

BARRIERS TO DIGITAL TRANSFORMATION IN SMES: A QUALITATIVE EXPLORATION OF FACTORS AFFECTING ERP ADOPTION IN ROMANIA

Miruna-Elena ILIESCU

National School of Political Science and Public Administration

30A Expoziției Blvd., 012194 Bucharest, RO

iliescu.miruna@gmail.com

Abstract

The present paper is an exploratory study and it contributes to the growing body of literature on ERP adoption and acceptance by small and medium enterprises in Romania. The research question was formulated based on the quantitative data available on Eurostat. According to the latest Digital Economy and Society Index, published in 2019, in Romania, only 22.3% of the SMEs have in use an ERP software package, designed to share information between different functional areas. There is a significant difference between SMEs and large enterprises where ERP systems are used by 59.1% of the companies. This study attempts to better understand the challenges that Romanian small and medium companies face when implementing an ERP system by collecting and analyzing data from semi-structured interviews conducted with participants across the country. The key actors in this research were senior ERP consultants who have significant experience in the market and are involved in the IT professional community for more than 15 years. The research methodology consists of 9 people being interviewed, a sample consisting of senior professionals with experience in the ERP software field and consultants that generated rich information on the phenomena. Since all senior consultants were working on different projects with companies of different sizes, fields of activity, and geographical region, they were selected to enhance generalizability and to provide reliable explanations. To ensure accuracy, interviews were taped, transcribed and sent back to the interviewees. Atlas.ti was used to code and to perform the analysis, to assign codes and to model the relationships between them. The results revealed the complexity of the digitization processes, the interdependence between the integration of digital technology by businesses and the level of digital literacy of the individuals in Romania. For most SMEs across the country, the costs for adopting an ERP system are too high and part of them consider they don't need it. The high cost of customization of an ERP system results in using an incomplete or inadequate product. Therefore, final users still use a spreadsheet to complement the work done in their ERP systems. This study is a starting point in understanding the slow integration of digital technologies in Romania, but it might become the base for further investigation of a wider European approach.

Keywords

ERP system; Romanian SMEs; digital adoption; ERP implementation; digital literacy.

Introduction

In the context of globalization and digitalization of businesses, resource planning is crucial. The Digital Agenda for Europe sets growth targets based on more than 100 indicators and, amongst them, the implementation of enterprise resource planning (ERP) systems is one the most discussed in the recent organizational management literature. ERP software plays an important role inside any business by bringing together customer management, inventory, supply chain, HR, financial management, etc. However, the adoption and acceptance of these emerging technologies in Europe are slower than desirable and significant differences are noted across countries. The

integration of digital technologies is particularly slow in SMEs, yet they represent over 99% of all businesses in Europe. To bridge the current divide, we first should understand the reasons behind the low percentage of companies using ERP systems in Romania and the challenges during implementation.

DESI (The Digital Economy and Society Index) is a composite index published yearly by the European Commission, from 2014 until the present. It focuses on the evaluation of five dimensions (Connectivity, Human Capital, Use of Internet Services, Integration of Digital Technology, and Digital Public Services) with different weights reflecting the EU's digital policy priorities. Integration of Digital Technology is the dimension with a relatively high weight, 20%, and it captures the use of ICT by the business sector. It has 2 sub-dimensions: Business Digitalization and e-Commerce. Business Digitalization sub-dimension is calculated as the weighted average of the normalized indicators: 4a1 Electronic Information Sharing (25%), 4a2 Social media (25%), 4a3 Big data (25%) and 4a4 Cloud (25%). The 4a1 indicator, Electronic Information Sharing refers to businesses that have in use an Enterprise Resource Planning software to transfer data between different functional areas.

Data published in DESI 2019 was collected between April and July 2019 and used as a basis for sampling the Business Register updated in January 2019. To ensure representativeness, the Neyman allocation was used and the sample within each stratum was drawn without replacement. The sample size was 15.912 enterprises with an overall response rate of 97%. The latest European reports evaluate the percentage of Romanian companies using ERPs to be only 21,5%, ranking the 24th in the European Union. In 2019, Bulgaria, Hungary, Romania, and Latvia are lagging in terms of the adoption of ERP technologies.

