Revista Ciencia UNEMI
Vol. 18, N° 49, Septiembre-Diciembre 2025, pp. 18 - 24
ISSN 1390-4272 Impreso
ISSN 2528-7737 Electrónico
https://doi.org/10.29076/issn.2528-7737vol18iss49.2025pp18-24p

Digital transformation plan for the operational management of the department of property of uniandes university

Gustavo Eduardo Fernández Villacrés[1]; Gissela Alexandra Arcos Naranjo[2]; Tannia Elizabeth Huertas López[3]

Abstract

This research arises from the need to optimize processes and increase the operational efficiency of the Property Department of Uniandes University. The starting point was the problem related to the slowness of processes, which affects teachers, students and researchers who require the necessary inputs for the educational process in a timely manner. The general objective of the research was: "To design a digital transformation plan for the improvement of the operational management of the Property Department of Uniandes University". To achieve this general objective, first a state-of-the-art study was carried out related to digital transformation and operational management, then field research was carried out with the participation of all those directly and indirectly involved in the departmental operational management (staff, teachers, researchers and students). The study was quantitative, using the survey as a research technique and the associated instruments were questionnaires. The findings confirm that many operational processes are manual and therefore delayed, which prevent efficient and timely decision making. This is most noticeable when working with university extensions. Finally, a digital transformation plan is proposed in which the following aspects will be prioritised: digitalisation or automation of all processes, the generation of positive experiences for the department's users, the generation of digital competencies through the training of all officials who work directly or indirectly with the department and the generation of digital operational models in the department. The research hypothesised that: "with the implementation of a digital transformation plan, the operational management of the Property department of the Uniandes University in the city of Ambato will be improved". It was concluded that the operational management of the property department has problems in terms of delays and effectiveness and that a digital transformation process should be applied as a solution based on a previously designed plan.

Keywords: Digital transformation; operational management; efficiency; planning.

Plan de transformación digital para la gestión operativa del departamento de bienes de la Universidad Uniandes

Resumen

La presente investigación surge de la necesidad de optimizar procesos y elevar la eficiencia operativa del departamento de Bienes de la Universidad Uniandes. Se partió de la problemática relacionada con la lentitud de procesos, lo cual afecta a docentes, estudiantes e investigadores que requieren oportunamente de los insumos necesarios para el proceso educativo. La investigación tuvo como objetivo general: “Diseñar un plan de transformación digital para el mejoramiento de la gestión operativa del Departamento de Bienes de la Universidad Uniandes. Para lograr este objetivo general primero se realizó un estado del arte relacionado con la transformación digital y la gestión operativa, luego se llevó a cabo una investigación de campo con la participación de todos los involucrados de manera directa e indirecta en la gestión operativa departamental (funcionarios, docentes, investigadores y alumnos). El estudio fue de tipo cuantitativo. Se utilizó la encuesta como técnica investigativa y los instrumentos aplicados fueron cuestionarios. De la investigación se pudo ratificar que muchos procesos operativos son manuales y demorados, y que todos los reportes son armados manualmente por secretaria y consecuentemente demorados lo que impide la eficiente y oportuna toma de decisiones. Esto es más notorio cuando se trabaja con las extensiones universitarias. Finalmente se propone un plan de transformación digital donde se priorizarán los siguientes aspectos: digitalización o automatización de todos los procesos, la generación de experiencias positivas de los usuarios del departamento, la generación de competencias digitales mediante la capacitación de todos los funcionarios que trabajan directa o indirectamente con el departamento y la generación de modelos operativos digitales en el departamento. En la investigación se asumió como hipótesis que: “con la aplicación de un plan de transformación digital se mejorará la gestión operativa del departamento de Bienes de la Universidad Uniandes de la ciudad de Ambato”. Se concluyó que la gestión operativa del departamento de bienes presenta lentitud y bajo nivel de efectividad y que como solución debe aplicarse un proceso de transformación digital en base a un plan diseñado previamente.

Palabras claves: Transformación digital; gestión operativa; eficiencia; planificación.

