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**Organizational Re-Design for Business Model Innovation while exploiting digital technologies: A Single Case Study of an Energy Company**

# **Abstract**

Digital technologies are bringing a wide spectrum of business opportunities as well as significant organizational challenges for incumbent companies operating in traditional industries such as the energy one. The diffusion of new technologies is changing the way energy solutions are consumed and experienced, while consumers increasingly take ownership of their consumption, acting as “prosumers”. In this evolving scenario, incumbents are urged to reshape their business models, explore new opportunities and change their organizational structures accordingly. Still, the required organizational re-design process that enables companies to undergo business model innovation while exploiting digital technologies is partially neglected in literature. Hence, this study explores how established companies embrace organizational re-design process to innovate their business model. To this end, we leverage a single case study methodology focused on an incumbent energy company. Our findings show how the establishment of a business unit dedicated to digital technologies exploitation has enabled company’s business model innovation. More specifically, we point at the critical role played by the know-how and the industrial capabilities to sustain not only the innovation activities of the new business unit, but also the overall company performance and the shift towards a renewed business model.

***Keywords:*** *Organizational Re-Design; Digital Technologies; Business Model;**Business Model Innovation; Energy Industry.*

**1. Introduction**

This paper examines the organizational re-design process that enables established companies to innovate their business model while exploiting digital technologies.

For long time, digital technologies have been almost exclusively of interest for researchers in the information system field, although mostly referred as “information and communication technologies”. This stance was due to the misleading perception of technology being a merely supportive rather than enabler tool for business strategy (Goldsmith, 1991; Rathnam et al., 2005; Ghezzi et al., 2015). Today, organizations operate in a world pervasively influenced by digital technologies: Big Data, Cloud Computing, Internet of Things (IoT), Social Network, Matching Platforms represent just a few examples of technologies that allow companies to reduce and overcome social, technical, and geographical barriers (Mandolla, et al., 2019; Nambisan et al., 2017). The integration and embedding of digital technologies involve the core business of many organizations, altering products, services, operations, and employees’ life (Autio et al., 2018). In this context, scholars started to investigate “practices, processes, and principles to underline the effective orchestration of digital innovation” (Nambisan et al., 2017). Thus, digital technologies are bringing in managers’ agenda a wide spectrum of business opportunities together with serious managerial and organizational challenges triggering the overall strategy of companies (Berman, 2012).

The current extremely competitive and fast-changing market scenario requires a continuous adaptation and innovation of the Business Model (BM), here intended as the “architecture of value creation, delivery and capture mechanism” of a firm (Teece, 2010), forcing companies to explore new BMs, as well as reshape and adapt the overall organizational design to make a better use of digital technologies. Digital technologies, indeed, are considered a key antecedent of Business Model Innovation (BMI) (e.g., Doz & Kosonen, 2010; Pateli & Giaglis, 2005), which in this contribution is intended as the “designed, novel, non-trivial changes to the key elements of a firm’s business model and/or the architecture linking these elements”, in accordance with Foss and Saebi (2017, p. 201). Although scholars have been discussing on BMI in the last 15 years, several issues remain open (Foss and Saebi, 2017; Spieth et al., 2014): a wide school of researchers has focused their effort on the degree of novelty introduced by BMI (e.g., Mitchel & Coles, 2004; Osterwalder et al., 2005; Johnson et al., 2008) leaving less attention on BMI both as an innovation process and, more importantly, as an organizational change process (e.g., Achtenhagen et al., 2013; Deshler & Smith, 2011; Cavallo et al., 2019; Balocco et al., 2019).

Researching BMI as an organizational change process means identifying the key organizational structures and control mechanisms enabling and supporting the execution of a BMI in its different stages (Foss & Saebi, 2017). Specifically, the diffusion of digital technologies is seriously triggering the extant BM of incumbent companies; this trend is pervading almost all industries, is customer-demand driven and is perceived by companies as sharpening their competitive edges (Autio et al., 2018). With this regard, we focus on a traditional industry, the energy one, which is currently undergoing a profound transformation challenged by medium and long-term societal and technological trends. In particular, we leveraged a single case study methodology and focused, through the lenses of the BMI research, on the organizational challenges faced by an energy utility to integrate digital technologies within its consolidated BM, may result valuable for advancing the current research on BMI and for providing managerial implications.

The remainder of the study consists of six sections. Following the Introduction, in Section 2 we present the theoretical background as basis of our investigation. In Section 3, we describe the research design and present the case company. Sections 4 and 5 respectively present and discuss the results. Finally, Section 6 points out some concluding remarks focusing on research value and managerial implications of our study.

**2. Business Model Innovation, Digital Technologies and Organizational Re-Design**

The literature widely recognizes the dynamic nature of BM. BMs indeed may evolve, change and be source or vehicle of innovation (Mitchell & Coles, 2003; Massa & Tucci, 2013), to the point that there is an ongoing debate whether we should generally talk more about BM change, adaptation, renewal, development and so on, rather than using (or abusing) the term “innovation” (Spieth et al., 2014; Saebi et al., 2017). BMI, indeed, derives from the necessity to find new solutions to answer the Drucker’s original question on how to capture customers’ preferences. This happens nowadays in a competitive scenario where the advent of digital technologies pose great threats to the profitability and, ultimately, to the survival of established firms, which are usually less able than new comers to innovate and embody new technologies in the design and commercialization of new products and services, although they demand for innovating established organizational processes (Urbinati et al., 2019a, 2018a; Greenstein, 2017, Bresnahan et al., 2012; Dyer et al., 2009; Frambach & Schillewaert, 2002).

