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ORIGINAL ARTICLE

Business Modeling of Information Management Processes Conducted at Optical Center 763

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ABSTRACT

Introduction: the Use Case Model describes business processes and customers in terms of use cases and business actors and allows developers to better understand the value that the business provides to its actors.
Objective: to develop the business model on Information Management of the processes that are carried out in the 763 Optics of the Municipality of Pinar del Río with the use of technologies.
Methods: a technological innovation type research was carried out, based on the dialectical approach, which is assumed as the philosophical basis of the elements discussed in the thesis. From this approach, the methods, procedures and research techniques were used, both theoretical and empirical, as well as mathematical-statistical.
Results: it was possible to obtain a business model of the processes that are developed in the 763 Optics of the Municipality of Pinar del Río, identifying the business use cases, its actors and workers. Once the actors and workers were identified, the use case diagram and the activity diagram were created. In addition to the functional and non-functional requirements, which will allow the software to be usable and fast.
Conclusions: in general, a business model was developed on the Information Management of the processes carried out at the 763 Optics in the Municipality of Pinar del Río, which provides a general perspective of how the automated information system will be developed.

Keywords: Business Modeling; Computerization Management; Use Case Diagram; Optics.

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INTRODUCTION

Technological development is advancing rapidly, with ever-increasing volumes of data requiring processing. Over the past decade, technological progress has enabled the world to transition systematically toward a new industrial era known as *Industry 4.0.*[1,2]

The joint advancement of optics, electronics, and computing has made possible the technological evolution we experience today. Digitalization has become an integral part of our lives, driving innovation and creating new opportunities.[3,4]

Business model design has gained growing importance at both the national and international levels. The digitalization of society entails the automation of institutional services and the integration of technology into internal administrative processes. To achieve this, the use case model is employed, as it accurately describes business processes and clients in relation to business actors and use cases. Furthermore, it allows developers to better understand the value the business provides to its actors.[5,6]

Business modeling is regarded in most modern software development approaches as the preliminary or technical phase of software development. For instance, the Rational Unified Process (RUP) defines business modeling as the initial discipline, whose workflow is used to understand the domain of an application. It is considered "a conceptual tool that integrates a set of elements and their interrelations, facilitating the expression of the business logic of a specific entity."

In general, business modeling results in a business model that describes the application domain in terms of a business system—an integrated set of interrelated elements such as business objectives, processes, workflows, and business objects.[7,8]

Cuba has recognized the convenience and necessity of introducing and mastering ICTs in social practice, emphasizing the identification of processes that can be computerized using existing or newly developed solutions.[9]

To computerize the processes carried out at Optical Center 763 in the municipality of Pinar del Río, it is first necessary to model these processes to ensure understanding. Business models enable clear comprehension of operations, helping provide more complete services and identify areas for improvement in internal processes—leading to greater efficiency and cost reduction. They also serve as useful tools for organizational planning.[10,11]

In Cuba, these processes—especially those related to health and social services—are undergoing a digital transformation. Within optical and optometry services, as part of the Master's program in Health Informatics at the University of Medical Sciences of Pinar del Río, the *Informatization Project* has emerged. To achieve its objectives, it is necessary to model the services involved. Hence, the objective of this study is to develop a business model for the information management processes carried out at Optical Center 763 in the municipality of Pinar del Río through the use of technology.

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METHODS

Theoretical methods included analysis, synthesis, and modeling, which allowed the representation of the essential characteristics and relationships of the object of study to obtain the main theoretical foundations.

Empirical methods included the review of business rule regulatory documents.

RESULTS

A business model was developed for each of the processes carried out at Optical Center 763 in the municipality of Pinar del Río. The business use cases, actors, and workers were first identified. Once these were established, the use case diagram and activity diagram were created, along with the identification of functional and non-functional requirements to ensure that the software would be usable and efficient.

Identified business use cases:

- Receive eyeglass order
- Dispatch eyeglass order
- Cut and assemble eyeglasses
- Deliver completed eyeglasses
- Return eyeglasses

Business actors:

- Patient: Individual presenting the eyeglass order.
- Receptionist: Receives and processes the order (envelope).
- Warehouse clerk: Manages eyeglass orders.
- Operator: Delivers the eyeglasses once completed.

