Abstract

Digital transformation is a challenge that many SMEs find difficult to embrace. This difficulty is not due to a lack of will or resources but to the lack of the right strategies for the type of organisation that is an SME. It is a common and accepted opinion that many of the digital transformation projects fail or do not achieve the proposed objectives because of the chosen strategy. Digital transformation cannot be seen as a mere evolution of technologies but as a need to shape the entire business of the organisation. The increase in e-commerce has forced SMEs to embark on this disruptive process based on globalisation and digital business.

In this work, we seek to understand what kind of strategy an SME in the retail industry should follow for a correct digital transformation of its business model. Studies on digital transformation in SMEs from various economic industries were analysed to obtain knowledge and examples of strategies used in digital transformation implementation projects. This preparatory work was used to propose an appropriate conceptual model for the digital transformation of retail SMEs and to create a prototype script to support the choice of the digital transformation strategy for these companies.

To prove the validity of the prototype, we applied the support guide in a practical case of digital transformation of a business process in a retail SME.

**Keywords:** Digital Transformation, SMEs, Retail Commerce, Digital Channels, Strategies

1. Introduction

According to the World Trade Organization, small and medium-sized enterprises (SMEs) account for more than 90 per cent of the world's business fabric, 55 per cent of the GDP of developed economies and employ 60-70 per cent of the working population [1]. In Portugal, the figures are identical as can be validated in the official statistics for the years 2017 and 2018. Given these data, we can say that SMEs are the engine of the economy and should be considered as fundamental in all areas and economic activities.

With the Internet and the Web playing an increasingly important role in the world economy, the integration and adoption of new digital technologies is the major challenge for businesses today, observing the effects of digital transformation in all industries and all types of organisations [2]. Organizations that do not take advantage of this moment to evolve and transform digitally are in danger of disappearing or being overtaken by more agile organisations. SMEs have to keep up with their changing markets, as their current position in the niche-based economy should not be supported for long due to the advent of digital platforms. Most SMEs have already adopted information technologies to their organizational processes, such as computers and Internet access, but most use them as mere routine work or communication tools (e-mail), with a weak digital transformation in the organization [4].

But transformation presents itself as a difficult task for SMEs because, in addition to the inherent technical difficulties of digital transformation, most of these companies do not have or have limited resources (financial and time) to plan and implement digital transformation projects, besides having little experience and lack of knowledge in the area of digital transformation [5].

1.1. Motivation and Research Problem

Digital transformation is one of the changes that SMEs need and must foster immediately, as this is the only way they will be able to keep up with the growing proliferation of digital platforms and the digital business. Although there is a lot of information on digital transformation strategies in SMEs, most of the literature focuses on industrial organisations with little literature on digital transformation into Retail SMEs and which strategies are appropriate for the retail economic industry. The scarcity of information on digital transformation in the retail industry was the motivation for carrying out this research, the
conclusions of which will help to present a proposal for a strategic script model for digital transformation applied to SMEs in the retail industry. This gap motivated us to start this research which is summarised in the question: "What transformation strategy can be used to create a digital channel in a retail SME?"

1.2. Objectives
The main objective of this research is to study and contextualize the digital transformation in SMEs in the retail industry, to design and evaluate an artefact, in the form of a script of transformation, modelling and integration of internal business processes in SMEs in the retail industry.

As a secondary objective, we want to understand if there is a pattern of digital transformation with application to all SMEs retailers or if each company is a different case, which products or services are suitable for the new digital channels and how they relate to existing channels.

2. Theoretical Framework
The success of digital transformation will depend on the strategies adopted by the organizations, which will hardly be the same or will have the same suitability in different industries. For example, the strategic measures for creating digital channels for a retail SME will in principle be different from the strategies used in an industrial SME. Due to pressure from online competitors and changing customer buying habits, these SMEs to remain competitive are "forced" to change the traditional business model.

2.1. Digital Transformation
Interest in digital transformation has increased in recent years, being one of the most important topics in management research and the business world. Digital transformation does not have a unique definition, and there are different perspectives in academic literature, with common concepts and ideas, which are considered and accepted as typical definitions of digital transformation.

