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DIGITAL TRANSFORMATION CHALLENGES

Research in Progress

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Abstract:

The digital transformation is still a protean concept, whose acceptances differ between practitioners and researchers. After a systematic literature review to clarify the definition and dimensions of this topic, we conducted an exploratory qualitative study to better understand the stakes and impacts of the digital transformation of businesses. Our first results show that digitalization represents strategic, organizational and cultural stakes for the company and requires the commitment and involvement of Top management. This paper is a research in progress; others interviews are planned in order to better understand the process of transformation.

Keywords: Digitalization, Digital Technology, User experience, Transformation

1 Introduction

The acceleration of technological innovations transformed the use and behavior of individuals and organizations as well as the markets structures. Indeed, consumers, especially the digital native, more connected to Internet, transformed the way they select, buy and consume offered products and services. Digital technologies such as mobile technologies, collaborative technologies and the Internet of things allow companies to enhance firms' performance. Market volatility increased further to the arrival of new disruptive actors proposing new offers through web applications. One of them has even been the object of a new term qualifying this trend, namely the "Uberification" of markets in what we call the sharing economy.

This transformation led by digital technologies takes on a crucial strategic importance for companies. Indeed, organizations have to, on the one hand, deal with new disruptive actors that have upset in depth traditional sectors. On the other hand, companies must be able to adapt themselves in a fast and personalized way to customers which became more aware about market offers and more challenging by imposing their rules of competitive game. Moreover, according to a study led on digital disruption issues by KPMG (2015), 91 % the French business managers are worried about the arrival of new entrant disrupting their business model, while 84 % of them are concerned about stakes of customer loyalty.

In this context, the digital transformation akin to a strategic imperative for today's business since company evolves in an environment that radically changed by the digital. However, even if "57 % of the French companies identify the digital as a strategic priority in the medium term, only 36 % of them formalized an appropriate strategy" (Berger, 2014, p. 5). Furthermore, it turns out that "the most mature companies in their digital transformation had a growth 6 times higher than the latest companies" (Berger, 2014, p. 5).

A systematic literature review was conducted, to better understand the phenomenon of digital transformation of companies and clarify in particular the definition and dimensions of this theme (Henriette et al., 2015). Given that the stakes and effects of the digital transformation on companies were little explored in the literature, we proceeded to an exploratory qualitative research to better understand the process of transformation. The objective of this research is to provide answers to the following question: What are the stakes and impacts of digital transformation on companies?

After the introduction, we will first present an overview of our systematic literature review. Then we will present the methodology and results of our exploratory study. We conclude by presenting our future research directions.

2 Background: Definition and dimensions of the digital transformation

In this section, we present and discuss the results of our systematic literature review, related to definition and dimensions of digital transformation. The distribution of articles relatives to this research is presented in (Henriette et al., 2015).

2.1 Definition of digital transformation

The digital transformation, otherwise called "digitalization" is defined today rarely in the literature. Our literature review shows that the digital transformation is defined as a social phenomenon (Stolterman et al., 2004) or cultural evolution (Belk 2013; Pardo et al., 2014; Rogers et al., 2011; Pînzaru et al., 2012) and for companies as an evolution or creation of business model (Zhu et al., 2006 ; Rogers et al., 2011 ; Kohli et al., 2011 ; Liu, 2012 ; Gastaldi et al., 2012 ; Berman, 2012 ; Medina et al., 2013 ; Barland, 2013 ; Rothmann et al., 2014 ; Øiestad et al., 2014 ; Pardo et al., 2014).

Indeed, it is perceived as a fundamental transition of society, driven by generations called "digital" (including Generation Y, born between 1980 and 2000, and Z, born from the 2000s), for which digital technologies are deeply rooted in their culture and daily practices. In this context, companies must be able to adapt themselves by changing their business model or develop a new one.

However, considering the digital transformation of companies as a business model seems debatable and incomplete because it can affect other elements of an organization such as culture, organizational

structure, workplaces and even ethics. For this, we propose defining the digital transformation as "a disruptive or incremental change process. It starts with the adoption and use of digital technologies, then evolving into an implicit holistic transformation of an organization, or deliberate to pursue value creation".

