Implementation of Information Technology in the Logistics Area in a Manaus Electronics Company

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Abstract

This article aims to elaborate a continuous improvement in the logistics and production process of an electronics company, through the implementation of IT focused on customer service within the deadlines. The case study proposal was based on the problems faced by the company in question, such as: lack of stock accuracy that directly impacts material separation due to the delay in systemic balance adjustments, BOM impressions for material separation in excess, late orders, among others. The main objective was to highlight the importance of information technology in the logistics area for the production process. As specific objectives we sought to analyze the importance of information technology for the production process; verify the advantages of an information system in the logistics area; analyze the results of the implementation of a logistics information system for the production process. The methodology used was descriptive research, where visits were made in an electronics company located in the city of Manaus. As expected results, the importance of information technology within the production process reduces errors and increases the quality of production.

Keywords: Logistics; Information Technology; productive process.

1. Introduction

Companies are looking for new ways to increase production and reduce costs, because manual procedures require more effort and time, which is why the company gets high quality from its customers. Staying in

the market with a potentially efficient organizational image leads to increased demand and thereby revenue. This work aims to develop a continuous improvement in the logistics and production process of an electronics company, through the implementation of IT, focusing on customer service within the stipulated deadlines, analyzing the benefits of technology and information within a process. indicating the advantage for the logistics process.

The difficulty that the company studied brings with it reflects several situations in which other organizations also share, such as performing processes by manual means, performing material collection through various impressions and high costs related to failures caused by incorrect counts. Related to this, technologies offer the practicality of data that generates important information to be passed on to managers. Technical visits were used to verify how the process of counting parts is performed, which were used as data collection instruments, document analysis, interview and questionnaire, which were conducted with those responsible for the productive process of parts collection to future assembly of notebooks and other equipment belonging to the organization's orders.

Therefore, the question is: how can the implementation of technology and information in the logistics area improve the productive process of an organization?

2. Theoretical Referential

2.1 Information Technology

With increasing consumption, companies increasingly need technologies to help control information and data, so information technology can be considered a strong potential for the development of an organization, because it provides the control. higher data streams, which in turn bring about positive change that can be process automation, even as an advanced way to get business to leverage [1].

The emergence of this term came with the need to create strategies that can involve the company through the capture, organization, interpretation and strategic use of information so that technology can bring knowledge and practicality to various people, especially when involves processes that need a long time for an activity to be performed, in this aspect is defined as [2]: “Information technology is any device that has the capacity to process data and / or information, both systemically and sporadic, regardless of how it is applied. ”

Information systems and information technology alone are not enough to manage or manage an organization, process or company, so the manager must have attributes that can make the best use of technology, making it favorable to the organization, making it a great strategic tool [3]

Therefore, there must be an agreement between technology and information and business strategy to make technology really useful and bring results into the organization; instead, it generates only expense. On the other hand, when they are interconnected, they can bring efficient results to a management decision process [1].

2.2 Information System

Technology and information should be used as a powerful tool to leverage internal processes and increase

business revenue. It can be used in many ways, from selling a product to manufacturing it, as a process control method. A company that knows how to make the best use of an information system may be able to make the best choices. With Technology and Information processes become faster and quality can also be a favorable factor, thus facilitating business management [3].

With the implementation of an information system, production processes can even reduce costs, increase productivity, expand business opportunities, thus allowing expansion to new markets, increasing quality and customer service and reducing waste [4].

Thus, it is analyzed that an information system is a set of related components that together make data enter and at the same time make data enter generating a set of information that may be needed for decision making. where processing converts raw data into important information for managers. And in the output corresponds to pass the information to the people who are responsible [2].

A system can be considered as any kind of platform that, when used, transforms data into information, and may use technological means, where data entry is performed manually by a responsible person, and during the inclusion of such data as it. They are undergoing changes and coming together, thus generating a set of information that is transformed through technology [6].

Thus, the organization that can manage these three items, where the qualification of people is what makes the difference in the results of the organization, can obtain an efficient return by obtaining the best resources, investing in employee training, thus bringing impacting results to the organization. the whole company. This is because a tool only becomes of great potential if it is in the hands of a person who has the experience and qualifications to handle it properly [7].