New digital technologies are the foundation of digital transformation, including various types of technology such as data analysis and management (Big Data), automaton robots, simulation, horizontal and vertical systems integration, Internet-of-Things (IoT), cybersecurity, cloud computing, 3D printing and augmented virtual reality.

Digitisation or digital transformation can help companies gain competitive advantages by improving their organizational flexibility, resilience and enhancing their dynamic capacity [8]. In the same article Guo [8] indicates the possible benefits of digitization for the dynamic capacities of companies:

- Help predict or feel external environmental changes at a reduced cost.
- Allows better use of the business opportunity in crises.
- Breaking space and time obstacles by the decentralized nature of digital technologies.
- Allows the reconfiguration of company resources in response to crises.

The COVID-19 pandemic, which has taken society, business, industry and is likely to cause a global economic downturn by surprise [9] tools and alternatives to their physical equivalents in combating the social and economic effects of the pandemic [10].

From the reading of the selected articles of the RSL, whose main theme was digital transformation, we find a set of common ideas and concepts that involve and define the phenomenon under study. Most authors state that digital transformation involves the transformation of processes and products, organizational structures, and management concepts.

In this work, we review the definition proposed by Matt [11] and Hess [2] in the articles on digital transformation strategies where the authors include the key concepts mentioned in the previous paragraph:

"Digital transformation is concerned with the changes caused by digital technologies in the business model of companies, resulting in changes in products or the structure of the organization or the automation of processes."

2.2. Small and Medium Enterprises
SMEs play a vital role in promoting technological innovation, offering jobs, and maintaining social stability. However, due to a lack of resources, SMEs are more vulnerable to public crises than other companies, and therefore need digital technologies to reduce this vulnerability as has happened with many SMEs in the pandemic crisis caused by COVID-19 [8].

Traditional retail companies to remain competitive must react to behavioural changes [13] derived from the use of digital technologies, as the majority of consumers have changed their shopping habits and turned to online commerce and services [6].

SMEs need to adapt to digital trends [14] that will possibly govern the culture and work organization of companies.
2.3. Retail Trade

The retail industry is the second-largest source of employment in Portugal, having very significant weight in the working population of Portugal. According to the INE survey [15] on the use of information and communication technologies in households, in 2019, 38.7% of residents in Portugal aged 16 to 74 made purchases over the internet, which reveals the increasing importance of e-commerce in the consumption habits of the general population. The growth of e-commerce is causing a profound transformation of the industry. Even before the Covid-19 pandemic crisis, EU citizens were joining e-commerce, but due to the confinement imposed by the pandemic, online shopping had great growth and a huge impact in all economic industries [16].

Despite the development of new digital sales channels and the narrowing of the differences between physical and online (e-commerce) retail, the retail industry still has room to promote improvements in e-commerce. In 2018, the European Commission[1] reported that 80% of retailers did not yet sell their products online, so it was necessary to provide these traditional retailers with the conditions and resources to facilitate adaptation to digital market developments. Retail SMEs, unlike large enterprises, have a flexibility that quickly enables them to implement formal and adaptable processes to meet customer requirements. This flexibility and the existence of few levels of management allow product and process innovations to be implemented on a small scale and resources to be quickly and effectively reorganized.

2.4. Digital Channels

The retail industry is in a new era as a result of the structural change, which has affected the entire retail industry, caused by the emergence of new distribution channels [12]. The classic sales business has moved from the traditional counter to the comprehensive internet-based platforms.

There are four types of distribution channels with different types of customers and actions:

- Traditional channels - Shopping in physical stores
- E-commerce - Online shopping
- Multichannel - Shopping using multiple channels (PC, Tablet, Mobile)
- Omnichannel - Engage customers anywhere through a continuous and integrated experience.

The concept behind the Omnicanal sales channel allows consumers to interact with businesses, anywhere, anytime, using digital channels like social networks. Recalling that the habits of consumers have undergone a radical change [6] and that due to the ease of access to digital technologies, the consumer intends to obtain an integrated and continuous experience associated with the purchase of products or services, such as the experience provided by Omnicanal. Compared to the other distribution and sales channels, Omnicanal operates synergistically, blurring the boundaries of the various channels available, transforming the world into an environment without borders and walls [16].

