



Investigation And Prevention of Hidden losses Occurring in Raw Material Stores of East Asian Pharmaceutical Companies

Naeem Ahmed*

Institute of Business &Technology, Biztek, Pakistan

Abdul Aziz*

Institute of Business &Technology, Biztek, Pakistan

ABSTRACT

Pharmaceutical industry profits have increased substantially since last few years. But due to some problems many pharmaceutical companies has been suffering from hidden losses occurred in different Phases of manufacturing especially in Raw Material Store. In this paper we determine these problems and provide some solutions.

Information technology is now seems to be very essential in every business. Since it enhance the abilities of our business skills and improve outcome to a level extent. Use of Information Technology may cure hidden losses in Raw Material Stores .

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1 PHARMACEUTICAL INDUSTRY OVERVIEW

The worldwide pharmaceutical industry has a dollar sales volume greater than \$100 billion with a number of individual drugs boasting sales volumes of over \$100 million each. Indeed some drugs have been called "blockbuster drugs"-those generating at least \$300 million in new revenues each year. The profit margins in drug manufacture are higher than the rest of the chemical industry and, of course, research expenditures are huge in order to maintain position and develop new drugs in this highly competitive industry.

The present-day drug industry is one of rapid change. Patents on current best-selling drugs are expiring. It has been estimated that the top 100 products in the marketplace will all come off patent (that is, the basic patents will expire) in the period of 90's. As patents expire, exclusivity of producing a trade-named product will pass and competitive-versions of the basic drug will be marketed under generic names (or other new trade names) by new manufacturers. It has been estimated that 40% of the drugs on the market in 1990 will be generic drugs. New products will come on the market as new products are developed through research (McGuire, 2007).

* The material presented by the authors does not necessarily portray the viewpoint of the editors and the management of the Institute of Business and Technology (Biztek).

*Naeem Ahmed : naemnu@hotmail.com

*Abdul Aziz : abdulaziz_uit@yahoo.com

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Ibrahim Hydri Road, Korangi Creek, Karachi-75190, Pakistan.

The pharmaceutical industry develops, produces, and markets drugs licensed for use as medications. Pharmaceutical companies can deal in generic and/or brand medications. They are subject to a variety of laws and regulations regarding the patenting, testing and marketing of drugs (<http://en.wikipedia.org>, on 03-03-2009).

2.1 Research and development in Pharmaceutical Industry

2.1.1 Drug discovery

Drug discovery is the process by which potential drugs are discovered or designed. In the past most drugs have been discovered either by isolating the active ingredient from traditional remedies or by serendipitous discovery. Modern biotechnology often focuses on understanding the metabolic pathways related to a disease state or pathogen, and manipulating these pathways using molecular biology or Biochemistry. A great deal of early-stage drug discovery has traditionally been carried out by universities and research institutions.

2.1.2 Drug development

Drug development refers to activities undertaken after a compound is identified as a potential drug in order to establish its suitability as a medication. Objectives of drug development are to determine appropriate Formulation and Dosing, as well as to establish safety. Research in these areas generally includes a combination of in vitro studies, in vivo studies, and clinical trials. The amount of capital required for late stage development has made it a historical strength of the larger pharmaceutical companies. Suggested citation: Tufts Center for the Study of Drug Development, Annual Impact Report etc.

2.2 High Industry revenues

For the first time ever, in 2008, global spending on prescription drugs topped \$643 billion, even as growth slowed somewhat in Europe and North America. The United States accounts for almost half of the global pharmaceutical market, with \$289 billion in annual sales followed by the EU, Japan & Pakistan. Emerging markets such as China, Russia, South Korea and Mexico outpaced that market, growing a huge 81 percent (<http://forbes.com>, on 15-03-2009).

Pakistan profit growth was maintained even whilst other top industries saw slowed or no growth (Pakistan Economic Report, 2008). Despite this, "...the pharmaceutical industry is - and has been for years - the most profitable of all businesses in the Pakistan In the annual Fortune 500 survey, the pharmaceutical industry topped the list of the most profitable industries, with a return of 17% on revenue.

IMS Health publishes an analysis of trends expected in the pharmaceutical industry in 2008, including increasing profits in most sectors despite loss of some patents, and new 'blockbuster' drugs on the horizon (IMS Health Forecasts, 15-03-2009).