Recibido: 4 de octubre de 2024
Aceptado: 29 de abril de 2025

[1] gustavo.fernandez@iste.edu.ec, https://orcid.org/0000-0003-1028-1224

[2] gissela.arcos@iste.edu.ec, https://orcid.org/0000-0001-5028-2219

[3] tannia.huertas@iste.edu.ec, https://orcid.org/0000-0001-6670-7808

[1,2,3] Instituto Superior Tecnológico España, Ambato, Ecuador

I. INTRODUCTION

Logistics significantly influences a company's competitiveness, as it directly impacts the final product cost. Logistics responds to the six "right ones": it seeks to ensure that the right products, in the right quantities and in the right condition, are delivered to the right place, at the right time and at the right cost. (Lobato, 2019)

Logistics is an interdisciplinary activity that links the different areas of the company, from purchasing scheduling to after-sales service, including raw material procurement, production planning and management, warehousing, stock handling and management, packaging, packing, transportation, physical distribution and information flows. (Ballou, 2019)

Logistics is not a functional activity but a model or a frame of reference, it is not an operational function but a planning mechanism. The importance of logistics is given by the need to improve customer service, optimizing the marketing and transportation phase at the lowest possible cost. (Mora, 2018)

A company differentiates itself from its competitors by its costs and by the perception that customers have of its products compared to those they receive from competitors. Therefore, each activity carried out in the company helps it to differentiate itself in terms of costs and added value. (Anaya, 2020)

To differentiate logistics activities, Michael Porter introduced a model in which the company's value chain is made up of two types of activities: Primary: these are those that make up the company's production process from a physical point of view, as well as its transfer and after-sales service to the customer. Support activities: those that support the primary activities, guaranteeing the normal operation of the company. (Gómez, 2019)

Efficient logistics creates value for the company's customers, suppliers and shareholders. The value of logistics is expressed in terms of time and place; products and services have no value unless they are in the possession of customers when (time) and where (place) they want to consume them. (Christopher, 2018)

Good logistics management looks at each of the activities in the supply chain and analyzes how they contribute to the process of adding value. However, value is added whencustomers are willing to pay more for a product or service after receiving it. For many companies around the world, logistics has become a significant value-adding process for a variety of reasons. (Mora, 2018)

The digital transformation of companies is not a simple and straightforward process where a sequence of planned activities leads to the achievement of specific objectives, since, in such a changing and dynamic environment, the objectives initially established may become obsolete from one day to the next. The companies of the future will be those that successfully integrate technology and people. (Vilaplana, 2019)

The Uniandes University, is an educational institution founded in 1998, its headquarters is in the city of Ambato, has extensions in several cities of Ecuador, currently has more than 8000 students in various careers and modalities. To carry out the educational process it provides, it requires many materials and supplies that are provided by the Property Department. The department is responsible for receiving, processing, acquiring, and distributing the necessary materials to university branches and the main campus. All these activities generate a difficult operational management that has a direct impact on the competitiveness of the department and the Institution, especially since most of its processes are manual, resulting in frequent delays and a low level of existing inventory.

Also, the issuance of reports becomes a time-consuming activity that is not as accurate as it should be.

All this allows us to formulate research questions such as the following:

How to achieve an efficient operational management in the Property Department of Uniandes University in the city of Ambato?

Will the digital transformation of the asset department lead to improved operational management of the asset department?

Does any digital transformation need to be properly planned in a company?

To solve the research questions, the general objective of this research was: To design a digital transformation plan for the different processes carried out in the Property Department of the Uniandes University, in order to improve the efficiency in the operational management of the department.

OBJECTIVES

General Objetive

Structuring a digital transformation plan which, through its implementation, will improve the operational management of the property department of Uniandes University.

Specific Objetives

- Develop a state of the art on digital transformation and operational management.
- Diagnose whether several of the digital transformation processes are already being applied in the property department of Uniandes University.
- Structure the digital transformation plan to be applied in the Uniandes property department.

II. METHODOLOGY

Based on the concepts of Gómez (2019) the adopted research has the quale-quantitative approach because the quantitative aspects were done based on surveys to internal customers and suppliers, while the qualitative aspects were generated based on an interview to the director of the Department.

According to the objective, the research is applied because it seeks to contribute to the solution in the improvement of the operational management of the Property Department of the Uniandes University. According to the scope of the research, it is descriptive because it characterizes the problems of the operational management of the property department.

The research methods applied are the inductive-deductive method to induce a particular answer and deduce it in a general way. The analytical-synthetic method was also applied, especially for the scientific basis of this research work, the method allows analyzing information collected from books, magazines and internet to synthesize it in the scientific article.

