Organizational Approaches to Digital Transformation

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Digital transformation is happening everywhere and organizations must adopt new technologies to remain on the market and to be able to expand to new markets. By implementing new digital technologies businesses will be able to create new products and offer better customer services by meeting customers' expectations.It is important for every business to understand that implementing technologies like artificial intelligence, big data, robotics and augmented reality will change not only product life cycles but also the way people will work and interact with these technologies. Digitalization will affect the way organizations will conduct their business by creating new business models that integrate digital technological innovations. In future organizations must adapt to remain competitive and take care of their customers and their employees.

Keywords: Digital Business Models, Digital Operation Models, Digital Competitive Advantage, Digitalization

INTRODUCTION

Organizations must digitalize in order to innovate and embrace technologies to stay ahead of the competition, thus leading to the digital revolution that transforms every sector of the business. As Marc Andreessen famously wrote that "software is eating the world" (Andreessen, 2011) we can state that now more than ever the world is ruled by digital that is powered by data. Digitalization and the use of digital technologies have managed to capture every aspect of our life(Ilcus, 2018). With the support given by digitalization, an organization is able to transform its business model and structure, to remain competitive, improve productivity, reduce production costs, and to connect with customers in new ways. Digitalization refers to the adoption of digital technologies in business and society

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and the changes that these technologies produce in the context of connectivity of organizations, individuals, and smart objects (Urbach and Röglinger, 2019).

According to the research of Urbach and Röglinger (2019) digitalization creates a world where the customer takes a dominant role because business have to change and adapt at a rapid pace in order to gain more customers and retain their attention for the offered products and services. Once the digitalization process begins, the organization must understand that it is a constant development and deployment in improving their business processes because technologies are also evolving. As stated by Rayes and Salam (2019) there are two main technologies evolutions to take into account: one, of computing and storage technologies governed by Moore's Law, and the second, for bandwidth growth at the network edge that is governed by Nielsen's Law. Moore's Law states that computing and storage doubles in capacity every eighteen months, and Nielsen's Law says that bandwidth of the network edge doubles every twenty-four months. (Rayes and Salam, 2019). Brown (2020) describes that automation at scale is coming and organizations must adopt technologies like artificial intelligence and robotics that will automate and semi-automate in order to remain competitive. Also Brown (2020) states that a question for every organization will be how the usage of automation will help in a customer-centric development because it is difficult to start the deployment of new technologies without clear goals, purpose, vision, and mission.

This type of organization aligns its business processes, corporate culture, and management to execute flawlessly their digital transformation Brown (2020). According to Brown (2020) the recipe for organization success in digitalization is "a clearly articulated core purpose, executed flawlessly by well-trained, highly motivated, passionate employees who believe in the mission, feel valued for their contributions, and who are supported by thoughtfully deployed automation and augmentation technology" Brown (2020). Also, it is important to mention that digital transformation doesn't affect only the organizations, it affects the entire ecosystem including universities, government communities, incubators and hubs (Roja and Năstase, 2014).

TECHNOLOGIES THAT DRIVE DIGITALIZATION

Because every organization is different, it must choose the technology implementation it has to undertake in order to stay competitive on the market and improve products and processes. Any organization must adopt different technologies according to the products and services it develops. Organizations must understand how each technology works, and how these technologies can be implemented separately or integrated as a platform inside organizations by connecting everything from product development to warehouse to the client.

Artificial intelligence (AI) represents the usage of different algorithms in order to reproduce human intelligence in certain tasks and it is represented by weak artificial intelligence (narrow artificial intelligence), while the other type of strong artificial intelligence represents the achieving of general artificial intelligence or as some say human-level intelligence (Goel and Gupta, 2020). Artificial intelligence is becoming important for every organization, by combining artificial intelligence with other technologies organizations will be able to innovate their product and process. As Tardieu (et al., 2020) states the recent growth in usage of artificial intelligence is driven by the usage of Machine Learning and Deep Learning. Businesses can implement artificial intelligence for better customer interaction and learn more about their preference and taste by using "sentiment analysis.

Artificial intelligence is helping businesses predict customer behavior and changing consumer patterns by using analysis based on customers' search history (Tardieu et al., 2020). Artificial intelligence can become the core of digitalization because it enables businesses' ability to provide personalized products, services, and customize the customer experience. A good example of this is the company Sephora, which is using a chatbot for better customer interaction. By collecting data with a quiz system, the Sephora chatbot is able to make personalized recommendations for customers (Tardieu et al., 2020). The adoption of technologies enables organizations to gain an informed behavior at the public level, leading to a change in their social responsibility code (Cristache et al., 2019). Artificial intelligence is a powerful technology that can be deployed across an organization in activities such as maintenance prediction, recommendation systems, fraud detection, and so on. As artificial intelligence can become the technology that drives digitalization, it is also important to mention that large quantity of data are necessary, too.