2.3 Importance Of Marketing in Pharmaceuticals

Pharmaceutical companies commonly spend a large amount on advertising, marketing and lobbying. In the US, drug companies spend \$19 billion a year on promotions. Advertising is common in healthcare journals as well as through more mainstream media routes. In some countries, notably the US, they are allowed to advertise direct to the general public. Pharmaceutical companies generally employ sales people (often called 'drug reps' or, an older term, 'detail men') to market directly and personally to physicians and other healthcare providers. In some countries, notably the US, pharmaceutical companies also employ lobbyists to influence politicians. Marketing of prescription drugs in the US is regulated by the federal (<http://en.wikipedia.org>, On 25-03-2009).

2.4 Pharmaceutical Care

Pharmaceutical care is the responsible provision of drug therapy for the purpose of achieving definite outcomes that improve a patient's quality of life. These outcomes are

- (i) Cure of a disease;
- (ii) Elimination or reduction of a patient's symptomatology;
- (iii) Arresting or slowing of a disease process; or
- (iv) Preventing a disease or symptomatology.

3.1 Typical Pharmaceutical Industry Organization Structure in Pakistan

Typical Pakistani Pharmaceutical Organizations have Following Departments/Sections.

- Personal Department
- HR Department
- Finance Department
- Planning & Evaluation Department (Optional)
- Procure department
- Purchase Department
- Quality Control Department
- Raw Material Department
- Packing Material Department
- Mini Store Department
- Production Department
- Finish Goods Department
- Marketing Department
- Maintenance Department

4.1 Inventory Management for Industry

Inventory is a list for goods and materials, or those goods and materials themselves, held available in stock by a business. It is also used for a list of the contents of a household and for a list for testamentary purposes of the possessions of someone who has died. In accounting inventory is considered an asset (Lyons).

The word inventory was first recorded in 1601. The French term inventaire, or "detailed list of goods," dates back to 1415. Inventory management is primarily about specifying the size and placement of stocked goods. Inventory management is required at different locations within a facility or within multiple locations of a supply network to protect the regular and planned course of production against the random disturbance of running out of materials or goods.

4.2 Inventory Management in Perspective of Accounts

Inventory needs to be accounted where it is held across accounting period boundaries since generally expenses should be matched against the results of that expense within the same period. When processes were simple and short then inventories were small but with more complex processes then inventories became larger and significant valued items on the balance sheet. This need to value unsold and incomplete goods has driven many new behaviours into management practise. Perhaps most significant of these are the complexities of fixed cost recovery, transfer pricing, and the separation of direct from indirect costs. This, supposedly, precluded "anticipating income" or "declaring dividends out of capital.

4.3 Warehousing in Pharmaceutical Industry

Warehouse Management in Pharmaceutical industry is an engineering field that is centered on the design of equipment used for the transportation of materials such as Raw Materials and Finish Goods in loose bulk form. It can also relate to the handling of mixed wastes.

Warehouse Management systems in Pharmaceutical industry are typically comprised of moveable items of machinery such as conveyor belts, stackers, declaimers, bucket elevators, ship loaders, un-loaders and various shuttles, hoppers and diverters combined with storage facilities such as stockyards, storage silos or stockpiles.

5.1 Purchasing Process

Purchasing is the formal process of buying goods and services. The Purchasing Process can vary from one organization to another but there are some key elements that are common throughout

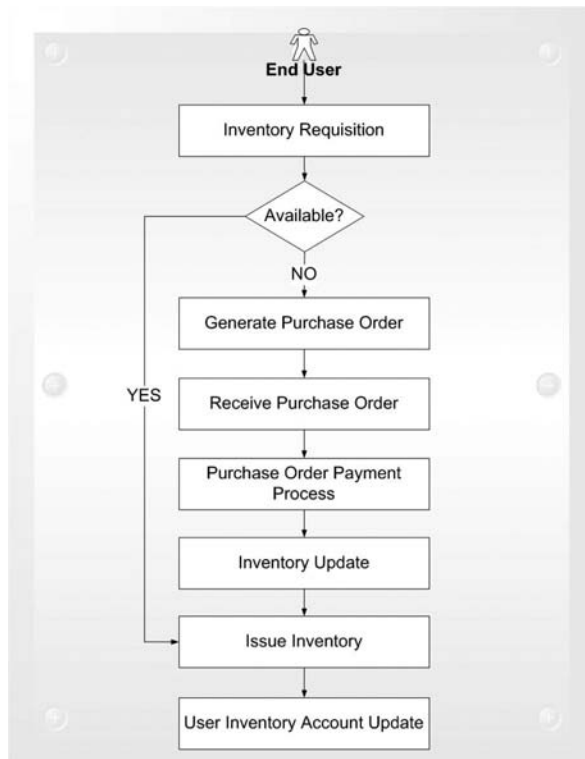
The process usually starts with a 'Demand' or requirements- this could be for a physical part (inventory) or a service. A requisition is generated, which details the requirements (in some cases providing a requirements specification) which actions the procurement department. An RFP or RFQ is then raised (request for proposal or Request for quotation). Suppliers send their quotations in response to the RFQ, and a review is undertaken where the best offer (typically based on price, availability and quality) is given the purchase order.