Digitization is not only felt in online channels, but also within traditional stores [13]. The increasing use of new technological instruments, such as RDIF sensors in smart shopping carts allows customers to almost obtain all available product information instantly they want to purchase.

Another important aspect inherent to these new digital channels is the possibility of changing the roles of the parties involved in the business, in which for example consumers become co-producers, competitors become collaborators, among other changes [16]. Examples of this type of market outage are described by Verhoef, mentioning the case of ING bank, which sees the Amazon platform as a potential competitor and the case of potential competition between the new Alibaba platform and traditional shipping company Maersk.

2.5. Digital Transformation Strategies

Digital transformation is not a question of technologies, it is a matter of strategies and new ways of thinking [18]. A successful digital transformation is more than improving information technology infrastructures, as it is equally important for organizations to change their vision and business strategies to address the new nuances of the digital age. The lack of a digital strategy

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is a reason for the fact that few companies can implement their digital transformation plans. The very strategic nature of digital transformation has significant implications for the management actions of organizations [18], [19]. As Loonam [19] refers to digital technology enables five types of business model archetypes:

- Reinvention of industry
- Replacement of products and services
- Creation of new digital businesses
- Reconfiguration of the value chain
- Rethink value propositions.

These business model concepts can be grouped into four types of management actions as Loonam [19] recommends in its organizational structure proposal. These actions are classified as strategy-centric, customer-centric, organization-centric, technology-centric.

Whatever the industry or type of organization, digital transformation strategies have common elements that can be encompassed in various types of dimensions and strategic domains. Matt [11] proposes a digital transformation model with four dimensions: use of technology, change of value chain, structural changes and financial aspects. Rogers considers that digital transformation should include principles that allow the redefinition of business strategy in five main areas: customers, competitiveness, data, innovation, and value. Stich proposes a series of measures, grouped into structuring forces (Resources, Information Systems, Organization and Culture) for the evaluation and implementation of digital transformation, through a level of maturity based on the concept of Industry 4.0.

Another important model to assist the planning of the digital transformation strategy is the one proposed by Hess [2], which based on Matt's model [11] proposes a questionnaire.

The authors such as Correani [20] propose the construction of a structure that assists the implementation of the digital strategy and that allows managers to create a connection between the formulation of the strategy and the implementation of the digital transformation strategy.

In the topology of digital transformation strategies proposed by Tekic and Koroteev, the authors characterize digital transformation strategies in two possible dimensions (1) use of digital technologies and (2) preparation of the business model for digital operations, evaluated as high or low level.

The authors propose four strategies of digital transformation: (1) disruptive, (2) oriented to the business model, (3) oriented to technology and (4) proud to be analogue. Also, considers that digital transformation strategies are appropriate for a certain type of company, depending on the intended objective for transformation, such as changing value proposition, exploring new opportunities, optimizing, and reducing costs and digitizing specific business areas. These transformation goals are mentioned in several articles, being referred to as indispensable for the creation of new business models suitable for the new digital economy.

In this investigation, we use the definition of the digital strategy proposed by Lipsmeier [21]

A digital strategy describes a company's overall vision in the context of digitization, including strategic measures to achieve it. It defines concrete digitization objectives and initiatives in the short, medium, and long term in the context of products, services, and value creation, as well as for the organization and culture of a company.

In the digital transformation strategies above indicated, several factors, reasons and barriers that can influence digital transformation are identified and there are common features and aspects in these studies. For example, several authors [5], [11], [24] consider as important factors, and that influence digital transformation, the new digital behaviour of consumers and the digital competition provoked by new digital technologies, among other factors.

