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Understanding Digital Transformation from the Perspective of Users

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ABSTRACT

The concept of digital transformation is reaching out to all kinds of people and organizations, but their understanding is still small. Because of this, we asked the 254 computer users what they understood of transformation and seven related dimensions. The questionnaire was built based on the literature review and seven dimensions were found determining the transformation, to verify the level of knowledge: Digital transformation, Value proposition, Value proposition for customers, Value proposition for suppliers, Ecosystem digital, Business Model and Digital Platform and Digital Enterprise. A five-point interval scale was created. For the correlation analysis, the Spearman correlation coefficient was used, which measures the association degree of the variables. According to the research, indicated that only platforms, ecosystems and value proposition for clients have a better understanding by the users.

INTRODUCTION

The term "digital transformation" is new and the fact of involving processes and resources from diverse areas such as Information and Communication Technology (ICT), administrative and productive areas, reinforce uncertainties and uncertainties. A typical example is if the company deploys a new management system, this is or not digital transformation?

Another question is whether the new nascent companies, which were born in the digital era, can be considered to have undergone "digital transformation" or if they are digital companies.

The digital transformation of a business means discussing various types of business transformation. Products and services must undergo a real revolution by introducing or adapting value-added services, using new technologies to have a direct impact on the presentation of results and the customer experience, making this one of the company's main guidelines. Channels and processes will also be transformed and the need to look for new models and revenue streams based on customer requirements will become necessary and therefore it will be mandatory to change the company's internal culture to include "digital" at the heart of everything is done [1]. The purpose of this article is to verify how society understands digital transformation and how pertinent topics correlate this new concept.

LITERATURE REVIEW:

2.1 Digital Transformation

In the literature, it can be observed that different dimensions of digital transformation have been proposed and defined for a better understanding of the digitization. In that sense, in a special edition of the MIS Quarterly of 2013 based on the analysis of five specialized jobs in the field of digitalization, four dimensions of a company's digital business strategy were highlighted as key attributes for digitization [2]. In the present study,

• Its scope, which needs to extend beyond the company's traditional boundaries;

• Its scale, with the emergence of platforms that create important network effects in a context of abundance of data;

• Its speed, whether to launch products or services, to make decisions, etc.

• The source of creation and capture of value (data, networks, digital architecture).

Digital business strategy is different from the traditional IT strategy in that it is much more than a multifunctional strategy and transcends traditional functional areas (such as marketing, purchasing, logistics, operations, etc.), various IT resources and processes (such as order management, customer service, and others).

Therefore, digital business strategy can be seen as inherently cross-functional. All functional and process strategies are encompassed under the aegis of the digital business strategy, with digital resources acting as the connective tissue "[3].

Digital Business Transformation is the application of technology for building new business models, processes, software and systems that result in more profitable revenue, greater competitive advantage and greater efficiency. Companies achieve this by transforming business processes and models, enabling workforce efficiency and innovation, and customizing client / citizen experiences [4].

According to Bounfour [5], digital transformation is a new development in the use of digital artifacts, systems, and symbols within and around organizations. For Leignel, Ungaro and Staar [6], the term digital transformation has existed since the 1960s, with the greater availability of large computers.

More development stages in the 1980s as the e-mail or 1990s the emergence of CRM and Business Intelligence (BI) tools for connected objects, 3D printing, block-chain technology and Artificial Intelligence (AI), innovation in digital technologies and digital transformation has changed the way of collaboration, implementation at the level of the entire economy in a radical way [6].

Digital transformation changes business and private life in the same way, in a radical and sustainable way. The economic potential is enormous. Topics related to the Internet have by far the most economic potential in the world.

The world becomes more and more digital and this is the big business of the future. Digital networks and data intensive are the main attributes of smarter production, the so-called industry 4.0. But not just in technology, many things are changing, humans and society are also changing [7].

In short, digital transformation means high-speed changes in cooperation due to the innovation and implementation of digital technologies and the integration into all aspects of human life and society in different dimensions [8].

2.2 Business platform

Platforms are defined [9] as building blocks on which a series of companies (a business ecosystem) develop complementary products, technologies or services, proposing these requirements for a platform:

- Must play a critical function of the general system or must solve a crucial technological issue of an industry,

- It should be easy to connect, " build " and provide space for new and unplanned use.

In the business model literature, an emerging model is the business platform (business platform), whereas business models on the one hand have one or several customer segments, which are distinct from one another, the model platform has two or several customer segments, which interact with each other using the business platform [10]. We can highlight as examples of this type of business model Facebook and Google.

