Innovation and viability in the retail service ecosystem: nudges from DITRON's history and evolution

< Service ecosystems and markets dynamics >

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ABSTRACT

Purpose – This work analyses the retail sector in a service ecosystem perspective**.** Its purpose is to empirically investigate how the adoption of a new technology can contribute to generate conditions of value co-creation (Storbacka et al., 2016) and to improve the efficiency and effectiveness of the system considered as a whole, through new shared logics and rules, *institutions*, used by actors to coordinate actions (Lusch, Nambisan, 2015) to survive.
The concept of innovation has been considered as the starting point to analyse how actors react in order to adapt to changes in their context and re-define their value proposition (Vargo et al., 2008).

Design/Methodology/approach – This study proposes a re-reading of retailing, complex context with many heterogeneous interrelated and interconnected actors, as a service ecosystem, with some suggestions by the VSA literature. It has been carried out through a case-study analysis.

Findings – This work highlights how the exchange of resources between actors, and the value co-created by them, can define new rules to shape the market.
Specifically, both the new technology introduced and the innovation, depending by it and defined by market interactions, provide new institutions, guided by value co-creation processes (Vargo et al., 2015).
According to this approach, the innovation is possible thanks to the re-configuration or the new generation, from a structural point of view, of relationships, resources and roles, as well as, from a dynamic point of view, to new forms of resources integration. These new forms of resources integration allow new value co-creation processes (Mele et al., 2010) that stimulate the emergence of institutions influencing the survival of each actor.

Research implications – These results have practical managerial implications in terms of service and decision make processes. To provide a service new specific skills, developed and trained by each actor, are needed and decisions depend on new resources to integrate.

Originality/value – In literature retailing has been studied not enough through the service ecosystem perspective. This work clarifies the interconnection between innovation and viability deepening on the concept of institutions. Thanks to these findings, we can match the Service Ecosystem literature with Viable Systems Approach, in fact institutions may be considered as tools to be resonant with the context and value co-creation as a driver for the viability.

Key words – Retail, innovation, service ecosystem, viability

Paper type – Research paper

1. Introduction

This work proposes a reinterpretation of the retail sector nowadays dynamics, and grocery particurarly, using the interpretative lens provided by the service ecosystems (SES) worldwide literature (Frow et al., 2014; Vargo et al., 2015; Akaka, Vargo, 2015; Vargo et al., 2017).

Today, it's suitable to deepen how dynamics between actors in SES, as they are interrelated in relationships as devices for resource integration (Laud et al, 2015; Xu et al., 2014; Kleinatenkamp et al., 2012; Vargo, Lusch, 2010; Vargo, 2009) and engaged in service exchanges for value co-creation (Frow et al., 2016; Chandler, Lusch, 2015; Pinho et al., 2014; Edvardsson et al., 2011), can really pursue the viability and competitiveness of each one over time, especially considering the role of institutions and istitutional arrangements in coordinating their behavior (Vargo et al., 2015; Vargo, Lusch, 2016).

Institutions are emerging social practices (Taillard et al., 2016), consisting on social norms and rules (Vargo, Akaka, 2012), more informal than typical law (Siltaloppi et al., 2016), which can coordinate the actors' actions involved value co-creation processes (Edvardsson et al., 2014; Wieland et al., 2016; Koskela-Huotari, Vargo, 2016).

In this manuscript, the analysis has paid the attention on the Grocery retail (Barile et al., 2018; Flint et al., 2014) and the impacts of the recent introduction of new technologies (Fernie, Sparks, 2018; Kurnia et al., 2015).

The technology considered for this study is the new kind of cash register, that is now composed by a hardware and a software able to allow the data collection towards a cloud e-platform.

It is thinked, designed, realized and promoted by an italian multinational holding company named Ditron S.r.l., operating since more the twenty years in Europe at first, with a solid leadership in its market about over than 60%.

The new type of this cash point may be considered as a service provided through a smart device, which may be helpful for each actor involved in the specified SES. It may be useful for retailers, for example, in the way the processing of collected data may allow them to adapt their proposal to consumers' needs and to offer them an increasingly personalized and personal offer.

The new technology seems particularly interesting as an advance prediction tool that allows data collection that, if systematically processed into precise information, can simplify the problem solving processes and favor more informed decision-making (Lee et al., 2014), according to a human-analysis of its outcome (Demirkan et al., 2015).

It is intended as a tool that makes easier the collection of more measurement data, the creation of more links for sharing resources and promotes better learning and adaptation paths. It is relevant in terms of dematerialization, in fact it becomes a strategic resource as a tangible asset that provides a series of intangible resources (single information on transactions and exchanges, as well as trends, stats, etc) essential to simplify the processes of resources integration and value co-creation.

The described cash point may be intended here as smart service, for the cash register considered as a smart appliance of service (Demirkan, Spohrer, 2014; Wuenderlich et al., 2015) in a sort of smart service system intended as a whole.

The paper starts with the results of a literature review that was carried out (par.2). The study of literature has allowed us to understand how the retail sector has been not enough debate in literature using the service interpretative key.

Further, for this reason, the theoretical framework has been built here (par.3) by presenting some possible contributes in literature on service research (Lusch, Vargo, 2014; Chandler, Vargo, 2011; Lusch, Vargo, 2006; Lusch et al., 2007) and system thinking (Barile, 2009; Barile et al., 2013), focusing on SES and then on viable system (VS) approaches (Polese et al., 2013; Pels et al., 2012).

Following this approach, this work wants to investigate how the rules, defined and shared by actors exchanging resources in SES, may shape the market through innovation intended as a new ways of firms to approach to the market, answering to the following research questions:

R.Q.1: Can innovation shape new forms of service ecosystem in the retail sector?