Background

The role of digital transformation inside organizations

IT is changing the way all companies work and it impacts the entire business environment. To deal with nowadays challenges, companies seek to improve their efficiency and enhance their agility (Erkan & Rouyendegh, 2012). The success of a company and its growth can be influenced by implementing software that integrates core processes by collecting data and information. On one hand, these features ensure better flow and ease the centralization of data across different departments inside the company. On the other hand, companies that use technology to analyses sales data, for example, know more about their customers and can provide more value for money, as their product fits the needs and the preferences of their clients. There are proven technical and strategic benefits of integrating module-based software and a wide variety of benefits also include productivity, reduction of costs, acceleration of performance, reduction of bottlenecks in communication, etc. According to numerous studies (European Commission, 2017), companies with a high degree of digitization are more productive (Strategy for Denmark's Growth, 2018).

In the past years, the incredible growth of the business technological tools and systems became an interesting topic for practitioners and researchers in the organizational management field. The ERP adoption has been studied from both individual and group

perspective. If only a few years ago, AI, IoT, or Big Data technologies were only mentioned in several academic circles, today they are broadly used technologies across industries and business sectors. For Romania, the use of new technologies would make the daily routine easier, but also may mean more efficient machines that lead to better production, new jobs, better use of resources, and improvements in many industrial sectors.

Unfortunately, implementing an ERP system costs a lot of time, money, and expertise and the role of it is not always clear to the management team. Even in other European countries, the most common barriers are the lack of IT skills, issues related to data security and data protection, organizational management, and a bad Internet connection (Zimmermann, 2018). Either is on-premise or on cloud implementation, there are a lot of challenges that the implementation process might face. The digital transformation of a company would also consider privacy protection and cybersecurity policies with a big impact in protecting companies' and employees' rights.

The adoption of ERP systems

Frameworks to study the adoption of digital transformation

The increased use of digital technology will have an impact on strengthening competitiveness and progress. The adoption of digital technologies varies according to company size and large enterprises already have a scale advantage, with 75% of them employing internal ICT specialists, according to DESI Report 2019. There are several frameworks to study the adoption of digital transformation and they are mostly based on big companies' case studies or they are still lacking empirical evidence to test their hypothesis.

In 2014, Corver and Elkhuizen proposed the Digital Business Transformation framework, a model built on four key elements: the customer, the product, the organization, and companies' processes and systems. The authors argue that the "digital transformation often begins with the customer" and they establish this mind-set as the premise for the framework. The process follows a logical order from a better understanding of the customers, then moving to improvements to service levels, followed by the digitization of customer experience, coming to an end with a digital transformation. The proposed framework could be a proper guide to companies that are in the process of developing their digital vision. It may also help organizations to build new business models that are based on digital opportunities.

The Digital Enterprise Integrative Management framework was developed by Bowersox et al. (2005) from a supply chain excellence perspective. The authors stated that "true supply chain excellence can only be achieved through digital business transformation." Hence, they consider it a transformation that leads the organization to the next level of operations. This framework exploits all the capabilities that technology could offer and the result is a "true collaboration" within the supply chain by asking for a digital business transformation as a precondition. The Digital Enterprise Integrative Management framework is based on splitting the transformation into three processes:

- a) Enterprise core processes which are focused on the maximization of customer value;

- b) Shared real-time information and operational connectivity which creates a response-based/demand-driven network of supply chain relationships among participating business entities;
- c) Commitment to operational excellence manifested in the form of customer centricity

From the authors' perspective, an integrated company is defined by five elements: integrated operations, measurement and metrics, financial stewardship, customer accommodation, and human resource development. The main limitation of this framework, as for most of the other conceptual frameworks, is that it needs to be validated and tested because there is no empirical evidence to support its practicability.

The digital dynamics in a company can be also addressed by using the Digital Transformation Framework Matt and colleagues (2015) consider that the digital transformation of an organization should be a central concept that would integrate the entire coordination, prioritization, and implementation of digitalization within the company. Therefore, the authors state that "digital transformation strategies should encompass four essential dimensions: use of technologies, changes in value creation, structured changes, and financial aspects."