A digital business platform is "an integrated set of electronic business processes and technologies, applications and data that support these processes" [11].

Digital business platforms are changing the way products and services are created and delivered. They are threatening established firms within many industries, see figure 1 [10].

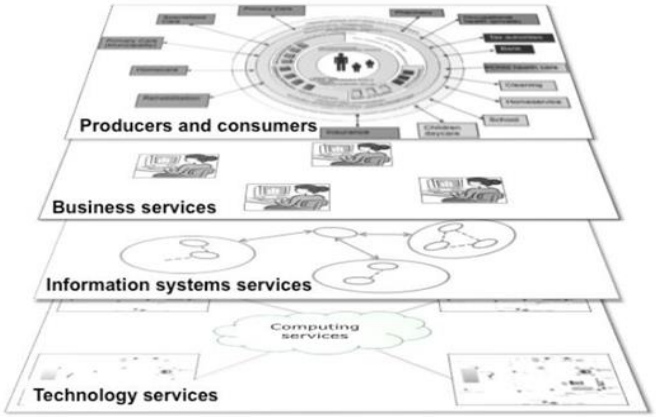

Figure No. 1: Tiered business platforms [10]

Source: Itälä (2015)

Itälä (2015) illustrated with the following events:

AirBnB is a platform that connects these ordinary people who are willing to provide a room and those travelers who need a cheap accommodation.

Uber is a platform that connects ordinary people who are willing to offer a taxi drive and customers who need from one place to another.

Interestingly, neither AirBnB nor Uber own their rooms or cars; they only connect owners and users in an interaction. Both AirBnB and Uber also create trust on both sides: service buyers can write reviews of their experience, and service providers can write customer feedback.

Venkatraman *et al*. [12] defined as digital business innovation platforms "actions of a network of companies with complementary skills to co-create new business models that are intrinsically based on information and technology functionalities".

It is considered a form of open innovation where there is contribution from outside the company through the participation of consumers and suppliers in the development of the business or product, adding value and receiving the benefits in exchange for their participation.

Like any collaborative process, this approach goes through a process of filtering ideas. Ohern and Rindfleisch [13] argue that regardless of the situation, a process of co-creation needs inputs, which need to go through an evaluation process for the correct selection of the idea that will make a difference.

First, they conceptualized innovation as a platform beyond the conventional framework of innovation as a process. Innovation platforms enable innovations of business models driven and supported by information technology [14].

Second, digital innovations are not created by autonomous companies, but by a network of companies in a business ecosystem that groups their complementary skills [14].

2.3 Ecosystem

Another type of model is called the ecosystem, which compares emerging commercial networks with biological ecosystems. Peltoniemi & Vuori [18] define an ecosystem "to be a dynamic structure consisting of an interconnected population of organizations".

According to ITÄLÄ [10], this combination of a device manufacturer, operating system provider, store, application provider and content provider is called an ecosystem, in this example, a smartphone ecosystem, figure 2. All members of the ecosystem benefit each other and, of course, the client benefits more. And, of course, customers belong to the ecosystem.

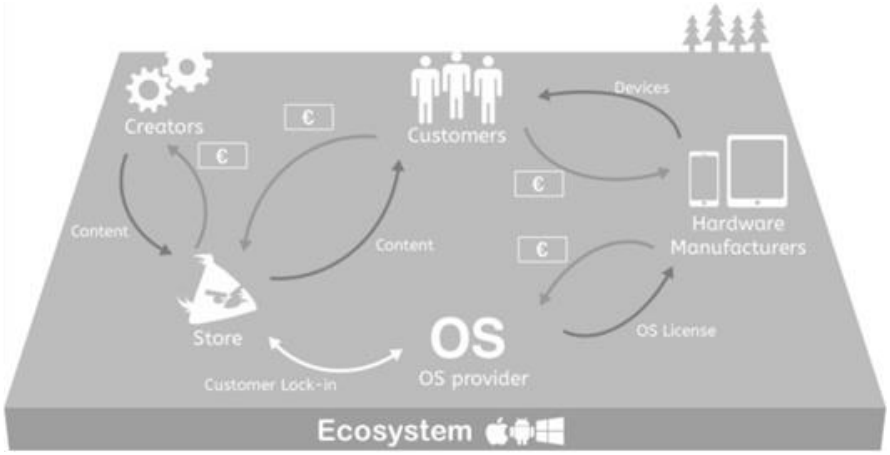

Figure No. 2: Example of an ecosystem [10].

Itälä (2015)

Consequently, Android or iOS are not digital innovations from Google and Apple, respectively. They are ecosystems involving hardware, applications and complementary services orchestrated by Google and Apple and involving several companies that compete and cooperate in dynamic networks [14].