Business workers:

- Receptionist: Receives the order, guides the patient or user, and provides all necessary information.
- Warehouse clerk: Dispatches frames and lenses corresponding to the orders that can be cut and assembled from available stock.
- Operator: Carries out eyeglass production.

Once the actors, workers, and relevant use cases were identified, the business use case diagram was created (Figure 1).

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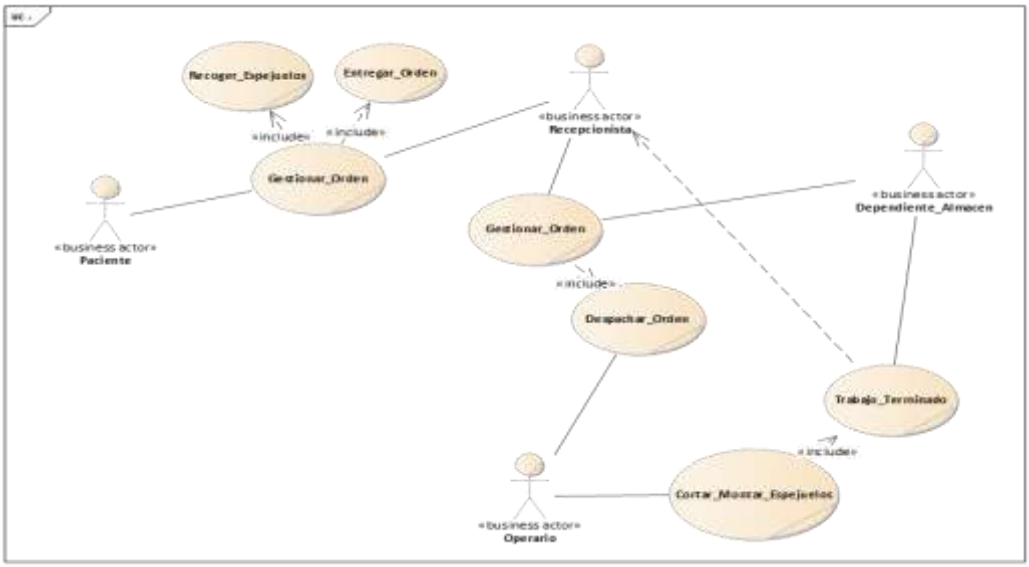
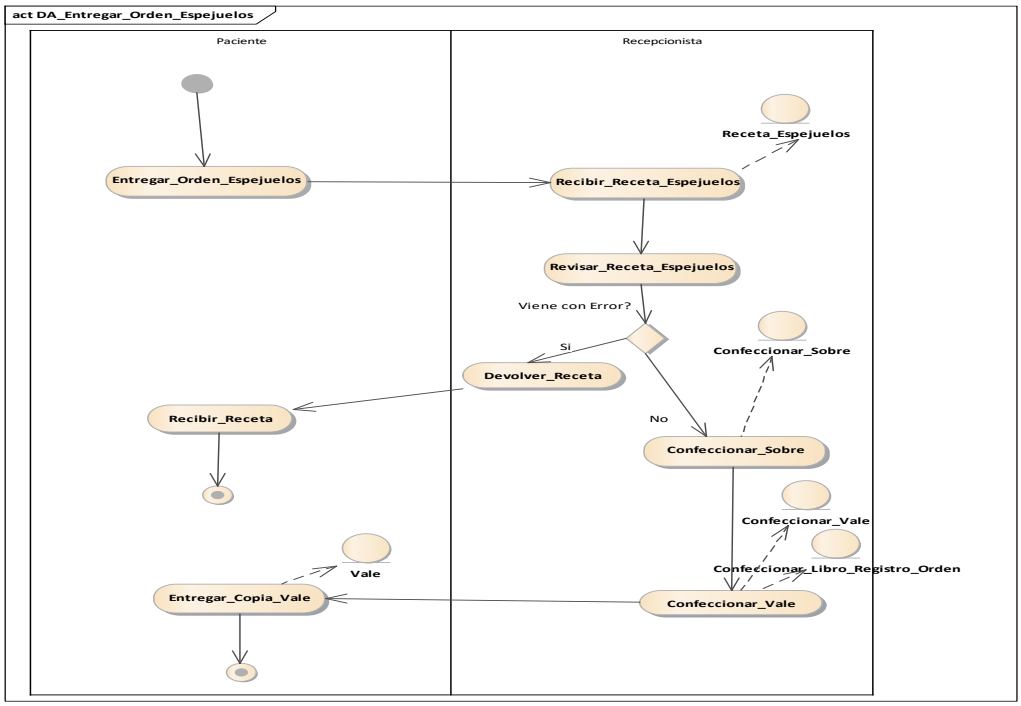


Source: Authors' own elaboration

Figure 1. Business use case diagram.



