



# Digital Transformation in Organizations from a Portuguese Project Managers perspective: what's changing?

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## **Abstract**

This investigation intends to analyze the changes in the organizations and on the way of work in the context of the digital transformation from a perspective of Portuguese project managers in technology-based companies. We adopted a qualitative multiple case study methodology, using the semi-structured interview and the secondary sources of information as technique of information gathering. Five Portuguese project managers from five technology-based companies, aged between 18 and 113 years (3 small companies and 2 large companies) participated in the study. The results were analyzed considering four categories: contextual, diagnostic, evaluative and strategic. The main results revealed that digital transformation has advantages in the work of the project manager and that these organizations have developed a digital strategy involving different areas of the organization, taking advantage of digital technologies to improve their performance. Some of the advantages are the increase of team productivity and offering customers differentiated services against competition, supported by innovative digital platforms, namely; the promotion of a culture of learning and continuous innovation. Contributions for the management of human resources are discussed.

**Keywords:** Digital Transformation; Human Resources Management; Project Manager.

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## Introduction

The digital era, characterized by the exponential use of technology, has been identified as one of the major trends changing business and society in an accelerated way. This tendency has become a challenge for the organizations to ensure that this technology-enabled change has a positive impact on their performance, so that they become or remain competitive, and contribute to the overall well-being of society (Reddy & Reinartz, 2017), for example, in the contribution of the creation of new business models, products and services. Digital transformation represents the opportunity for businesses to think and operate like digital companies in the way they engage their customers, empower their employees, optimize their operations and transform their products. Taking advantage of this phenomenon is the key to innovation and growth (Arkan, 2016).

To date, there is little published scientific research on digital transformation (Hess, Matt, Benlian, & Wiesböck, 2016; Stief, Eidhoff, & Voeth, 2016) and the several non-scientific publications, based on opinions and speculations (Parviainen, Tihinen, Kääriäinen, & Teppola, 2017) make it difficult to construct a reliable and adequate knowledge of this topic. Reddy and Reinartz (2017) mention that in a traditional sense, digital transformation refers to the use of computer and internet technology for a more efficient and effective economic value creation process. Nevertheless, in a broader sense, the same authors say that it refers to the changes that new technology has on the whole; on how we operate, interact, and configure, and how wealth is created within this system. We believe that, for a successful digital transformation in the organizational environment, everyone must operate from a shared and comprehensive view of the demands and resources required.

The digital age brings challenges for organizations that face a context of constant

change and transformation in the way they operate, both at the level of their services and products, as well as in the resources and people involved. In the organizational setting, digital transformation is a complex matter that touches all segments within a company (Hess et al, 2016). So, to take full advantage of the digital, it is necessary to think differently about the organization, and also think about the workforce, the workplace, and the world of work (Bersin, McDowell, Rahnema, & Van Durme, 2017). Hence, there are profound effects of the human resource management in organizations and the new approaches to managing people (Das, 2017).

The use of digital technologies and digitalization are recognized as important to business, as revealed in the MIT Sloan Management Review study in 2015, in collaboration with Deloitte, involving 4,800 business executives, managers and 129 countries and 27 industries and organizations of different sizes (Kane, Palmer, Phillips, & Kiron, 2015). In this study, most respondents admit that digital technologies have the potential to transform the way people work in their organizations. In addition, the study reveals that most organizations implement digital initiatives through top-down processes, followed by pilot projects and cross functional teams. They also point out to the need to develop skills in business knowledge and the ability to conceptualize how digital technologies can impact business models; the desire to try and take risks; the ability to manage work or distribute it, and the digitally experienced teams in fast-paced, flexible environments. The results of the study showed that companies may be in different degrees of maturity. A digitally mature organization has a clear digital strategy combined with a collaborative culture and leadership that fosters digital transformation and encourages risk-taking. The fact that many companies fail to implement is not related to the technology itself, but to the organizations that do not change attitudes and processes or

build a culture that promotes change and lifelong learning, as well as the fact of having insufficient skills (Kane et al, 2015).

Based on the literature reviewed and, on the results presented previously in the present study, we aim to understand the changes in work mode and organization resulting from the digital transformation in Portuguese technology-based companies. For this purpose, we interviewed project managers of teams from different technology-based companies. Team project managers deal with the project development level and they have to constantly articulate with their team, following the policies and the organizational strategy. We selected technology-based companies in this study because we believe that they are at a digital maturity level that will enable us to better understand the changes in work organization in this digital era.