At the core of this model lies the financial aspect and it represents the primary driver. This is a unique approach when trying to understand the dynamics of the digital transformation of a business entity, considering that an organization's strategic focus is primary on sustainable growth and profit in the long run. The framework focuses on describing the building blocks for digital transformation along four dimensions, but it is yet to be validated in order to move on from the conceptual stage of development.

Factors that influence adoption and use of technology

ICT and the growth of the Internet provided the means for the organizations to improve external communication and the relationships with the customers and other stakeholders. In general, innovation impacts the efficiency and the performance of an organization, but the adoption of digitalization brought even more and influenced the industries' growth considerably. In the past years, strategic innovation has played an important role for most organizations and, in certain fields, it became imperative. Therefore, technology is not the only disruptive force inside a company. There is a lot of research in the past years focused on the links between the organizational culture and competitiveness and innovation. Still, there are not many companies that exploit internal marketing opportunities to forecast the upcoming changes in their competitive environment (Gounaris, 2006). A competitive and innovative firm is a performant one. Thus, we can argue that organizational culture is likely to impact an SME's business model development project activities, which can then lead to changes in its organizational culture.

To adapt and succeed in digital competitiveness, SMEs must adapt and implement strategies that support their development. This digital orientation extends the previously analyzed market orientation. The digital orientation reflects the company's beliefs and activities, but public policies can also have a strong positive influence. Barriers identified in European countries like Sweden, Germany, or Belgium were related to company management, organization, and finances (European Commission, 2017). Low awareness of company management and a lack of understanding of

digitalization benefits is one of the main issues identified. The lack of resources, the competence needed, and they inhibit access to financial support are also relevant setbacks in implementing an ERP system.

There are several successful national policies adopted in European countries to address these barriers. For example, the largest grant size can be found in Estonia, where an SME can obtain up to 500.000 euro through the Enterprise Development Program. Other initiatives include vouchers, project funding, tools, incubators (Germany), but also coaching (Sweden) and networking (Denmark). These initiatives were based on the involvement of private consultants or suppliers, but involve also public mentors, project facilitators, and universities or research institutions.

One of the main factors that play a role in technology adoption inside the companies is senior management (Alshamaila, Papagiannidis, & Li, 2013). When we refer to SMEs, usually the senior management confuses with the owner-manager whose values and skills cause a domino effect on the whole company. The level of IT knowledge of the senior manager is a strong factor influencing the adoption of a digital orientation inside the organization (Michaelidou et al., 2011). Avolio et al. (2014) theoreticized a co-evolution between leadership and technology which they called eLeadership. Later on, Li, Liu, Belitski, Ghobadian and O'Regan (2016) distinguish between eLeadership at meso, micro and macro levels. At a meso level, eLeadership focuses on changes occurring at work, at micro level, it focuses on communication inside remote teams and at a macro level it aims to understand the implications of organizational transformation. In a more recent study on leadership, Larjovuori, Bordi and Heikkila-Tammi (2018) state that understanding and adapting leadership abilities to the digital age, organizations need a holistic view of the environment in order to reach their goals. A positive attitude towards change (Peltier, Zhao, & Schibrowsky, 2012) and risk taking are also factors that influence the adoption of a digital oriented strategy. In a previous study, Peltier et al. (2009) suggested that age and education of the owner-manager of the SME can also influence the drive to embrace progress and digital technology. There is still a lack of research in the field of eLeadership and there are no current theories or models that cover the alignment between strategy and digital technology (Li et al., 2016).

Design of research

Research question

As proven in past studies, the implementation of ERP systems is low amongst Romanian SMEs and in the EU. The research question of this study is, therefore: "What are the barriers in the ERP adoption and implementation in small and medium companies in Romania?"

Research objectives and hypotheses

The aims of this study are twofold: (1) to better understand the reasons why Romanian SMEs are not keen on adoption an ERP system; (2) to identify benefits of implementing ERP systems to serve as arguments for managers interesting in implementing them. This

study hypothesizes that Romanian SMSs have a low understanding of digital technologies and they fail to understand the benefits of using them.