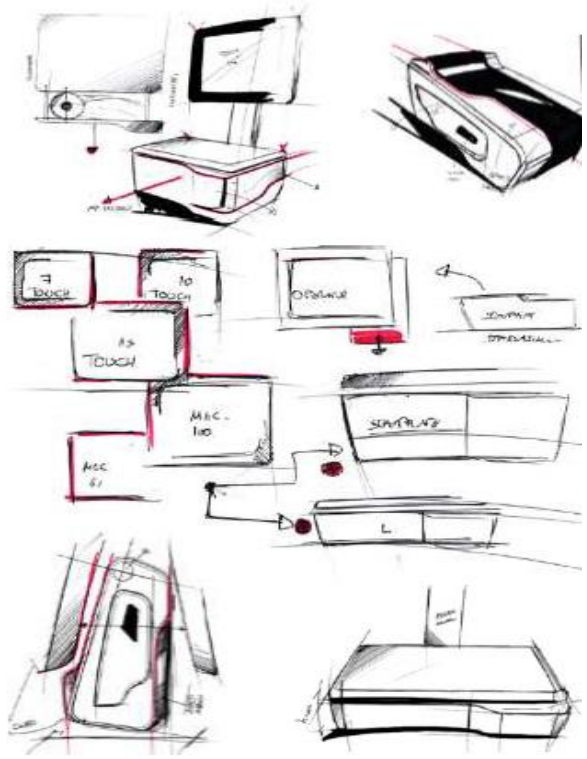
R.Q.2: Is it possible to consider innovation as a driver for retailing actors' viability?

The new rules also affect the ability of firms to survive in the market in fact they influence them both in a structural and systemic direction, acting on relationships, on resources sharing, and on the resources integration processes. According to this perspective, these rules, institutions, and institutional arrangements affect the ability of companies to innovate and their ability to survive and, like a sort of bridge, connect the two concepts of innovation and viability in a cause-effect relationship (par.4).
Finally, in this work will be used the point of view of a specific actor, Ditron company (http://www.ditronetwork.com/landings/index/Ditron) that is the main supplier of a smart cash register, I-DEAL RT UPGRADE (http://www.ditronetwork.com/landings/showproduct/4/90) in the Italian retailing market. It seemed relevant to observe the Ditron's behavior, through the development of new products as described in this case study (par. 5), because it is the bigger company in this type of European market, with a significant size of investments during the last decade, achieved greater results then before, confirming the potential advancement of knowledge on this topic.

2. Methodology

This study attempts to answer the research question through the development of a case study (Eisenhardt, 1989; Baxter, Jack, 2008). The case study approach turns out to be particularly interesting as it helps in deepening the understanding of the perceived reality by the interactions among actors within the observed context. The case study allows some new interpretative schemes of the phenomenon through a systematic evaluation that considers the effective experiences of individuals and the usage of theoretical constructs framework to evaluate their evolution over time.
The use of a case study seemed particularly interesting due to the theories tests are useful to have a more practical knowledge of the issue dealt with; a only theoretical approach cannot be proved sufficiently accurately performed case studies and by a systematic production of samples, can be considered ineffective (Flyvbjerg, 2006); it may be useful to test a theory looking for its dynamics details with the context (Stake, 1995).
The company studied is Ditron S.r.l., an italian multinational holding company, national leader in the design and production of cash registers and scales. Its target is the Retail, DO and GDO markets and, starting from 2008, is an undisputed leader in the Retail market with a market share of over 50%.
Ditron S.r.l. is one of the main actor in Italian market, distributing through more than 600 specialized dealers and exporting products and know-how to many European and non-European countries, 18 foreign distributors (Belarus, Albania, Montenegro, Morocco, France, Hungary, Romania, the Czech Republic, Austria, Germany, Greece, Malta, Cyprus, Kenya, Turkey, Mexico, Argentina, China), with 30% of their turnover from foreign markets.
It is considered a suitable case also for its explanatory power in order of answering to the research question, in fact thanks to its continuous attention to contextual changes, now it develops integrated hardware and software systems and integration systems towards cloud platforms. During the last years, Ditron has maximized investments, always looking for innovative solutions.

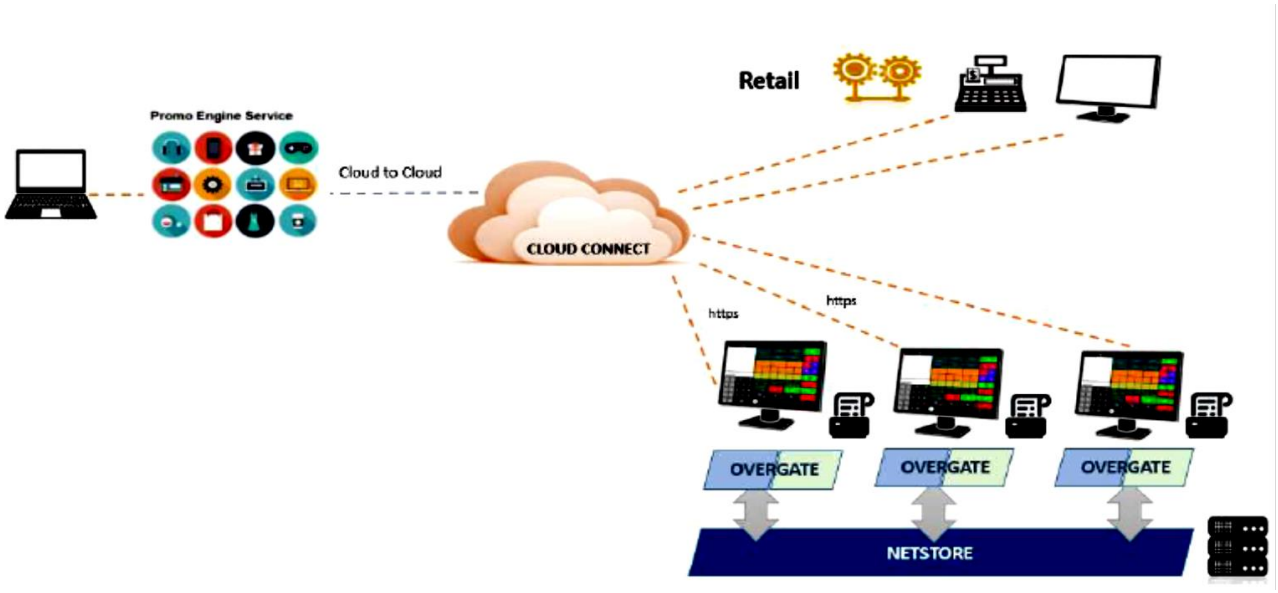
*Figura 1.*Technology modeling



Source: Ditron Srl

They understood that the best way to deal with external complexity was the ability to consider a previous product as a service. Thus, thanks to the application of a software to the cash registers and strategic partnerships with other actors, it has begun to carry out data collection activities.