Purchase orders can be of various types including

- * Standard - A one time buy
- * Planned - Planned PO is an agreement on a specific item an approximate date
- * Blanket PO is an agreement on specific terms and conditions - date and quantity and amount are not specified Purchase Orders are normally accompanied by Terms and Conditions which form the contractual agreement of the Transaction.

An invoice is sent by the supplier which is cross-checked with the Purchase Order and Document which specifying that the goods received. The payment is made and transferred to GL.

Figure. 1
Inventory Flow Diagram



6.1 Supply Chain Management Process in Pharmaceutical Industry

1. The inventory control department takes order from marketing department by their monthly forecast file which shows that how much inventory is needed categorized into different names as A, B, C.
2. Material Management department divide into batches according to procedure specified. Bill of Material (BOM). Pharmaceutical product is divided into two parts according to manufactures, Active and arc pent. Active is the action ingredient that fight against the diosis for which the medicine is being used and acepent is the helping part of the medicine that may be Color, Fruity Liquid.
3. Development of supplier & vendors takes place by procurement department for the inventory which is required.
4. Procurement takes place by Source to a Supplier with a right Quality, Price and Time.
5. Storing of Inventory Starts when it received by Company's respondent and handled with very care and according to precaution from the Supplier's Laboratory. Storing of Inventory takes place according to the Type of Material. Some Stored in cold storage, Darkness and some in dry places with Less Humidity this process is called dispensing.
6. 70% of the total cost is called A grade Inventory. 20% is called the B Grade and 10 percent is C grade.
7. Dispatching of finished goods is followed by methods of First in First out FIFO and Last In Last out LILO. Time of Expiry is very important in dispatching.
8. Orders are generated from marketing and sales department and dispatch to the retail market. If the retailer is across the 100 km distance then it is dispatch in the special bags that prevent heat and light.

6.1.1 Demand Forecast

The demand is generated for production for a whole fiscal year. Hilton Pharma likes to keep 2 months inventory on hand in anticipation of sales. This inventory stocking is called a 3 months freeze.

6.1.2 Abnormal Demand planning

Abnormal demand stands for the demand which is generated in unexpected outcomes such as natural disasters, war, martial law etc. to overcome these demands Hilton Pharma likes to keep a 30 days safety stock.

6.1.3 Safety Stock

The extra handing of raw material/finished goods in anticipation of abnormal demand is known as safety stock. Hilton Pharma maintains a 30 days safety stock in raw material as well as finished goods.

6.1.4 Supply Planning

Supply planning is done in order to satisfy the customers. Hilton Pharma is very well sticked to their logic of on time on full (OTIF) in order to satisfy their customers. Its last year achievement was of 97% which they achieved comprehensively, this year target is of 98% which they are quite achieving it.

6.2 Capacity Planning:

Capacity is the ability to do a work within the resources provided. Capacity planning is done in order to look at the resources which are available for the production and to utilize those resources efficiently to have the maximum output. Capacity planning is done with the forecasted demand provided by the marketing department keeping in view the available resources. Most of the Pharmaceutical companies also put a lot of effort in this field in Order to achieve the maximum output. Here they use a term On Time in Full (OTIF) which helps them achieve their target of the required production output.

The decision which every manufacturing company has to take need to be effective and profitable at the same time. Making every single raw material would be expensive because

of the different machinery and plant requirement so the financial advisor of The Company will not allow having the liquidity of the firm to be stuck up. Most Pharmaceuticals also takes this point in consideration and do not make every raw material by itself but instead they import every thing from foreign countries namely China, India, United Kingdom, Malaysia

7.1 Investigation and Prevention of Hidden Losses Occurring in Raw Material Stores

7.1.1 Issue # 1: Labor Mishandling Issue # 1: Labor Mishandling

Mishandling of material by the labor due to lack of training and irresponsibility and stress they get for working in cold storage area. Labor does not take interest in handling and mixing process.