2.2　Dimensions of digital transformation

Our literature review shows two main dimensions: (1) the digital technologies and (2) the user experience.

2.2.1　Digital technologies

The digital transformation, as its name suggests, is primarily a transformation stemming from the evolution of new technologies. We noticed from our literature review that the main technologies mentioned in the context of digital transformation of companies are Internet technologies (Zhu et al., 2006 ; Kohli et al., 2011 ; Rogers et al., 2011 ; Berman, 2012 ; Pînzaru et al., 2012 ; Liu, 2012 ; Medina et al., 2013 ; Øiestad et al., 2014 ; Pardo et al., 2014 ; Rothmann et al., 2014), analytical technologies (Kohli et al., 2011 ; Berman, 2012 ; Gastaldi et al., 2012) and mobile technologies (Berman, 2012 ; Liu, 2012 ; Pardo et al., 2014 ; Pînzaru et al., 2012 ; Medina et al., 2013). These three complementary technologies actually have developed these last years, in particular, thanks to Cloud technologies.

2.2.2　User experience

The digital transformation places users at the heart of corporate strategy. Customers are more and more demanding regarding the quality of products and services. They expect companies to be able to adapt quickly and customized to their changing needs. It is particularly the case of new "digital" generations (Pardo et al., 2014), who have a deep knowledge of new technologies and an important capacity for sharing their experience with others via social media (Rogers et al., 2011 ; Pînzaru et al., 2012 ; Berman, 2012 ; Rothmann et al., 2014 ; Øiestad et al., 2014). To face these new expectations, companies must adapt their manners to address its products and services according to consumption trends. That's why digital transformation begins generally by transforming the marketing function. The latter passes in particular by the adoption of CRM (Customer Relationship Management) tools latest generation integrating a strong social dimension through the social networks analysis modules.

However, the user experience does not concern only the company's customers but also internal users namely collaborators or employees (Berman, 2012 ; Pînzaru et al., 2012 ; Belk, 2013). Indeed, employees using the new technologies in their daily life, often have a step ahead of their company in the adoption of latest innovations. The provision of mobile and collaborative technologies has modified workplaces and has changed way of working in particular by the intensive practice of remote working. Therefore, companies invest in mobility, connected objects and collaborative platforms to provide value-added services to employees in terms of quality and efficiency of work. The digitalization of human resources function also came with the implementation of ERM (Employee Relationship Management) tools. These kind of tools consider employee as an internal customer and aim to ensure a high level of service.

However, the evolution of technologies in digitalization of companies engenders new labor needs and thus creates new job opportunities. For example, the Chief Digital Officer is an emerging role. He is dedicated to digital transformation while having a transverse function of operationalizing digital strategy. New jobs in the management and governance of digital data are also emerging such as Chief Data Officer, Data Scientist or Data Analyst. In the marketing field appear new functions such as the responsible of web and social networks oriented Marketing study (Community Manager).

3　Exploratory research

According to our literature review (Henriette et al., 2015), we find that articles are more focused on the digital technologies used by companies and their impact on the user experience. However, the study of MIT and Capgemini (2011) shows that digitalization transforms not only the customer experience but also business models and business process (Fichman et al, 2014). Given that the stakes and effects of

the digital transformation on companies were little explored in the literature, we proceeded to an exploratory qualitative research to better understand the process of transformation.

3.1   Research methodology

In this study, we adopted an exploratory approach and we conducted semi-structured interviews face-to-face with three senior consultants in digital transformation. The interviewees work in a multinational company in the domains of computer hardware, software, IT services and consulting in France. Their age varies between 30 and 55 years and they have over 5 years of professional experience. The interview was around two main themes: the implementation and the stakes of business digital transformation.

After transcribing the interviews, data analysis was executed using thematic analysis method which consists in identifying and categorizing significant ideas to draw the fundamental semantic elements (Negura, 2006). The purpose is to compare and discuss the results of each this will be presented in the following.

