



## INTRODUCING THEORIES AND PRACTICES CONCERNING ERP THE CASE OF THE PHARMACEUTICAL INDUSTRY

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**Abstract** *The Pharmaceutical field is a rapidly growing and highly variable market due to constant advancements in medical research. This industry is also considered one of the biggest markets currently in place. The competition in the pharmaceutical field requires companies to operate in a very efficient and effective way to ensure a competitive edge that allows them to keep moving forward. Furthermore, innovations in the IT industry have become a major part of businesses worldwide. One of the most advanced tools that companies are implementing nowadays is Enterprise Resource Planning systems (ERP) that runs the entire operational infrastructure in an automated way. This article aims to provide a qualitative approach to the integration of ERP in the pharmaceutical industry and the depth and spread of the available applications through testimonies from various head of departments within a pharmaceutical company that underwent a migration from a manual to an automated system.*

**Key words:**

Pharmaceutical industry, ERP, Automation, Competitive Advantage

**JEL Codes:**

M41

With a global annual market revenue of USD1000 billion, the pharmaceutical industry represents an important portion of the global economy. In addition to its large market worth, large investments are constantly poured into the various components of the pharmaceutical field in order to enhance and develop its progress with stable expenses over the last three years in the range of USD170 billion worldwide, which makes it one of the biggest markets that currently exist.

Given the extremely competitive nature of the market due to the availability of numerous substitute products spreading over different pharmaceutical firms, as well as the race for research and development (R&D) and patents, in addition to the fragile and highly demanding nature of the production process, it is essential to ensure the best practices across the various departments of the company. These practices are crucial for the gain and maintenance of a competitive advantage in a highly fluctuating and rapidly changing economic environment.

In order to accommodate for the requirements of the pharmaceutical market, companies are shifting their focus to the automation of their systems and processes. Manual procedures that were the

widespread norm are now being reassessed and replaced by automated applications.

The advances in technology have allowed for the establishment of a new baseline for performances across the various components of the industry and have raised the minimum requirements to levels unattainable through the old methods and with the current turn of event, these methods will soon be rendered obsolete. These new technology are referred to under the name of Enterprise Resource Planning software (ERP).

In the past few years, the trend of using and implementing ERP software in organizations has spread on a global level. What is an ERP and what are the usages of such software for firms.

An ERP system is software that comprises a number of business utilities that are meant to facilitate the transfer of information throughout a company of a chain of interconnected companies. ERP systems first emerged on the market in the mid-1980s as a primitive source of information transfer and then moved to higher grounds by the late 1990s. Before this technological revolution, “companies both large and small used function-driven software for each area of their business” (Leoni, 2012). This means that each department used to operate with its own independent system that did not communicate with any other department, thus making

the information sharing prone to human error and much less accurate as it had to travel through a number of independent and separate channels controlled by people.

With the new ERP technology, all employees with the proper access are connected to the information center that provides them with the data in real-time and with a complete accuracy.

Instead of having to acquire and implement a number of separate software and programs to run their various departments, companies can now opt for a single solution software that can be implemented across the various departments of the company with varying access rights and processing options.

The main functions that can be found in most ERP systems are:

- Accounting and Finance
- Budgeting
- Distribution
- Supply Chain and Procurement
- Inventory Management
- Manufacturing Schedule
- Material Tracking
- Delivery Management (delivery tracking)
- Customer Feedback
- Sales Functions
- Reverse Logistics

The article focuses on understanding the impact of ERP systems on pharmaceutical companies' performance. The objective is to demonstrate the concepts under which an ERP provides a clear superior solution to the manual techniques.

"Functionally, an ERP system primarily supports the management and administration of the deployment of resources within a single (though possibly multi-site) organization. These resources can be materials, production capacity, human labor, or capital." (Apiyo and Mburu 2014).

ERP systems nowadays have three major functions:

- Supporting the decision making process.
- Processing transactions.
- Combining the different workflows into a single compact process.

"ERP systems provide an enterprise transaction backbone that constitutes the glue between all kinds of best-of-breed solutions for specific processes or business areas" (Akkermans, 2003).

To deal with the overall aspect of the above definitions would lead to a very complex and elaborate study that goes in-depth of the process and its characteristics. The focus in this paper will be oriented towards a qualitative assessment of the benefits of integrating an ERP system with regards to the sales

process, customer service, supply chain, warehousing, and distribution as well as parts of the involvement of the financial department.