Organizations can use big data analytics to enable real-time interventions by predicting critical situations that are leading to an increase in reliability and efficiency (Kumar and Nayyar, 2020). According to Sharma and Pandey (2020), big data is the technology that allows organizations to achieve long-term development, from resource consumption to automation and process optimization. Also, using data analytics together with data mining, organizations can gain a better insight into relevant information for the optimization of their production process which, in turn will lead to cost reduction and raised profits (Kumar and Nayyar, 2020). Organizations are able to gain insight into what customers are needing by gathering customers' data and use it intensively with artificial intelligence. Organizations are able to use such data to develop powerful artificial intelligence algorithms that are able to become better in time as they are feed in more data, allowing organizations to modify their process and business models. Also, by using data together with artificial intelligence algorithms and Internet of Things organizations are able to connect everything. Given the fact that the

Internet of Things (IoT) is not a new concept and has been around for some time, it has now started to be adopted and transform every organization, city, and home (Brown, 2020). IoT has made possible the "blending of the physical world with the virtual

world" (Kumar and Nayyar, 2020) with the help of "low-cost sensors, cheap computing, widely available connectivity, cloud storage, low-cost compact batteries, energy harvesting technology, and standards to connect all the pieces together" (Brown, 2020). Industrial Internet of Things (IIoT) represents a subset of IoT with a focus on industrial automation helping in decreasing "the complexity of machine-to-machine communications and would allow collection and analysis of data using strategically positioned sensors" (Kumar and Nayyar, 2020). In conclusion, data is the technology that feeds the digitalization of every organization and also contributes to the development of advanced robotics.

As advanced robots come in all shapes and sizes they will reshape the organization's working environments. Some of these robots are connected with different sensors combined with artificial intelligence. This will help these robots to better interact with their environment. For example, organizations can use these type of technologies in their warehouse for storing raw materials and finished products. Using computer vision together with different sensors and artificial intelligence, a robot will be able to navigate through the warehouse and organize different products.

According to Goel and Gupta (2020) because of the recent advancement in technologies like big data, artificial intelligence, and machine learning, industrial robots are becoming aware of their environment and are more cooperative and flexible. Also, is important to mention collaborative robots called "cobot" which are designed to work with humans in a cooperative manner (Brown, 2020), (Kumar and Nayyar, 2020). Human-robot collaboration plays a major role in the digitalization of manufacturing businesses. According to Goel and Gupta (2020), robotics is the future of manufacturing because it offers flexibility in production and high-quality performance with fewer risks. This type of robot is not designed to replace the human worker but to assist in tasks like lifting heavy loads (Goel and Gupta, 2020). Robots can be also used in product design, for example, Nike has used robotic software o design spike shoes for runners.

The result was the creation of a lighter shoe design that surpassed as quality the human-designed one (Goel and Gupta, 2020). Automation and innovations are happening everywhere. Any organization must implement these technologies in every process from manufacturing to warehouse management. As a powerful example, Walmart has managed to implement a robotic store management system where robots are retrieving and placing products on shelves and help customers find the desire products (Goel and Gupta, 2020). In future robots and humans will work together, and as technology advances, augmented reality will also be used by helping humans retrain in working alongside robots.

Augmented reality (AR) technology will help humans to understand better complex projects by visualizing different parts of the project in 3D that will lead to better decisions making (Kumar and Nayyar, 2020). Because augmented reality is the technology that overlays digital information over the physical world this results in an expanded and enhanced user experience (Lavinga and Tanwar, 2020, Azuma, 1997). Augmented reality is the technology which organization can use forcustomer engagement, workers training, and displaying real-time information for workers and specialists.

Organizations can use augmented reality in customers engaging, brand awareness and marketing campaigns by developing applications that contain information's about the products, or games that encourage customers to go and buy more in order to unlock different game features. Inside organizations and especially in manufacturing, augmented reality can be used in workers' training and enrollment, because it overlays information's and 3D objects training tutorial over the real world (Lavinga and Tanwar, 2020). Also, augmented reality can help in connecting with a remote specialist to assist workers in machine maintenance and task-specific assistance by providing real-time accurate guidance. One important aspect to mention here is that augmented reality will be the technology for the future of work which will help humans in retraining and requalifying. Augmented reality will become the technology that will enhance human capability in competing with artificial intelligence and robotics.

IDENTIFYING USE CASES FOR DIGITALIZATION

Before starting on the digitalization journey organizations must identify evaluate and prioritize "use cases". According to Kaiser and Doleski (2020) organizations can use existing cases that already run within the entity by optimizing them in order to gain more added value. Also, organizations can try and use the so-called "quick win" applications, that is related to a category of pilot applications that can have a big impact but also a high level of rejection, which still can be tolerated.