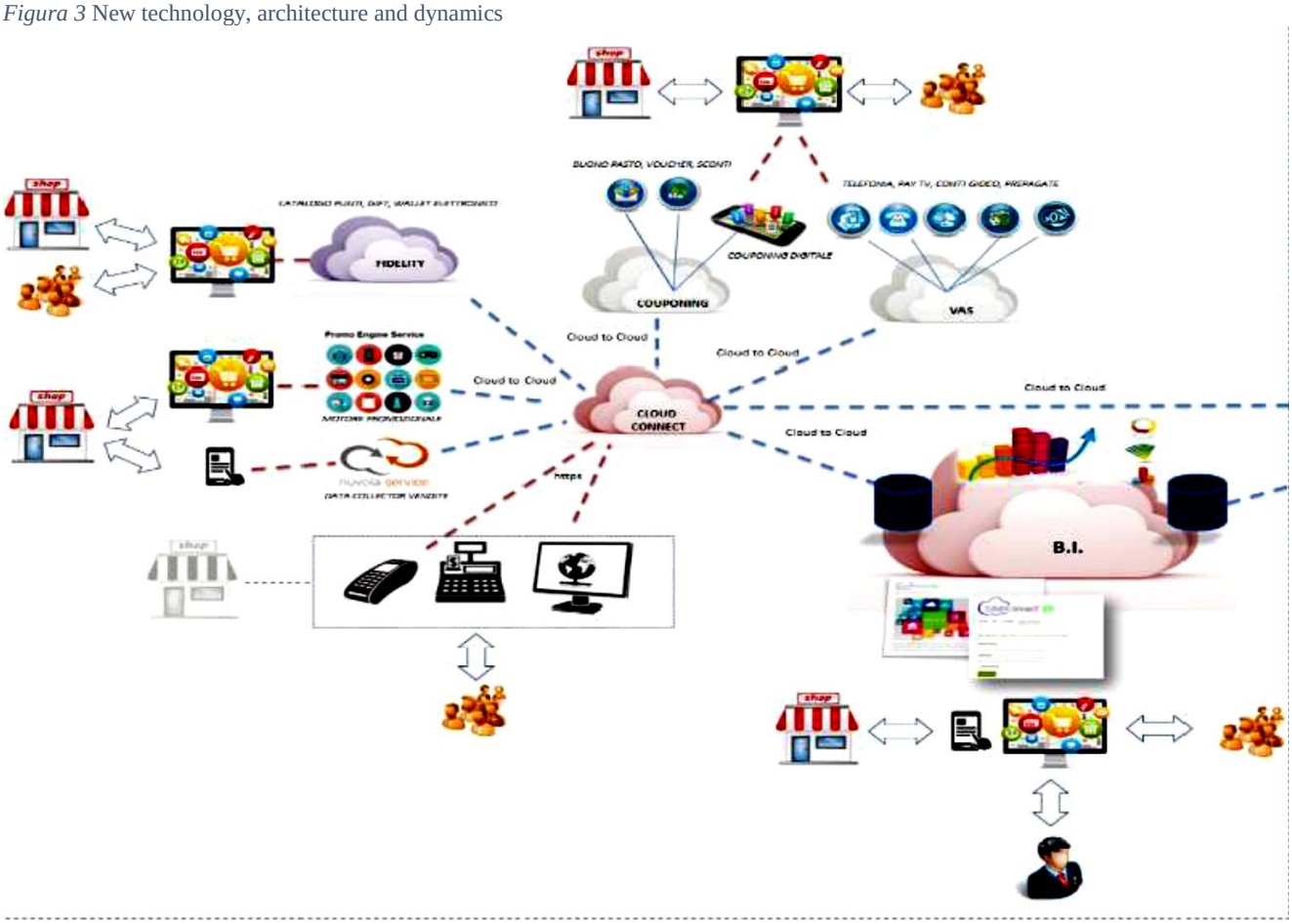
Figura 2. Cloud Connect technology



Source: Ditron Srl

This new kind of technology seems to be useful for improving the promotional capabilities of existing software applications, for creating, testing and launching promotions in few minutes, for reacting quickly to market trend.

Figura 3 New technology, architecture and dynamics



Source: Ditron Srl

3. Literature Review

Starting from 2017, the ecosystem perspective begins to be considered but mainly connected to the concept of innovation (Pinto et al., 2017; Alexander et al., 2009; Mizuno, Odake, 2019). Innovation is studied to deepen the impact of the digitalization in the resources management and as a firms' driver to change and to be adaptable with the context (Hänninen et al., 2018), or to analyze the relevance of data management and the importance of data protection (Schneider et al., 2018).

When we talk about big data, we intend the usage of smart technologies (Wamba et al., 2017; Gil-Garcia et al., 2014; Bughin et al., 2010). The role of new smart technologies within this sector has been rather debated in literature (Pantano et al., 2017 Kurup, Jain, 2018; Roy et al., 2018; Pantano, Gandini, 2018; Napoletano, Carrubbo, 2010). A number of scholars argued that technology can be considered a competitive advantage for companies.

Firms who failed to stick to technologies would lose market share, due to the role of human intervention would be minimized. According to this interpretation, therefore, we can see how it is possible to intend technology as an enabling resources that are not supportive but almost a substitute for the decision-making process of individuals.

In retail sector, Demirkan and Spohrer (2014) understood technologies as useful tools for providing consumer experiences. The use of these tools, such as sensors or smartphones, enabler to be increasingly in tune with consumer expectations and to provide increasingly sophisticated levels of service. These tools are in fact able to detect purchasing behaviors, are interconnected, generate interactions through algorithms. Willems et al. (2017) suggested that new technologies are able to increase the ability of companies to provide an experience to consumers, since they support in saving costs, pursuing convenience and utilitarian value, to the detriment of hedonistic or symbolic benefits. Neverthless, the innovation impact on the decision-making process, so relevant for business competitiveness (Pantano et al., 2017; Chan et al., 2017), has not been sufficiently studied.

