DIGITAL TRANSFORMATION AND BUSINESS MODELS*

Tiziano Vescovi

Summary

In this chapter the relationship between the digital transformation and the change of the business models is analyzed. The chapter focuses the influence of the digital technology adoption on the models of value creation of the company. Four main aspects are highlighted: a) different types of digital business models, b) the main areas of business change induced by digitalization of the company, c) difficulties and problems arose in changing the business model because of digital transformation, and d) the pathway to a digital business model.

Digital transformation leads to new business models

A fundamental restructuring of business processes associated with the adoption of digital technology implies the need to revise the views of the management of the organization. Management should be absolutely mobile, but one should not forget that behind any transformation, technology, or business process, there are people with their professionalism, involvement in the process, interest in the final result.

To use digital technologies, the company needs to abandon the old processes, rethink the content of the work, radically restructure the processes and give the business a new format. That is, constantly learning new information, taking into account the current business context, adapt the processes on the fly.

The process should begin with changing corporate culture. This point is quite crucial and difficult. Actually, there is interesting to notice that, if the company's culture remains the same, it is this culture that makes the choice of new resources (human, technical, financial) for digital transformation, probably culturally inappropriate choices could be taken.

Currently, most chief executive officers are concerning about to understand how the digital revolution is affecting and will continue to affect their firms, in light of the ongoing paradigm shift from an industrial to a more digital economy. In some industries such as retail, the profits of large dominant firms are declining, despite attempts to stem this decline and their brick-and-mortar business model is under threat (Björkdahl 2020).

Technological issues are not the first problem worrying business leaders engaged in digitalization efforts. The development and use of new digital technologies are prerequisites for digital transformation, but are not sufficient for business success. Successful efforts require re-optimization to allow effective use of digital technologies and data, and creation and capture of

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value in new ways. In other words, digitalization includes more than digital technologies, it needs a new business model.
Nevertheless, there are many factors, such as the desirability of the products, that can affect a company's success as much or more than its digital capabilities. Therefore, no managers in traditional businesses should view digital as their sure salvation. Digital is not just a thing that you can buy and plug into the organization to solve business problems. It is multifaceted and diffuse and doesn't just involve technology. Digital transformation is an ongoing process of changing the way doing business. Moreover, it's important to calibrate digital investments to the readiness of the industry — both customers and competitors. But when things are not going so well in the existing business, the call of a new business model can become more powerful than it should (Davenport and Westerman 2018). Amid the excitement and uncertainty of a new technological era, it can be very difficult to distinguish between investments you need to make ahead of the market and investments that must be in sync with market readiness. However, the speed of the transformation is changing the rules of the normal game. To wait for the right moment could mean to be late.
For example, the subscription economy grows five times faster than the S&P 500. Sixteen car manufacturers are now offering their cars on a subscription model. People living in big cities don't need to own vehicles; they are able to use them when they need them through these services. The subscription economy is coming, and the companies need to adapt their business model to that (Chaniot 2019). For this reason, companies are seeking new ways to unlock value through new business models or reinventing existing ones to meet the ever-changing demands of customers and gaining a competitive advantage in the digital era (Von Leipzig et al., 2017, p. 518).

Digitalization can be seen as augmented generation, analysis, and use of data in order, on one hand, to increase the firm's internal efficiency, and on the other hand to grow the firm by adding value for customers through the change from analog to digital formats. This second aspect, being more strategic, pushes to new business models, because digital technology diffusion produces changes in customer behaviors and preferences, creates new players in competition, and offers new opportunities to execute and analyze operations. Failure to adapt business models to digitalizing business environments can have disastrous effects on incumbent firms (Lucas/Goh, 2009).

The degree of the digital transformation can concern the incremental as well as the radical change of a business model. Within digital transformation of business models, enablers or rather technologies (e.g., big data) are used to generate new applications or services.

Exhibit 1. Digitalization of business models

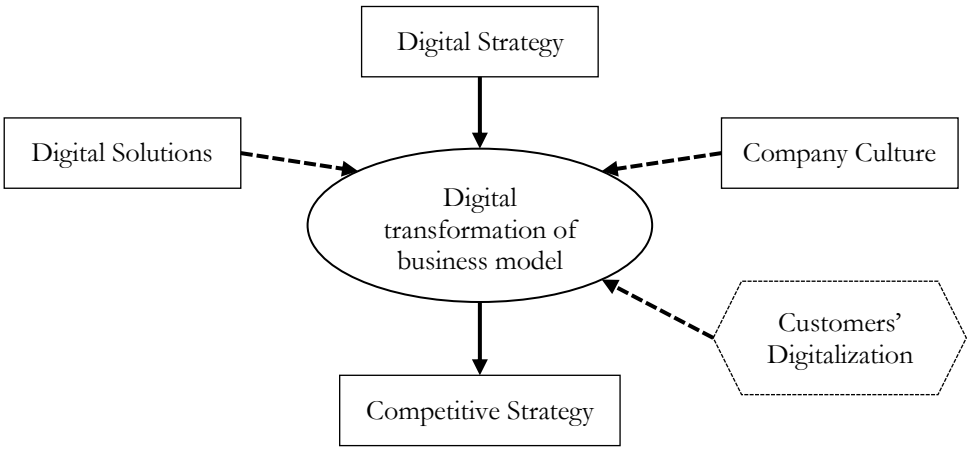
Business model category	**Short description**	**Examples**
Ownership-based business model	Customer purchases a product and owns it	Purchasing a car