Source: Authors' own elaboration

Figure 2. Activity diagram for eyeglass order delivery.

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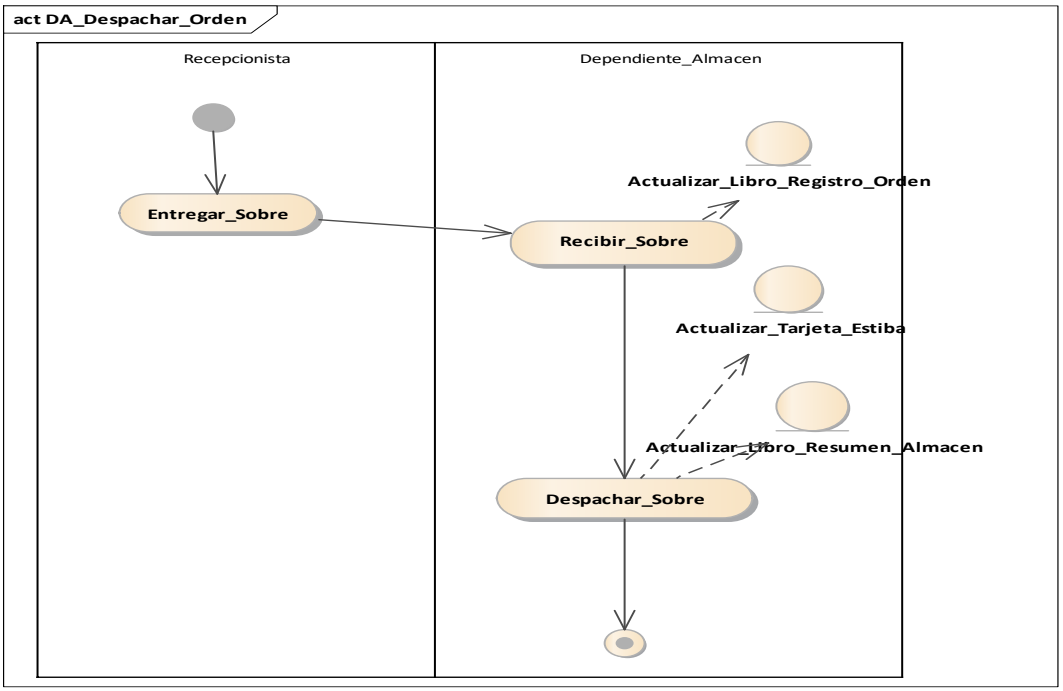

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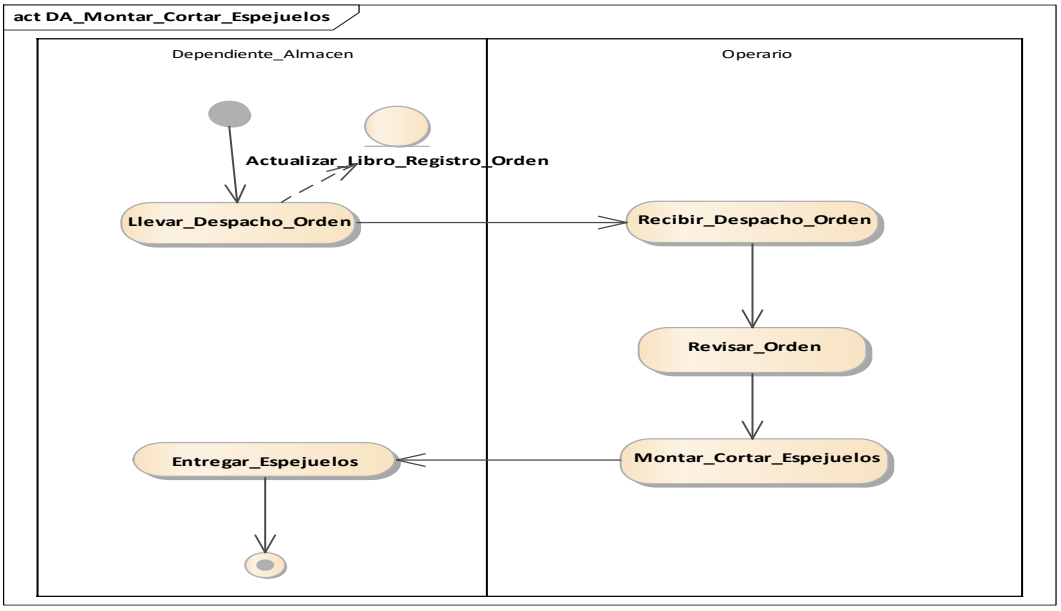
Figure 3. Activity diagram for order dispatch.