2.3 The role of information technology in logistics

The way information technology has developed in recent years has brought about real changes in the way people operate their processes within the organization. Whether through software or hardware, IT has already become fundamental to logistics, facilitating the process, organizing information and generating decisions based on business reality [5].

Thus, all the interesting were able to realize that useful information such as: order status, product availability in stock, delivery schedule, payments, are items that are considered essential in a business process. Not to mention that this item is considered a determining factor for reducing inventory and human resources costs, as well as provides a control of everything that happens within the organization, and the information can be used strategically to further increase revenues [1].

Thereby, technology is increasingly applied to logistics processes as a way to make them faster, where you can adhere to the concepts of ECR – Efficient Consumer Response, which is the efficient response to the consumer, so that the importance is focused on the end consumer, responsible for this for the market dynamics, making that several companies seek to meet the increasing demands of the market and customers. ECR can make a difference for many organizations, especially today where the company that offers the most advantages and favors the consumption in some form is the one with the most demands [6].

2.4 Logistics Information Systems

The logistics information system (SIL) offers several advantages in the internal operation that involves the

logistics of the company, which in turn tends to unite all the utilities and needs of the company, together with the clients and managers [7], the methods from within. Sales, shipments, production schedules, inventory availability, order status, and the like with vendors can radically reduce information errors as users use the system to generate information that becomes available for future solutions.

Thus, the manager who is responsible for a given logistics activity can gain control of information necessary to stay with or improve it, according to the results that can be determined with the logistics information system used [5].

Within the Logistics Information System, each Order Management System (SGP) is described in detail, where it is possible to have customer contact in the product search and order placement stage. [8] Thus, this SGP is directly in communication with the inventory or warehouse control system, where it reports whether the product is available from stock. With this, the EMS provides information regarding material availability.

2.5 Services

The concept of services is surrounded by the idea that it is something that the company can offer to its customers without being tangible, it is abstract, not noticeable. Service is considered as the way an organization would like to have its services perceived by its customers, employees, shareholders and financiers, in other words, the concept of service is the business proposition. [8]

Thus, the concept of service needs to be understandable for everyone so that it can express that it is something that materializes in different formats, but all is how the company intends to solve a particular problem, in a different way, where it can be viewed [9]

The companies that perform services occupy the top spot within their sectors before the economy in Brazil. The service is a constantly growing modality, where two items can be considered as more relevant in this area: the demands of consumers and buyers are increasing every day and increasingly new technologies make several services easily accessible. [10]

Thus, companies that provide service to the population are always seeking to satisfy their customers, so that they choose to improve their activities so that they can express the best, an organization's vision concerns me where it expects to be sometime in the future. [8]

Services are considered something of value that serves to collaborate with the continuation of something. Thus, “services are considered to be economic activities that create value and provide benefits to customers at specific times and places as a result of making a desired change in or on behalf of the service recipient” [11]. With this, companies are focused on the service factor, where they can offer their attributes to people or companies, and make customers acquire value or quality with what they offer. Thus, it can be stated that when a particular economy of expansion expands the service area, it generates employment and income for the local population [10].

3. Methodology

This research has the main objective of conducting a study of an electronics company in Manaus, carried out through a technical visit to the company, where an interview was conducted with the head of the sector

where the main problem arises. The interview to find out how the procedures are performed in the production process in a company of electronic technology. It is also performed for data collection the application of a questionnaire with 10 questions to ascertain the procedures performed within each activity related to logistics and the production process.

The type of research performed is descriptive, and tries to highlight what happens as a way to make everyone aware of the problem that is causing discomfort in the organization and thereby seek a solution by implementing a response.

Regarding the research methods used for the development of this work, an interview was applied to those responsible for the production process, in a semi-structured manner, surrounded by 5 questions related to the methods applied in the production process and how the activities are currently performed. The data are obtained and analyzed according to the answers offered where the characteristics that permeate the importance of the problem-oriented solution are observed. They are presented in graphs and tables so that the results can be compared.

