

Smart cash point in a B2B market to enable service innovation: towards transparency and shared intentions- a case study

Antonietta Megaro

Department of Business Science, Management and Innovation Systems, University of Salerno, Salerno, Italy

Abstract

Purpose – This work tries to detect the factors that can impact service innovation in the retail sector according to a service ecosystem (SES) perspective. This paper aims to understand whether it is possible to study innovation focusing on the impact of technology on resource integration practices in SESs and to rank different patterns of innovation by evaluating their effects in terms of value co-creation.

Design/methodology/approach – To show up the perception of actors, a case study has been carried out through semi-structured interviews. The aggregates of practices and the service innovation archetypes, drawn from the theoretical background, have been used as categories of analysis.

Findings – Service innovation is reconceptualised as the result of the application of new technology to resource integration practices in the retail SES, and it is possible to rank its patterns and outcomes by deepening its effects on the emergence of value co-creation phenomena. Shared intentions have been identified as drivers of service innovation, but greater transparency in systems used to embolden a higher willingness to use could be necessary.

Originality/value – Service innovation has been studied by focusing on value co-creation; for this reason, the willingness to use technology emerged as a determinant of service innovation. This result implies the need for a multilevel reinterpretation of contemporary SES, both regarding the technical features of digital solutions and their adherence to users' skills and the effects of willingness or unwillingness to use on value co-creation.

Keywords Service innovation archetypes, Service ecosystems, Technology, Resource integration, Value co-creation, institutionalization

Paper type Research paper

1. Introduction

The retail sector is today affected and characterised by a deep digital transformation (Pantano, 2020) that has entailed a total paradigm shift: from the consumer entering the physical environment for purchase to the retailer entering the consumer's private environment through mobile devices, anytime and anywhere (Shankar *et al.*, 2010). For this reason, new business models could prove useful for the management of emerging problems (Barile *et al.*, 2018).

More recently, retailers have also had to approach omnichannel strategies with the consequent need to equip themselves with specific skills (Brynjolfsson *et al.*, 2013); this condition in Italy is due to restrictive regulations and small companies, which are becoming less competitive than large international chains (Ziliani *et al.*, 2011).

In the literature, digitisation has often been analysed by investigating its effects in terms of value co-creation, considering the growing involvement of consumers in the co-production of services, thanks to the use of digital technologies (Breibach and Maglio, 2016; Pantano *et al.*, 2018). Consumers can compare, in real time, the different proposals in terms of prices, packaging and delivery methods, more or less distant (Akaka and Alden, 2010).

The attention has come to be focused on experience. Alexander *et al.* (2009), for example, investigated the impact of buyers in the transition from the retail store to stores characterised by self-activity services, thanks to a perception of a more reasoned and more emotional shopping experience; the experience is no longer to be understood as a mere shopping experience in a physical store but as an online and networked experience in which consumers become part of the lived and sought-after experience (Pantano and Gandini, 2018) and potential online value co-creators (Hajli *et al.*, 2017).

Current technologies can improve the consumer shopping experience by personalising it, reducing perceived risk, favouring a better predisposition to positive word of mouth (Roy *et al.*, 2018) and greater engagement towards retailers' value propositions. In general, they can streamline and enhance the experience for both service providers and customers (Kruja *et al.*, 2019).

Companies must simultaneously engage in digital transformation (digitisation) and the incorporation of

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services (servitisation) to create value, especially in business-to-business (B2B) contexts, to exert a greater influence on performance (Martín-Peña *et al.*, 2019).

It is therefore believed that retailers must calibrate and organise their technological investments based on the potential they ensure in terms of value co-creation, expecting useful guidelines to simplify the emergence of phenomena of co-creation of value with the customer (Bahn *et al.*, 2015), as planning activities useful for value co-creation, defined on the basis of customer feedback, to maximize the consumer shopping experience turns out to be more profitable (Jafari *et al.*, 2015).