### **Methodology**

This study adopted a qualitative multiple case study methodology, using the semi-structured interview and the secondary sources of information such as published articles, reports and websites as technique of information gathering. This methodology provides tools for researchers to study complex phenomena within their contexts, and it allowed building a complex holistic picture, analyzing words, and reporting

detailed views of informants. This study has an exploratory character, since the state of research in the field of digital transformation is at an early stage. In turn, the use of multiple cases allows ensuring robustness in the study (Yin, 1994). Regarding the purpose of the present research study, the aim is to cover various organizational contexts. Consequently, the organizations were selected both for their similarities (technology-based companies) as well as for their differences (small company vs. big company; company age) (Orlikowski, 1993, 2010).

### ***Participants***

Five project managers from five technology-based companies (e.g. computer information systems, electromedicine, telecommunication and information technology), aged 40 to 51, participated in the study. Their experience in the field of project management ranges from six to 20 years. In table 1, we briefly introduce the background and experience in the field of project management from each interviewee.

The age of the companies varies between 18 and 113 years, with an average of 57 years and standard deviation of 50 years. The number of employees per company ranges from 21 to 3000 people. Considering the number of employees, there are three small companies and two large companies.

**Table 1: Experience in the field of project management**

<b>Company A</b>	Has an experience as a project manager for 15 years. He always used traditional frameworks in waterfall projects. In the last two positions, he has applied SCRUM and now he follows this trajectory.
<b>Company B</b>	Has an experience as a leader in information technology projects for six years related mainly to international rollouts.
<b>Company C</b>	About 20 years of experience in the management of development projects in the electronic area.
<b>Company D</b>	About 15 years of experience as a project leader in the implementation of SAP R/3 projects, and currently as a Product Manager and Product Owner.
<b>Company E</b>	About 20 years of experience in the management of development projects in the electromedicine area.

### ***Procedures and Data Analyses***

The first step of data collection was to contact the organizations, via e-mail, explaining the objectives and determining the availability of some experts, which already started to pursue digital transformation projects, to integrate the study in making a semi-structured interview. Anonymous and strictly confidential data treatment was assured.

After having agreed to participate, semi-structured interviews were performed to those experts. The average duration of the interviews was between 20 and 40 minutes and took place between March and April 2018. Interviewees were briefed on the purpose of the study and all the interviews covered the same interest areas. The interviews were made by skype and were transcribed in full. Apart from the interviews, other sources of information such as published articles, reports and websites were collected. Whenever possible, data were triangulated to establish validity.

Twelve questions were elaborated and were divided into four categories, such as contextual, diagnostic, evaluative and strategic, following the recommendations of Ritchie and Spencer (1994). The contextual

category tries to identify the form and nature of what exists looking for attitudes, perceptions and experiences. In our study, we formulated the following questions: "Q1: What is the role of digital technologies for a project manager?; Q2: What digital media and tools do you use in project and team management? Q3: What basic digital skills are fundamental to a project manager?" The diagnostic category intends to examine the reasons or causes of what exists. It looks mainly for the factors that underlie particular attitudes or perceptions and why some decisions or actions are taken, or not. The questions formulated in this category were: "Q4: What are the main potentialities of digital technologies in the organization where you work?"; "Q5: What are the main barriers that prevent your organization from taking advantage of digital technologies?" The evaluative category appraises the effectiveness of what exists and how objectives are achieved. The following questions were asked: "Q6: How does the organization you work in implements or is starting to implement digital initiatives?"; "Q7: What additional care should be taken in the implementation of digital technologies?"; "Q8: What are the best practices in terms of critical success factors while implementing digital initiatives?" Finally, the strategic category tries to identify new theories, policies, plans or actions in order to mitigate

previously identified issues or propose new improved solutions. The interviewees were questioned about: "Q9: How can the current model of digital technologies in the organization in which you work be improved?"; "Q10: What new services can be added? Which areas need further development and investment?"; "Q11: How important are digital technologies and skills for your organization?"; "Q12: Does your organization have a cultural orientation towards the promotion of digital technology?" The interviews were analyzed line by line to extract its meaning and the codes were derived from those four categories.

## Results

In the analysis of each of the interviews, we considered the four categories indicated above (Ritchie & Spencer, 1994).