According to Hernandez (2017) the population is made up of all those involved in the problem, so for the present study it is made up of the following three segments of people, since they provide different information.

Table 1. Research Population

Function	Number
Internal customers (Administrative personnel and teachers of the entire Institution)	200
University Suppliers	50
Administrative staff of the Ambato Property Department	1
Total	251

Source: Uniandes Property Department

The population is finite and since there are three independent segments, we will only apply the sample formula for the segment of internal customers, which is 200:

$$n = \frac{Z2 * P * Q * N}{e2 * (N-1) + Z2 * P * Q}$$

Where:

Z = Confidence level, 96% is assumed, which is equal to 1.96.

P = Percentage of viable population, 50% is assumed to be 0.5.

Q = Percentage of non-viable population, 50% is assumed to be 0.5

E = Error, a value of 7% is assumed, which is equivalent to 0.07.

N = Population size, in this case 200.

Table 2. Calculated Sample

Function	Number
Internal customers (Administrative personnel and teachers of the entire Institution)	99
Frequent suppliers to the University	50
Administrative staff of the Ambato Property Department	1
Total	150

Source: Uniandes Property Department

The research techniques applied were a survey of internal customers and suppliers and an interview with the director of the property department. The instruments associated with the techniques are the questionnaire and the interview guide.

III. RESULTS

Results of the supplier survey.

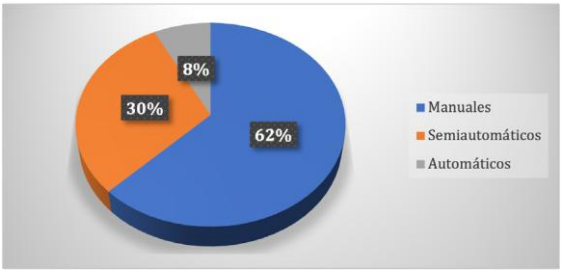

Figure 1. Question No. 1. Are most of the operational processes of the Property Department of Uniandes University?
Source: Own elaboration

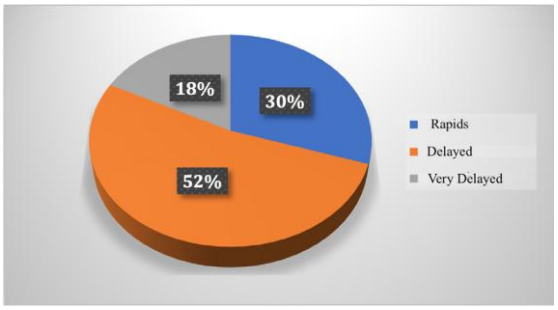

Figure 2. Question 2. How would you rate the quality of the department's operational management?
Source: Own elaboration

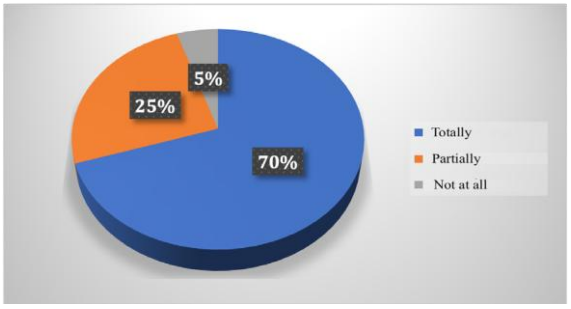

Figure 3. Question 3. Would you recommend the digital transformation of many of these operational processes?
Source: Own elaboration

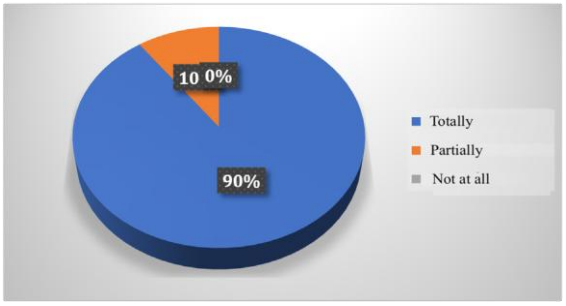

Figure 4. Question 4. Do you consider that an adequate planning of the digital transformation process should be made?
Source: Own elaboration