Borrowing from the seminal work by Mitchell and Coles (2004), BMI process can start with changing a single business model element – business model improvement – that may become “BM replacement” if it entails improving several business model elements; finally, when there is a continuous changing phenomenon, business model replacement can be considered as “business model innovation”. Since Mitchel and Coles’s seminal work, the literature on BMI has been growing considerably. Recently, Foss and Saebi (2017, p. 201), provided a review of the extensive literature on BMI, arguing that we may consider different degree of novelty and scope in BMI. With this regard, companies that aim at innovating – or renewing – their BMs need to redesign multiple aspects of their internal organizations (Foss et al., 2013; Leih et al., 2015). Hence, BMI may be interpreted as an organizational change process (Damanpour, 1996). However, several issues remain open (Spieth et al., 2014; Foss & Saebi, 2017; Ghezzi & Cavallo, 2018), since a wide school of researchers has focused their effort on the degree of novelty introduced by BMI (e.g., Mitchel & Coles, 2004; Osterwalder et al., 2005; Johnson et al., 2008) leaving less attention on BMI both as innovation process and, more importantly, as an organizational change process (e.g., Achtenhagen et al., 2013; Deshler & Smith, 2011). BMI can be interpreted as an organizational change process (Damanpour, 1996), which requires changes in the way a firm is designed, through the creation of new business units, the definition of new internal functions and departments, the external hiring of new employees with specific skills and/or the training of the workforce to use new solutions and technologies in their everyday activities. Organizational design and BMI, therefore, are strongly correlated, since a successful implementation of BMI requires correspondent changes in the organizational design, which typically refers to the structuring of the organizational processes (i.e., delegation, departmentalization, and job description), the coordination of activities inside a firm (e.g., liaison committees and lateral and vertical communication) and the role of functions, units and departments within an organization (Foss et al., 2013). These changes require managers to explore new opportunities even as they work diligently to exploit existing ones (Gibson & Birkinshaw, 2004).

The role of organizational re-design within the research on BMI is even more important today in the light of the growing proliferation of digital technologies (Gambardella and McGahan, 2010). Over the years, indeed, the role of new technologies has pervasively affected the way through which companies support their business model design and innovation activities (Yoo, 2010; Yoo et al., 2010). Today, companies operate in a world that is strongly influenced by digital technologies, which allow to reduce and overcome social, technical, and geographical barriers (Bogers et al., 2018). Digital transformation, intended as “the digitization of previously analog machine and service operations, organizational tasks, and managerial processes” (Iansiti & Lakhani, 2014) is pushing both established and start-up players in many industries to compete in new ways. In this context, scholars are investigating the “practices, processes, and principles that underline the effective orchestration of digital innovation” (Nambisan et al., 2017, p. 224), since not only products, processes and infrastructure become digitalized, but also services and business models (Hinings et al., 2018). Thus, digital technologies are bringing in managers’ agenda a wide spectrum of business opportunities, together with serious managerial and organizational challenges, triggering the overall strategy and organizational design of companies (Berman et al., 2012), being able to develop whole new digital ecosystems which act as game changer of the “business as usual” approach (Weil & Woerner, 2015). As new (digital) technologies gain momentum, therefore, managers within established industries face a strategic dilemma of whether to explore new BMs or exploit existing models that provided past success (Osiyevskyy & Dewald, 2015). Digital innovation may indeed represent the main driver of firms’ survival, since it enables firms to achieve a sustainable competitive advantage, ensure long-term growth and improve performance over the competition through product differentiation and more efficient processes (e.g., Crossan & Apaydin, 2010; Dyer et al., 2009; Elmquist, 2009). With the integration of digital technologies both into the innovation and business processes (Tilson et al., 2010; Yoo et al., 2010), firms are deviating from their proven, existing and traditional innovation paths (Henfridson et al., 2014). As noted by Amit and Zott (2001), digital technologies have opened new opportunities for organizing business activities, completely reshaping previous BMs. With this regard, innovation researchers differ widely on how to design an organization to adopt digital technologies (Westerman et al., 2006; Siggelkow & Levinthal, 2003; Christensen, 1997; Iansiti, 1997; Tushman & O’Reilly, 1997).

Accordingly, a key success factor for firms trying to exploit digital technologies is to consider if the extant BM is suited to support the nascent technology or if an innovative BM is required, since the use of digital technologies require new forms of collaboration among different organizational units (Fichman et al., 2014). In this transformation process, digital technologies play a crucial part in proposing and enabling new organizational architectures, which radically differ from those observed in traditional organizations (Bonaccorsi et al., 2006). Particularly, in the last decade the huge proliferation of digital technologies has enabled important changes for established companies’ BMs, since they need to combine existing non-IT based activities with digital ones (Urbinati et al., 2019b, 2018b; Svahn et al., 2017). Accordingly, companies are called to shift, with different degrees of radicalism, from an existing BM to a new one (Massa et al., 2016), as well as to adapt their BM architecture to changes in the external environment (Foss & Saebi, 2017). Adaptation through BM reconfiguration, hence, can be the key to survive in the era of major technological change, where traditional BMs no longer guarantee success and profitability of established firms.

