inventory Management

On the platform of Operation Organization for control this tools activities. Operation Management is a very vast field but we are using it like a supervisory tool to these three above itemized tools.

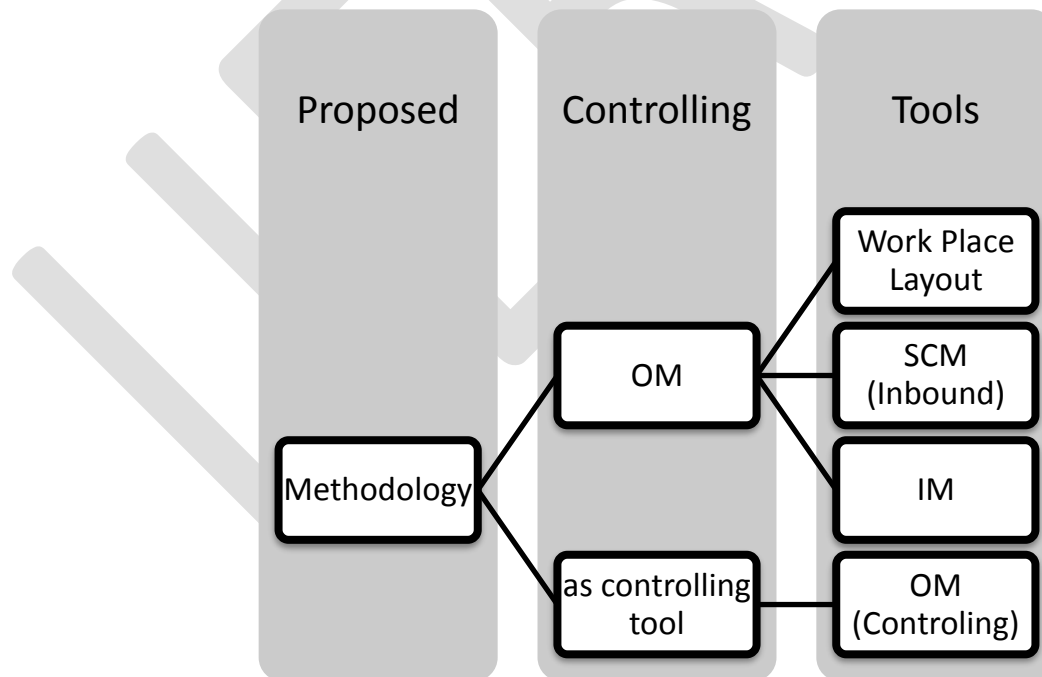


Figure 3- Proposed Methodology

As we are discussing we are taking a mechanism shop's shop floor if we follow Principle of Production Planning and Switch: "The highest efficiency in production is obtained by manufacturing the required amount of a product, of the required quality, at the required

time by the best and inexpensive method" - PPC is a tool to coordinate all manufacturing activities in a production organization. Production planning and control essentially consists of planning manufacture in an engineering organization before actual production activities start and training control doings to ensure that the planned production is realized in terms of amount, quality, SCM timetable and cost of production. Manufacture planning includes the organization of an overall manufacturing / functioning system to produce a product. The numerous activities involved in production preparation are designing the produce, determining the equipment and capacity requirement, scheming the layout of physical facilities and material and material handling system, decisive the sequence of processes and the nature of the operations to be performed along with time requirements and specifying certain production quantity and quality levels. Impartial of production planning is to provide a physical system together with a set of employed guidelines for efficient conversion of raw resources, humanoid skills and other inputs into finished products. Volume of Production:

Factors determining Production Preparation Procedures:

The production planning used, varies from business to company. Production planning may begin with a product idea and a plan for the project of the product and the entire production/operating system to production the product. It also includes the task of planning for the industrial of a modified version of a current product using the existing facilities. The wide difference between preparation procedures in one company and another is primarily due the differences in the financial and technical condition under which the firms operate. The three major factors decisive production-planning procedures are:

The amount and intensity of production preparation is determined by, the volume and character of the operation and the nature of the industrial processes. Production planning is expected to reduce industrial costs. The planning of manufacture in case of custom order job shop is limited to preparation for gaining of raw materials and components and willpower of works centers, which have the volume of industrial the product.