Even the concept of value co-creation, focal element in the service ecosystems studies, in retail is more debated (Bassano et al., 2018; Pantano, Gandini, 2018; Yrjölä et al., 2018; Algharabat, 2018; Finsterwalder, 2018), often associated with the increasingly active role of the new consumer-prosumer (Shamim and Ghazali, 2016; Fellesson and Salomonson, 2016; Shamim et al., 2016).
The study of the literature on this topic revealed the following gap in the literature: the retail sector has been not enough treated in the literature in terms of service ecosystem, through the Service-Dominant Logic perspective (Ehrenthal et al., 2014; Flint et al., 2014).
That gap was the starting point of the analysis. Using main insights of Service-Dominant Logic perspective, the innovation and survival impacts of the introduction of a new technology in the retail sector has been investigated.

4. Theoretical Framework

The theoretical frameworks are the two streams of research that have proved particularly useful, over the last few years, in the governance's studies for different fields: Service Research and Systems Thinking.
Service research, with a particular attention to Service-Dominant logic (Lusch, Vargo, 2006; Lusch, Vargo, 2014), may be useful in order to understand the meaning of the dematerialization of the cash register, in order to suggest the of more appropriate business strategies for companies involved in the process of value co-creation (Payne et al., 2008; Nenonen, Storbacka, 2010; Wieland et al., 2012), according to a win-win perspective (Gummesson, 2002; Gummesson, 2008; Polese, Carrubbo, 2016).
System Thinking may be useful to understand how the new relational and interactive dynamics, which exist between actors following the introduction of the new device, may have contributed or not to the viability of each, no longer intended as a supplier or consumer, but as a generic actor (Vargo, Lusch, 2008; Storbacka et al., 2016). This perspective will be explained through the suggestions from the Viable Systems Approach (Barile, 2009) and Relationship Marketing started by the Nordic school (Gummesson, 1997; Grönroos, 2008).
According to the authors, these two scientific strands can foster a broad analysis of the chosen context, overcoming the efficiency logics of each single entity and moving towards an investigation into the survival capacity of SES as a whole (Lusch et al., 2016; Barile et al., 2016). Survival skills depend on a set of interactions that each actor engages in their own context, by adopting a holistic approach to manage and solve problems. The introduction of the new technology could generate, in this pathway, advantageous conditions for each involved actor: for consumers who see their purchase expectations increasingly satisfied, for suppliers potentially more and more able to understand their preferences, for retailers, for dealers, for partners, for other stakeholders.
This highlights how the need to understand the behavior of each person based on the role has been overcome, but how actors are now generally identifiable, in reports of the A4A type (Polese et al., 2017), in which each one is active and cooperate 'for' a mutual benefit, according to the resources that brings every own interest, with and for others in value-co-creation processes.
In this direction, the study of systems, potentially viable, proposes to understand the system as a single and integrated set of phenomena, observed as a whole, in which the individual properties of each actor appear indistinct, and all actors in pursuing their own purpose can favor the achievement of the systemic equifinal purpose (Von Bertalanffy, 1972; Mele et al., 2010).
On the other hand, service logics led us to understand the dynamics existing between the actors involved in providing and using service, the main basis of exchange (Vargo, Lusch, 2008; Edvardsson et al., 2011).
Both, through a specific focus on the relationships and interactions between actors, and putting the attention on their exchanges of resources, provide a key for understanding the most appropriate behavior looking for the pursuing of a common purpose.
Thanks to these considerations it is possible to say that the SES perspective is even more relevant in fact it allows to understand how each actor is stimulated to the cooperation and coordination in a process of generating a common value, in compliance with common and shared rules (institutions).

According to the service approach, each actor is interested in integrating resources for the definition of a benefit for himself and for third parties, directly or indirectly connected, because it is the assumption for having a common and shared value (Vargo, Lusch, 2008).
Moreover, in this work institutions are the crucial elements because, as "gaming rules", emerging and modifying social practices of human behavior, not formal structures established to govern human action, they help the understanding of the dynamics that facilitate the coordination of the actors' actions involved in the value co-creation process (Wieland et al., 2012).
Finally, a SES is a dynamic, changeable, reconfigurable, continuously evolving concept, based on each possible resources integration carried out (Vargo et al., 2015). SES is here understood as an autonomous and self-regulating entity in which actors linked together through institutions and they operate with the aim of pursuing an individual sense of survival that depends, in part, on the general well-being.

5. Institution-bridge between innovation and viability

This section aims to highlight how the concept of the institutions, introduced in the SES literature, enables to understand the reticular essence of innovation that, according to Service-Dominant Logic, may be considered thus when, recognized and shared by all actors, it favors new ways of interaction (Mele et al., 2014). Such innovation can affect the system's ability to survive that is a set of interrelated and interacting parts. In order to learn more about how innovation may be a driver or not for system's viability; here the interpretative lens of the Viable Systemic Approach has been adopted by using some of its basic constructs, and deepening linkage between innovation and viability, through institutions.

5.1 Institutions for innovation

Service innovation refers to a networked approach to innovation (Vargo et al., 2015), according to which innovation is not the outcome of a dyadic perspective on the supplier-customer relationship (Lusch, Nambisan, 2015). Innovation does not take place through a linear sequence of actions, with individual actors embedded in an integrated pathway of activities but in a broader perspective, through a practice recombination process (Vargo et al, 2015). Existing value propositions are modifying through a process of existing resource integration or new resources inventing (Skålén et al., 2015; Âkesson et al., 2016). Following this, the resource integration between actors becomes the main activity that allows the emergence of innovation (Barrett et al., 2015; Koskela-Huotari et al., 2016).
In S-D logic, actors are intended in an A2A perspective, according to which is not important the specific role of each one but the relations between them and their ability to co-create value through service-for-service exchanges (Vargo, Lusch, 2016).
In SES, relationships between actors are based on their value propositions (Frow et al., 2014) that, just like promises, are the starting inputs for integrating resources, due that they may be considered as value co-creation opportunities offerings (Vargo, Lusch, 2010). Value propositions have to balance stakeholder relationships (Frow, Payne, 2011).
Resource is everything that may be intended as useful, but its usefulness depends on the availability of other resources (Vargo et al., 2017) that, once integrated, may give it a value.
The main resource to generate a mutual value is knowledge (Mele, Russo-Spena, 2018), an operant resource able to act on or with other resources, operand type, to create value (Vargo, Lusch, 2008).
According to S-D Logic, resource integration is simplified by the existence of *institutions*, as routinized mechanisms, and *institutional arrangements*, as set of interdependent institutions, which coordinate actors' actions and make easier the understanding of value co-creation (Vargo, Lusch, 2016).
Institutions and institutional arrangements, coordinating interactions between actors, enable and constrain value co-creation, through service exchanges, and provide the context for future interactions (Lusch et al., 2016).