To assess the main issues faced by the various departments within a pharmaceutical sales company, individual interviews were conducted with the heads of departments of a pharmaceutical company that opted for the implementation of an ERP system. The company in question is a local subsidiary of a multinational company that manufactures and sells a variety of pharmaceutical products. The company has a national coverage and provides these products to hospitals, pharmacies and dispensaries through its privately owned channels. The interviews focused on the benefits that these supervisors and managers noticed and on the improvement to their departments that are a direct result of this shift from manual to automated systems. The paper will present a qualitative approach to the subject matter and attempt to point out the changes that this company has benefited from.

First on the list is the sales team, which represents the most important aspect for any company. In this case, the sales team is composed of an outdoor sales team known as a commercial team that is responsible for the coverage of pharmacies and dispensaries, as well as a team of medical representatives that are in charge of the hospitals and other non-commercial entities (governmental parties or NGOs). According to the sales manager, the integration of an automated system allowed the sales force to be linked directly and in real time to the company system thus giving it access to important information that is needed during a sales meeting. The system provides stock levels, expiry dates, client credit balance and outstanding dues amongst other items directly onto the personal digital assistant (PDA) of the salesperson, thus cancelling the need to refer back to the company quarters during a sales meeting. This increased the efficiency of the salesperson by reducing the time spent communicating with the company in order to obtain necessary information for each client before or during the sales meeting with the customer. In addition to providing this information, the link between the PDA and the system makes the placement of the customer order a single step process in which the salesperson selects the items required, the quantity and other specifications and with the click of a button the order is confirmed on the system and moves along to the next process owner. In comparison, manual methods require the salesperson to fill out a separate text document and send it to the customer services department for processing or contact the customer services department directly to provide them with the customers' request via phone communication. Same thing goes for

the collection of dues; the salesperson has the financial information of the customer available at hand and can confirm instantly the receipt of the payment without having to revert back to the finance department. Another aspect of the improvement, as noted by the sales manager, lies in the process of returning products to the company or reverse logistics. The salesperson is also responsible for the pickup of the items that the customer wishes to return to the company due to expiration, quality issue, wrong order delivery, duplication of request or debt repayment. Under the manual procedures, the salesperson returns the products with a written documentation and the customer services department is in charge of processing these documents in the system before the items can re-enter the inventory. Using the PDA, the items is processed directly to the system by the salesperson, thus reducing to a minimum the time consumption related to the checking of the physical good into the company storage and processing it on the system as well as reducing the multistep process to a single step which reduces the number of people involved in the process thus reducing the possibility of human error.

When moving the attention to the finance department, it was made clear by the financial controller (who in the case of the company being assessed is the head of the financial department) that the system provides a time management advantage as it reduced the duration needed for the financial clearance of customer orders. To clarify, the clearance of an order is the action of providing the approval of the financial department on a request for items by the customer based on the credit history, available balance, dues and payment method of said customer. Following the manual method, each client had to be reviewed individually at each request to ensure the appropriate level of credit allowed as well as the payment history. Under the ERP, the system automatically flags any customer with debt issues or credit surcharge and clears any order that meets the preset conditions. This allows the process to go much faster which affects not only the finance team but also the operations team in charge of storage and distribution as the workflow progresses much faster with minimal delay. On the other hand, as mentioned above, the payments processed directly by the sales team is checked by the finance team and is simply confirmed with comparison to the full data entry process used to occur under the manual processes. The automation also affects other functions of the financial team, but considering that these functions are primarily owned by other departments, they will be mentioned while discussing the respective departments that are the source of the process.

The next interview was conducted with the customer services team leader (CSTL). In addition to the advantages related to request entry on the system and returns previously mentioned in the sales department section a clear change was noted by the CSTL with regards to the complaint and feedback received from the customers. Under manual conditions, any feedback received from the customer, be it a quality issue or a complaint or a notice related to delivery or request placement or credit balance, is noted and sent via mail or through phone call to the related party. The follow up is time consuming and difficult as there no specific time line nor record for the processing of these issues. Using the ERP, the recipient of the feedback inputs it on the system and assigns it to the concerned party. The entire route that this feedback follows is automatically documented and recorded by the system with time-stamps, actions taken, task owners etc. this allows for the immediate finding and resolution of any outstanding issue as well as increase in accountability for all parties involved in this process.