Usage-based business model	Customer purchase a certain usage period of a good	Car sharing, rental a car
Performance-based business model	Customer purchases a defined performance	Taxi, Uber services
Result-based business model	Customer purchase a defined end result	A-B mobility (moovel)
Freemium business model	Customer gets service for free (advertising etc.)	Google Maps

Based on Semples (2014); Cinquini et al (2013)

Moreover, the generative and convergent characteristics of digital innovations incorporated in business models require increasing levels of organizational agility and absorptive capacity. The characteristics of digital innovations are "pulling" for specific organizational capabilities (Hanelt et al. 2018). Organizations seeking to deploy digital technologies to garner greater competitive advantages must also ensure their respective business models are aligned.

Exhibit 2. Main factors affecting the digital business model solution



The digital transformation of business models concerns the individual elements of the business model, the entire business model, value chains, and the networking of different actors in a value network. The digital transformation serves to define the digital strategy more clearly within business models. It is based on an approach with a sequence of tasks and decisions that are logically and temporally related to each other (Schallmo, Williams, Lohse 2019).

Different types of Digital Business Models

The digital transformation of manufacturing firms does not necessarily involve a radical business model, a new product category, or response to a competing technology; it can take many shapes. Westerman, Bonnet, and McAfee (2014), propose five archetypes of business model reinvention driven by digital technology: (i) reinventing the entire industry, as AirBnb did to the hotel market; (ii) substituting products and services, as Uber does with traditional rental cars; (iii) creating new digital businesses with the development of new products and services, as the banks developed in the last years; (iv) reconfiguring value delivery models, to provide more direct services to the customers, for example through e-commerce, and (v) rethinking value propositions. (3)

In developing a new business model, the company can follow three key themes: (i) strategy-centric, (ii) customer-centric; (iii) organization-centric; and technology-centric to the fore (Loonam et al 2018).

Three key approaches can be followed to develop digital customer-centric approaches. The first is designing a customer experience from the outside-in, the second reaching and engaging customers and online communities, and the third blending a physical and digital (or virtual) customer experience. For example, creating a new "customer journey," where using digital technologies customers' expectations could be transformed by enabling them to connect with others and share their experience throughout their journey. Reaching and engaging customers and online communities is also an important step in developing a customer-centric perspective during digital transformation.

The organization-centric approaches include the importance of fostering a digital culture, focusing on the organization rather than the technology in delivering change, centered on four key themes: customer centricity, co-creation, market making, and digital culture. The technology-centric approach develops insights from data analytics, and relies across platforms, where digital technologies can seamlessly interact with one another. The value provided by underlying technologies is substantially dependent on the business model in which they are integrated.

It is clear that the importance of the strategic role of information systems in the digital era can no longer be restricted to automating and informing business processes, but further extends to the transformation of organizations through innovating business models (Merali et al., 2012). According to Fichman et al. (2014) we define digital business models as a way how the enterprise creates and delivers value to customers, and then converts payments received to profits, which is enabled or embodied in information technology.

In categorizing the value, created through digital business models, the following three categories should be considered: 1) cost value (price transparency, consumption-based pricing, reverse auctions, buyer aggregation, rebates, and rewards), 2) experience value (customer choice, personalization, automation, lower latency, and any device any time), and 3) platform value (marketplaces, crowdsourcing, peer-to-peer, sharing economy, and data monetization) (Agaard 2019). Therefore, how to create value is the main challenge given by digital economy.

Areas of business change

Digital transformation can create sophisticated products and services. Increasingly, manufacturing firms are integrating technologies in established products to make them more "intelligent". The data generated from products in use may increase performance or give rise to new functionalities. Hence, the integration of digital technologies allows the firm and its customers to collect valuable data on the product. These data allow products to be monitored, optimized, controlled, and sometimes operate autonomously. This is in line with manufacturing firm trends and reduces the distance between the firm and the end user while increasing business revenue streams. Companies create value for their customers through digitalization based on the Internet of Things and Artificial Intelligence (reinforcement learning neural networks). For example, automotive firms are connecting their vehicles to the cloud to enable new complementary downstream services. Several firms also use digitalization and connected products to allow direct links to end users. Digitalization has triggered a new relationship marketing strategy and allowed the development of innovative services based on direct sales to end users.

