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Enterprise Resource Planning (ERP) System and its Influence on the Business Processes of Fast-Moving Consumer Goods Distribution Companies in Metropolitan Lima - 2019

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ABSTRACT

The objective of this research was to determine whether the Enterprise Resource Planning (ERP) system exerts influence on business processes of fast-moving consumer goods distribution companies in Metropolitan Lima, 2019. The study had a quantitative approach, non-experimental, cross-sectional design, and correlational type. The sample consisted of 147 employees, the technique and instrument used were the survey and questionnaire. In addition, Spearman's test was used to determine the correlation. As a result, a weak direct significant correlation was found between the ERP system and business processes.

Keywords: Enterprise Resource Planning system; strategy; management; business processes.

INTRODUCTION

Nowadays, companies organize their activities by means of a set of business processes, which leads to the establishment of general rules that determine the policies and structure of the organizational information. According to Laudon and Laudon (2016), business processes are the grouping of logically linked activities and behaviors developed at the organizational level over time aimed at achieving concrete results for the business (e.g. procurement, requisitions, reservations, etc.); these actions can be coordinated and organized solely by business processes.

The information system is one of the tools that a company can use to improve its business processes, as it is essential to conduct commercial activities and to achieve strategic business objectives. For instance, the United States has a number of managers and people working in the information sector that exceeds 21 million and 154 million, respectively; for the proper management of their businesses, they all depend on the knowledge generated from information systems (Laudon & Laudon, 2016).

There is a variety of research at the international level. Alshalfi (2018) conducted a study in which he assessed the impact of ERP systems on business operations. This study aimed to explain the challenges of ERP systems and their benefits, and concluded that companies become competitive with the use of an ERP system, as, by integrating solutions into their operations, they achieve a reduction in costs over the years since its implementation and use; thus it was determined that it is vital for the organization to move its systems into the cloud by adopting ERP solutions.

Acosta (2014) concluded that the SAP ERP system influences the impact of business management. In turn, Torres (2014) conducted a research in Chile to assess the benefits and impact of

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ERP systems on management control, as well as on the organizational structure of SMEs nationwide; thus, she concluded that the use and implementation of an ERP tool is crucial and recommended for companies that are growing and wish to remain competitive in an increasingly demanding market.

At the national level, studies such as that of Espinoza and Llerena (2018) demonstrated the existence of a favorable influence of the ERP on the worker's motivation, which can be determined through the business results obtained by the system. Bustamante (2018) concluded that there is significant evidence to state that the BAAN system for enterprise-level resource planning favorably influences the various business processes of the company concerned.

From a practical perspective, this research was conducted due to the need to evaluate and measure how the use of an ERP system influences business processes in distribution companies, so that it can be useful for the future decision-making of the organizations involved, as well as for those organizations interested in implementing an ERP software, but that have difficulties to implement it or are not obtaining the expected results.

From a theoretical perspective, this research attempts to enhance the existing knowledge of the ERP system and determine how it influences the business processes of fast-moving consumer goods (FMCG) distribution companies, so that it provides valid and reliable information, and impacts the existing paradigm of the use of ERP in SMEs.

This research contributes to the expansion of knowledge regarding the benefits of using an innovative tool of integrated processes such as the ERP system, so that the operation and analysis times in the various areas of the business (accounting, financial, among others) are reduced; in other words, business resources are optimized in favor of a greater capacity to successfully provide the services offered.

This research also intends to support the majority of SMEs in the commerce sector in the decision to opt for the implementation of an ERP system due to the potential that this tool offers in the long term. In addition, the supply of ERP system solutions in Peru is scarce compared to the countries in the region, so it would help to boost the business software market and, consequently, the country could catch up with the regional standard.

Therefore, the main objective was to determine whether the ERP system is able to influence the

various business-related processes of FMCG distribution companies in Metropolitan Lima in the year 2019. The secondary objectives were to determine the influence of system quality, information quality, individual impact and organizational impact on business processes.