Nature of Production Processes:

In job shop, the production groundwork may be informal and the growth of work methods is left to the individual workman who is highly talented. In high volume production, many products contrive are complicated and they put huge amount of effort in designing the product and the commerce processes

Scope of machine shop production planning

Production Planning and Control encompasses following areas:

- **Materials:** Planning for obtaining of raw materials, components, and spare parts in the right quantities and stipulations at the right time from the right source at the right price. Purchasing, storage, inventory control, calibration, variety reduction, value analysis, and review are the other activities related with material.
- **Methods:** Choosing the best method of dispensation form several alternatives. It also including determining the best classification of operations (process plans) and preparation for tooling, jigs and fixtures etc.
- **Machines and equipment's:** Industrial methods are related to production facilities available in the manufacture systems. It includes facilities planning, capacity planning, allocation, and use of plant and equipment's, machines etc.
- **Manpower:** Preparation for manpower (labor and managerial levels) having appropriate skills and knowhow.
- **Routing:** Decisive the flow of work material handling in the plant, and sequence of operations or processing steps. This is connected to consideration of appropriate shop layout and plant layout, temporary storage sites for raw materials, components and semi-finished goods, and of materials treatment systems.

Advantages of Proposed Methodology

- **Improving Quality**
How several times has a manager brainstormed ways to growth the frequency with which personnel perform quality control drafts? New floor layouts are the perfect chance to reduce the footsteps/effort mandatory to QC products while care key personnel at or close their primary workplaces.
- **Operator Efficiency**
Reviewing machine-manning supplies by looking at the current mix also can be factored hooked on new floor layouts. That does small runs may advantage from having an operator that can change over and over to the next job. A shop that does very extended runs, or has been clever to schedule parallel size work to lines, can bring prime operator work positions to within a few steps of each other to decrease redundant people.
- **Planning for Expansion**
Planning for future machine developments and elevations can pay massive dividends when the time is taken to factor in floor planetary.
- **Less travel time of Material Layout Concepts**
In each layout, it must be strong-minded where the incomplete product arrives the and wherever finished goods leave. Machine arrangement comes next. Typically, the highest layout chance/variable is the conveyor transfer among the equipment, so careful consideration should be given to this capital expense.

RESULT

- **Workplace Layout**
As we develop the new shop floor plan can lead to less travel time of material it simply means that you can deliver material in very short time. So, it is clear that material will take less time to travel inn shop floor so performance rating will increase.
- **Inbound Supply Chain**
The Inbound SCM Information Source facilitates the collection of inbound SCM data for analysis purposes. In a mixed system landscape, inbound distributions may be processed in different systems. However, you want to use the inbound SCM data from all systems for analysis purposes. To do this, you can set up a dominant system with the changed or canceled inbound SCM data (an information view of inbound distributions). As a next step, the information view of inbound deliveries can be used as the input for tools in the back-end system that monitor inbound deliveries or measure the performance of suppliers, for example. Previously there is no inbound scm info system was there. Implementation can be increase 20-30 percentage.
- **Inventory Management**
Inventory management is a discipline mainly about stipulating the form and location of stocked goods. It is mandatory at different locations within a facility or within many locations of a supply network to precede the regular and planned course of production and stock of materials. Previously there were two inventory locations. Implementation one on the middle of the shop floor as per design. It can reduce assembly time and shorter assembly time lead to better and on time dispatch based on customer requirements, by delivering systems which move through each clearly defined phase, within scheduled time frames and cost estimates.

ACKNOWLEDGMENT

In performing our dissertation, we had to take the help and instruction of some esteemed persons, who deserve our supreme gratitude. The finishing point of this assignment gives us much Pleasure. We would like to show our gratitude, Mr. Rajneesh Rai. & Mr. Y.P. ladhe.

CONCLUSION

In sum, the available research determines that openings can have both direct and indirect belongings on worker's strength and well-being. Product will travel less and dispatch will be possible before delivery date. There is collecting evidence that the appearances of the physical work location can function as a coping reserve and provide many opportunities for renovation. Workplace design is a

much-referenced catchword when it comes to following and civilizing employee efficiency. If your business has an chance to renovate you may find physically considering new layout choices. Without a doubt, logistics and inbound supply chain management will endure to grow in standing as companies continue to pursue subcontracting, expand their international processes, and do business in a worldwide economic environment. It is one of the most significant aspects of any professional. The characteristic of this part of the professional is whether or not you can content the mandate of your clients if you aren't sure if you take all the materials accessible to make the final invention.