Companies can develop more integrated value chains, which increase the efficiency of various firm functions and enable better control over the operations. The sharing of information among systems and functions improves coordination, visualization, and planning of important processes. Manufacturing firms share data not only within the firm but also across firm boundaries with suppliers and customers.
In other words, digitalization has changed the game for incumbents in many industries by introducing competition and collaboration from firms outside the industry and competition with more asset-light business models.
Digital transformation initiatives focus on leveraging greater customer engagement, bringing further flexibility and agility to standardized, and centralized operational processes, and providing new strategic opportunities to organizations by reconfiguring business models. It created new products and services, and, in some cases, disrupting and reinventing entire value chains and industries (Westerman & Bonnet, 2015). According to Berman (2012, p. 17), "to succeed in digital transformation leading companies focus on two complimentary activities; reshaping customer value propositions and transforming their operations using digital technologies for greater customer interaction and collaboration." It highlights the importance of building across-platforms, where all customer touchpoints are reached.

As instances of digital innovations, digital business models exhibit several characteristics that differentiate them from traditional business model innovations. First, due to the generativity that is unleashed by the flexibility afforded by the digital technologies on which they build, these innovations are intentionally incomplete and thus, dynamic and adaptable. Second, digital business models are characterized by convergence in various approaches, which stem from the openness afforded by digital technologies (Yoo et al., 2012). The impact of digital technologies is seen in the way they automate, extend, and transform business models – for automation, it refers to how a firm uses digital technologies to automate or enhance existing activities; extension refers to how a firm uses digital technologies to support new ways of conducting business; transformation refers to how digital technologies are used to enable new ways of conducting business to replace traditional ones (Li 2018).

Digital business models improve the interaction and continuous dialogue with customers. We can assume that the customers do not know what they want or need in two years. Thus, the value is the data that can be monitored through customers' interaction in exploring their "unknown" preferences and behaviors. Firms also need to create customer value in a more uncertain external environment. Customer usage patterns and customer behaviors are exploratory and formative and are accompanied by a lack of market knowledge and embryonic competition among new solutions. Another pathway compiles the development of service business models that is pursued by most of the service companies and also by the manufacturing companies. Here the emphasis is on providing added services for the customer while using data to help optimize and tailor existing or new offerings to the specific customer usage and needs. Digital business models comprise network-based business models and business experimentations, relating to co-creating and co-developing common business models and business experiments. They constitutes network-based connection with stakeholders and customers. In general, there is a trend among the firms toward becoming more service-oriented to realize value from digitalization.

Difficulties and problems in changing the business model

The first point is that most companies ignore or underestimate the role of corporate culture in the transformation process, thereby making it a failure. In order to avoid this problem, sometimes, in the process of transformation, companies create in the organizational structure a separate branch for a digital transformation manager, to whom they transfer the powers of strategic digital development, which is seen as part of the company's strategy, and not the general company's strategy itself.

Such a solution could be ineffective, because: (i) the old culture has chosen the manager for digital transformation and he/she will act consistently with it; (ii) the proposals of the digital transformation manager will be associated with the risks of reducing revenue from typical activities, increasing costs etc. leading to general resistance.

In this situation, the digital transformation manager has to overlay the digital transformation on the existing system. Thus, subsequent development will make the company, at best, a hybrid, but not digital. This can lead to a sort of Frankenstein monster, not analogic, nor digital. This is because manufacturing firms typically do not have previous experience with the concepts and solutions they want to develop, and they involve product features and customer segments that are uncertain. Additionally, many IT department members lack experience in building new business they have informatic culture more than digital one.

Moreover, in digitalization efforts organized to develop new customer solutions, problems arise in relation to coordination with sales and marketing functions to launch new products and services. This can create a cultural conflict between traditional and digital approach to the customers.

Smaller companies seemed to lack the understanding of the importance of developing new business models or adopting already tested business models, well aligned with the demands of

the digital era. They have a lower adoption rates and they adopt digital technologies in more fragmented manner that is often restricted to certain functional areas such as moving vital assets to the cloud or use of social media in engaging with their customers (Nwaiwu 2018).
Considering the two alternatives connected to the development of a digital business model, i.e. cost-cutting/operational efficiency and growth/innovation, it appears quite easy to understand that the most difficulty relies on the growth/innovation side. Actually, in this second case there are:

- no established mechanisms to allocate capital needed by several functions;
- no established culture to develop and sell services or use data to build new business;
- no control on data generated from customer applications to identify growth options;
- uncertain market demand;
- dependence from partners in the value eco-system;
- new managerial processes to be implemented;
- implementation time difficult to be estimated.