Source: Authors' own elaboration

Figure 4. Activity diagram for eyeglass cutting and assembly.

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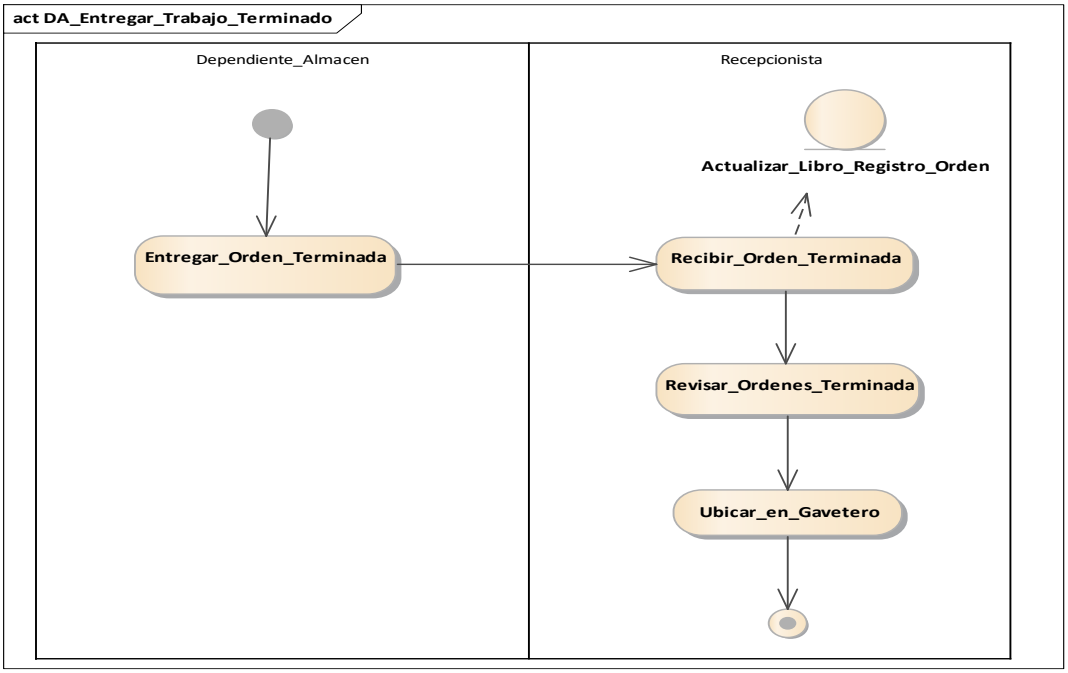
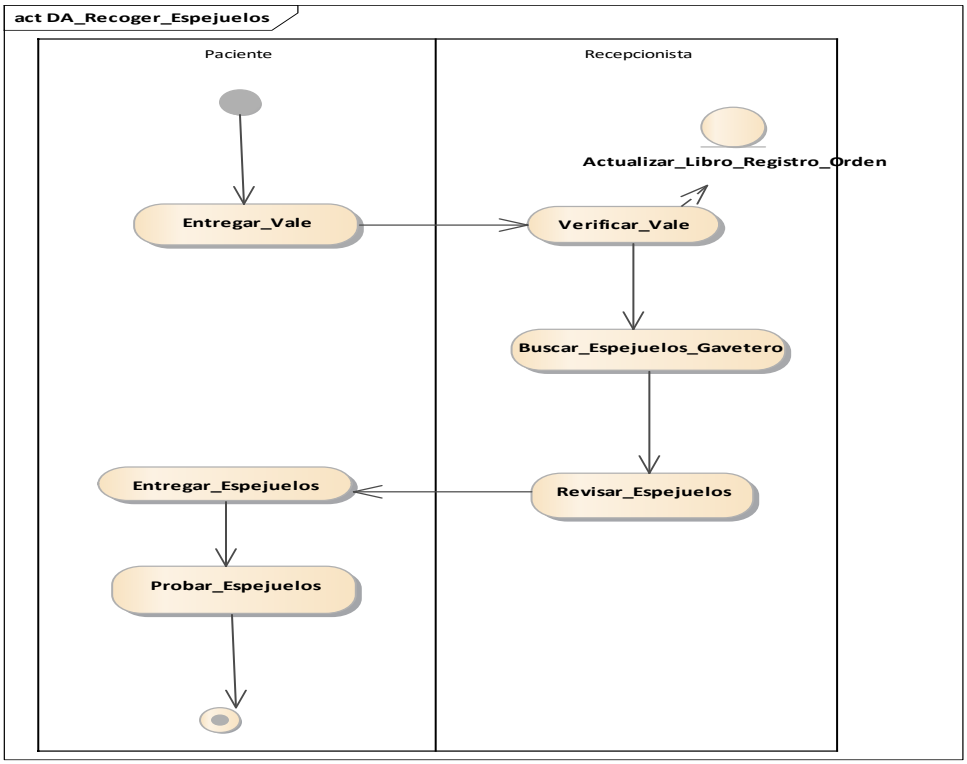