Changes within the organization can be considered dynamically and in line with the target "use case" by taking into consideration the progress made in the project as the digitization advances. For a successful digitalization according to Kaiser and Doleski (2020), organizations must follow a few guidelines.

First, organizations must establish a set of rules when implementing digitalization and must define and maintain a clear distinction between the visual implementation of the sketched out project in the begging and the outcome.

Second, it is important for organizations to make sure there is a good working environment between its employee and external providers if they use external IT providers and third party collaborator. In this case, it is important to

understand that an organization must take into account the risk in misplaced investment and the fact that IT licenses are often at odds with the agile and responsive solution in regards to data (Kaiser and Doleski, 2020).

Third, in order for an organization to adapt for its own transformation, the relevant implementation trends and factors must be taken into account when realizing a digitalization roadmap and constantly monitor these factors (Kaiser and Doleski, 2020). One of the most important factors is the tracking of legislation and standards regarding data protection and data security because this factor can change according to geographical region and country legislation. From a

technology perspective, the implementation of automation activities like robotics, the use of machine learning and IoT, but also the gathering of values from the hybridization of new and existing IT infrastructure are essential. If the organization posseses lots of data, then it is more efficient to deploy a digitalization based on data by implementing different artificial intelligent systems for better insight and understanding of the data. And according to Kaiser and Doleski (2020), another factor with high impact over digitalization is change management because it can lead to organizations' transformation failure or success, if well executed.

The business model alignment with the digitalization represents another important factor that can be added to the above list. Most organizations focus on the digital aspect of the transformation and don’t take into account the business model transformation change because “digitalization drives significant changes to the process level, organization level, and business level of any company and their customers, as well as on the society level” (Wilson et al., 2020, cited Parviainen, 2017, p. 63–77). Over the years, most of the organization have gone through constant complexity and size increasing by “clearly distinguishing between the planning and realization layers for company strategy, product portfolios and individual products” and “handling change mainly in the realization layer and ensuring that the planning layer remains reasonably stable” (Wilson et al. 2020). Because of the impact of digitalization, (Wilson et al., 2020) proposes and builds an extension business model based on Ritter & Lettl’s (2017) business model framework. They propose a business model change that acts as a contextual agent called “value membrane” and a learning organization design which can help organizations identify misalignments and minimize the gaps “between needed change, planned change, and implemented change” (Wilson et al., 2020).

THE CHANGE OF THE BUSINESS MODEL

With the emerging of new technologies organizations have to undergo a massive transformation that doesn’t affect just the products and services but it affects also the business model transformation. Organizations must take into

consideration the fact that the implementation of these new technologies in their business models could lead to the adoption of new business models, too. According to Kumar and Gupta (2020), organizations must develop business models based on these technologies that offer a higher created and captured value.

According to Brown (2020), the automation philosophy can be expressed in levels of hierarchy as follows: resources, business results, business capabilities, outcome, and the human factor. Another less risky business model is the optimization of the internal and external processes of the organization by deploying different innovative technologies (Kumar and Gupta, 2020). One of the most important aspects of this innovative business model is the improvement of productivity and product quality by minimizing resources, thus resulting in the achievement of optimized revenue and profits. Because the digital revolution is happening everywhere, an organization must become agile and flexible. Anotherimportant aspect of digital transformation inside organizations is the human factor because digitalization also improves employee creativity, happiness, and interrelation. This aspect is also connected to the future of work and how jobs change during and after the implementation of new technologies and employees must adapt and retrain in working with new technologies.

Ibarra (2019) considers that organizations must rethink their business model by adding services to their products. The digital transformation of organizations will result in a product-service system, where organizations will develop specific products and services bundles and offer them as solutions for customers (Kumar and Gupta, 2020). In order to meet customers' expectations organizations must increase their business capabilities by improving processes, governance, and corporate culture. By using a customer-centered business model organizations will be able to satisfy the customers' needs and innovate their products and services. In order to do this organizations must develop new capabilities by using digital technologies to learn more about their customers for better decision making in developing integral customers' experiences (Ibarra, 2019).

The operational digital business model of every organization must describe the way in which technologies and resources are used to achieve the strategic goal of the organization. The business model and the operational model of each organization are responsible for the way in which value is created and delivered to the customers. Organizations must use digital capabilities in order to increase and adapt the delivered value to as many customers as possible at a lower cost. In this respect, digital organization is able to achieve multiple goals faster with the help of a higher level of scalability to deliver value. A good example of a digital business model is represented by the platform model. Organizations that use the platform model are able to create a network effect defined by positive loops with a large number of users that generate attractiveness for new users. This type of digital business model is based on the data collected from the users, and this data

is helping organizations to gain a better insight into what the customers need and, therefore to deliver the expected experience and products.