2.4 Business Model

According to Zott, Amit and Massa [15], the main areas that use business models are: E-business and IT use in organizations, strategic issues such as value creation, competitive advantage, company performance and innovation and technology. In addition, business models offer a holistic view of the system level in business logic [15] and therefore offer the possibility to focus on value creation comprehensively.

The importance of the business model can be demonstrated in the article by Zott, Amit and Massa [16] published in the Journal of management with the title of "The business model: recent developments and future research", focusing on business model with substantial attention from academics and practitioners. The authors state that since 1995, there have been at least 1,177 articles published in peer-reviewed academic journals, in which the notion of business model is addressed.

During the e-commerce boom in the 1990s and with the advent of the Internet, the term business model has gained prominence and has been used by managers, academics, and journalists for everything related to the "new economy" that is driven by technologies of information and communication and has accumulated since then [16][17].

The business model has also been the subject of a growing number of professional-oriented studies. While there has been an explosion in the number of articles published, and an abundance of sessions and conference panels on the theme of business models, it seems that researchers (and practitioners) have not yet developed a common and widely accepted language that would allow researchers to examine the construction of the business model through different lenses to draw effectively on the work of others [16].

The definition of Teece [19], emphasized the value creation function of a business model:

A business model describes the design or architecture of the mechanisms for creating, delivering, and capturing employee values. The essence of a business model is that it crystallizes customer needs and ability to pay, defines how business responds and delivers value to customers, attracts customers to pay value, and translates these payments into profits through the project and operation of the various elements of the value chain [19].

In this project was adopted as definition of business model:

A business model is defined by three main elements: value proposition, value creation and delivery, and value capture (Fig. 3). Value creation is at the heart of any business model; companies often capture value by taking advantage of new business opportunities, new markets and new revenue streams [19][20].

2.5 Digital Companies

Digital companies present themselves as companies that impact the development of ecosystems and sectors, by actively contributing to this innovation scenario and boosting the economy with the creation of new high technology jobs.

These companies actively contribute to the economic and technological development of the regions where they are concentrated and generate a great deal of interest in the market and the academy [21].

With Digital Era, digital companies are already born in a technology-driven context, taking advantage of the industry's latest innovations. Many of these products and services are fully offered and marketed through applications, websites, and related artifacts and reliance on information technology, adding value to consumers in a way that can in some cases completely change the market where they operate.

When we talk about digital, Dörner & Edelman [22] say that some executives associate the concept with technology, while for others; digital is a new way to connect with consumers and others still believes that it represents a whole new way of doing business. None of these definitions is necessarily incorrect, but these different views can disrupt companies and teams because they reflect a lack of alignment and common vision about where the company needs to go. This often results in fragmented initiatives or misguided efforts that lead to missed opportunities, slow performance or false starts.

Already Turban [23] defines a digital company as a company that uses digital technologies and networks in activities of buying and selling products and services, customer service, collaboration with commercial partners, conducting communications and transactions within the organization.

Swanton & Lehong [24] define Digital Company as a creation of new business designs that blend the physical and digital worlds. This creates an unprecedented convergence of people, businesses, and things that change today's business models and create new revenue opportunities.

For Burton *et al.* [25], a business or digital company is a business that explores data and analysis. Although the data also exist in the analog business, in the digital, it becomes more

nebulous, riskier and more valuable; and analytics underpin the new smart and improved business mode. Even if the organization has not yet decided to adopt a digital business platform, if you are looking to explore data and analysis to improve business results, you still need to put data and analysis at the center of your plans.

In the digital age, the economy of connections describes value creation by increasing the density of interactions between businesses, people, and things. This new connection economy is, and will continue to accelerate, change the way companies invest in new products, physical assets, information technology, and people.

For Dörner & Edelman [26], becoming digital in some cases requires being open to reexamining the whole way you do business and understanding where the new frontiers of value are. For some companies, understanding these new frontiers may consist of developing entirely new business in adjacent categories, while for others it may mean identifying and pursuing new value groups in existing industries.

Further said, becoming digital means being in tune with how customer decision-making is evolving in the broadest sense. This means understanding how clients' behaviors and expectations are developing in and out of their business as well as outside their industry, which is crucial in anticipating the trends that can generate or destroy value.

One of the key pillars is to rethink how to use new features to improve the way customers are served. This is based on the obsession to understand every step of a customer's purchase journey, regardless of the channel, and think about how digital resources can design and deliver the best possible experience across the company.