3.2   Results and discussion

The results of our exploratory research are presented according to identified themes. The interviewees will be afterward appointed by I.1, I.2 and I.3.

3.2.1   Strategic stakes

Having presented our definition of the digital transformation, we interviewed the professionals about their vision of strategic stakes related digital transformation MCIS of companies.

All the interviewees agree that digital transformation is a strategic issue for companies. Indeed, "the digital transformation caused significant market disruption, placing this topic at the heart of managers concerns of companies, regardless of the sector… New disruptive actors can even, through low investments, penetrate into markets that are considered as stable" (I.3). The second interviewee illustrates this with the example of a transportation network company which, by "the provision of a mobile platform which is putting in contact users with drivers, has shaken up taxis market in Paris" (I.2). In this context of markets "the digital transformation is for many a question of survival, […], companies have to rethink their business model and diversify their offers" (I.1).

Two of the interviewees emphasized that the magnitude of these stakes differs across industries driving companies to diversify their offer. For example, in the media industry, "a company which historically proposed of DVD rent, anticipated very early the dematerialization of the video supports rent in favor of video on demand, diversified its activities by producing movies and series, and became leader in its sector" (I.1). On the other hand, in the manufacturing industry, the production line has also elvolved in digital era. Indeed, "the generalization of digital assembly lines, that is robotic and automated, allows customization of products for every consumer with an optimization of inventory management, and thus the provision on the market of high quality products at competitive prices" (I.2).

According to our interviewees, to provide propose personalized products and services, "companies need to be more flexible, more agile with a time to market ever shorter" (I.2). Therefore, some companies undertake the transformation of one or more business processes. Indeed, "the digitalization of business process, it is the evolution and automation of existing business process to improve the quality of provided products and services" (I.2). The multiplication of communication channels allowed companies to expand their market and rethink their way of addressing customers. In particular, "the widespread use of the Internet transformed the marketing and purchasing processes and lead a disintermediation of the customer-supplier relationship" (I.1). Driven by changing uses in society, "the digital transformation of companies requires a connection between companies and their customers" (I.1).

3.2.2   Organizational and cultural stakes

In addition to the strategic stakes of digital transformation, the interviewees also discussed the organizational and cultural stakes.

Indeed, the collaborators also faace changes induced by the daily use of digital: "today, the digital is everywhere in the everyday life of people whose company employees" (I.1). Companies have to change

the way of working, which means to set up a digital culture. "What is more difficult is that there is a great cleavage between generations X, Y, Z wishing to have the same tools in business and at home, and previous generations who have more difficulties to adopt them" (I.2). New workplaces transformed organizations and the corporate culture in particular through mobility and collaboration spaces: "There is a strong craze around collaborative initiatives such as the co-working and crowdsourcing" (I.1). The stake for the companies of an internal point of view is to be able to "mobilize all collaborators towards new practices as collaboration or remote working" (I.3). "Managers have to find new ways of remote team management" (I.1).

Digitalization of business processes also has a structuring impact. Indeed, "the automation of business activities change business processes and can lead to deeper problems for the company" (I.3). Similarly, "the optimization pushed to the maximum, for example when we automate complete process, can lead to the disappearance of jobs and can cause great resistance to change" (I.2). However, digital transformation can result in the emergence of new jobs: "New professions have emerged as the Cloud Broker whose role is to aggregate all internal and external cloud services through a single portal" (I.1) or "the Chief digital Officer, who has a facilitating role in the adoption of digital technologies for business [...] but he can also be responsible of a complete project of digital transition" (I.3).

Other existing jobs became more important with digital. For example, with the explosion of data, "companies must ensure the integrity, quality and security of data flowing in its information systems, what involves the implementation of new models of data governance, in particular big data" (I.1), as well as "the rise in force of jobs as Chief Data Officer or jobs existing as Chief Security Officer" (I.3).

Finally, one of the interviewees underlined that IT organization is strongly impacted by digital transformation. "There is often, in companies, a triptych between local IT organization, dedicated to a line of business, Global IT group and businesses. Global IT group give a vision, big trends as well as rules and standards. While the local IT organizations are more operational and directly related businesses. One of the stakes in digital transformation is to be in capacity to manage the relationships between these actors" (I.1).