In the light of the above premises, we aim to answer in this paper to the following research question: *“How do established companies embrace organizational re-design to innovate their business model while exploiting digital technologies?”*

# **3. Research Design and Case Company**

***3.1. Research Context***

Today, energy utilities see themselves confronted with fundamental changes arising from new technologies, changing policy requirements and higher customer expectations (Baines et al., 2009; Abdelkafi et al. 2013, Helms et al., 2016). They are forced to explore new solutions (i.e., energy efficiency measures, demand response solutions, smart metering and so on), new ways of power generation (i.e., renewable energy sources), and new (decentralized) models of production, as well as to develop new electricity uses. Energy utility industry is especially characterizing for two main trends, namely (i) the role of the customers within the sector of activity and (ii) the development of new energy utility business models.

First, the emerging scenario puts customers in the middle of the stage. On the one hand, because they can take the ownership of their production, e.g., acting as “prosumers”, i.e., consumers who also produce and share surplus energy with grid and other users (Zafar et al., 2018), thanks to the adoption of renewable energy sources and digital technology and with the aim to reduce their energy bill and environmental footprint. On the other hand, because they can search for solutions provided by third parties rather than utilities, disintermediating their traditional role (Hall & Roelich, 2016). This represents a major agent of change for the business of utilities, traditionally based on the sales of electricity as a commodity to their customers (Richter, 2012).

Second, four emerging energy utility business models have been identified by the literature, namely the Green Energy Utility, the Cooperative Energy Utility, the Prosumer Energy Utility, and the Prosumer Facilitator (Bryant et al., 2018). The Green Energy Utility presents a very similar business model to that of the traditional utility, i.e., the sale of the electricity, heat and gas as commodities, but with a focus on ensuring that these commodities are generated from “green” sources, such as hydropower, solar, wind and other renewable energy sources in general. The Cooperative Energy Utility business model is built as well on the sale of commodity (i.e., electricity, heat and/or gas). However, the value proposition of Cooperative Energy Utilities has a different focus, since they tend to provide low or no-profit energy generation for their members, typically from renewable energy sources, with profits being used for the development of the local community. The Cooperative Utility typically has a small customer-base with little customer churn, it tends to own only a small number of generation assets and has a very limited, typically local, focus. The Prosumer Energy Utility business model offers customers the prospect of green, local, self-produced electricity, seeking to maximize customers’ ability to utilize their own (owned or leased) self-generation assets (i.e., rooftop solar PV). Indeed, the Prosumer Energy Utility business model involves the sale or leasing of distributed renewable generation equipment (i.e., solar PV, battery storage) to customers to build the distributed renewable energy generation capacity base. Alongside the sale and leasing of distributed energy capacity to households, the Prosumer Energy Utility deploys peer-2-peer trading software and distributed generation control processes to then sell any excess generation from customers’ rooftop solar PV systems to other customers, generating payments for the owner of the system and for the utility. Lastly, The Prosumer Facilitator business model focuses on helping customers reduce their dependence (partially or entirely) on grid-supplied energy, whilst reducing their cost of energy. To do so, it deals with the sale and leasing of rooftop solar PV systems (often combined with battery storage) to residential and small-commercial customers (e.g., companies such as Tesla-SolarCity and SunPower). Revenue is derived either from an upfront payment for the system and its installation (e.g., Tesla-SolarCity) or from monthly leasing payments, in addition to maintenance contracts designed to ensure the longevity and optimal performance of the system.

***3.2 Using a Single Case Study Methodology***

This study analyzes the case of a leading energy company – Company ALPHA (disguised name), (hereafter “Company ALPHA” or “the Company”). We chose to focus on a single industry (energy) to eliminate industry effects and increase internal validity. The identification of the Company has followed theoretical and convenience sampling criteria (Voss et al., 2002), hence this case has been selected because Company ALPHA is developing and implementing internal managerial practices to innovate its traditional business model, and over the period of the transformation of the organizational design four of the authors of the present study actively participated in a jointly project with the Company to analyze BMI opportunities and required organizational changes. With this regard, a single case study offers a useful methodological approach to answer the “how” and “why” questions (Yin, 2003), while a qualitative approach facilitates the understanding of complex phenomena (Massa & Tucci, 2013; Yin, 2009; Fleming, 2001; Levinthal, 1997).

***3.3 Data Collection***

A three-step approach has been adopted to conduct the study. First, we examined the relevant academic literature on BMI and organizational design (as shown in Section 2). Second, we prepared a semi-structured interview protocol for the interviews with the Company key informants (see Table 1A of the Appendix). Third, we triangulated the information gathered during the interviews (appropriately transcribed) with secondary sources to re-elaborate and refine the theoretical setting and avoid post-hoc explanations and rationalizations. Relevant documents, such as Company reports, archival records and market analysis were investigated during the period of the study, i.e., from January to April 2018 (Barnes, 2001). In addition, the Company provided access to internal confidential information related to its marketing strategies and innovation initiatives that were useful for understanding the key reasons of the organizational re-design activity to innovate its BM while exploiting digital technologies. The triangulation of information collected from primary and secondary sources rigorously followed the steps suggested by Tellis (1997): initially, each author independently reviewed all the information of the transcribed interviews and secondary documents to verify their validity and avoid potential ambiguous and equivocal data to be included in the database. Then, each author contrasted or corroborated his own analyses with the ones of other authors to reach a shared understanding and interpretation of the whole information under investigation. Finally, the authors triangulated all the accepted information.