Methodology

In-depth semi-structured interviews were conducted with 9 senior professionals with experience in the ERP implementation field that generated rich information on the phenomena. The senior consultants were in charge of different projects inside companies of different sizes, field of activity and geographical region. Therefore, they were selected to enhance generalizability and to provide reliable explanations. This research addresses how Romanian SMEs reacted to the on-going digital transformation requirements, what their level of digital technology is, and their perceptions of its benefits or drawbacks for their organization.

To ensure accuracy, interviews were taped, transcribed and an English translation of the original transcript was sent back to the interviewees. Each interview lasted between 20 and 30 minutes and it was taped with the explicit permission of the consultants. Atlas.ti was used to code and to perform the analysis. Before all the documents were exported in Atlas.ti, they were cleaned by repeated words (“yes, yes”), or utterances (“uhm”, “ihm”). After being edited, cleaned, and prepared, the text documents were imported into Atlas.ti for coding and modeling the relationships between codes. From a total of nine participants, three were female and five were male.

Results

Data Analysis

Data were analyzed using the Atlas.ti program. The main coding categories are included in the following themes: a) Current barriers in ERP implementation in Romania b) Perceived benefits of using an ERP system c) Perceived disadvantages of using an ERP system. The coding families made the process easier by being based on the interview’s questions.

Results

The results reveal the complexity of the digitization processes, the interdependence between the integration of digital technology by businesses, and the level of digital understanding of managers in Romania. For most SMEs across the country, the costs of adopting an ERP system are too high and part of the managers consider they don’t need it. The high cost of customization of an ERP system results in using an incomplete or inadequate product. Therefore, final users still use a spreadsheet to complement the work done in their ERP systems.

All nine ERP consultants have international experience and they consider their work to be similar to their colleagues around the world. The analysis of the codes for the first theme revealed as general barriers in ERP implementation the lack of awareness at the management level, the lack of understanding of data value inside a company, and the high cost of implementation. From their personal experience, the consultants tended to consider that the general perception in Romanian companies is that human labor and

manual tasks are less expensive than the automatization of a process: “Also, human resources are still considered unlimited, as employees do overtime on regular basis and this is considered normal and acceptable.”

A favorable attitude towards bringing digital transformation in SMEs was captured when talking about companies in certain fields like commerce, retail or media: “Yes, once they have clients which use digital tools, they are more interested in trying”, “we noticed a rise in interest in building online businesses, based only on digital tools but a lot of things still have to change to become a widespread situation.”

The analysis of the second theme exposed a nuanced and varied number of benefits that an SME would have if adopting an ERP. A digital tool would help Romanian small and medium companies to be more efficient, to have more accurate reporting activities, to reduce the risks of human error in financial documents. “General benefits of using an ERP for businesses are: keeping financial and basic HR data in the same place, having a standardized flow of financial documents recording, reduce redundant tasks, reduce employees' overtime. I think these benefits are the same in Romania as well.” All respondents agreed that the advantages of using an ERP are similar, no matter the geographical region or sector of activity.

Most of the participants considered that the main disadvantages that managers identify when trying to implement an ERP in an SME are: the costs, the lack of understanding of this kind of software, and the lack of expertise inside their company: “SMEs managers do not realize they need it and that is why is hard for them to see the advantages of such projects”.

Conclusions

This study is a starting point in understanding the slow integration of digital technologies in Romania, but it might become the base for further investigation of a wider European approach. The results are consistent with other findings in different European countries. Ideally, the study can be followed by the next ones including countries with cultural similarities. Understanding why the Romanian SMEs are not implementing ERP systems might be a starting point in addressing these issues locally, but also expand the knowledge to surrounding countries.

Limitations

This is an explanatory study and its purpose is to identify several new hypotheses for new studies. Even if the participants were consultants with recognized experience in the field, the low number of interviews makes it impossible to generalize the results. The sample was neither random nor fully representative of the SMEs' business environment.

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