The general hypothesis was "There is a favorable influence of the enterprise resource planning system (ERP) on the various business-related processes of FMCG distribution companies in Metropolitan Lima in 2019". The specific hypotheses were "there is a favorable influence of the system with respect to the quality of the system, the quality of information, the individual impact and the organizational impact on the business processes of FMCG distribution companies in Metropolitan Lima in 2019".

Enterprise Resource Planning (ERP) System

According to the Spanish Association of Accounting and Business Administration (AECA, 2015), ERP systems originated from the Material Requirements Planning (MRP): a method for planning and managing the resources available to the operational areas. However, some functions, such as the finance area, were not covered by MRP, therefore, ERP arose as an information system innovation, with the objective of integrating all the company's activities.

For Oltra (2012), Enterprise Resource Planning (ERP), is also known as enterprise system, integrated management system or integrated enterprise system. Suarez (2016) defines ERP as an integrated business management software because of its functional modules in logistics, finance, human resources, sales, etc.

According to Lacub (2015), the ERP software is the backbone of a company and the failure to apply it, its poor utilization, and lack of commitment and permanent improvement intentions would result in the decrease of the potential of the system, which would hinder the achievement of the goals and strategic objectives of the organization.

Based on Tsai et al. (2009), the ERP system can be generally described in 4 business dimensions as shown in Table 1.

Business Process

Hernández (2005) defines the business process as a set of logically related tasks that are performed in a determined manner and use the company's resources to achieve goals. Among its dimensions are the following processes:

Table 1. *Dimensions of the ERP System.*

Dimensions	Indicators
System Quality	Data accuracy Data content Data update System level accuracy Response time
Information Quality	Reliability Timeliness Usability Comprehensibility Relevance
Individual Impact	Individual performance Individual productivity Individual decision quality Problem identification Accurate interpretation
Organizational Impact	Finances Client Internal business processes Growth and learning

Source: Adapted from Tsai, Tsaur, Chou, Liu and Hsu (2009).

- **Strategic Processes**

Also called management processes, they are focused on the direction, planning, management, organization and control of the company's resources, which will guide and direct the other processes. The strategic processes establish how the other processes are to be carried out in order to fulfill the company's mission and vision (Mallar, 2010).

- **Operational Processes**

They constitute the primary activity of the production chain and have a direct impact on the customer's perception of satisfaction and on the company's mission (Mallar, 2010); therefore, it is essential to provide the good and/or service so that the customer values its quality. Operational processes are also called key processes, since their main purpose is to operate based on customer demand, with the company's added value, thereby satisfying the needs and desires of customers (Martínez & Cegarra, 2014).

- **Support Processes**

These are the internal services necessary for the fulfillment of the business process. They contribute to the functioning of the operational processes and are interrelated with the

provision of input and resources (Pardo, 2017). In conclusion, they are responsible for supplying the company with machinery and raw materials, in order to generate the added value that customers require (Martínez & Cegarra, 2014).

METHODOLOGY

This was a non-experimental research, since no intervention was undertaken; it was also cross-sectional and correlational in nature. On the other hand, it had a quantitative approach according to the typology of Hernández et al. (2014). The sample consisted of 147 workers of companies distributing mass consumption products of Molitalia S.A. Similarly, a sampling where the entire population was included as a sample was conducted; that is, it was census-based and consequently categorized as non-probabilistic.

The research technique used was the survey; the instrument used was the questionnaire, which consisted of two subscales: one to evaluate the enterprise resource planning (ERP) system and another to evaluate the business processes. The first instrument assessed enterprise resource planning using an ERP system by means of four dimensions: i) system quality, ii) information quality, iii) individual impact, and iv) organizational impact. The second

instrument assessed business processes in three dimensions: i) strategic process, ii) operational process, and iii) support process.

The data obtained was processed and analyzed using IBM SPSS Statistics 25. From this statistical package, Spearman's test was used to determine the existence of correlation between the ERP system and the business processes, with a significance level of 5%.

RESULTS

Descriptive Results

A total of 147 employees of FMCG distribution companies in Metropolitan Lima were included. Table 2 shows that 29.9% of the FMCG distributor's employees perceived an "optimal" ERP system, 47.6% rated the ERP as "average" and 22.4% considered the ERP system as "non-optimal".