Value co-creation is a possible outcome of a resource integration process (Kleinaltenkamp et al., 2012). Knowledge is a resource, value co-creation, which depends on resource integration, may lead to the generation of new knowledge that enable new value propositions (Kaartemo et al., 2018). Innovation, in fact has a very strong link with learning process (Taivonen, Kijima, 2018), so it depends on the creation, renewal and transformation of pre-existing knowledge and it is referred to the process that goes from design to the re-definition of value propositions.
The interpretation of innovation through the S-D logic lens puts the attention on a user-based approach (Helkkula et al., 2018).
According to the past literature on innovation, there were specific separated roles in the innovation process: the firm innovator was opposed to the adopter o non-adopter consumer (Laukkanen, 2016). According to the S-D logic view, all actors are equal because all actors are value co-creators and resource integrators (Vargo, Lusch, 2008; Kleinaltenkamp et al., 2012).
As for value, even in the innovation, to be effective, beneficiary has a central role with the use of its outcome (Helkkula et al., 2018)
Interactions and exchanges of resources between actors guide and determine the innovative process (Koskela-Huotari et al., 2016).
In this sense, innovation does not occur when a new idea or product is introduced, but when the practices of generation, supply and use of this new idea or product become common and shared, so when, through value co-creation among actors, new practices and solutions become institutionalized (Koskela-Huotari et al., 2016). The outcome of innovation, according to this point of view, is the realization of new value proposition and new SES (Kaartemo et al., 2018).
Innovation depends on institutions, the rules that guide the emergence of new resources (Vargo et al., 2015), so it is important to focus on the way that form and reform those, when institutionalization takes place.
Institutionalization, intended as the maintainance, disruption, change of institution (Vargo et al., 2015), is a process that derives from value co-creation and involve the innovation emergence. Institutionalization is the process behind innovation (Toivonen, Kijima, 2018).
According to the SES approach to the understanding of innovation features, institutions, intended as ways to solve problems or tools to develop new form of knowledge, is more impactful than technology (Wieland et al., 2018).
Technology may be considered as an operant resource and becomes useful when is integrated with others (Akaka, Vargo, 2015). It is possible to consider technology as actor because humans in pursuing their own aims create it (Storbacka et al., 2016). The value of a technology depends on the perception of the individual players called to use it and is based on their held resources (Wieland et al., 2018). In fact, people can assign different meanings to technology based on personal, social and contextual perceptions; the interpretation of the value of technology is framed by institutional process and their *resourceness* (Koskela-Huotari, Vargo, 2016).
Following this interpretation, innovation is shaped by the introduction of technologies that allow new institutions.
It is possible to understand the innovation effects on the SES, which is a self-organized and self-adjusted system (Vargo, Lusch, 2017).
Based on the hierarchical structure of innovation in SES has a bottom-up innovation approach (Lusch, Nambisan, 2015; Vargo et al., 2015). At the lowest level of aggregation, novels are created, as well as new technologies, and service exchanges between actors occur (micro-level). At the central level (meso-level), there is an integrated communication between actors, so their interactions gives stability to the lowest level in order to do not continuously change the structure. At the macro-level, innovation may become a strategic leverage to regulate exchanges in terms of governance. The interactions between each level define the dynamic nature of the system and its ability to self-adjust, which is the core essence to innovate.

5.2 Institutions for viability

In order to better understand the impact that innovation has on a company, here the lens of Viable Systems Approach (VSA) is used.

Firstly, it is necessary to clarify one of the dichotomies that characterize VSA: structure-system dichotomy (FC6) (Barile, Polese, 2010). The structure can be observed through a reductionist approach and it is intended as a set of related components with specific rules. The system, which can be understood only through a holistic interpretative approach, emerges from the structure and represents the structure in action that moves towards the achievement of a purpose through a series of interactions between the related components (Barile, Saviano, 2011).

The central aim of a VS, embedded in a specific context, is to survive (Barile, 2009).

The ability to survive of a VS depends on its ability to satisfy effectively and efficiently, and through value creation processes, the expectations of actors that compose its context.

The context is a subjective concept (Polese et al., 2017a; Carrubbo et al., 2017) and is characterized by actors perceived as relevant according to the held resources: the supra-systems hold useful resources for the system viability and therefore can influence its decisions makers; the sub-systems depend on the system held resources and therefore their decisions are influenced by the action of the system (Barile, Polese, 2010; Polese et al., 2013).

The system viability depends on its attitude to develop, over time, consonant and resonant relationships with them (Polese, 2013).

The consonant relationship is reported to the static view in which it is possible to imagine positive and harmonic relationship; resonance relationship occur at a dynamic level in which it is possible to evaluate positive, concrete and effective harmonic interactions (Mele et al., 2010).

Business dynamics and the search for viability are due to dynamic and repeated processes of structural and systemic modification to align internal structural potentials with actual contextual needs (Barile, Polese, 2010).

The company is always exposed to external stimuli, not only economic but also social, political and technological.

It operates in a competitive and unpredictable dynamic context; it is relevant the ability of its government to monitor developments, ensuring flexibility in actions and in its operating structure in order to adapt strategic behavior to external changes. The management has to look for an internal organization able to guarantee that synergies and operational processes among structural components are not limited to formal aspects or to the bureaucracy that may hinder innovation and limit creativity.

The increasing information not coded in knowledge can also lead to an increasing entropy and to a complex situation in which the decision maker is struggling to reach a decision (Barile, 2009; Barile, Saviano, 2010).

Innovation occurs when new interpretative schemes are defined to manage a complex situation (Barile, Saviano, 2011). Institutions simplify the coding of new interpretative schemes.

Innovation and creativity may determine companies' market behavior. These two variables are determined by the influence of the context, the adequacy of the organizational configuration and human resources skills and competences (Barile et al., 2016).

The external dynamics influence the organization (Polese et al., 2017b) and makes a close link between the contextual opportunities and the company' ability of reacting, for this reason it is necessary a strategic consonant behavior with the variability and the expectations of the market.