### A. The Contextual Category

First, we start by identifying the current context of digital transformation based on the perception and experience of the project managers of each organization. The question about the role of digital technologies for a project manager shows a high consensus among the different experts. All were unanimous in affirming their relevance concerning the: project planning and control; support for document management; exception control; and sharing of information among project team members. One of the experts pointed out that

*"Technology allows automating many tasks that were previously done archaically and manually. For example, a timesheets tool in which each employee intervenes, putting the hours dedicated to each project, alleviates the project manager by giving an almost immediate overview of the costs of the project, as well as anticipates deviations of the project in terms of time, and in terms of cost, which*

*are the main variables of a project,"* (Project manager of the Company D).

Regarding the main digital media and tools used in project and team management, our experts listed the following: project planning and management; business process modelling; tickets systems; collaborative work; mind maps; support for team management; workflows systems; videoconferencing; and social media platforms.

All the experts were consensual about the importance of basic digital skills to deal with the management of a project, namely; at the level of virtual office work and governance processes. They point out that it is important to have knowledge at the level of computer tools, such as productivity, planning and business process modelling.

### B. The Diagnostic Category

The second category which is diagnostic looks mainly at the potentialities and barriers of the implementation of digital technologies in the organizations of each one of the project managers. The project managers mentioned several potentialities of digital technologies in the organizations in which they work. These included the automation of processes, documentation and control; effectiveness in managing and supporting the organization; the reduction of financial costs and the fact that they give a real-time view of the project (s), and the possibility of anticipating deadlines (or costs).

*"Also important is to identify deviations between estimates and actual cost, as well as to be alert to capacity constraints that may occur over time."* (Project manager of the Company D).

Furthermore, they mention the virtualization of meetings and the flexibilization of all moments of alignment of work teams.

Most experts do not identify major barriers that prevent the organization from taking advantage of digital technologies. In general, they claim that they are already taking advantage of existing technologies. One of the experts also points out that digital technologies pose new challenges and opportunities, giving it greater agility in the face of changes in the market.

*"I do not identify it as a barrier but rather as a challenge to be agile enough to follow the market."* (Project manager of the Company A).

However, another expert points out that the dynamics of daily activity make it difficult to adopt new technological procedures that require cutting with the current methods in the company, suggesting that sometimes it would be useful to be able to stop, reorganize and proceed.

*"The dynamics of the activity makes it complicated to adopt new procedures that require cutting with the current methods in the company. Sometimes, it was useful to be able to stop, rearrange and go back."* (Project manager of the Company C).

It has also been mentioned by one of the experts that people and their natural resistance to change can be an important barrier preventing the organization from taking advantage of digital technologies.

### **C. The Evaluative Category**

The evaluative category looks for the effectiveness of implementation on digital technologies, from the project managers' perception. All experts were unanimous in pointing out that the implementation of digital initiatives is due to top-down processes involving top leadership and strategic management. Furthermore, they pointed out the importance of the involvement of all parts of the organization in this process. In addition, they emphasized that it is also essential to have a good training

support to know how to take advantage of the potentialities. Two of the experts stressed the importance of conducting pilot studies prior to the implementation phase in order not only to define the contents and processes to be taken into account in the digital transformation, but also to select the most appropriate tools for each case.

*"It essentially depends on the content of such initiatives. But it is usually preceded by a study phase. However, after decision, the initiative is clearly towards Top Down."* (Project manager of the Company B).

*"The process of digital transformation (started about 5/6 years ago) was an initiative of the administration. The order was (and is) to bet on a range of tools that would give us guarantees that they would not impede the growth of the company. In some cases, we bet on the best tools in the market, in other cases, we use open-source solutions. The tools are usually chosen after studies or pilot implementations. We always rely on tools that give us accessible interfaces on any device, so the vast majority of these tools provide Web-based environments."* (Project manager of the Company D).

*"Top-down processes with good training support are needed/chosen."* (Project manager of the Company E).

Other additional cautions that must be taken in the implementation of digital technologies are the portability, mobility, and agility of the digital technologies.

*"Technology makes no sense only on its own; it makes sense in a context of its use and applicability. Thus, the entire IT project must contain an important (and perhaps even more relevant) OCM (Organizational Change Management) component: a blend of Communication, Marketing, and Training."* (Project manager of the Company B).

