Digital Organizations Enhancement With Information and Operational Technologies Convergence

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INTRODUCTION

The new technologies open the space for changing the way that business works. During the process of changing business environment the organization successfully take new position on the regional and global scene. The old tools of organizational design are not well-suited to success in new markets. Competitive advantage in new markets requires a capability to sense, shape and take new market opportunities. This means that continuous improvement of existing capabilities is not enough, but organizations should develop new capabilities that anticipate and respond to new opportunities in marketplace. Currently, digital environments push new demands on information processing in organizations. For an organization to gather these opportunities it must obtain and process current and reliable information and it asks for dynamic organization capabilities. Thus, in the process of designing organizations for dynamic capabilities there is a need for capturing information, knowledge, and experience and use it all in collective decision making. The mission of the organizational designer is to design structures that put employees in contact with their appropriate environments, and to design processes that help learning, sharing and aggregation of individual knowledge so that the collective organization can make appropriate decisions. The individual capabilities of actors must be turned into collective capabilities making an organization prepared for operating at new market environments. Opposite to traditional organization design that is centered on structural relationships actor-oriented design is centered on shared access to information and other resources as well as the protocols and infrastructures by which actors connect and collaborate. Digital organizations can apply an actor-oriented design at their origin. However, traditional organizations must be redesigned. Redesign involves changing a predominantly hierarchical system supported by legacy technologies to an actor-oriented system (Langer, 2017). Having targeted a particular area for redesign, designers and decision-makers need to address each of the components of the actor-oriented scheme (Snow, Fjeldstad & Langer, 2017).

Organization response to technological changes was dominantly gradual and enabled by information technology improvements that provide larger scope and dimensionality of organizational control and coordination. Such adaptive responses were made within existing hierarchical organization. In the context of digital technologies deployment, traditional organizations are not appropriate and require adaptation through collaboration as well as self-organization around situation awareness and knowledge commons. It is due to the fact that self-organization and collaboration, as an adaptive response, is faster and more effective than a hierarchical response. Furthermore, Rachinger (2018) states that new forms of cooperation between organizations lead to new products and service offerings as well as new forms of organization relationships with customers and employees.

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With the huge developments in information technology and the continuing globalization, the environment for businesses changes rapidly. Changes in technology form new markets and industries and have sustainable impacts on the competitive environment. Digitalization is ubiquitous and new performances of information technology create new businesses. Furthermore, digitalization is the most powerful driver of innovation over the past few years and is acting as innovation generator making the business model concept highly relevant for research activities (Buck, 2018). One impact of digitalization on business models is business model creation, which enables new business models due to the usage of evolving digital technology. New data driven business models are exclusively build on the usage of data which is called datafication (Mai, 2016). This is caused by the reduction of marginal costs that tend to lowest level due to the high number of users. Customer experience moves towards digital integration leading to customized products improved with digital services. Hence, Engelbrecht et al. (2016) identify new categories for data-driven business models using three dimensions of data origin, target group and technology. Organizations adopting a data-driven approach have opportunities to improve their business, and outperform other organizations. Any organization planning widespread adoption of analytics and data-driven culture needs to put suitable tools to all departments. The next move is implementing data mining tools that allow users to do predictive analysis. Regardless of where advanced analytics is placed within the organization, the information technology system needs to change its focus in a way that enables easy access to data, for all the employees (Berndtsson et al., 2018).

Successful digital transformation requires a cultural shift which impacts all processes, systems, actions, and people across an organization. Companies worldwide are now highly focused on updating their business processes and adopting digital platforms that will help them serve customer needs more effectively and reliably. The recent developments that took place from 2010s, such as the mobile revolution, social media, and big data analytics, led to the digital transformation of business modeling. Anything-as-a-service models emerged were platforms with business networks and ecosystems are promoted. In the meantime, business partners can receive pervasive access to information through Internet and have multiple channels to choose from. With the help of new business modeling concepts, an organization is able to describe its business in terms of "what it does," "what it offers" and "how the offer is made" (Ritter & Lettl, 2018). It opens the space for new organization based on an actor-oriented design in which the key element is infrastructure that relies on technologies, both operational and information technologies. These two technologies are converging with interchangeable devices, software and data connected through the same network infrastructure modeling new digital organization.

BACKGROUND

Digital technology is changing the ways of organizations activities. Organizations increasingly include digital and human agents who share means of communication, control, and coordination. Traditional organization design is centered on structural relationships. Actor-oriented design, by contrast, is centered on shared access to information and other resources as well as the protocols and infrastructures by which actors connect and collaborate. Thus, digital organizations can apply an actor-oriented design at their beginning but traditional organizations should be redesigned using actor oriented architecture. The actor-oriented architecture is composed of three elements: actors who have the capabilities and values to self-organize; commons where the actors accumulate and share resources; and protocols, processes, and infrastructures that enable multi-actor collaboration. In actor-oriented organizations, control and coordination are based on direct exchanges among the actors themselves rather than on hierarchical