4. Applied Studies

Today, the company has an exclusive person to print the list of items to separate from the orders that will produce on the day, but this person, as well as the planner does not have a 100% view of the materials in stock, because every year the Inventories only occur in the logistics sector, this does not guarantee the planner that all the simulated materials in the "Down" orders will be all right to fulfill the orders to be produced, because currently the largest case of surplus balance is in the production process, first of all. Inventory must take place in the company as a whole and orders to lower should only consider the relevant material warehouse, in this case logistics, since once the material has a balance in the production warehouse, one must imagine / understand that it needs balance / consumption adjustment only.

However, the company does not have this critical view of deposits and inventory, there are often delays in billing service because of this and others, the daily work ends up being stressful / exhausting most of the time, for those who end up having to solve the problem of lack of materials. With the data collector, the company can use the same annual inventory time to perform inventory across the enterprise, not to mention that it would be more accurate and assertive in balance.

The collector with its high technology would help the company to save time in its logistics and production process, because a logistics operator for example: The same having a collector in hand, can start separating items of the next order to produce, the reader behind In real time the bill of material view according to the SAP system used by the company, if it detects any divergence / neglect of any item, it will have the power to adjust the balance and inform the PCP, so that it has action of make reasonable decisions for billing negotiations. The reader would minimize the cost for prints and toners, the person who is currently exclusive for bill of materials printing, could just be for rotary inventory where the company benefits greatly from this action.

Even though the reader has a higher cost than printing and toning costs, besides helping the environment, it helps the company, if it were already being applied, today the planner simulating and lowering the production orders that they are considering. only relevant material warehouses (logistics sector), the

logistics operator would have no problem locating, sorting, sending the correct order balance to the production warehouse, just as production would not have to wait for balance adjustments that often do not exist In fact, with the implementation of this technology, revenues would be met ahead of time, at least 90% of the errors found today would no longer impact other future demands.

5. Results and Discussions

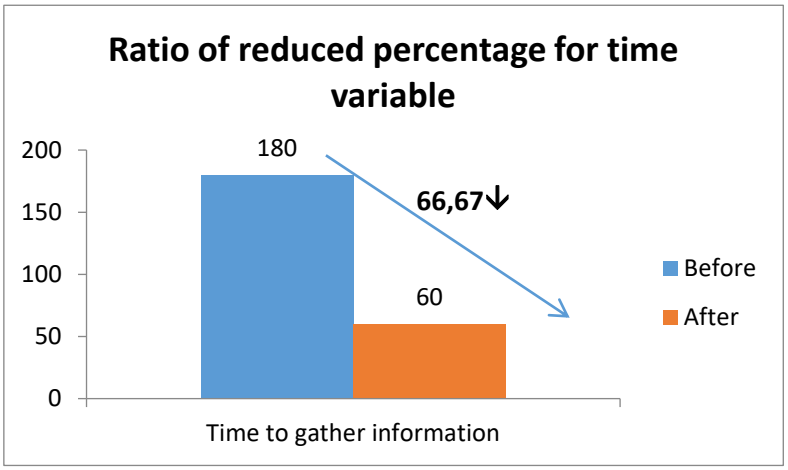
A company needs to gain insight into its flows and find the best strategies to improve its processes, speeding them up and making it easier to achieve quality. The company studied presented difficulties regarding the amount of time taken to collect relevant information about the material.

Before the process of collecting the items to be produced took about 3 hours, so it took time and this made the company not speed up its processes, making the process slow and costly. The RFID system used in conjunction with the data collector reduces the amount of steps and procedures that were previously performed manually. Using the SAP System, the use of the collector causes all information being digitally accounted for to be updated from the system balance, thus the information is written off in real time.

The SAP system is an integrated ERP system that transmits information to all sectors involved, so if an employee enters information about a particular input, that information is also updated in the materials control, the supplier's sector, and the others involved. This system is updated when the employee uses the data collector, placing it on top of the material code in stock, and instantly updating it in material stock. As shown in Figure 1.