Figure 1 shows the results of the assessment of business processes where 11.6% of the employees of the FMCG distribution company perceived

a "good" level of business processes, 65.3% observed a "fair" level and 23.1% perceived a "poor" level of business processes.

Hypothesis Testing

Table 3 shows the existence of a direct significant correlation ($p < 0.001$) and weak intensity ($Rho = 0.463$) between the enterprise resource planning system and the business-related processes. In addition, 64.7% of employees who perceived a "good" level of business processes also observed an "optimal" ERP system, while 58.8% of employees who perceived a "poor" level of business processes rated the ERP system as "non-optimal".

Table 3 highlights the existence of a relationship that, although significant ($p < 0.001$), is also direct with weak intensity between system quality and business processes, information quality ($p < 0.001$; $Rho = 0.483$), individual impact ($p < 0.001$; $Rho = 0.348$) and organizational impact ($p < 0.001$; $Rho = 0.420$) with business processes.

Table 2. ERP System in FMCG Distribution Companies. Metropolitan Lima, 2019.

Enterprise Resource Planning System	N	%
Optimal	44	29.9%
Average	70	47.6%
Non-optimal	33	22.4%
Total	147	100.0%

Source: Prepared by the author.

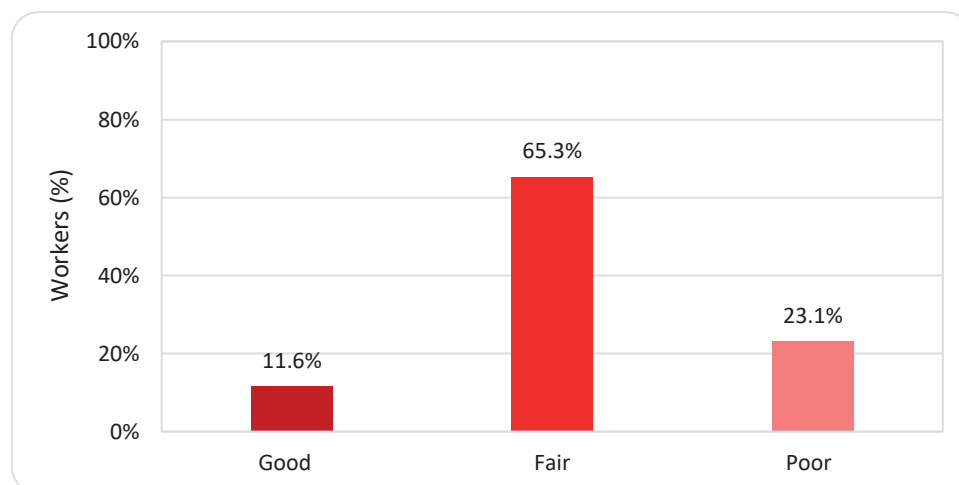


Figure 1. Business processes in FMCG distribution companies. Metropolitan Lima, 2019.

Source: Prepared by the author.

Table 3. ERP System and Business-Related Processes in FMCG Distribution Companies. Metropolitan Lima, 2019

ERP	Business Processes						p	Rho
	Good		Fair		Poor			
	N	%	N	%	N	%		
Optimal	11	64.7%	30	31.2%	3	8.8%	< 0.001	0.463
Average	5	29.4%	54	56.3%	11	32.4%		
Non-optimal	1	5.9%	12	12.5%	20	58.8%		
Total	17	100%	96	100%	34	100%		

Source: Prepared by the author.

DISCUSSION

There are many benefits of implementing an ERP in a company, ranging from the automation of repetitive operations (operational benefits), improvement in the availability of information to support decision-making processes (management benefits), competitive advantages with respect to companies in the same sector (strategic support benefits), ability to reuse and share information technology resources (IT infrastructure benefits), to the integration of production, sales, financial and logistics processes at the enterprise level (organizational benefits) (Iacub, 2015).

However, the implementation of an ERP system implies a previous diagnosis and evaluation of other ERP alternatives, as well as the support that the owner company will provide to the user company. It must be noted that the implementation of these systems is not enough to improve process efficiency; they must be accompanied by an organizational culture and management style based on knowledge, experience and skills.