Digital information (data) is the most important element in a digital transformation, as it is the heartland for planning and developing business transformation strategies that enable the creation of value for the organization and customers. The latter is another important element in digital transformation and implementation strategy, as it drives this disruption with new consumption habits and behaviours. The adoption of new technologies by customers and companies promotes the creation of new business models and the reformulation of the value chain as in the case of Volvo, with the provision of digital services complementary to the core business [23], or the case of Nike in partnership with Apple, which creates a new digital business based on customer engagement (customization) and the development of new digital products and services [17], [18]. The financial aspect is another element mentioned in digital transformation
strategies, considered both as an incentive factor and a barrier to digital transformation. Organizational change in companies is another characteristic present in the strategic planning of digital transformation.

As we can validate, in several strategic models presented, these characteristics and elements are linked to each other, functioning as a uniform block of motives and constraints of digital transformation, being fundamental and essential in choosing the appropriate strategy for implementing digital transformation in this type of projects.

3. Research Methodology

3.1. Design Science Research

We use the methodology Design Science Research (DSR), whose main foundation is based on the concept of creating artefacts for problem-solving (technical) in each context and simultaneously creating scientific knowledge (science). This methodology has grown within the academic community especially among information system researchers [24].

DSR is a methodological structure/model where various methods and methodologies of research (DSRM) coexist. Research and artefact should produce useful results, both for the problem under study and scientific knowledge of the research area.

In this investigation, we will follow the model proposed by Peffer [25] for the DSR methodology, composed of six sequential activities represented in Figure 1. Each activity is already mentioned the work to be done in each stage of the methodology.

![Figure 1 - Steps of the process of the DSR methodology adapted from [25]](image)

3.2. Systematic Literature Review

An investigation that is considered rigorous, credible and with scientific value should be supported by a good systematic literature review (SLR), which is a means to identify, evaluate and interpret the research available and considered revealing for a given research question, area of a topic or phenomenon of interest [26], [27]. It is intended to understand, through the SLR, the digital transformation strategies that SMEs in the retail industry can use to successfully respond to the new dynamics imposed on online and face-to-face commerce.

4. Digital Transformation in Retail

The current retail paradigm is primarily concerned with the competition of online commerce and the growing influence of digital in the relationship between consumers and traders.

To implement an appropriate digital transformation strategy is necessary to know the current knowledge on the subject of the potential stakeholders in this rupture, small and medium merchants, because the existing digital capabilities in enterprises, the culture of learning, the history of the adoption of digital technology, among others, are factors that influence the choice of strategy and the success of digital transformation in organizations [28].

4.1. Creation Questionnaire and Survey of SMEs

We have laughed at a questionnaire to help us understand what the main points can influence this break-in traditional trade activity and analyse the degree of digital maturity and digital transformation of SMEs in the retail industry, to understand the current state of digital transformation in SMEs. This type of survey by questionnaire is a quantitative research method suitable for studies with quantifiable data, i.e. data can be represented by numbers, opinions and information and subsequently classified and analysed by statistical methods [29]. The questionnaires help to organize and normalize the data, besides allowing the verification of the research objectives [31], [32] and allowing, eventually, the confirmation of the research hypotheses. This classification allows us to assess the most important reasons, needs and constraints in the view of retail companies and thus help to design a strategic model of digital transformation appropriate to the retail industry. With the conduct of the survey, it is important to know the current situation and motivation of retail SMEs concerning digital transformation and what measures, barriers, and strategies that managers consider most relevant for this type of transformation. The articles and studies presented in the theoretical framework were the support for the creation and elaboration of questions about digital transformation. The responses obtained from the SME survey were processed as a statistical process for further analysis of the results. The results, together with the research carried out so far, have made it possible to draw up a draft script, in questionnaire format, to assist in the choice of the type of digital transformation strategy appropriate to retail SMEs.
4.2. Selection and Survey Results

We have selected a sample of SMEs retailers who were within these two premises, family businesses and with some history and tradition. This sample of companies was obtained from the official website of Lojas com História, a project created by the City Council of Lisbon. The online page of the questionnaire was available to the companies selected to participate in this study, during August and September 2021, accepting answers until the end of September 2021.