Figure 1 - "Sequencing" System Statement Used for Production Management
Source: Author, 2019.

The RFID system brings a technology capable of capturing bar code information inserted in the parts and when used with the data collector passes the information directly to the SAP control system, updating it automatically. Thus, the reduction of time after the use of the indicated technologies brings a time differential for the organization, as shown in Graph 1.



Graph 1 - Ratio of reduced percentage regarding time variable
Source: author, 2019.

In the previous processes, for each piece passed on by the logistics industry, the person responsible for the parts quantity information would have to print several labels per day, which generates around a significant amount, also causing the responsible employees to spend more time. to check the machine serial numbers one by one. According to the on-site survey, performing observational and documentary analysis of printing and photocopying costs that the company performed monthly, generating a considerably high cost to the annual average, it was found that if the company maintains the same usage pattern in a Real projection of what was already done in the previous year and what is being determined from this year, until the end of the current year, the organization acquired an average variable cost of R $ 2,742.73 monthly.

Thus, the forecast of costs with printing and photocopying that the company may have until the end of the current year using the same procedures currently practiced, where comparing the costs can be observed that in 2017 the value was obtained. monthly average of R $ 1,979.13, and from 2018 onwards, an average monthly cost of R $ 2,722.4 can be determined. However, with the help of the two production process implementation technologies, the costs fall because it does not have to be continuously printed in the same quantity as the one previously mentioned, requiring only the inclusion of codes belonging to the RFID chip inserted from the Kaban methodology.

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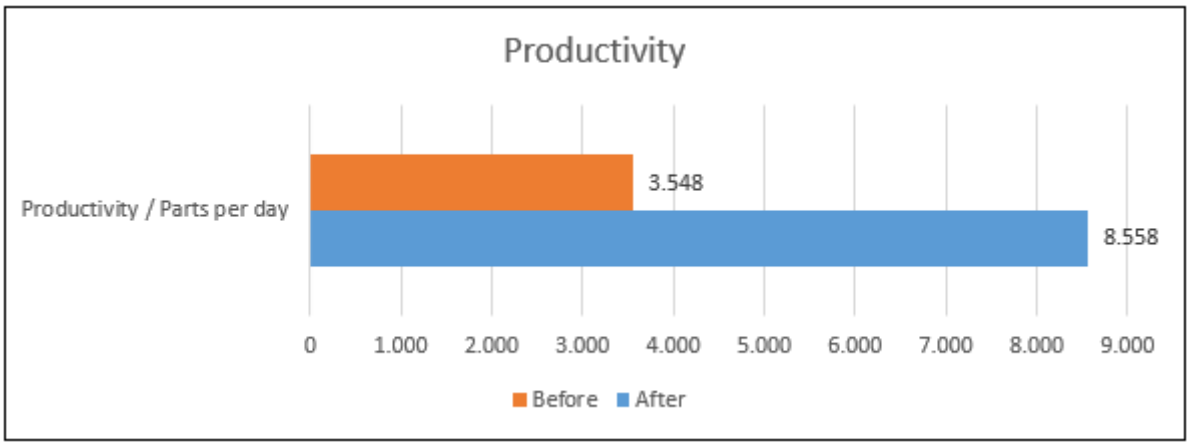
As a result, the company acquires the standards of Just in Time production, where production information and parts accounted for, transported and shipped in real time and accurate, where every minute can be part of a quality standard geared towards quality. efficiency of the organization. The use of the SAP System together with RFID technology in chips together with collectors causes the amount of errors in the counting of parts to be reduced when this quantity is passed on the label that has the chip and when this information is updated through from the SAP system the information is not lost and reduces the amount of errors.

The company is thus able to offer its services and products in real time, accurately, meeting deadlines and maintaining their quality, turning towards efficiency in the logistics environment, having a competitive advantage and using this data as a business strategy vis-à-vis other company. companies in the same

industry.

Thus, when verified the impact on time in reference to the company's productivity we can compare, before and after the application of the two technologies, according to Graph 2.