During the research period, we observed several activities leading to the development and initial implementation of a renewed BM. Ten top-managers were interviewed in one or two rounds of interviews (see Table 1B of the Appendix). The decision to interview top managers was dictated by the fact that top managers are the primary agents for decision-making actions inside an organization (Kim & Chung, 2017) with a legitimate right to drive organizational decisions (Helfat & Martin, 2015; Augier & Teece, 2009), initiate innovation activities (Collins & Clark, 2003) as well as to respond to external pressure (Scott & Bruce, 1994). We also participated in many informal conversations with middle managers and employees to get a holistic view on the organization history and culture. Interviews were conducted with the support of the above-mentioned interview protocol built around a set of specific questions and organized according to the key literature contents described in the theoretical background. Each question also contained several sub-questions as guidelines to conduct the interviews. A first round of interviews was followed in some cases by a second one to consolidate information collected, cross check relevant data and clarify important issues. Sometimes interviews were also followed up by emails with questions of clarification over the period of the study. First-round interviews lasted from 1 hour to 1 hour and half, while second round lasted from 45 minutes to 1 hour. Each interview was recorder and transcribed. Then, a traditional coding process and cross comparison analysis of interviews’ answers was performed by each author to identify the recurrent patterns of useful information (Weber, 1990). To encourage candor of interviewees it was agreed upfront to ensure anonymity of the respondents and the organizations involved (Ozcan and Eisenhardt, 2009), with the respondents referred to by their role and the organizations referred to with pseudonyms.

***3.4 Data Analysis***

At the end of the data collection phase, we wrote a case narrative on the innovation process and the organizational changes required to implement an innovative BM, starting to sketch the new Company organization design. The case narrative contained several identified plots (i.e., the digitalization of the innovation activity, BMI in the energy industry, organizational change required), which reflected the theoretical setting and the premises defined for conducting the study (Langley, 1999). As the study progressed, similarities and differences among the information collected started to emerge. This made possible to define keywords common to all the interviews and relevant to the domain of the investigation, which allowed to enrich the case narrative with abundant information on the Company organizational design and BMI.

***3.5 The Case Company***

Company ALPHA is an energy services provider and electricity producer. The traditional BM of Company ALPHA covered several stages of the energy value chain, offering to the customers commodity sales of electricity and gas, a comprehensive service for the energy management in buildings and facilities as well as an international energy trading business line. The Company, at the year 2018, has approximately 1,290 employees, is headquartered in Lausanne (CH) and is listed on the SIX Swiss Exchange. The Company generates electricity from hydro power (installed capacity of 2,701 MW), conventional thermal power (installed capacity of 2,333 MW), nuclear energy (installed capacity of 738 MW) and new renewable energies (installed capacity of 328 MW). Company ALPHA offers to customers comprehensive and efficient services in the fields of energy generation and marketing as well as energy optimisation and electromobility. It is also an international energy trader, active on all major European markets. Company ALPHA has unique expertise in the field of flexibility marketing and cross-border trading and adopt digital tools to optimise electricity generation and consumption as well as the energy flow between producers, prosumers and consumers. During the 2017, the Company decided to innovate its traditional BM with the aim of creating more value from the integration of service components into its range of activities, offering solutions based on new uses of electricity. It is now organized in four Business Units, named (i) Digital & Commerce, (ii) Industrial Engineering, (iii) Building Technology Design, and (iv) Power Generation:

1. The Digital & Commerce business unit has been formally established at the end of the internal transformation process and comprises the optimization of the Company’s own power plants, the optimization of decentralized units as well as the production of electricity from third parties’ renewable energy sources. The business unit also covers trading activities with standardized and structured products for electricity and gas as well as emission allowances and certificates. Topical issues relating to smart homes and smart buildings with photovoltaic as well as solar and energy storage systems and e-mobility services are integral part to this business unit.
2. The Industrial Engineering business unit covers the construction, operation and dismantling of power plants, the industrial plant business and the new renewable energies one. This includes the planning, construction and operation of decentralised, environmentally friendly energy generation systems, as well as the operation and maintenance of thermal power plants and renewable energy sources.
3. The Building Technology Design business unit covers the full range of building technology and building management services. It develops and realises energy-efficient solutions in various industries for customers.
4. The Power Generation business unit comprises the production of electricity from traditional power plants as well as the production of electricity from hydropower, storage and pumped-storage power plants. It also operates renewable energy sources mainly in the form of solar parks and wind farms.

**4 Results**

***4.1 Renewing the BM***

To avoid being left behind by the digital wave of innovation that is reshaping the energy sector, the Company decided to grow closer to customers, developing innovative commercial solutions enabled by the adoption of digital technologies focused on the use of electricity as a service rather than as a commodity. The Company hence defined a renewed BM built on three pillars: (i) focus on prosumers, offering innovative energy services with the support of in-house “Energy Artificial Intelligence (“AI”)” platform; (ii) focus on the growing markets enabled by self-learning algorithms, specifically with regard to the trading of electricity to offer the marketing of flexibility from decentralised energy generation units and digital solutions for an optimised energy flow; (iii) focus on the development of further products and services to optimise and connects all energy management systems in the future.

To practically do so, the Company identified four areas of innovation: (i) Machine Economy; (ii) Disruptive Digital; (iii) Urban Sustainability; (iv) Smart & Connected. Figure 1 groups together the above-mentioned areas of innovation, providing details of the related enabling digital technology.

**Insert Figure 1 about here**

Any of the identified areas of innovation helped define a new value proposition and an innovative commercial offer of energy services and solutions. For instance, the implementation of solutions coming from the so called “Machine Economy” enabled the adoption of AI algorithms and the testing of blockchain solutions in the energy trading practice, to predict and react proactively to changes in the market dynamics; the “Disruptive Digital” area of innovation enabled the offer of Vehicle-to-Grid (V2G) services, as well as other app-based solutions for energy monitoring and a more intelligent approach to the energy management, for example through demand-response (D/R) applications; the “Urban Sustainability” area of innovation focused on the development of e-mobility solutions integrated on the deployment of smart grid; finally, the “Smart & Connected” innovation area enabled the deployment, as reported by the Head of the D&C unit, of “*energy management systems for homeowners that can regulate household energy flow in the best possible way analysing production and consumption data around the clock, displaying it on apps even taking weather forecasts into account*”.