3.2.3　The implementation of digital transformation

At the end of interview, we asked our respondents the following question: How does digital transformation manifest in companies?

The digital transformation is "widespread in the whole company and often over the long term" (I.3), but "it is imperative for companies to be able to quickly show results" (I.1). To reach this, the interviewees presented emerging solutions for assessing the contributions and risks of digital transformation. Two interviewees put forward the implementation of pilot groups: "it is necessary to target a pilot business lines which can, on a smaller scale and with less risk, present results and launch a dynamics of change" (I .3); "The contributions of digital transformation, particularly the transformation of internal processes, are generally qualitative. The best way today to identify the contributions of internal processes transformation is to conduct pilot and to compare them with others" (I.2). One interviewee supported more the use of prototypes. For him, "it is better to invest 4 times 100K€ on Proof of Concepts and only have one that works to launch a project that is sure to see success" (I.1).

The use of pilots or prototypes is not the only way to initiate a digital transformation while limiting risks. Indeed, "instead of investing big sums in research, we see more and more organizations co-innovate with other companies to minimize risks and share the financial charge. This allows in addition to accelerating the speed of projects" (I.1). Apart from co-innovation, there is also open innovation where "compagnies are opening more and more to Crowdsourcing. It allows them to benefit from a larger panel of experts and gain visibility on the market" (I.2).

If interviewees agreed on the way of undertake digital transformation, it is not the case for the question of the initiator of this transformation. For some, as it is a strategic issue for the company, it belongs to companies' leaders to launch the project of digitalization: "it is the CEO which has to carry the digital transformation of company because it affects the company strategy. CIO must provide needed tools for the realization of the strategy" (I.2); "When we touch the business model, the direction of company must be involved. It gives a vision, guidelines and provides the necessary means for transformation businesses" (I.3). On the other hand, according to an interviewee, it is the CIO who has to initiate the

transformation because changing uses is conditioned by new technologies. "The CIO must be able to provide the technology and services necessary for business digital transformation. It must therefore carry this model with the sponsorship of the CEO" (I.1).

4 Conclusion

We found from this in progress exploratory study that digital transformation involved more or less profound changes in the business model of the company, which may occur on processes, resources, operational methods or culture. This is why the choice of how to initiate the digital transformation is long-term structuring for the company. It represents a crucial strategic decision.

Digital transformation is a very rich subject, trans-disciplinary, raising a number of important issues that may be the object of research works. On the theoretical level, the digital transformation presents an important interest as far as theories can be adapted or revised, such as the resource-based view or the theory of organizations. Methodologically, the mobilization of case studies (Yin, 2014; Eisenhardt, 1989) and action research (Baskerville, 2016) can describe and allow to better understand the use of digital technologies such as big data, business analytic as well as the progress of the digital transformation process. To continue this research, we will lead more interviews until we found relevant issues by using saturation as a guiding principle during data collection (Mason, 2010).

References

Barland, J. (2013), Innovation of New Revenue Streams in Digital Media, *Nordicom Review*, 34, 99-112.

Baskerville, R. L., & Wood-Harper, A. T. (2016). A critical perspective on action research as a method for information systems research. In Enacting Research Methods in Information Systems: Volume 2 (pp. 169-190). Springer International Publishing.

Belk, R. (2013), Extended Self in a Digital World, Journal of Consumer Research, 40 : 3, 477-500.

Berger, R. (2014), Du rattrapage à la transformation : L'aventure numérique, une chance pour la France, URL :
http://www.rolandberger.fr/media/pdf/Roland_Berger_Du_rattrapage_a_la_transformation_201409 29.pdf

Berman, S. (2012), Digital transformation: opportunities to create new business models, Strategy & Leadership, 40 : 2, 16-24.

Dyba, T. et T. Dingsoyr (2008), Empirical Studies of Agile Software Development: A Systematic Review, Information and Software Technology, 50 : 9-10, 833-859.