What is best for the firm will depend also on the stability of the market, which indicates whether there is a need for a larger transformation for the firm to remain competitive. In a stable market, digitalization aimed at achieving operational efficiency, because the growth prospects may be too small to justify sacrificing current efficiency and profits. In a turbulent market digitalization is asked to increase competitive position of the company.

The pathway to a digital business model

First of all it is necessary to create, as in every big cultural change, appropriate motivators that will shift the focus of activity to experiments, eradicate the "fear of error", make decisions and responsibilities from the individual to the group, and encourage the exchange of knowledge and intellectual leadership of both the employees and the company. It should be identified also a new generation of leaders. In a company that is serious about the digital transformation of business processes, succession planning requires the development of new vision and capabilities. This point could represent a high cultural obstacle to overcome.

The speed of the company's innovation processes has been changed from the past. Many companies, worked on a project for eighteen months, then they put it on the market, and then eighteen months after that they could discover that the project was not meeting customers' needs. Now digitalized companies co-design from day one, with their customers, dealers, and consumers, to make sure that they are satisfied by the solution proposed. So, speed is a crucial issue in digital business model.

Aagaard et al. (2019) point five pathways for companies in driving business models and digital transformation:

1) improving customer interaction by initiating customer self-service through digital technologies, increasing the experience value for customers;

2) digitalizing the value chain to obtain data and to automate the production process, increasing cost value and enabling experience value;
3) producing data for business intelligence using real-time data obtained from products to increase external awareness;
4) developing service business models enabled through the increased usage of digital technologies, such as prototyping face-recognition for future payment options;
5) creating network-based digital experimentation, for cooperating with network actors to achieve a successful digital business model innovation by utilizing external capabilities and resources.

It seems clear that digitalization will entail ongoing complex organizational and managerial challenges. Its design is important because it has been shown to be a crucial enabler of dynamic capabilities and the capacity to sense changes, seize opportunities, and to transform the firm.
For example, Scania has reallocated the IT department's responsibilities among various firm functions, and every department in the firm includes data scientists. The result of these changes to the organizational structure is that all the firm functions are involved in the digital transformation and are less dependent on input from software developers and data scientists from other functions in their efforts to explore and develop new customer solutions (Björkdahl 2020).
Many of the digital firms cooperate outside the firms' traditional boundaries for the development of technological solutions. This means that firms increasingly need to be involved in more dynamic value constellations, where different actors from multiple industries contribute to firms' value creation, and where parts of the firms' value chain activities shift to new actors.

In order to develop a digital business model, managers should answer to some questions. For example:

- Why could digital technologies help to solve company's problems and increase value for the customers?
- Where do digitalization creates the most value?
- What enables and capabilities are needed to support digitalization?
- How is the company approaching an operating model, culture and processes to drive the transformation?

Frequently business leaders invest in searching for growth in adjacent areas, that have little overlap with the current business, rather than using digitalization to improve existing business to achieve growth. A strategic digital transformation strengthens the core business, making it costly and difficult for other firms to compete. In other words, the pursuit of new value propositions requires a transformational approach to customer engagement, where also unmet customer needs can be identified and met through digital transformation.
The keys to the development of a digital business model should consider, by mean of the digital technology, *personalization* of customer preferences, *asset sharing* with other organizations, *usage-based pricing* and *collaborative ecosystem* answering to the increase in demand of product and services, and *agility* adapting the company to the fast changing environment.

Conclusions

First of all, in defining a new business model for digitalization, there is no "one-size-fits-all solution," and firms need to have dynamic capabilities to achieve agility and address the business environment changes caused by digitalization itself.
The most important question to be addressed is why digitalization is important for the firm, that is, why and how digitalization might allow the firm to create and capture more value. Successful firms are starting by asking why digital technologies and data will help them to solve their main challenges in obtaining value for the company and its customers (e.g., customer experience, employee experience, and business decisions).
While organizations have always valued the importance of customer insight and opinion into respective product and service development, the issue is now challenging management to think very differently about their relationship with the customer. Instead of being casual onlookers, organizations seeking to implement effective digital technologies will need to ensure customers become active participants, where insights directly influence the product and service on offer. This obviously challenges the power and control held by many organizations and opens management to external influence, and indeed scrutiny.

A radical change is due to the need of a double direction integration of the company, both vertical and horizontal, of the business model. The typical pre-digital stand-alone business model may not lead to success in digital transformation.
Actually, digital transformation requires a change of the vision of the company, a change in the business culture of the company, a change of the relationship with the customers, according with digital economy. There is a shift of importance from products to functions and activities and from products to services, where the products are part of the service.

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