Solution: -

This problem can solve by Motivating the employee and making the natural environment in the factory premises to reduce the stress. Constant training and division of work of handling the material according to its nature.

7.1.2 Issue # 2: Government Problems

Almost all earlier studies comparing pharmaceutical prices in Pakistan and India have attributed higher prices in Pakistan mainly to the differences in the intellectual property rights regime between the two countries. That Pakistan permits product patents while India does not is factually incorrect. This paper argues that a weak patent regime combined with policies to reduce market concentration, curb monopolies and encourage bulk drug production, initially through public sector investments, and the size of the Indian market could have led to development of indigenous process capabilities. Meanwhile, in Pakistan, the same patent policy was not combined with policies adopted in India and since the market size is much smaller, it did not have the same effect.

Solution: -

This is the major problem in Pakistan Pharmaceutical Industry and it can only resolved through good and Effective Policy Management.

7.1.3 Issue # 3: Lack of Artificial Intelligence

Due to unavailability of Artificial Intelligence devices Raw Materials Consistency problem arise which may be Cause of Big Loss in Finish Good Production.

Solution: -

Temperature measurement devices range from simple spot-measurement bulbs to more complex multi-element sensors and transmitters, capable of measuring the temperature at different heights in the vessel. Use a multiple element device to provide the average product temperature in large bulk liquid storage tanks. Use a single element device to provide the temperature of liquids at a single localized area, such as at or near the bottom of a storage vessel or in a pipeline. The increase in accuracy achieved by using spot or average temperature measurement allows tighter control of all their tank farm liquid inventories, including finished products, raw materials, crude oils and feed stock, increasing overall efficiency. You are also able to track product more effectively and balance book vs. physical inventories more accurately.

7.1.4 Issue # 4: Dispatching Mishandling

In this process they have very few vehicles most of them from out sources in the peak season on contract bases where transporter takes time to deliver and vehicles are not suitable for Raw Material Transportation.

Solution: -

This problem can be solved by purchasing vehicles at optimum level, and out sourcing

can be done only when it is required in the peak season and only for those Materials which do not require special care.

7.1.5 Issue # 5: Shortage of Material

The main problem Pharmaceutical Companies is facing is that they don't have the right information about the inventory, and how much is required for next month as disease and viruses do not predictable.

Solution: -

This problem can be solved by Management Information System (MIS) to flow information effectively and efficiently.

7.1.6 Issue # 6: Lead Time Problem

Almost all Pharmaceutical companies face lead time problem, due to this problem transportation cost increase.

Solution: -

This problem can be Solve by Proper Forecasting of Material requirement and Early Decision for Purchasing of That Material.

7.1.7 Issue # 7: Potency Losses (100%-95%)

Potency losses are a bigger problem in Pharmaceutical Industry due to improper handling of Raw Material Storage.

Solution: -

This problem can be solving by proper Storage Management in Raw Material Store for sensitive materials.

7.1.8 Issue # 8: Under Production Raw Material Weight Losses

Production Department is a critical Department in Pharmaceutical Industry, Under Production, Finish Products May be Process in different Stages, So that Raw Material may loss their weight in that stages due To improper environment controlling.

Solution: -

This problem can be Solve by providing Proper maintained environment in production area to overcome these losses.

7.1.9 Issue # 9: Under Expiry of Materials

Expiry of Raw Material is very critical in Pharmaceutical Industry. If a Raw Material is expired in Stores Before its Usage so all the Material will be lost.

Solution: -

This problem can be solved by Management Information System (MIS) to flow information effectively and efficiently.

7.1.10 Issue # 10: Deficiency of Batch Casting- Actual Casting

A Proper Batch forecasting is been organized before production. But due to some environmental factors involved in the production Area, deficiency in Batch will occurred and that can only be resolved by adding some Raw material to fulfill the deficiency.

Solution: -

This is the most common problem in Pharmaceutical Industry which causes major losses in the Finish Product; So Tightening the Environment according to Product Requirement will reduce this kind of losses.

8. CONCLUSION

Pharmaceutical industry profits have increased substantially since last Few Years. But due to some problems many pharmaceutical companies has been suffering from hidden losses Occurred in different Phases of Manufacturing especially in Raw Material Store. In this paper we highlight these problems and provide some solutions.

Information technology is now seems to be very essential in every business. Since it enhance the abilities of our business skills and improve outcome to a level extent. Use of Information technology may cure hidden losses in Raw Material Store hidden losses.

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