From the empirical analysis, it especially emerges that the core contribution of digital technologies to the organisational re-design for BMI is mainly on the Company value proposition (i.e., the offering of products and services). This aspect is discussed in Section 5.1. Consequently, to ensure the market success of the new value proposition, a set of organizational changes have been introduced by the Company. This aspect is discussed in Sections 5.2 and 5.3.

***4.1.1. The Company New Value Proposition***

The focus on the delivery of innovative energy services has reshaped the Company value proposition, which is now customer-oriented, with a high digital content, service-based rather than commodity-sale based and is realized toward innovative ways of value delivery, as it will be shown below. In Figure 2 we summarize the new value proposition.

**Insert Figure 2 about here**

The first step “Identifying new customers’ needs”, refers to the customer centricity, i.e., the definition of new services based on (i) the problems that arise by customers, (ii) the kind of customer that raises the problem, (iii) the possible solutions to the problems and, lastly, (iv) the feasibility, marketability and profitability of such solutions, in line with the current social trend toward sustainability, energy saving and consumption optimization.

The second step “Developing Innovative Solutions”, refers to the core phase of developing solutions with a high digital content, such as e-mobility services, ICT energy services, energy storage, D/R solutions, micro-grid, virtual power plant, as well as the development of application for the energy management within energy communities.

The third step “Testing Phase”, focuses on the analysis of how to effectively reach final customers, simulating new solutions and testing their commercial applicability to meet customers demand, in terms of pricing, quality of the service and expected results. The role of new technologies, indeed, has pervasively affected the way through which companies support their BM design and innovation activities (Yoo, 2010; Yoo et al., 2010). With this regard, the Company launched physical energy shops, where customers can enter and discuss with energy consultants the best available solutions for their energy needs. This change is connected with the increase complexity of the services offered, which require in depth explanations to the customers. From the very words of the Chief Marketing Officer “*offering a complete smart home solution was a real add value for our customers in terms of savings from a better energy management and consumption, but the advantages brought to customers by smart home solutions are not easy to be perceived at a sales point, you need a sales force and consultant able to make the customers understand what they are bringing home, and why they have to pay a high price for that*”. He also added: “*For the first time, customers will enjoy a physical direct contact with the Company; we expect customers to liaise with our energy consultants to understand how they can better manage their energy needs and improve energy consumption. They will have the chance to walk in the shops and look for innovative services and solutions they were not aware of, in this way we aim to stimulate demand and increase our revenues from the sales of energy services*”*.* This can be interpreted as major change to the way the Company delivers value to customers, i.e., the way it architects the relationship with customers to whom products or services are sold, reaching them in the most effective way (Chesbrough & Rosenbloom, 2002; Mansfield & Fourie, 2004; Zott & Amit, 2008; Teece, 2007) and more importantly in how the Company interacts with customers.Thus,the Company is willing to capture more and more value from the sale of services, to which a higher value is attached compared to the mere sales of electricity as a commodity (hence increasing the overall revenues and, mostly important, profitability).

The fourth, and final, step “Adapting Business Model”, concerns the Company’s internal adaptation to generate revenues, make profits and attract new investors, scaling new digital solutions inside an established organization. Here, the firm’s ability to integrate, build, and reconfigure internal and external competences (Teece, 2017; 2010) proves to be crucial to facilitate the shift towards BMI adopting proper organizational changes (i.e., Foss & Saebi, 2017), as will be seen in the next section when discussing the organizational changes adopted by the Company.

Summing up, changes started from the willingness to enrich the value offered by the Company to the customer and triggered a shift in the overall process of value creation. More importantly, Company ALPHA is also changing the way it operates, which for some scholars correspond to what we should intend as BM (Mitchell & Coles, 2004). Indeed, the changes introduced in the value creation process were not limited to the value proposition and value creation but involved also the way value is delivered to the customers, for example through the physical contact points such as the energy shops. Taking from the very words of the Head of Marketing & Sales, “*we did not want to clear up all the good things we have done in the past, we just want to evolve with respect to our history and with respect to the new era in which we are living today*”*.* Indeed, when the Company started to evolve its value proposition (i.e., with new digital services), it soon realized that a single change in BM required others to follow such as those on value delivery mechanism (i.e., energy shops). This is consistent with the general conceptualization of BM as complex system made of several interdependent and interconnected components (Massa and Tucci, 2013).

***4.2. The Innovation Process***

To effectively innovate its value proposition, the Company has defined a three-phase process within the D&C unit (i.e., Market Input; Technology Fit; Service Delivery). The process, outlined in Figure 3, highlights the role played by the digital technologies mapped in the four areas of innovation of Figure 1.

**Insert Figure 3 about here**

In the “Market Input” phase, the Company opens its innovation process both to external actors and its own employees to collect ideas and input for the realization of new (digital) services. This because it is aware that a large part of the idea generation process nowadays happens outside its own boundaries, so opening the innovation process to external contamination would help pollinating the internal environment with new ideas that may generate interesting business solutions, as noted in the literature by Frankenberger et al. (2014) and supported in its empirical evidence by the Head of Marketing and Sales, according to whom “*nowadays there is such an abundance of web-based platforms that can be adopted to scout for new ideas and support the idea generation phase. I think that we shall be able to gain advantage of these platforms and implement them in our every-day business. We simply cannot pretend anymore that only internally we can generate innovation and new commercial solutions; we need to contaminate our activities with the ones of the external ecosystem, and web-based platform may represent the right tool to do so*”.