Another key aspect of the digital business model is represented by the collaboration between organizations and their ecosystem. It is important to mention that digital transformation doesn't affect only the organizations, it affects the entire ecosystem consisting of universities, government institutions, communities, incubators and hubs (Roja and Năstase, 2014). As digital innovation is progressing at a fast pace, cooperation and collaboration between organizations and other entities is becoming more important, because in order to remain competitive on the market organizations can no longer rely only on their own resources (Roja and Năstase, 2013). Since everything is connected in the global economy, the collaboration between organizations, small and medium enterprises (SME), universities and startups is highly important in achieving next-level technological innovation and knowledge transfer (Roja and Năstase, 2014). With the adoption of new technologies, organizations can achieve competitive advantage throughcollaboration by creating new relationship networks with other entities developing a collaborative business culture (Roja and Năstase, 2013). Collaboration offers business the advantage to develop new technologies and create joint products and services in an integrated manner (Roja and Năstase, 2013).

CRITICAL ASPECTS OF TRANSFORMATION

According to Wilson et al. (2020) organizations should address critical aspect like: “business model innovation for the business ecosystem”, “digital software, focused on automation and integration of business and software architecture, information, and tools”, the “level of integration and automation between the four processes of value creation, value capture, knowledge creation, and knowledge management” Wilson (et al., 2020, cited Laloux and Wilber, 2014, Kahneman 2011). By far one of the most critical aspects for a failed digital transformation is “badly designed organizations, ill-suited for experimentation and collaboration in a digital business world, affecting both the product development as well as the value delivery” (Wilson et al., 2020, citing Lepaket al. 2017, Curado, 2006).

Another critical aspect of the digital transformation process is the synchronization between the organizational structure and the digital technologies systems. The implementation of the digital systems must be able to integrate them in the fabric of organizations' architecture. An organization that is unable to redefine its core for undertaking digital transformation will be challenged by the situation of structural inertia. The structural inertia can lead to a situation in which the organization is unable to adapt to the challenges of digitalization. This type of

inertia can represent a barrier in the implementation of new business models and technologies, and it is closely related to the practices used in the last four decades in which the technological infrastructure was only inside an organization.

Also, another important aspect for organizations to take into considerations is the change of the working environment. In a digital organization, employees are not focused only on creating and selling products but also on designing automated solutions and algorithms that help in the delivering and value capturing. Using digital systems in the transformation of some processes, organizations will be able to scale better and better taking care of their employees, too. For example, if an organization is implementing digital agents for customer support it must be able to provide necessary training in order to help with employee reskilling. It is very important for organizations to know the impact on their employees created by the implementation of these technologies because routine tasks that are carried out by employees will be eliminated and replaced by digital solutions. Moreover, these technologies are not affecting just routine and repetitive tasks they are also changing the role of managers and business owners because they have to become "organizational designers". Their managers' and business owners' must be able to configure organizational structures in order to provide higher value to customers,thus becoming "digital systems integrators" with a clear vision for the future of their organization and of the evolution of technology.

According to Roja and Năstase (2014) one of the major roles in this transformation is played by universities because they are the main workforce supplier for the digital organization. Universities must adapt their curriculum and educate students according the job market needs. Once the digital transformations start there will be a constant deployment and constant innovation as new technologies become available on the market. A digital organization and the entire ecosystem must be flexible and adapt to the constant changes of their environment in order to remain competitive on the market.

CONCLUSIONS

Using new technologies at scale, organizations are able the change their architecture leading to totally digital processes that can be easily integrated within the value chain or other organizations processes. Organizations must change their business model in order to implement technologies like robotics, artificial intelligence, and augmented reality.

Digitalization gives rise to organizational flexibility and agility leading to better modularity and organizational ecosystem. Because of the accelerated digitalization organizations must adapt in order to maintain their competitive advance. These technologies are very powerful and can generate disruptive effects in both digital and non-technological industries. Organizations can gain

competitive advantages by collaborating with other entities in the deployment of digital technologies in order to access different resources and create new innovations.

Another way for an organization to achieve a competitive advantage is by combining product creation and customer services leading to a customer-centric competitive business model. The organizations must keep in mind that implementing these technologies they will change the way in which they deliver product and customer experience and also the future of the working environment inside the organization. Because digitalization is happening everywhere on a global scale, and given the fact that everything is connected in the global economy, organizations must collaborate with the ecosystem and adapt their business model on a global scale, therefore increasing their market competitiveness.

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