The system has to change continuously in order to manage the external complexity and the external needs, always looking for consonance and resonance conditions with the external context: *adaptation* (FC9) (Barile, Polese, 2010).

Adaptation is a feedback analysis (Lewis, 1995), with a revision of the relationships between components in accordance with the general and defined organizational scheme. It is different from transformation, which is a modification of the organizational scheme with an action of the top management, and from renovation, which implies a new outline organizational scheme and, often, a new business idea or a new identity. The company may always has to adjust itself for the external demands, based on its structure flexibility. Whenever the external stimuli complicate the consolidated

procedures or force the rules, it is necessary to adapt the traditional models and operational schemes through adaptation processes (Barile, 2009).
The company viability depends on a careful strategic analysis able to ensure a lasting competitive advantage. The inability to adapt involves an inevitable revision of the specific structure, which means a return to another necessary knowledge to be sought in the expanded structure.
Companies may change their routines and be viable through capabilities and skills, considered as a cognitive asset able of generating innovation and creativity, useful to create knowledge, the only source of survival (Adams et al., 2015; Saviano, Caputo, 2013).
According to the Knowledge Based View, routines are brakes on innovation and creativity, according to S-D logic, routines, as institutions, are normal rules to co-create value (Wieland et al., 2016).
Innovation is based on routine; routines hold the characteristics of innovation in themselves because their reconfiguration produces a smart recombination of the existing practices. Innovation in fact is the result of a complex cognitive process based on selection criteria (Gajendran et al., 2014; Ahrweiler, Keane, 2013; Martins et al., 2015; Xu, 2011); it derives from the development process of an idea that, defined and implemented, produces an innovation that determines new learning processes and new routines (Gebauer et al., 2012; Nelson, Nelson, 2002; Hoeve, Nieuwenhuis, 2006).
Innovation, which may be considered as a new way of interaction between the parties, depends on the institutions The inter-system stability conditions are guaranteed by a relational level based on established procedures (routines).
According to this approach, innovation and creativity may be intended as drivers for viability and competitiveness.

6 Ditron case-study: an overview on innovation and viability

6.1 Data collection and Analysis

The case study was carried out through data collection and subsequent analysis of them. To develop this study 10 interviews were conducted with some key informants in semi-structured questionnaires. The key informants, as defined by Eisenhardt and Graebner (2007), refer to a group of selected (non-random) experts who are the most experienced in the selected organization; they are not chosen because representative of the general population but because maybe relevant for the interpretation of the studied phenomenon.
In this case, key informants who should have been aware of the process of introducing new technology into every process, from analyzing its usefulness to market introduction. These people included top management, which in this case is characterized by ownership.
The interviews took the form of semi-structured conversations, in which key concepts had been defined in order to respect a guideline conversation, but able to allow flexibility to the interviewees for ranging in each aspect that may be relevant for them pertaining to the topic.
This allowed us to grasp some relevant inputs with respect to some key elements considered by the interviewees as relevant and strategic in their performance.
This type of interview has allowed the emergence of further questions to clarify unclear meanings or with respect to unplanned topics and therefore worthy of further study, able to improve the quality of results.
Each interview lasted about an hour and it was recorded and transcribed. Primary data thus detected were analyzed with a logical inductive approach: the reading of the transcribed interview, and therefore of individual specific examples, made it possible to refer to some specific topics referring to the theoretical framework used, and therefore to move from the particular to the general proposing how practical observations can contribute to the theory validation.
Data coding took place therefore on the basis of some basic assumptions of the theory on the subject of S-D Logic and VSA.

6.2 Findings

Companies have today to operate with threats deriving from turbulent markets, continuous changing needs and legislative changes. Due that, they are forced to manage this complexity only with strategic collaborations and innovation in the products / services offerings, not only for end users, but also for every actor along the supply chain, increasing operational efficiency, satisfaction and gaining confidence over time. The development of ICTs is the main enabling factor in this field (Breidbach, Maglio, 2016).

Ditron S.r.l. has understood that it must maximize its efforts and investments by placing go-to market as its primary aim, always looking for innovative solutions, product quality and solutions, and governance models innovative able to favor a strategic and integrated development process.

They understood that it was important to organize an articulated, integrated and functional value proposition, to increase its quality perception, resources and potential; moving from a product-oriented perspective to a service-dominant perspective, with the aim of value co-creation through the customer satisfaction and loyalty and long-lasting relationship not only with, but with all relevant actors.

They intended that the great ability of connection and information gathering and analysis allows pursuing more efficient, competitive and inclusive solutions, in which the competitive force is not only considered on a monetary scale but is given from the company's ability of surviving in its own reference market.

Two main concepts knots emerged from the interviews.

6.2.1 Dematerialization

Technology is useful as it favors a certain speed of response, which today the market requires. It cannot longer be managed only by entrepreneurial or managerial skills, but has to be supported by the application of new technologies, as decision support systems, and by the application of business intelligence logics on big data, which must be able to fully support the single actors, with objective data. Only the human being, due to the amount of information processed, cannot carry out the analysis.

In order to reduce complexity and to generate innovation, companies must be able to valorize and share knowledge, which today means first of all to collect data, detect information flows, and then convey them to people who can actually make that that knowledge as a value for the company. This can often mean going outside the company boundaries. In fact, in a world of relationships, the satisfaction, trust and retention of end consumers of their products can only be achieved by ensuring that they perceive a high quality of after-sales services, which however is often managed by third parties.

"From cash register providers, we realized that we had become data providers and therefore of a potential service."

In this way, the cash register became a conveyor of data that, once processed, would have provided information that could make decisions that are more informed.

The collaboration with the ticket restaurant vouchers Ticket Restaurant would have allowed the retailers to acquire more and more detailed information on consumers, and therefore to be able to observe their buying behavior and to be able to design increasingly personalized offers based on the needs and preferences of individual consumers. The cash register, through the collection and processing of data, would thus have made it possible to establish a direct relationship with customers and focus on their emotions. Not only that, the data would have allowed retailers to obtain information also on the capacity of their own structure, on the most effective physical areas of the store and on the less visible or captivating ones, to acquire information on employee performance. All levers able to allow traders more and more weighted decisions in terms of effectiveness, but also to improve the efficiency of their structure.