From the interaction of the supply chain, as a fundamental item to deliver the right product in an efficient way, in the way the customer wants, to the use of data and metrics where we can find insights about the customers that, in turn, drive the decisions marketing and sales. This process involves a cyclical dynamic in which processes and capabilities are constantly evolving, based on the information provided by the customer, promoting permanent loyalty to the product or service.

Lehong & Swanton [24] detail that in the case of digital business, looking at the aspects of value creation for customers; companies can either optimize existing business models or transform themselves by creating a new business model.

An enhanced customer experience is not simply delivered with a focus on the customer interface, but delivered by focusing on multiple platforms in the execution of a customer-focused strategy. Figure 03 shows the elements of the digital business technology platform that would support a digital journey that focuses on improving the customer experience.

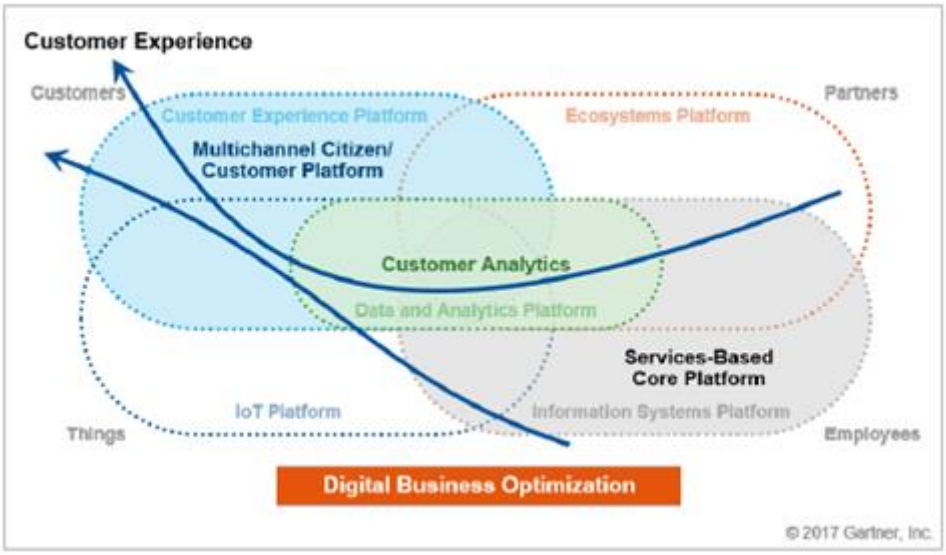

Figure No. 3: Integration of areas focused on creating value for the user (Source: Adapted from Lehong & Swanton) [24]

Looking more closely at the interactions in Figure 04, we see that the customer experience platform provides a multi-channel experience. It would support all channels of interaction and transaction, Social Networks, Apps and Portals for customers, Commerce and multichannel interactions, interacting with the data and analysis platform that would provide information from these clients, offering a context sensitive perception to customize experiences and products.

Completing the overall interaction for customer value creation, IT systems such as inventory, shipping, billing, contract management and accounts receivable would be modernized to support any of the new experiences.

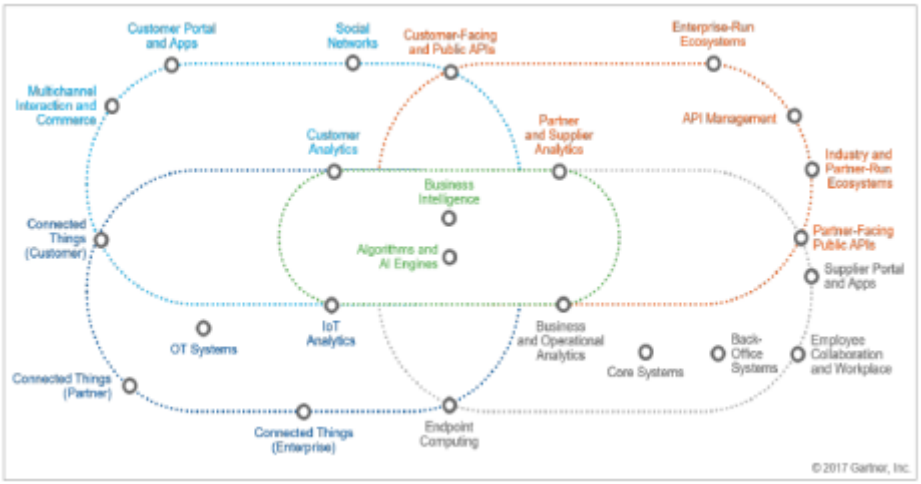

Figure No. 4: Integration detail of the areas with focus on the creation of value for the user (Source: Adapted from Lehong & Swanton) [24]

2.6 Value proposition

Value proposition refers to the way organizations create value for both their customers and each party involved in service delivery, the value proposition is embodied in the products and services offered by an organization [27]. The economic literature commonly considers platforms as two- or multiple-sided markets - to compare [28][29][30] - to understand a platform as "an organization that creates value.