In the “Technology Fit” phase, the Company performs a check of the feasibility and marketability of new solutions, considering the level of maturity of new technologies and their applicability. This is supported in literature by Bullinger et al. (2016) and previously by Christensen (2009), according to whom “*the history of innovation is littered with companies who had a disruptive technology within their grasp but failed to commercialize it successfully because they did not couple it with a disruptive business model*”. With this regard, in this phase digital technologies such as D/R, V2G, IoT are tested to see how they can be converted into new commercial valuable solutions to enrich the Company business portfolio toward a “digital-energy” market value proposition. Here is relevant to mention the words of the Head of D&C Unit who, talking about the future of energy utilities, stated clearly “*the energy of future is to be more sustainable and smarter: renewable sources, energy efficiency, new services for customers, digitalization. A whole new way to look at energy is an essential value for quality of life and competitiveness of businesses. The key to this future is innovation. A challenge for Company ALPHA which shall be able to leverage on the large array of digital technologies nowadays available, even redefining and reinventing, if necessary, its internal capabilities*”.

Lastly, in the “Service Delivery” phase, the new (digital) solutions are commercialized, allowing the Company to eventually reach new customers, for instance through the deployment of energy shops where to provide consultancy on the adoption of innovative energy services and solutions. It is self-explicative, with this regard, a comment made by the Head of Marketing & Sales, who stated clearly “*in the future of our business, selling electricity as a commodity will generate no more profit to the business of a utility. If we want to continue to be attractive for investors, we need to develop a brand-new portfolio of services and solutions able to add value to the customers and generate marginality for the Company. This is what is required to become a «digital-utility»*”.

In the end, referring to a general evaluation of the changes introduced in the Company, the Head of Marketing & Sales stated, “*we are gradually evolving, there is no revolution here. I hear too much the words revolution and disruption while in many cases we are just evolving. Moreover, when I see my people getting too much excited for the changes we are introducing, I remind them that we are followers in this strategy, other companies in our industry are doing it already. This, since I want them to be focused on results which are still there to reach, the game just stated*”*.* This finding traces a view of the type of BMI the Company is facing, both in terms of scope and degree of novelty. Consistently with Foss and Saebi (2017), we may interpret the BMI Company ALPHA is making as in between evolutionary and adaptive. It emerges indeed that the BMI here discussed is new to the Company but not to industry, since other utilities are evolving in the same way. In terms of scope, the BMI appears in between two extremes: it is not a “pure” evolutionary (involving single component and modular changes naturally occurring overtime), and not “pure” adaptive (involving changes in the overall BM) (Saebi et al., 2016; Foss & Saebi, 2017).

***4.3. The Organizational Dimension***

The BMI process happened not without difficulties. Indeed, while the Company started to change the BM, clear difficulties emerged at organizational level. From the words of the Executive Vice President Human Resource, it emerged that “*soon after our strategic changes passed from idea to implementation and especially from the top managers to the middle management, we encountered difficulties. At the beginning it was even not clear to me what was the bottleneck in the change process, then we realized that the organization and especially the people were not ready for the changes we decided top down. This revealed the need for rethinking our organizational structures favoring strategic changes*”*.* This is in line with the research on BMI and organizational re-design by Foss and Saebi (2017), Leih et al. (2015), Saebi and Foss (2015), according to whom an organization’s overall design and structure affects its ability to innovate the BM to the point that a firm that decides to innovate its BM needs to implement an organizational change process (Damanpour, 1996). Indeed, with the integration of digital technologies both into the innovation and business process (Tilson et al., 2010; Yoo et al., 2010) firms are deviating from their proven, existing and traditional innovation paths (Henfridsson et al., 2014). This demands for the reformulation of firms’ value proposition (Sebastian et al., 2017), forcing established companies to re-design multiple aspects of their internal organizations to move towards a renewed BM (Yoo et al., 2012; Massa & Tucci, 2013; Foss et al, 2013; Leih et al., 2015). Nevertheless, organizational changes are often prevented by the inertia that typically affects large organizations, inertia that has been recognized as “a pervasive problem that organizations face in spite of frequent calls for change and flexibility” (Boyer & Robert, 2006, p. 325). With this regard, the ability of a firm to “integrate, build, and reconfigure internal and external competences to address rapidly changing environments” (Teece et al., 1997, p. 516) is crucial to facilitate the shift towards BMI adopting proper organizational changes. Below, the description of the organizational re-design process implemented by Company ALPHA in line with the changes in its BM.

***4.3.1 The Organizational Re-Design Process***

At organizational level, innovation activities were spread among the different BUs, which had their own internal competence centers. Then, the network of informal relations at managerial level ensured the overall coordination of the innovation activities. As noted indeed by the Head of the D&C Unit, “*when it comes to innovation, every BU had its specific competence center and was very jealous of its own innovation activity. In this situation, top management could almost nothing in front of the outbreak of closed approach to innovation by staff functions at BU level*”*.* Nevertheless, the traditional and consolidated organizational model has been perceived as not sufficient by the Company managers. The Company realized that a traditional hierarchical approach to innovation was not coherent with the requirements of the new competitive scenario; this is in line with the academic literature that points out how the proliferation of digital technologies shakes the traditional organizational hierarchical structure (Gambardella & McGahan, 2010) impacting the management and flow of information inside a firm (Doz & Kosonen, 2010). Therefore, the creation of the D&C unit is the organizational result of the Company willingness to take advantage of what is newly possible for competitive differentiation while exploiting digital technologies (Berman et al., 2012).