According to the operations manager, another major component of the process that has a large share of the benefit by switching to automation is the supply department. The company has a list of products ranging up to the hundreds. Keeping track of these items on a daily basis is time and effort consuming. The supply chain coordinator, in charge of the supply, had to manually gather stock and inventory information, match them with outstanding products (products ordered from the supplier but not yet received), assess the sales averages while taking into account seasonal items, special circumstances that occurred or that are expected to occur and other issues that affect the sales of pharmaceutical items, and then calculate the needed quantity of each item according to specific guidelines that differ from product to another due to the differences in lead time (time required for the manufacturing of the product), point of origin, expected sales etc. Once this process finalized, these quantities had to be communicated to the supplier or suppliers via email. The confirmation and follow up processes occurred entirely via mail or phone communications. In the midst of this communication, it is important to keep in mind the involvement of the financial department in both sides of the channel for the necessities of approval and clearance of these requests. The aforementioned is subjected to a high degree to human error due to the need to manually determine the requirements and needs as well as the involvement of a number of separate entities with different scopes and targets. The integration of ERPs allows for an automated monitoring system of the stock level in real time, with notifications and alarms presets for each item at the adequate level.

Moreover, the system provides the automatically generated assessment of stock levels and products need thus reducing the task required by the supply chain coordinator to the confirmation of the assessment and the adjustment in case of need for particular reasons. Once the assessment confirmed, the system communicates the quantities of products requested to the supplier (that is linked to the system) thus expediting the process of product requesting. The system also allows the supplier to update the status of each order, request and even product in real time thus providing the supply chain coordinator with a continuous flow of information concerning the products needed which allows the various entities involved in the retail process to adjust accordingly.

This step is also linked to the receipt of the products by the storage unit, as the items are invoiced on the system and a detailed list of the items is generated on the ERP by the supplier allowing the warehouse supervisor to confirm the receipt and the integration of the items into the inventory with a simple confirmation click on the computer instead of having to manually enter each product with the related specifications (name, expiry date, quantity etc.). Therefore, upon receiving a shipment from the supplier, and after checking the quantities received with the invoice and shipment manifest, the warehouse supervisor is in charge of simply confirming the receipt as per the list generated on the system by the supplier and in case it is needed to note any missing or damaged items. Another advantage, as pointed out by the Operations Manager, which benefits mostly the storage unit of the company, is that the system is programmed to follow preset rules for the choice of the products to be invoiced to the customers. As a general guideline, products with less than one third of their shelf life are not considered sales adequate and due to the usual rather short shelf life of medicinal products, companies follow the concept of First Expiry First Out (FEFO) when choosing from different batches (a batch is a serial number assigned to a product lot that indicates that all units of this lot have been manufactured at the same time and from the same raw materials mix) of a single product. These rules are set with exceptions made for specific items or customers (based on laws, agreements, rules and regulations) thus eliminating the risk of error with regards to expiry dates (which, as pointed out by the regulatory department, can be an important legal liability to the company in case of error).

Finally, the last department that is positively affected by this upgrade is the distribution unit. During the meeting with the Operations Supervisor, he pointed out that using PDAs similar to those assigned to the sales team but programmed with tools related to the

distribution tasks, organizes the distribution process faster and better than through a manual, human based process. Distributors are assigned a readymade route to follow with each item drop preset on the GPS. This allows for a real time tracking of each package and an approximate estimation of the delivery duration or time. Once the order received by the customer, the distribution notifies the system of the drop, using his PDA. This does not only permit for a better and more accurate follow up of the delivery of products to the right location in the right time lapse but also has a significant effect from a financial point of view. The manual method, due to the lack of other possibilities, sets the start of the value date of the invoice at the moment of issuance of the invoice (the value date is the time frame that the customer has to settle the amount due in the invoice). This moment varies sometimes with a significant degree from the delivery date. Due to this, the customer might have to proceed with the payment of the items he ordered at the end of a period shorter than the actual period he should have benefited from. Using the confirmation of delivery with direct link to the ERP allows the system to identify the exact moment at which the customer receives his products and set the value date accordingly thus avoiding the dissatisfaction of the customer.

As presented above, the integration of automation to pharmaceutical companies is the next step that all companies must take as described by the various heads of departments that we involved in this study. It is the best way to ensure a high quality service and a proper workflow in all aspects of the company. This step does only allow for a better control, a faster response to change and an easier management process but it also reduces drastically the margin of error caused by the human factor while maintaining the accountability of each party involved in the process. From a general point view, the advancements in technology that are witnessed every day have been used to make life easier and more pleasant. Implementing these advancements to the pharmaceutical field is a must for every company that looks to achieve a competitive advantage and provide its customers, internal and external, with the best value possible.

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