6.2.2. Flexibility

Ditron S.r.l. owners understood that its long-standing historical presence needed adaptation and transformation processes to be able to maintain and to improve its market positions or intercept new ones. They put the attention on the innovation concept, but a structural reorganization process of the company necessarily accompanied it.

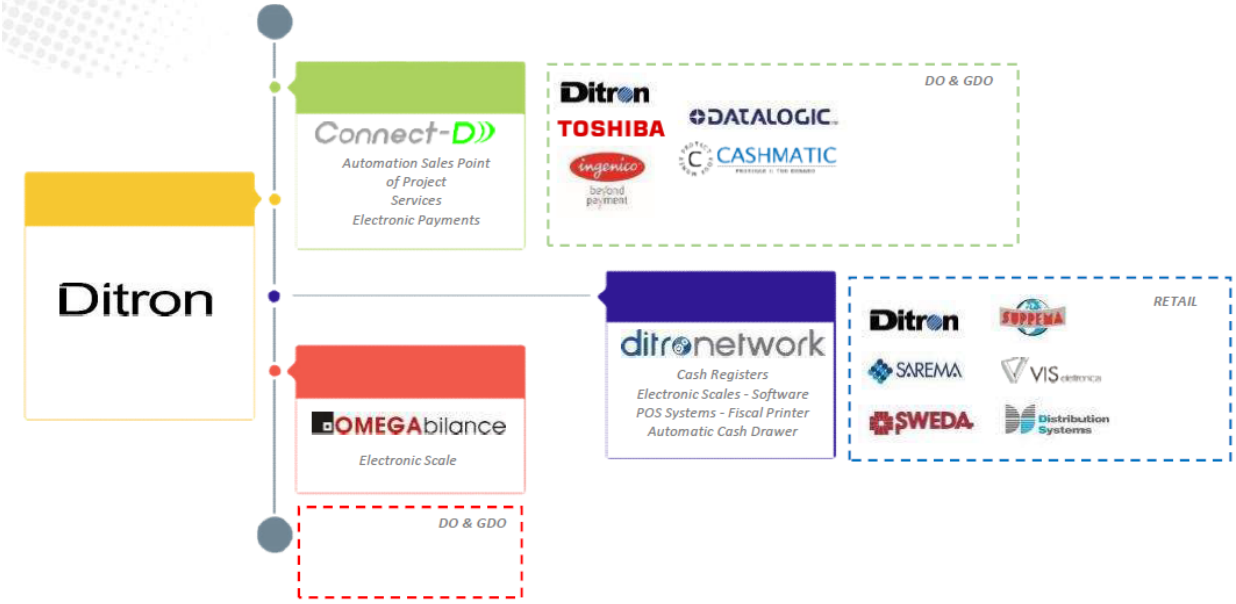
"We are competitive because our decision making process is in front of a coffee machine".

Over the years, Ditron S.r.l. firm began to organize itself in a fragmented way, on several business units, which has made it more flexible and faster, able to anticipate market's needs, to be increasingly competitive and to preserve its market share.

They faced with the variability of market needs and divided their organization into different individual business units, each aimed at its own reference market. The breakdown has made it possible to obtain a more agile structure, with a faster decision process and an ever wider and more varied range of services offered, which can be integrated into a single, complete and holistic, value proposition.

The company has a functional organization with some logical units related to different functional areas of both commercial and service nature. These are both internal and in outsourcing, preparatory to each other for the general operation of the entire corporate architecture

Figura 4. Business Units



Source: Ditron Srl

Ditronetwork and Omega are the two commercial branches committed to the product market proposition. Their target market is retail sector and organized distribution.

The introduction of the new technology, in order to provide a new service to its customers, has led to the need to internally integrate other units, Ditron has had to implement within it new skills and technological resources useful for data collection and processing and to define new collaboration relationships with software houses.

This organizational flexibility and reorganization has in fact allowed them to grasp the stimuli coming from outside and be reactive with respect to the changes imposed by it, also in tax matters.

"For 3 years, we have completely changed our vision and have begun to propose ourselves as solution sellers."

Over time, the company as a machine supplier has begun to propose itself to its customers as a supplier of devices capable of providing solutions, of a set of integrated objects in order to solve a problem and satisfy a specific need.

The ability to offer integrated and complete solutions has allowed Ditron S.r.l. to be more and more efficient compared to the expectations of its customers whose approach today is always as "I don't want problems, do as you please!".

Table 1 Case study insights

Findings	Theoretical concepts	Outcome
Dematerialization	Ditron understood that in order to be successful on the market, it was necessary to provide solutions rather than products. This new business, based on the supply of new technology, was intended as a solution to customers' problems. This new action has led to new market practices and so new institutions.	This new institutions allows new roles of each actor, and new rules and new interactions, new resources to integrate and new possibilities to co-create value. This was the innovation process implemented by Ditron and its market.
Flexibility	Ditron understood that in order to be as performing as possible with respect to its context, increasingly characterized by turbulence and complexity, and to preserve its market share, it should have acted on its structure. The ability to adaptation, event according to a structural point of view, is now intended as the condition to create, in a dynamic point of view, new routines that, in this work, are considered as institutions.	Innovation, that is the outcome of new forms of interactions and new routines, may be a driver for viability. Innovation means that each actor is acting, reacting and interacting with his context. If this interaction has a resonant output, it means that it may be intended as viable.

Source: Authors' elaboration

7 Discussion

The results obtained through the led observation of this case study, show how the Ditron S.r.l. company, although unconsciously, placed itself as an innovator and precursor of new co-creative logics within its own reference context.

Dematerialization and flexibility may be considered as two levereges. Dematerialization determines an impulse that, in a dynamic perspective, push a reaction.

On the other side, flexibility is related to the structural dimension and means a passage from a static to a dynamic perspective of innovation and, then, of viability. Flexibility means that the innovation, that allows the viability, depends on the structure because, moving from the structure, it is possible to pull new form of interactions among actors, and so, new form of value co-creation.

7.1 Dematerialization pushes new institutions for innovation

Innovation in this case study depends on the introduction of new technology, but not on the simple entry into the market of the new device itself.