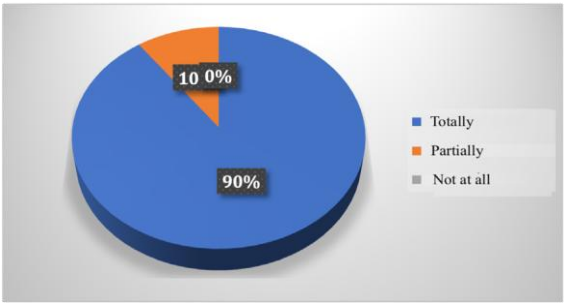

Figure 5. Question 5. Do you believe that the planned digital transformation can increase the administrative efficiency of the department?
Source: Own elaboration

Digital transformation involves four fundamental aspects, which are: digitization of processes, digital business model, creation of user experiences and training, for the property department the following have been taken for the digital transformation plan:

Process digitization is arguably the most critical component; hence, the following technological actions are proposed to be implemented with the sole purpose of optimizing operational processes and their management in general.

Table 3. Summary of the digitization plan

No	Process requiring automation	System required	Duration (months)	Cost
1	Registration of invoices for their respective verification.	Web application to record invoices received.	3	3000
2	Validation of the invoice received.	Web application that records validated invoices.	1	1000
3	Approval of the invoice to go to the payment approval process.	Web application that records the approval of invoices and issues a report to be sent to the rector's office.	1	1000
4	Search for suppliers for the Institution.	Web application for supplier registration and management	3	3000
5	Request for quotations from suppliers.	Web application for ordering from registered suppliers.	1	1000
6	Registration of orders by local and national Users.	Web application for registration of local and national orders with POA Integration.	3	3000
7	Order approval.	Web-based order approval application.	1	1000
8	Delivery of orders	Web application to record the delivery of the order	1	1000

9	Monthly report of invoices and products delivered in the month.	Web application for general reporting. Dashboard.	2	2000
10	Monthly financial reports of purchases and by supplier	Web application for issuance of monthly financial reports	2	2000
		Total		18000

Source: Own elaboration

In terms of generating user experiences, it is expected to improve the service by accelerating processes so that each process requested is fast, efficient and motivating.

In terms of training, it will be essential for all personnel to be trained in the use of all the systems implemented and, in general, for users to acquire digital competencies.

IV. DISCUSSION AND CONCLUSIONS

First, a summary of the results obtained in the research will be presented:

In general, 73% of the internal users consider that the operational processes of the property department are manual, and 44% of users consider that the operational management of the department is regular.

Among all those surveyed, an average of 75% said that processes should be systematized and 95% said that this digital transformation should be planned.

Finally, 80% stated that, with the digital transformation of processes, the operational management of the Property department at Uniandes University will be improved.

We have reviewed some works related to digital transformation and its impact on any company, among them we have deeply analyzed the one developed by: Hoyos (2019) with its theme "Improvement in operational management to increase the productivity of the company Grifosol", it analyzes the different processes that can be performed within the company for operational improvement, among the main actions for these improvements is the digital transformation that includes computer automation of various processes, which when executed in an accelerated manner optimizes waiting time and that favors customers.

Another of the works reviewed is that of Sánchez & Parra (2019) with its theme: "Web information system for the optimization of the management and administration process of the computer laboratories of the "Universidad Distrital Francisco José de Caldas - Facultad Tecnológica" in which an improvement of the operational control of the laboratory is achieved based on the implementation of a web system, this means that the digital transformation had a direct impact on the improvement of the control processes. Once again, it is ratified that technology and information systems are fundamental tools for the improvement of operational and control processes.

Another important work that enriches the present discussion is the one developed by Garcia (2019) and that has to do with customer service, the author considers that the generation of a culture of good service supported by a technological strategy, facilitates the operability of the processes, although this work actually considers that the process is the reverse, i.e. the operational processes are optimized to then improve customer service. In both criteria, the influence of the technological support given by a digital IT transformation that optimizes the operative process in any company is very noticeable.

In the second decade of the 21st century, it is essential for a company's operational processes to be digitized, according to Cortes (2019) in his treatise "Lead the digital transformation successfully", the author points out that from his business experiences related to digital transformation, the digitization of operational processes is essential for the optimization of such management, also the competitiveness of the company is improved if this digital transformation of operational processes occurs. Regarding the recommended technology for this digital transformation, the author suggests that web applications should be considered, hosted in the cloud for faster connection and therefore achieve an acceleration of the different processes.