REFERENCES:

1. Mehta, S., R. Uzsoy. 1999. Predictable scheduling of a single machine subject to breakdowns. *International Journal of Computer-Integrated Manufacturing* 12 15–38.
2. Knoll Workplace Research, *Shaping the Dynamic Workplace An Overview of Recent Knoll Research 2015*
3. Dr. B. RAMBABU, N R H/IAI VADDI, Dr.G.MALYADRI,- Volume : 3 | Issue : 1 | Jan 2014 • ISSN No 2277 – 8160
4. Jaideep GUPTE, *Contemporary Inventory Management Techniques: A Conceptual Investigation*, Jan-2016
5. Elisa Battistoni, Andrea Bonacelli,- *International Journal of Engineering Business Management*, Received 5 Jul 2013; Accepted 19 Aug 2013 DOI: 10.5772/56919
6. Hossein MotamedChaboki , Ahmad Fauzi A. Wahab , Majid Ansari, *IOSR Journal of Business and Management (IOSR-JBM)*, e-ISSN: 2278-487X. Volume 7, Issue 5 (Jan. - Feb. 2013), PP 82-88
7. Tom Jose V, Akhilesh Jayakumar, Sijo M T, *International Journal of Scientific and Research Publications*, Volume 3, Issue 3, March 2013 ISSN 2250-3153
8. Dr. K. CHANDRASEKAR, *International Journal of Enterprise Computing and Business Systems Journal of Enterprise Computing and Business Systems (Online)* <http://www.ijecbs.com> Vol. 1 Issue 1 January 2011
9. Amina Hameed, *Journal of Public Affairs, Administration and Management* Volume 3, Issue 1, 2009
10. Milano, M., P. Van Hentenryck. 2010. *Hybrid Optimization: The Ten Years of CPAIOR*. Springer. Milgrom, P., J. Roberts. 1990. Rationalizability, learning, and equilibrium in games with strategic complementarities. *Econometrica* 58 1255–1277.
11. Moin, N. H., S. Salhi. 2007. Inventory routing problems: A logistical overview. *The Journal of the Operational Research Society* 58 1185–1194.
12. Morton, T. E., D. W. Pentico. 1993. *Heuristic Scheduling Systems*. Wiley.
13. Mosheiov, G., A. Sarig. 2009. Scheduling a maintenance activity and due-window assignment on a single machine. *Computers and Operational Research* 36 2541–2545.
14. International MODAPTS Association, Inc., 2000, *MODAPTS Manual*, Southern Shores, NC, 4th edition, Printing two, February 2007.
15. Kanawaty, George, 1996, "Introduction to work study" 4th edition (Revised), International Labour Office, Geneva Konz, Stephan, 1995, "Work Design: Industrial Ergonomics, Fourth Edition, Publishing horizons, Inc.
16. Lewis J. R. and Sauro J.. "The Factor Structure of the System Usability Scale", *Proceedings of the 1st International Conference on Human Centered Design: Held as Part of HCI International 2009*, pp. 94-103, 2009.
17. Vincze D., KovácsSz., Gacsi M., Korondi P., Miklosi A., Baranyi P. "A Novel Application of the 3D VirCA Environment: Modelling a Standard Ethological Test of Dog-Human Interactions." *ACTA POLYTECHNICA HUNGARICA* 9:(1) pp. 107-120, 2012.

18. Gabor Sziebig, Istvan Nagy, R K Jordan, Peter Korondi, Integrated multimedia educational program of a DC servo system for distant learning. In: Proceedings of 13th Power Electronics and Motion Control Conference (EPE-PEMC 2008). Poznan, Poland, 01/09/2008-03/09/2008. pp. 2360-2367.(ISBN: 978-1-4244-1741-4)
19. Peter Korondi, Bjørn Solvang, Gabor Sziebig, Peter Baranyi, An interactive human - robot programming methodology. In: Manufacturing 2008.Biannual 19th international conference. Budapest, Hungary, 06/11/2008-07/11/2008. Budapest: pp. 125-133. (ISBN: 978-963-9058-24-8)
20. Zoltan Suto, Peter Stumpf, Kalman R. Jordan, Istvan Nagy, Integrated e-learning projects in the European Union. In: IECON 2008. Orlando, United States of America, 10/11/2008-13/11/2008. IEEE, pp. 3524-3529.(ISBN: 978-1-4244-1767-4)