1. METHODOLOGY

The qualitative approach was used in this research and the method to be used will be exploratory and descriptive research.

According to Cauchick and Martins [30] the qualitative approach emphasizes the perspective of the individual being studied, so that it is possible to obtain information from these perspectives, for the interpretation of the environment in which the problem lies.

The sources of external evidence researched were: documentary analysis, which included a review of the literature. The sources of internal evidence: survey with computer users in order to identify which is the most important attributes related to digital transformation. In this sense, a structured questionnaire was applied to 254 randomly selected computer users.

The questionnaire was built based on the literature review and seven dimensions were found determining the transformation according to Table 1, to verify the level of knowledge: Digital

transformation, Value proposition, Value proposition for customers, Value proposition for suppliers, Ecosystem digital, Business Model and Digital Platform and Digital Enterprise. A five-point interval scale was created. Regarding the order of the questions, it was decided to place the attributes of the service in a random way, thus minimizing the impact of the bias relative to the logical ordering of the questions.

Table No. 1: Seven dimensions of Digital Transformation

Digital transformation
Value proposition
Value proposition for customers
Value proposition for supplier
Digital Ecosystem
Business model
Digital platform
Digital Company

For the correlation analysis, the Spearman correlation coefficient was used, which measures the association degree of the variables. The selection of this test is due to the fact that none of the variables present normal distribution. As a classification of the degree of correlation, that is, of the force between the variables, Table 02.

Table No. 2: Interpretation of the Spearman correlation coefficient

Spearman correlation coefficient	Interpretation
0.0 to 0.19	A correlation good weak
0.20 to 0.39	A correlation weak
0.40 to 0.69	A correlation moderate
0.70 to 0.89	A strong correlation
0.90 to 1.00	A correlation very strong

4. RESULTS AND DISCUSSION

The results of the correlations showed two groups, one with moderate correlations with coefficients between 0.40 and 0.69 and another group with strong correlations with coefficients between 0.70 and 0.89 according to Table 3.

Table No. 3: Spearman Coefficients

	digital transformation	Value offer	Value proposition for customers	Value proposition for supplier and s	Digital Ecosystem	Business model	Digital platform	Digital Company
digital transformation	1							
Value offer	0.85	1.00						
Value proposition for customers	0.77	0.85	1.00					
Value proposition for supplier and s	0.68	0.67	0.63	1.00				
Digital Ecosystem	0.80	0.75	0.73	0.61	1.00			
Business model	0.66	0.68	0.61	0.63	0.61	1.00		
Digital platform	0.69	0.68	0.61	0.68	0.70	0.74	1.00	
Digital Company	0.64	0.63	0 , 57	0.70	0.61	0.77	0.75	1.00

As can be seen in Table 1, all calculated correlation coefficients ranged between the moderate and strong levels, which apparently indicates a reasonable level of consistency of participants' knowledge about TD.

The coefficients of dimensions correlated to moderate digital transformation are: Value proposition for suppliers, business models and digital company. The value proposition for suppliers and business model had the majority of the coefficients as moderate, indicating that these two dimensions are few known by the respondents due to the novelties of the themes. The digital company dimension presented the lowest coefficient (0.64) in relation to TD, indicating a low knowledge of the respondents.

The coefficients that had a strong relationship with the TD were value proposition, value proposition for client, platform and ecosystem. The proposed dimensions of value and value proposition for customers presented the highest coefficients, this can be explained since the value proposition is the main guide for the new business models of the digital era and the proposal of value to the client is the main value created. Platforms and ecosystems are TD's viabilizing themes like AirBNB or Uber and these themes are well commented and popularized.

The findings indicate that a significant number of respondents do not demonstrate a clear understanding of TD as a process that, as discussed in the literature review, allows companies

to find new ways to generate value, increase their organizational performance and modify or adapt their business to the new digital reality.

5. CONCLUSIONS

The objective was reached, because the literature review presented seven dimensions related to digital transformation, which, according to the research, indicated that only platforms, ecosystems and value proposition for clients have a better understanding by the users.

The proposed dimensions of value for suppliers, business model and digital company have a lower user understanding.

We had as limitation the fact that the users indicate the degree of knowledge of each dimension without explaining the due concepts.

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