As noted by the Head of the D&C unit, “*to be effective in the BMI process we had to change the organizational structure, because the internal Company culture was so rooted in its procedures and traditional Company “modus operandi”, that no innovation in the business model would ever been possible without changing the organizational structure, this also to trigger the development and flourish of new know-how and capabilities within the organization*”. This finding pairs with what noted by Hannan and Freeman (1984) according to whom the characteristics that guarantee an organization’s stability (i.e., institutionalization, standardization and routine) are those that create barriers to change, and so factors of inertia, generating strong pressure against organizational change. In our empirical analysis, the centralization of all the digital innovation activities within a unique BU helped overcome the typical inertia of the day-by-day operations and the “business-as-usual” trap of a large utility, creating momentum around the innovation topic and its urgency for the definition of an innovative BM. This is particularly complex for incumbent firms, since their portfolio of existing competences acts as a blinder for managers’ ability to innovate the BM, therefore from seeing novel opportunities to innovate or acting upon those opportunities when they see them (Pisano, 2006).

In Company ALPHA, the “Digital & Commerce” (D&C) unit is the one responsible for promoting digital solutions and for developing innovative services. The unit is articulated in a set of five sub-units, each of them focusing on a specific area/technological domain, and currently employees 80 people with a mix of energy and e-commerce experts and a customer-centric approach. Figure 4 reports the D&C unit organizational design and the activities it executes.

**Insert Figure 4 about here**

The five sub-units reflect the four areas of the innovation identified in Figure 1, i.e., Machine Economy, Disruptive Digital, Urban Sustainability and Smart and Connected home/office. All the sub-units required the development of specific skills, which reflect the main activities performed by the D&C unit (as mentioned above). In some cases, these skills were acquired from outside the Company through external hiring, while in some other cases the Company provided specific trainings to its employees. Specifically, Activity 1 required more than 20 external hiring in order to reach the market with D/R services, since the expertise required to become commercial aggregator of D/R services was not a relevant part of the Company background. Activities 2 and 3 required a mixed approach, with the hiring of some external digital specialists to work as managers of Company’s current employees. In this case, employees could benefit from the training actions of external specialists to acquire the (digital) know-how needed for the development of innovative integrated optimization systems in energy management (which somehow was a business already performed by the Company, but without the adoption of digital solutions). Activity 4 required the creation of a new (*ad-hoc*) team with external hiring to develop infrastructure solutions for e-mobility and provide all the operations and services related to charging stations. The creation of this new team was in line with to the Company’s goal to briefly position itself into the emerging energy market of services and solutions for e-mobility. Lastly, Activity 5 (i.e., trading services) required the training of a team of 20-30 traders already working within the Company, to whom dedicated training programs on AI software and new analytics tools were offered.

**5. Discussions**

The organizational changes reflect the new domain of competences of Company ALPHA, widening the technological boundaries of a traditional utility in new fields of expertise. Digital technologies, indeed, enabled the definition of a wide spectrum of viable commercial solutions and the creation of complex ecosystems (Chesbrough, 2017). Summing up, the establishment of the D&C unit has allowed the Company to focus on the exploitation of digital technologies for energy services (Khanagha et al., 2014), innovating its traditional BM acting on the overarching dimensions of value creation, delivery and capture (Damanpour, 1996). From the case study has indeed emerged that the decision to re-design the Company organization and innovate its traditional BM has been determined by the necessity to seize new opportunities introduced by the advent of digital technologies (Saebi et al., 2017; Pateli & Giaglis, 2005; Teece, 2010, 2017) and grow closer to new customer needs in the “digital energy” era (Abdelkafi et al., 2013).

Value creation consists mostly of crafting a differential commercial offer that satisfied both the traditional energy consumption and the exploitation of digital technologies for energy services (i.e., D/R, V2G, Blockchain solutions, smart metering, etc.) (Saebi et al., 2017). The traditional BM continues to operate with its historical and relatively simple value proposition (Hall and Roelich, 2016), while it is eroded by the reduction in consumption of final users (Richter, 2012). Value delivery focuses on managing multiple engagement points with customers for delivering energy services away from the traditional sale of electricity as a commodity. With this regard, *ad-hoc* commercial strategy has been developed to reach new customers with a strong digital content. Value capture is mainly related to the pricing of the new energy services delivered, so that they could be attractive and appealing for customers, meanwhile capturing high marginality for the Company.

Table 1, while illustrating an example of how data were structured in the study, shows some key overarching dimensions. These dimensions represent a synthesis of the BMI and organizational re-design process. It is noteworthy to specify that Table 1 is not meant to be an exhaustive illustration of the first order concepts collected during the interviews, neither a causal nor a dynamic model but, rather, it is a selective representation of the core concepts and their relationships.

**Insert Table 1 about here**

The results show how the dimension of BMI along organizational re-design is crucial to create, deliver and capture value through the adoption of new technologies and solution, as noted in literature by Fjeldstad and Snow (2018) and Foss and Saebi (2017). Such findings prove how the adequacy of a company’s strategy is defined in terms of its congruence with organizational contingencies facing the firm (Zajac et al., 2000): as the Company spotted the new opportunities represented by the advent of digital technologies, it aimed at pursuing BMI to properly exploit such opportunities; however, the Company soon realized the need of a proper re-organization to enable such BMI. Our study hence confirms that effectively implementing BMI requires adequate organizational changes to properly enable a renewed value creation, delivery and capture. Therefore, our single case suggests that the following are the steps to effectively realize BMI while changing the organizational design: first, top management spots digital innovation opportunities with possible impacts on company business; second, top management reflects on how such technologies may influence the company traditional BM; third, top management rethinks and redesigns the organization to enable BMI; lastly, top management implements such innovation changing value creation, delivery and capture mechanisms.