Source: Authors' own elaboration

Figure 5. Activity diagram for delivery of completed eyeglasses.



Source: Authors' own elaboration

Figure 6. Activity diagram for retrieval of completed eyeglasses.

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Business Rules

Rules for receiving orders

- The receptionist is responsible for preparing the order form (envelope).
- All data must be written in ink. Once completed, the sales receipt (voucher) must include all patient and order details.

Rules for dispatching orders

- All transactions must be entered in the warehouse summary log, consecutively numbered and signed by the administrator.
- Every time an order is dispatched, the stock card must be updated.
- The order logbook must be updated daily with all incoming and outgoing orders from each area, ensuring quick and easy traceability without erasures or corrections.

Rules for cutting and assembling eyeglasses

- The cutting and assembly operator must verify that the lens prescription from the warehouse matches the one indicated on the order form.
- Completed orders are delivered by the warehouse clerk to the receptionist, who reviews them before placing them in the delivery drawers to ensure the required quality standards.

Rules for delivering eyeglasses

- To receive completed eyeglasses, the patient must present both the order stub and an identity card.
- If the stub is not presented, the patient has 72 working hours to request a copy of the order with all necessary information.[13]

DISCUSSION

As part of the study on digitalization, a theoretical review was conducted on business modeling and related approaches used globally and nationally to assess their feasibility for implementation at Optical Center 763 in the municipality of Pinar del Río.

The analyzed models did not fully meet the expectations of the unit under study, as they were designed for optical centers in different contexts. The information management processes at Optical Center 763 present operational differences that make those models inapplicable. The proposed business model for Optical Center 763 allows for a clear and visual structuring of the processes performed, identifying the key operational areas. It also facilitates financial and operational feasibility assessment, ensuring that the optical service remains efficient and profitable.[14,15]

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CONCLUSIONS

In general, the business model for the information management processes carried out at Optical Center 763 in the municipality of Pinar del Río was successfully developed. This model provides a comprehensive perspective on the design of the automated information system based on information and communication technologies. The analysis and design of the processes implemented at Optical Center 763 have made it possible to integrate all recorded information across each stage, enabling efficient information management, statistical analysis, and further development.

Conflict of Interest
The authors declare no conflict of interest.

Author Contributions
All authors participated in the conceptualization, formal analysis, project administration, writing—original draft, writing—review and editing, and approval of the final manuscript.

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