Eisenhardt, K. M. (1989). Building theories from case study research. Academy of management review, 14(4), 532-550

Fichman, R. G., Dos Santos, B. L., & Zhiqiang (Eric) Zheng. (2014). Digital Innovation as a Fundamental and Powerful Concept in the Information Systems Curriculum. Mis Quarterly, 38(2), 329-343

Gassmann, O., K. Frankenberger et M. Csik (2014), The St. Gallen Business Model Navigator, URL: http://www.im.ethz.ch/education/HS13/MIS13/Business_Model_Navigator.pdf

Gastaldi, L. et M. Corso (2012), Smart Healthcare Digitalization: Using ICT to Effectively Balance Exploration and Exploitation With in Hospitals, International Journal of Engineering Business Management, 4, 1-13.

Henriette, E., M. Feki et I. Boughzala (2015), The Shape of Digital Transformation: A Systematic Literature Review, Mediterranean Conference on Information Systems, 3-5 October 2015, Samos, Greece.

Kohli, R. et S. Johnson (2011), Digital Transformation in Latecomer Industries: CIO and CEO Leadership Lessons from Encana Oil & Gas (USA) Inc, MIS Quarterly Executive, 10 : 4, 141–156.

KPMG (2015), Nouveaux défis, nouvelles stratégies : regards croisés de dirigeants, URL : http://www.kpmg.com/FR/fr/IssuesAndInsights/ArticlesPublications/Documents/CEO-Survey-2015-Nouveaux-defis-nouvelles-strategies.pdf

Liu, D. (2012), Competitive Business Model in Audio-book Industry: A Case of China, Journal of software, 7 : 1, 33-40.

Mason, M. (2010, August). Sample size and saturation in PhD studies using qualitative interviews. In Forum qualitative Sozialforschung/Forum: qualitative social research (Vol. 11, No. 3)).

Medina, M. et B. Prario (2013), The transformation of audiovisual media companies: The cases of Mediaset (Italy) and Antena 3 (Spain), Studies in Communication Sciences, 13 : 2, 166–173.

MIT et Capgemini (2011), Digital Transformation: A Roadmap for Billion-Dollar Organizations, White paper, MIT Center for Digital Business and Capgemini Consulting, 17 novembre 2011, URL: https://www.fr.capgemini-consulting.com/resource-file-access/resource/pdf/digital_a_transformation_roadmap_for_billion-dollar_organizations_-_mit-cdb_and_capgemini_consutling.pdf

Negura, L. (2006), L'analyse de contenu dans l'étude des représentations sociales, SociologieS, Théories et recherches, URL : http://sociologies.revues.org/993.

Øiestad, S. et M. Bu (2014), Digitisation of publishing: Exploration based on existing business models, Technological Forecasting & Social Change, 83, 54-65.

Pardo, A. et C. Etay (2014), Movies and screens: the Spanish audience's choice, Communication & Society, 27 : 4, 131-145.

Pînzaru, F. et A. Mitan (2012), Social media and marketing of the "popcorn" music wave: the success of romanian commercial musicians analysed through their perceived image on facebook and youtube, Economics & Sociology, 5 : 2a, 125-138.

Rogers, J. et S. Sparviero (2011), Same tune, different words: The creative destruction of the music, Observatorio Journal, 5 : 4, 1-30.

Rothmann, W. et J. Koch (2014), Creativity in strategic lock-ins: The newspaper industry and the digital revolution, Technological Forecasting & Social Change, 83, 66–83.

Saussier, S., et Le Lannier, A. (2013), Les territoires du SI et leur urbanisation, Master management des entreprises, Eyrolles, 205-206.

Stolterman, E. et A. C. Fors (2004), Information Technology and the Good Life, in: B. Kaplan et al. (dir.) Information Systems Research: Relevant Theory and Informed Practice, London: Kluwer Academic Publishers.

Zhu , K., S. Dong, S. Xin Xu et K. Kraem (2006), Innovation diffusion in global contexts: determinants of post-adoption digital transformation of European companies, European Journal of Information Systems, 15, 601–616.

Yin, Robert. 2014. Case study research - design and method. s.l. : SAGE, 2014