*"Too strong dependence on a particular tool or system can be "fatal" in the event of a temporary or permanent lack of that tool or*

system. Therefore, risks and prepared backup plans should be identified for the most critical cases." (Project manager of the Company C).

"A bad process will never be good even if we use the best available technology. So, it is desirable to review the current process (simplify whenever possible!) And only then see the best technology to make it digital." (Project manager of the Company D).

"It is essential to ensure that the platforms work from the beginning efficiently and without technical problems, for greater acceptance." (Project manager of the Company E).

As for the critical success factors that the experts presented for the implementation of digital initiatives, there are several factors that can be listed, such as: sponsorship with decision-making power; holistic view of business; operational interviews, communication, discipline, changing management and the involvement of process actors in the transformation and making them participate in the choice of tools and the validations that follow. Another factor was the stability of tools that avoid constant changes in technological choices.

#### **D. The Strategic Category**

Finally, concerning the strategic category in answering the question of how the current model of digital technologies in their organization could be improved, it was suggested that controlling and monitoring the execution of the processes and trying to improve them every day is fundamental for these processes. The agility to accelerate with the market was also mentioned, as well as the better performance of some tools, ensuring that they function in an integrated way. Furthermore, one of the experts highlighted the importance of considering the generational diversity at their workplace.

"IT cycles are getting shorter and shorter, monitoring these cycles is a constant challenge

for the organization and its employees. It is important to consider generational "diversity", and not only to support such cycles of change. In most organizations, this is not considered. We are starting in a systematic way".

"This is done by extending the current practice to other parts of the company (e.g., Operations, Administrative)".

With regard to new services that may be added or areas that need further development and investment, areas of customer retention and satisfaction were mentioned since they are in permanent change. All companies consider that they are constantly developing new services and looking for customer solutions. And, in this sense, they have solutions that are in a phase of maturation and others that are in development. In turn, they consider that the agility necessary to accompany the experiences they offer to customers is complex to endure without proper tools.

One of the companies pointed out that in general, a digital company is already considered, and it invests consistently in its development. However, the company's project manager states that

"It was interesting to extend the advantages of design tools beyond the design itself, that is, in the installation and maintenance phases over the life of the product." (Project Manager of the Company B).

We asked the experts about the importance of digital technologies and skills to their organization to get an overview regarding their prominence. All considered that digital technologies are currently present in all organizational activities, encompassing human resources, products and services. Some examples of the answer to this question were:

"Having this company in the area of IT, the importance of technologies and skills is the maximum possible. It is relevant to increase the productivity of the teams, and extremely

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*important to offer the customer a differentiating service in relation to the competition. The most innovative companies distinguish themselves by offering differentiated services, usually supported by innovative digital platforms. It is extremely important and crucial to good performance.”* (Project manager of the Company D).

*“A committed and dedicated work team, with proven scientifically qualified and technically savvy know-how is the guarantee of solid, creative and technologically innovative ideas and solutions.”* (Project Manager of the Company A).

*“A highly specialized and motivated team with the technical, technological and innovation capabilities is necessary to respond to any challenge of our clients, implementing robust and appropriate solutions to the different sectors of activity where we operate.”* (Project Manager of the Company C).

As far as the organization's culture is concerned, all experts consider that there is a culture oriented attitude towards the promotion of digital technology. An analysis of our data shows that all companies have the mission of designing, developing and implementing tailor-made technological solutions that will make them more agile, optimize processes and reduce costs with proposed solutions that will give the business more strength. But they also develop and implement digital solutions inside their companies. Company's documentation and processes were practically dematerialized. Any new process that needs to be implemented in the company must always be digital.

One of the companies (Company D) develops a cloud solution that is transforming the processes of managing people through applications that allow registering and accessing data anywhere, from mobile devices. This solution aims to provide employees with greater autonomy in accessing all types of data related to their relationship with the company and have

access to the Internet access information that is useful to them from anywhere (e.g. change personal data, mark vacation days, record expenses, tick absences or overtime, view the income statement). The advantage of this solution, according to the expert, is to reduce the amount of administrative work associated with Human Resources Management, through the automation of routine tasks (e.g. treatment of expenses, absenteeism, registration and all types of contractual information), as well as continuous updating of data, improvement of information's reliability and the dematerialization of processes that consume significant time and resources.