The results of the survey have made it possible to validate the main reasons, constraints and strategies that retail SMEs consider most significant to implement digital transformation in companies in this economic industry, and there is unanimity in the reasons for a retail SME to implement a digital transformation, as all respondents consider creating new business opportunities and ease of entry into new markets and capturing new customers as key factors for the company's digital transformation. As regards the constraints to the implementation of digital transformation in retail SMEs, it is noted that the answers show a dispersion among the variables presented in this question. Even so, we note that most respondents consider their company’s business model as the main obstacle to the implementation of the digital transformation of SMEs. Finally, the main aspects to be considered when choosing the strategy to be adopted in the digital transformation, the preferred choice of respondents is the creation of value for the business that the correct implementation strategy can provide to SMEs.

5. Retail and Digital Transformation

We had the most important indicators for digital transformation in the view of SME retailers. These indicators were the initial working basis of the model prototype for validating the digital transformation strategy best suited to retail SMEs sample. The results of the survey allowed us to infer which variables are most important for the retail SME sample, concerning the motivation and barriers to the implementation of digital transformation, as well as the main aspects to be considered when choosing the strategy to be adopted in the digital transformation of this type of enterprise. Given the results we believe that it is possible to define a strategy for retail SMEs in which we should focus on the assumptions indicated by the evaluation of the responses to the survey:

- Creating value for the business
- The financial impact of digital transformation
- Use of information technologies

According to the indications given in the survey, these premises will support the implementation of the digital transformation sought by retail SMEs, whose main objective will be to reach new markets and customers in new business.

This analysis allowed us to propose a conceptual model, adapted from the structure proposed by Correani and the management actions indicated by Loonam [18], which we consider appropriate for the specificity of the activity of SMEs in the retail industry. The proposed conceptual model, which is represented in Figure 1 is divided into two stages, the first stage referring to the process of surveying the digital transformation strategy and the second to the evaluation and specification of the objectives that are intended to be achieved with digital transformation.

![Conceptual model for the digital transformation of retail SMEs](image)

**Figure 1 - Conceptual model for the digital transformation of retail SMEs**

The proposed conceptual model is a kind of checklist or verification for the strategy to be adopted in the implementation of digital transformation. To assist retail SME managers with the correct choice of the digital transformation strategy, we have created a guide prototype to support digital transformation with the issues that seem most appropriate for the retail industry, covering the indicators considered to be most significant in the last section of the initial questionnaire. The script prototype consists of three sections that encompass the stages of the conceptual model. The first section questions the scope and focus intended for the digital transformation of SMEs. The following section is for SME managers to assess key factors, which in

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2 http://www.lojascomhistoria.pt
their view can influence the choice of SME digital transformation strategy. The third section of this prototype allows SME leaders and employees to assess the current digital status of the organization.

6. Application of the Artifact in a Specific Case

All this research needs to be validated to prove that the digital transformation strategies to be implemented are appropriate for a particular industry or activity, in this case for the retail industry. To validate the proposed model, it was applied the artefact in an SME in the retail trade, in the online sales department of Leitão & Irmão, a small retail company whose code of economic activity (CAE) is 47770 – Retail sale of watches and articles of goldsmith and jewellery, in specialised establishments.

6.1. Leitão & Irmão online sales process

Leitão & Irmão is a two-hundred-year-old company with a business model based on physical stores and traditional luxury goods trading, we think that the digital transformation strategy "Pride to be analogue" proposed by [21] has the appropriate characteristics to implement a digital transformation project in Leitão & Irmão, restricting the application and validation of the digital transformation model to the latest company department, the online sales area. Leitão & Irmão customers value the excellence of manual manufacturing and product exclusivity. Leitão & Irmão products fall into the luxury goods segment, in which the customer does not seek to satisfy a need, but a desire for personal satisfaction [32]. As the millennial generation will soon replace pre-digital customers, current consumers of luxury products, the "Pride to be analogue" strategy suggests establishing partnerships with native digital companies as a measure to improve this transition. For this reason, digital transformation in companies like Leitão & Irmão does not have as main objective the total transformation of the primary business model, seeking instead to digitize parts of the business, remaining the same as the original activity.