The instruments used in this research were mentioned by authors such as Tsai et al. (2009) and Mallar (2010), and were used to assess systems for enterprise-level resource planning and business-related processes. The metric properties of both instruments were subsequently corroborated, finding a value greater than 0.7; that is, the instruments can be applied in companies in the same industry. Moreover, the findings can be applied to companies in the mass consumer product distribution sector in order to enhance decision-making.

A contrast of the results obtained in this research with those provided in the literature was made in order to determine whether the enterprise resource planning system (ERP) was capable of influencing the business-related processes in FMCG distribution in Metropolitan Lima.

It was observed that almost half of the employees (47.6%) perceived the level of the ERP system to be "fair", a third (29.9%) indicated that this system was "optimal", whereas a quarter of the employees (22.4%) stated that this system was neither adequate nor optimal. These opinions would be determined by the quality of information, the organizational and individual impact of the ERP system and, to a lesser degree, would be linked to the quality of the system (see Figure 2).

The results of the assessment of the company's business processes show a similar behavior. On the one hand, 2 out of 3 employees (65.3%) perceived that the organization's processes were managed in a "fair" manner, almost a quarter of them (23.1%) indicated that the management of processes were "poor" or "inadequate", and only 11.6% considered that these processes were carried out "adequately" or "well". This perception basically corresponds to the management of operational processes, strategic processes and, to a lesser extent, support processes. This last component is the one with the worst management in the FMCG distribution company.

On the other hand, it was demonstrated that the ERP system is capable of positively influencing the business processes of FMCG distribution companies in Metropolitan Lima ($\rho = 0.463$; $p < 0.001$). Similar results were obtained by Bustamante (2018), who studied the influence of ERP systems on the business-related processes of a distribution company, and concluded that ERP systems exert a significant influence on business processes (chi-square = 42.865; $p = 0.000$).

These research studies demonstrate the advantages of implementing an ERP system, which optimizes the different processes developed by a company, regardless of its size and business line. The ERP system is a tool that provides many competitive

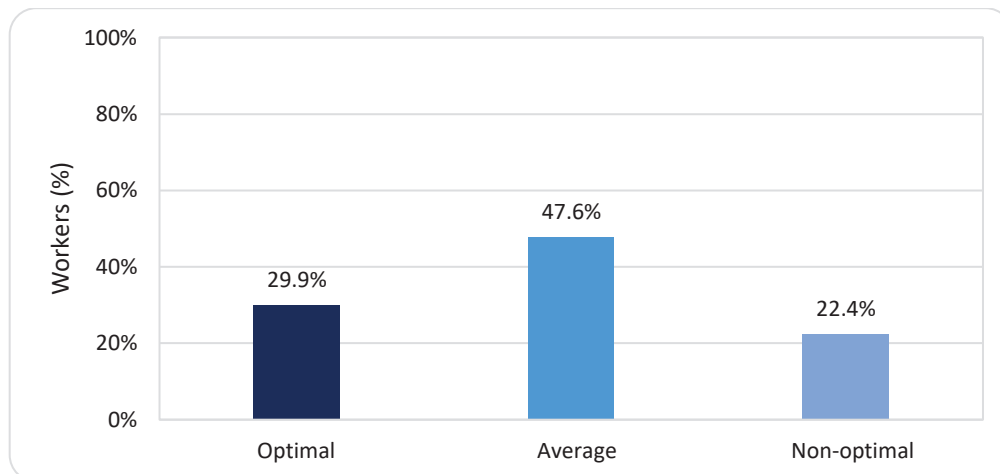


Figure 2. ERP system in FMCG distribution companies. Metropolitan Lima, 2019.

Source: Prepared by the author.

advantages and achieves greater efficiency in a company's processes. Upon assessing the components that are part of the specific objectives, it was determined that the quality of the ERP system has a favorable influence on all business processes in FMCG distribution companies in Metropolitan Lima ($\rho = 0.451$; $p < 0.001$) (see Table 4).