In the two largest companies (Companies B and E), the lifelong learning initiatives that have been developed are creating a collaborative and learning culture. The employees of these companies are present physically in different countries and divisions and it is therefore important to connect all parties so that employees at all levels, functions and cultures contribute with their ideas and knowledge. To this purpose, they have developed actions that enable their employees to collaborate virtually in a network, share their knowledge and learn from others. A practice that has been adopted is Working Out Loud and it has been widespread for all direct employees working together around the world, not just for those who belong to research and development, information technology or marketing departments. This practice allows employees to build relationships that can help them to achieve a goal, develop a skill, or explore a new topic. The advantage of this practice is that employees invest in relationships making contributions over time, making the work and experience of each other visible, rather than networking only for something.

## Discussion and Conclusions

The purpose of this study was to understand the changes in the organizations and on the way of work resulting from the digital



transformation in Portuguese companies of technological base, from the perspective of the project manager. For this purpose, we consider four categories of analysis: (1) contextual, (2) diagnostic, (3) evaluative and (4) strategic.

The results showed that digital technologies play an important role in all phases of the management of a project, being more increasingly the tools that the manager can use. The study showed that digital transformation has advantages in the work of the project manager, for example, in the agility of planning, execution and monitoring of action plans and management of exceptions, workflow, resource management, how people interact and collaborate, resulting in a greater commitment of those involved in the tasks. The combination of digital and social skills is important for the performance of all the activities.

The results of the present study also revealed that the digital technology has enhanced business process automation, control of workflows, resource management effectiveness, cost and time reduction, as well as a more effective management of work teams. In general, the initiative to implement digital transformation follows a top-down process. However, the need to involve employees in the transformation process and to provide them with the necessary training for a successful implementation is highlighted. Moreover, when the initiatives are originated in a bottom up process, the existence of a sponsor with decision-making power is fundamental. These sponsors are seen as leaders who support and legitimize projects.

In the cases under study, no major barriers for the implementation of digital technologies were identified, perhaps due to the fact that these organizations have a technological base and all the obstacles are perceived by the managers as challenges and opportunities that are being created for the company.

In line with Kane et al (2015), the results of this study suggest that these organizations have developed a digital strategy involving different areas of the organization, taking advantage of digital technologies in order to improve their performance. These strategies are expressed not only in the development of agile and tailor-made technological solutions for customers, as a result of their business areas, but also in the internal investment in people to achieve this strategy. For example, digital technologies enable them to increase team productivity and offer customers differentiated services against competition, supported by innovative digital platforms. In this sense, they consider that it is important to invest in digital skills, combined with other skills which are important for developing innovative solutions such as teamwork, motivation, creativity, commitment and qualification of people.

Another strategy adopted by these organizations is to connect the virtual with the physical, allowing all parts of the organization to be interconnected, anytime, anywhere. In this way, organizations gain in speed, accessibility, interconnectivity, mobility and agility. In turn, these organizations have developed a culture of learning and continuous innovation that embraces all the people of the organization, which allows them to be in constant development of new solutions. There is an awareness that digital transformation is not just about technology itself, but about transforming ways of thinking and acting, thus requiring a change in the mentality of people (Henretta & Chopra-McGowan, 2017).

This study reveals some contributions for the management of human resources. For example, human resources management must respond to the complexity of organizational reality by planning its workforce in a dynamic and constantly changing context, helping employees and leaders to develop social and digital competencies to respond to the challenges of this transformation. For digital transformation to succeed, it is important for

it to be aligned with the organizational strategy. At the level of human resources practices, the automation of some routine administrative tasks in the human resources department can bring improvements for the organization, since it frees the manager to develop other activities that empower people. Still, in the context of digital transformation, there should be developed lifelong learning initiatives that enable employees to collaborate virtually in the network, share their knowledge, learn from others and build relationships.

### **Limitations and Future Research**

Apart from the contributions of this research, our study has some limitations. First, the generalization of the findings to other contexts should be made with caution, since we use a small number of subjects (a unique perspective from the project managers at each organization) and the companies integrated in this study were technology-based and not representative of other sectors of activity. Also, the present sample is based in the Portuguese companies' culture. Another potential limitation is that our study does not employ a longitudinal study design.

Future studies could be further implemented along a quantitative direction to validate the findings arising from the current study, so that various perspectives can be analyzed, as well as different types of companies of other activity sectors and from other countries. It is also important, in future researches, to replicate this type of qualitative studies to a longitudinal study, understanding the dynamics of the digital transformation processes and its implications in the field of human resources management.

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