The Leitão & Irmão e-commerce sales process was created in 2018. This process is more like a task circuit than a business process, with unnecessary tasks and generation additional work. The online sales process of Leitão & Irmão despite the use of various technological tools (emails, billing system, etc.) is still essentially manual. We can almost say that we are in the presence of an analogue process executed with the aid of digital technology.

6.2. New Leitão & Irmão online sales process

With the help of the digital transformation strategy script prototype, we sought to restructure the entire process of online sales of Leitão & Irmão. We request the heads of the departments involved in the process, to fill out the script prototype to evaluate the current digital strategic thinking of Leitão & Irmão. In the next step, the answers are analysed to decide the scope and focus desired for the digital transformation of this business process.

It was concluded that the digital transformation of this distance sales process would have as scope the strategies centred on organization and technology, strategies whose focus is the implementation of internal initiatives and actions. As key factors for choosing the digital transformation strategy, the answers indicate that the focus should be on improving the organization supported by existing information technologies, i.e., once again the focus is on internal initiatives and actions. The self-assessment of the digital status of Leitão & Irmão indicates that the middle leaders consider that there is little involvement in the company's digital strategy and thinking.

Based on these indications, an action plan has been drawn up to reformulate the online sales process, since the main obstacle to the transformation of the process is the lack of standardised information throughout the data flow of the various technological tools.

In Figure 2 we present the diagram with the proposal of reengineering the process in question, created through the answers to the strategy script prototype. Thus, the information available in this process will be in a single and standardized format and can be used throughout the business process. This reengineering process will allow the connection of the databases of the two information systems and thus facilitate the entire business process, from the management of stocks to the sending of orders to customers, with the availability of information in real-time.

The implementation of this reengineering process awaits final approval from Leitão & Irmão Management and is expected to start the new business process of online sales in early 2022.
As owners and entrepreneurs of companies, the definition of the value proposition by the business models. Digitization transforms the value creation chain of companies at all levels, including products, processes, and the business model. We have demonstrated that it is possible to choose a digital transformation strategy for SMEs in the retail industry, using an appropriate script to the specificities and constraints of this economic activity. In short, this research has validated digital transformation strategies that can adapt adequately to retail SMEs, using concepts and models of the articles selected in the SLR and based on the results of the survey, we propose a conceptual model and a prototype script to support digital transformation for SMEs in the retail industry.

7. Conclusion

As Professor José Tribolet states in the preface of the book "Automating Processes with RPA" digital transformation is much more than "computerization" and "digitization", concepts with growing importance in the interaction of digital technologies with organizations at the beginning of this century. When we want to make a real digital transformation in the organisation, in addition to computerisation and digitalisation, we must also include the transformation of business models, organisational models and existing processes, to avoid results contrary to what is intended. In the face of the constraints triggered by the Covid-19 pandemic, digital transformation has gained increased importance for organisations without or with little presence in the digital world, as is the case of retail SMEs, which have seen their traditional business model collapse with the closure of establishments and restrictions on face-to-face care.

With more informed and demanding consumers, the focus of the retail business has changed. Consumers look for factors other than the price in the purchase of products or services, leading to the inclusion of these behaviour trends, in the analysis s of decision-making and the definition of the value proposition by the owners and entrepreneurs of the companies. As we indicate, the future and value of digitization are in the data and its availability for the creation of new services, which can enhance the emergence of new business models. Digitization transforms the value creation chain of companies at all levels, including products, processes, and the business model. We have demonstrated that it is possible to choose a digital transformation strategy for SMEs in the retail industry, using an appropriate script to the specificities and constraints of this economic activity. In short, this research has validated digital transformation strategies that can adapt adequately to retail SMEs, using concepts and models of the articles selected in the SLR and based on the results of the survey, we propose a conceptual model and a prototype script to support digital transformation for SMEs in the retail industry.

7.1. Future Work

As in all research, this research work can be the subject of improvements in future research work on the theme of digital transformation in SMEs in the retail industry.

- Cover a larger number of SMEs.
- More detailed initial characterization of retail SME.
- Conduct interviews with senior management, in addition to the responses to the script.
- Segment SMEs by-products to verify variation between different types of SMEs.

Bibliography