Technology can be understood as an operant resource that has favored the emergence of a new type of service ecosystem. The new ecosystem with new logic of integration of resources has been the

actual innovation. Ditron S.r.l. understood that it had to requalify not only its own production, but also its own nature and mission.
Ditron S.r.l. intended that was useful to propose himself as a service and solutions provider and no longer merely as a machine supplier.
It was not important to put the attention on the product, because it is now intended as a tool to create and share knowledge. They understood that allowing his customers to be more aware of consumers' preferences, tastes and behavior, could help them to be reactive to their expectations. In this way, retailers would improve their sales capacity.
Retailers may re-define their value proposition; following the Frow et al. (2014) interpretation according to which in SES relationships between actors are based on their value propositions, we may say that the new technology, in this case, allows new form of relationships between actors and new types of resources to integrate, so a new kind of service ecosystem shaped through the innovation.
Innovation in this sense has been given by the new relationship capacity of the various players on the market, favored by the new technology, and by different types of integrated resources. In particular innovation, in this case, is led by knowledge (Kaartemo et al., 2018).
In fact, as Koskela-Huotari et al. (2016) say, it does not arise when a new product is introduced in a market, but when its introduction determines new institutionalized practices and solutions to co-create value among actors.
The new possible interactions between actors and the new possible forms of value co-creation have guided and guide the innovative process; innovation depends on institutions that guide the emergence of new resources (Vargo et al., 2015)
In this case, the institutionalization process refers to an institution change (Vargo et al., 2015) and is behind innovation (Toivonen, Kijima, 2018).
As Wieland et al. (2018) say, is not important the technology as a tool, but as an operant resource (Akaka, Vargo, 2015) that acting with other new resources provides a new knowledge and a new way to solve problems.

7.2 Flexibility pulls new routines for viability

The Ditron S.r.l. flexibility arisen by the case study results, underlines the importance to design, in the best possible way, the structure to lead the system emergence.
To be viable, according the Viable Systems approach, a company has to adapt itself to the external stimuli, so has to change its routines to generate knowledge useful to survive (Barile, 2009).
Innovation, that is a result of a complex cognitive process based on selection criteria, is based on routines (Gajendran et al., 2014; Ahrweiler, Keane, 2013; Martins et al., 2015; Xu, 2011).
Ditron S.r.l. owners understood that the external scenario was changing; at the regulatory level, a new form of taxation had been imposed to the companies. The meaning of this perception, for Ditron, was linked to the necessity of a structural and behavioral adaptation in order to be as close as possible to the expectations of their own context.
Ditron S.r.l. began its specific structure reorganization in order to be agile and speed to better fit with supra-systems' needs.
This return to the specific structure has imposed a revision of its initial knowledge domain, and for this reason, the definition of new routines.
Because innovation is based on routine, routines hold the characteristics of innovation in themselves because their reconfiguration produces a smart recombination of the existing practices. It produced an innovation through new learning processes and new routines (Barile et al., 2017).
According to the authors, routines may be considered as institutions and, following this perspective, the introduction of the new technology imposed a reconfiguration of the single role of each actor in the market, in particular Ditron S.r.l. has rearranged itself, from a structural point of view and then from a dynamic point of view.
Flexibility, like a traction force, determined the new structural configuration, which inevitably led to new dynamic interactions between the actors.

Innovation can be understood as an outcome of an accumulation and learning process from the past
This adaptation is necessary to be viable in fact, only with a more effective fitting with the context expectations a company may survive.
In this case, flexibility to survive, has involved new routines, so new institutions, that have defined an innovation process.
In fact, to be viable, is not only important the ability to adapt, but the outcome of this adaptation. Innovation, considered as the outcome of new co-creative process, in this case is intended as the effective outcome of the adaptation so as a driver for viability.
This analysis allows to answer in an affirmative way to the R.Q.1 stating that it is possible to consider innovation as an element able to shape new forms of service ecosystem, but it is not possible to understand, through the observation of this case-study, how much every actor can actually pursue his own viability.

8 Limitations

These considerations about Ditron S.r.l. case have some limitations, in fact as the interviewees said, going far from Ditron S.r.l. and all the potential effects of its actions on the market and moving towards the reference market, retailers have curbed innovation. Retailers resisted for the age, in fact they do not agree the total digitalization for the management of the sales point and therefore also of the relationship with consumers. They were opposed even for skills held, often not appropriate for using digital tools. At least, they resisted innovation for fear of leaving "the old way for a new way" which could imply uncertainties and a greater error probability.
The case study results highlight that retailers implemented the new technology proposed by Ditron S.r.l. only for brand retention motivation; this cash point is even more expensive than others proposed by competitors. They are now using this technology but are not exploiting its full features. Data collection activity from sales point has been started. From a static point of view, the innovation's conditions have been generated: technology has led to the emergence of new relationships and resources at stake and therefore a structural reconfiguration, but not new co-creative processes have still been completely implemented. Due that, Ditron S.r.l. for example has not yet managed to integrate its new potential data processing proposal with all its customers, and some retailers have not yet begun to use information that technology can detect as a tool to support decisions in the relationship with customers.

9 Non-conclusive considerations

Institutions allow innovation, when these new rules become routines and actors are all actively involved in the value co-creation process, whose outcome is the innovation co-creation, everyone manages to pursue a condition of mutual winning and to survive.
The present case study proposes a re-reading of the concept of innovation in the retail sector and it suggests to consider new technologies not only as enabling tools but to understand innovation as the emerging result new behaviors deriving from new relationships and new ways of integrating resources, also based on new types of resources.
Innovation is not only connected to the introduction of a new device, but it appears when the active and aware contribution of each actor produces effects.
The Ditron S.r.l. case, in its limitations, is an example. In this work was taken as main point of view the technology supplier perspective. According to it, the implementation of this new tool would have involved new possible actions on the market by everyone. Nevertheless, the technology has not been accepted and used by everyone, so it has not yet really produced an effective innovation on the market; it has only defined the structural innovation conditions, through roles' reconfiguration, held resources' recombination and relationships' redesign. When each actor will activate this static dimension in a synergic way, will begin to integrate resources according to these new rules, innovation will begin to produce its own results on each one.

The limitations of this study lie in the own nature of this work. As possible future insights it is thought to study, through a quantitative empirical analysis, what were the actual results achieved by the actors using that technology to its full potential and which the results obtained by Ditron S.r.l. with the performance of its new tasks, relating to its new enabling role of data processing and managerial consultancy.

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