Along the same lines of the previous paragraph, we can mention the thoughts of Krajewski & Ritzman (2015) in his treatise on "Operations Management. Strategy and Analysis", which states that the 21st century demands a total digitalization of the operational processes because we are in an era where speed prevails and if the processes are slow, they reduce the efficiency of the operation and therefore of the company. These concepts are complemented by the even more innovative criteria of Tundidor & Peña (2018) that are already talking about logistics 4.0, which means that not

only the digital transformation of operational processes is required, but also that they must be complemented with industry 4.0 technologies such as drones and robots. This leads us to think that the operability of the company is still fundamental and that it must be supported with all the technological tools available, in the end what matters is the high business efficiency to remain competitive in the market.

Comparing the general results of the reviewed research works and in addition to the criteria of several authors in their works related to operational management, it is concluded that: these fully agree with the results of this research work, it can easily be noted that the influence of the digital transformation of logistics processes is of great importance within the company, this means that the digital transformation of the processes leads to the improvement of operational management in companies and thus there is a substantial improvement of the service to the user. It is also stated that the operational management of a company must be supported with all the technological tools available, which is why, in addition to digitalization, disruptive technologies such as drones and robots have begun to be used.

The digital transformation of processes in any company allows them to be carried out quickly and without errors, which obviously allows the operational management of the company to be optimized and improved. In the specific case of the property department, a planned digital transformation will improve logistics activities and operational management in general. This improvement in operability has a direct impact on all the processes of the University, i.e., both internal and external users will be better served and other processes that depend directly on the property department will flow properly.

The planned digital transformation implies that: in a company or in this case, the Assets department of the Uniandes University, one of the fundamental aspects of the digital transformation process is being carried out, this pillar of the digital transformation refers to the digital transformation of the different processes that are developed in any company. Normally these processes are related to the operation of the department, and with the possibility of their respective improvement.

V. REFERENCIAS

Ballou, R. (2019). Business Logistics Management. Planning, Organizing and Controlling the Supply Chain. Fourth edition. . New Jersey.: Prentice Hall.

Anaya, J. (2020). Integrated logistics: the operational management of the enterprise. Madrid-España: Esic.

Christopher, M. (2018). Logistics and Procurement. How to reduce costs, stocks and improve services. Barcelona, España: Biblioteca de Empresa. Ediciones Folio.

Cortes, M. (2019). Successfully leading the digital transformation. Madrid: Independently.

García, A. (2019). Service culture in customer service optimization. Journal of Interdisciplinary Studies in the Social Sciences Universidad Privada Dr. Rafael Belloso Chacín, 381 – 398.

Gómez, C; Alvarez, G; et. al. (2019). Scientific research and forms of qualification. Ambato: Editorial Jurídica del Ecuador.

Gómez, J. (2019). Logistics and commercial management. Barcelona-España: McGraw-Hill.

Hernández, A. (2017). Research methodology. México: McGrawHill.

Hoyos, M. (11 de 12 de 2019). Universidad del Sipan Digital Repository. Obtenido de Improvement of operational management to increase the productivity of the company Grifopetrosol: https://repositorio.uss.edu.pe/bitstream/handle/20.500.12802/4644/Hoyos%20Coronel.pdf?sequence=1&isAllowed=y

Krajewski, L. & Ritzman, L. (2015). Operations Management. Strategy and Analysis. México: Prentice Hall.

Lobato, F. (2019). Logistics and commercial management. Madrid-España: Macmillan Iberia, S.A.

Mora, L. (2018). Integrated logistics management: best practices in the supply chain. México: Eco Ediciones.

Sanchez, A & Parra, L. (1 de 11 de 2019). Web information system for the optimization of the management and administration process of the computer labora-

tories of the Universidad Distrital Francisco José de Caldas - Faculty of Technology. Obtenido de Universidad Distrital Francisco José de Caldas Digital Repository: https://repository.udistrital.edu.co/handle/11349/6130

Tundidor, A;Hernández, & Peña, C. (2018). Supply Chain 4.0. Benefits and challenges of disruptive technologies. Madrid: Merge books.

Vilaplana, F. (2019). Digitalization and people. Business and humanism, 22-31.