Graph 2 - Company Productivity Projection Statement

Source: author, 2019.

As shown in Graph 2, you can see the difference in the average productivity of the company, the amount of more parts that the technologies together contribute to the more efficient processes. What was previously smaller, as quoted 3,548 average part quantities per day, after implementation of process efficiency solutions, the amount of productivity can rise to an average quantity of 8,558 per day. This makes the company have more customers and consequently higher revenues.

Thus, technologies such as the SAP system, which is precisely an ERP system, where all information is integrated as advocated by Turban, Mclean and Wetherbe (2010, p. 92): “ERP integrates all departments and functional information flows into one on a single computer system with a single database that can meet all of your business needs. ” This way, this system passes the information correctly and up-to-date in real time throughout the company. Bringing management to the exact or most accurate information that facilitates increased productivity.

6. Final Considerations

Companies are always adapting and improving their processes with a focus on staying in the market and streamlining their internal procedures, such as reducing failures and scaling up their production or assembly. This makes it a company ahead of others and competitive, and may even gain recognition for their deadlines and the quality that their internal services may be performing.

Information technologies are innovations that seek to bring companies, both industrial and commercial or services, the practicality and reduction of time efficiently, enabling the organization to reduce costs, time and increase customer satisfaction and consequently this has repercussions. on your monthly or yearly billing. Thus, by generating more profitable returns, the company can invest in other means to become better, which can be in more intellectual capital to increase the quality of production or processes.

Within the case study, the SAP system being used in conjunction with RFID technology potentially transforms information stored by the chip by updating the organization's inventory without requiring the

employee to have time to manually count and then pass this information back to the inventory, which in itself consumes time, increased the flow of the counting of the pieces, being reduced in the studied case to only 1 hour, which previously occurred in 3 hours. Along with this reduction of prints also reduces variable costs with inks and paper. The result of this is increased productivity and consequently profitability of the organization, which by the way is potentially good, as it can use these resources to achieve better business opportunities.

7. References

[1]. SPAGNUOLO, F.O.; SILVA, M.H.M. COSTA. A importância da tecnologia da informação no suporte à tomada de decisões. Tese de Conclusão de Curso de Administração. Centro Universitário Católico Salesiano, UniSalesiano, Lins – SP, 2017.

[2] BATISTA, E. O. Sistema de informação: o uso consciente da tecnologia para gerenciamento. 1. Ed. São Paulo: Saraiva, 2009.

[3] O'BRIEN, J. A. Sistema de informação e as decisões gerenciais na era da internet. 2.ed. São Paulo: Saraiva, 2012.

[4] LAUDON, K.C.; LAUDON, J.P. Sistemas de informações gerenciais. 5. Ed. São Paulo: Prentice hall, 2009.

[5] FLEURY, P. F. Logística Empresarial: A perspectiva Brasileira. São Paulo: Atlas, 2012.

[6] BERTAGLIA, P. Logística e Gerenciamento da Cadeia de Abastecimento. 2. Ed. São Paulo: Saraiva, 2009.

[7] BALLOU, R. H. Logística empresarial: transportes, administração de materiais, distribuição física. São Paulo: Atlas, 2009.

[8] JOHNSTON, R.; CLARK, G. Administração de operações de serviços. Tradução Ailton Bomfim Brandão; Revisão técnica Henrique Luiz Corrêa. São Paulo: Atlas, 2012.

[9] GRÖNROOS, C. Marketing: gerenciamento e serviços: a competição por serviços na hora da verdade. Tradução de Cristina Bazán. Rio de Janeiro: Campus, 2013.

[10] FITZSIMMONS, J.A.I; FITZSIMMONS, M.J. Administração de serviços: operações, estratégicas e tecnologia de informação. Trad. Gustavo Severo de Borba. 2. Ed. Porto Alegre: Bookman, 2010.

[11] LOVELOCK, C.; WRIGHT, L. Serviços: marketing e gestão. Tradução: Cid Knipel Moreira; Revisão técnica Mauro Neves Garcia. São Paulo: Saraiva, 2014.