 In addition, our study creates new insights into how digitization specifically impacts innovation management as a business process and provides contribution to the digital innovation management field. In particular, it suggests considering, in developing business processes through digitization, the development of new capabilities and to manage the trade-off between them and the traditional ones. Balancing new and digital capabilities with traditional ones is not an easy task, as also noted by O’Reilly and Tushman (2013), according to whom “the failure to achieve breakthrough innovations while also making steady improvements to an existing business is so commonplace”. This has been noted, from a different perspective, also by Terjesen & Patel (2017) who stated that the transformation and exploitation of external knowledge from a variety of sources into process innovations involves significant trial and error, which requires modifications to deeply embedded tasks and processes, forcing firms to maintain a breadth of internal operational routines while trying to go in search of process innovation outside its traditional boundaries (Laursen & Salter, 2006). The role of capabilities, with this regard, has been subject to a deep academic investigation, in particular with Teece (1997, 2010, 2017), who has defined them as a firm’s “ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments” (Teece et al., 1997, p. 516). To facilitate the shift towards BMI adopting proper organizational changes, firms need indeed to develop proper capabilities in order to (i) size new opportunities introduced by the advent of digital technologies (Johnson et al., 2008); (ii) sense new opportunities in a business context characterized by a high level of strategic discontinuities, identifying the magnitude of a change in customers’ preference (Doz & Kosonen, 2010); (iii) transform their internal capabilities, consequently determining the best configuration to exploit the opportunities deriving from the adoption of a new technology. In addition, firms are required to develop meta-capabilities, such as strategic sensitivity, leadership unity, and resource flexibility, which represent the human dimensions of a leader to enable the transition and avoid the inertia to change (Massa & Tucci, 2013; Saebi et al., 2017) as well as are required to develop learning and training mechanisms to manage effectively the organizational re-design for BMI as a dynamic process (Foss & Saebi, 2017). Hence, the overall innovation process can be considered the central function of dynamic capabilities (Zollo & Winter, 2002).

Accordingly, along the innovation process of our investigated Company ALPHA, training internal employees and sharing new ideas, know-how and competences with external stakeholders becomes a fundamental aspect in order to support the decision-making strategy of the top management in the process of BMI through organizational re-design.

# **6. Conclusions**

This research was motivated by several elements that embrace both a theoretical perspective and a practical evidence. As for the theory, since extant studies contend that innovating a BM may require changing the organizational design (from Damanpour, 1996 to Leih et al., 2015 and Foss and Saebi, 2017), investigating the organizational impacts of BMI is calling for further theoretical effort to deepen the understanding of key organizational changes and control mechanisms enabling and supporting the execution of a BMI (Achtenhagen et al., 2013; Deshler & Smith, 2011). In particular, organizational re-design can require a firm to create new business units, to define new internal functions and departments, to hire new employees with specific skills and/or train the existing workforce to use new solutions and technology (Foss et al., 2013).

Our study hence contributes to the literature that investigates the intertwin between organizational design and BMI, showing how BMI requires and calls for organizational changes to the point that we may view BMI itself as an organizational change process: BMI may require indeed the creation of new units, as well the definition of new internal functions with proper know-how and capabilities, as for the case of the D&C unit in the present study. This contribution also adds to the literature on BMI, showing how the current digital wave of innovation may conduct to Evolutionary/Adaptive BMI (Foss & Saebi, 2017). Moreover, we extend the current debate over the pervasive impact of digital technologies on business process (Nambisan et al., 2019) as supportive enablers of change and innovation (von Briel et al., 2018), by arguing how digitization can also drive and trigger business change and innovation at strategic and organizational level – especially in existing organization in need of renewal (Schmitt et al., 2018). Specifically, few studies to date show how specific organizational and managerial practices may support business transformation and innovation process triggered by the specific purpose of making the most from digital technologies. Therefore, this ultimately contributes to the field of innovation management.

Our study offers also contribution for practice. On the basis of the empirical findings, we deem that training activities play a crucial role to enable the transition from a traditional to a new BM. Such activities are necessary to create a consensus and awareness organizations’ transformation process, as well as to develop dedicated competences related to the exploitation of digital technologies. Specifically, the study addresses the energy industry, since energy utilities are nowadays called to major business transformation and reorganization. As regards, based on our findings, we believe the internalization of external knowledge is strictly required to briefly gain a higher position in D/R services and into the market of e-mobility services.

Notwithstanding our attempt to provide contributions for theory and practice, we are aware of the limitations of our study. First, we were not able to emphasize the role of the managerial commitment to guide the organizational re-design process along the shift towards the Company renewed BM (Massa & Tucci, 2013; Saebi et al., 2017). In addition, a more in-depth analysis on the mechanisms of implementation of training activities and programs, as well as of the internalization of new knowledge from the external environment, deserves more attention in future studies. Finally, the single case study analysis – and the exploratory nature of our research – does not allow generalizing the findings to any population of energy utilities in the energy industry. Accordingly, we invite future research into this subject to shed light on the relevant although under-researched management issue of BMI as organizational re-design process in a context of digital transformation of businesses.

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