Information quality was also found to positively influence business processes ($\rho = 0.483$; $p < 0.001$). Likewise, individual ($\rho = 0.348$; $p < 0.001$) and organizational ($\rho = 0.420$; $p < 0.001$) impact were also found to significantly and positively influence business processes at the level of FMCG distribution companies in Metropolitan Lima (see Table 4).

Regarding the ERP system quality component, the positive perception was determined by the accurate data obtained from the system, by having the data content required by the organization and because the system keeps the data up to date. In the case of the information quality component, its positive aspects were related to the ease of use, the comprehensibility of the system and its relevance to the organization.

Regarding the individual impact component, its appreciation was determined by the contribution to performance, productivity and individual decision. Finally, the organizational impact component had relevant aspects such as the contribution to growth and learning in the organization, and the benefit to the organization's finances (costs).

These findings reveal how fundamental and significant is the implementation of an ERP system in

organizations, and that it is determined by the multiple benefits it provides to a company, regardless of the business line or its size, and regardless of whether it is a national or foreign organization. In all those economic units, the result has always been positive, which means that the implementation of an ERP guarantees success and is reflected in the efficiency and productivity of the processes of the different areas that make up an organization, since it optimizes and improves management processes, data security, scalability and traceability of processes, and the automation of tasks, which is manifested in a reduction of costs and greater organizational competitiveness.

It is important to note that the research was conducted one year after the implementation of the ERP in Molitalia's FMCG distribution companies, which were quickly integrated into the business processes, reaffirming the positive influence on them. In addition, the necessary know-how was provided by the company that owns the ERP, with the participation of the head of IT and the head of Commercial Strategies of Molitalia, who previously performed an assessment and diagnosis of other ERP alternatives, and subsequently monitored the execution and validation of the selected ERP in the business processes, respecting the international administrative practices that were adapted for the optimal operation of the ERP.

CONCLUSIONS

- The ERP system is able to exert a positive and significant influence on all the business-

Table 4. Relationship Between ERP System Components and Business Processes of FMCG Distribution Companies. Metropolitan Lima, 2019.

ERP dimensions	Business Processes						p	Rho
	Good		Fair		Poor			
	N	%	N	%	N	%		
System Quality								
Optimal	9	52.9%	26	27.1%	3	8.9%	< 0.001	0.451
Average	7	41.2%	53	55.2%	8	23.5%		
Non-optimal	1	5.9%	17	17.7%	23	67.6%		
Information Quality								
Optimal	15	88.2%	39	40.6%	5	14.7%	< 0.001	0.483
Average	1	5.9%	50	52.1%	12	35.3%		
Non-optimal	1	5.9%	7	7.3%	17	50.0%		
Individual Impact								
Optimal	11	64.7%	25	26.0%	5	14.7%	< 0.001	0.348
Average	3	17.6%	55	57.3%	11	32.4%		
Non-optimal	3	17.7%	16	16.7%	18	52.9%		
Organizational Impact								
Optimal	11	64.7%	28	29.1%	3	8.8%	< 0.001	0.42
Average	5	29.4%	54	56.3%	14	41.2%		
Non-optimal	1	5.9%	14	14.6%	17	50.0%		
Total	17	100%	96	100%	34	100%		

Source: Prepared by the author.

related processes in companies engaged in the distribution of mass consumption products in Metropolitan Lima, 2019. In other words, an optimal ERP is evidence of good business processes and vice versa. It was also observed that almost half of the employees rated enterprise resource planning as "average" and exactly 65.3% perceived a "fair" level of business processes.

- ERP dimensions positively and significantly ($p < 0.05$) influence business-related processes in companies engaged in the distribution of mass consumption products in Metropolitan Lima, 2019.

RECOMMENDATIONS

- It is recommended that those responsible develop a continuous training program on information quality for their coworkers, not only at this stage but throughout the entire process, focusing on critical aspects and making the appropriate changes or feedback.
- Regarding the dimensions of the ERP system, it is advisable to continue strengthening the content and accuracy of the data; the

response time, through training and constant monitoring; the use and understanding of the information; and finally the performance, productivity, etc., in order to promote a culture of change and support the improvement of workers.

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