However, higher prices and fears related to the protection of privacy are inhibiting factors with respect to the use of smart and connected products (Mani and Chouk, 2017). For online purchases, a direct correlation between platform reliability perception, protection of privacy and trust in value propositions was recorded (Suki and Suki, 2017).

In this sense, big data analytics would allow individual retailers a greater and better understanding of consumers and their preferences (Hänninen *et al.*, 2018), increasing their information sharing performance, thanks to cloud computing and smart device solutions (Chan *et al.*, 2017).

To properly exploit the innovation opportunities offered by new technologies through the redefinition of information sharing and resource integration, there is a need to understand how digital transformation reframes interactions (Taiminen and Karjaluoto, 2015) and value co-creation practices in service ecosystems (SESs) (Ciasullo *et al.*, 2018; Sklyar *et al.*, 2019), thus contributing to their viability (Ciasullo *et al.*, 2021). Value co-creation implies the transition of customers from passive targets to active players, and through that, the supplier can create superior value propositions, while customers can determine value when a good or service is consumed (Payne *et al.*, 2008). Value is created by and for all actors from a win-win perspective (Polese *et al.*, 2017a, 2017b).

Specifically, there is a lack of studies in the literature on the conceptualisation of resource integration among multiple actors and innovation outcomes (Patrício *et al.*, 2018) considering the impact of new technologies on the emergence of value co-creation phenomena (Stegmann *et al.*, 2021; Manser Payne *et al.*, 2021). Moreover, extant research does not adequately conceptualise the key dimensions and the potential outcomes of service innovation according to an all-encompassing view (Carlborg *et al.*, 2014; Helkkula *et al.*, 2018), and while some B2B companies approach innovation, for example, by using digital marketing, most of them are unable to reap its full benefits due to the scarcity of comprehensive research on the subject (Pandey *et al.*, 2020).

For this reason, this paper seeks to analyse the emergence of different patterns of innovation in the retail context analysed as a SES, a self-regulation and self-regulation system in which related heterogeneous actors interact and integrate resources with the aim of co-creating value (Polese *et al.*, 2021c).

The study aims to answer the following research questions:

- RQ1. How can technology influence resource integration practices in SES by fostering service innovation?
- RQ2. Is it possible to identify different patterns of service innovation to evaluate their effects on value co-creation?

To address the first RQ in this work, we will evaluate how introducing new technologies can modify the resource integration practices proposed by Skälén *et al.* (2015). Afterwards, to deepen the second one, innovation outcomes will then be analysed through the SES perspective, which allows focusing on the commitment and resources of all the actors involved in the co-creation of value, using the archetypes of service innovation (Helkkula *et al.*, 2018).

The paper is structured as follows: after the description of the theoretical background (Section 2), useful to draw the drivers used for the analysis, results the Ditron Ltd. (Ditron) case study has been proposed (Section 3). The discussion of the case study (Section 4) allows answering the research questions by focusing on resource integration practices (Subsection 4.1) and on service innovation archetypes (Subsection 4.2). From the discussion of the results (Section 5), two key concepts emerge (Subsections 5.1 and 5.2). The work ends with the highlighting of non-conclusive considerations (Section 6).

2. Theoretical background

2.1 Service innovation from a service ecosystem perspective

A SES is a relatively self-contained and self-adjusting system (Vargo and Lusch, 2016) in which actors are stratified and nested within three ecosystem levels (micro, meso and macro levels) (Chandler and Vargo, 2011). Actors integrate resources based on shared institutional arrangements and mutual value creation, sharing the purpose of pursuing general well-being (Vargo and Lusch, 2017) by pursuing their individual well-being (Kuppelwieser and Finsterwalder, 2016). SES can be considered value-creating systems (Ramirez and Mannervik, 2008) in which actors are willing to share their own resources, as they are attracted by the value propositions of others (Frow *et al.*, 2014). For this reason, SES provides a more systemic and holistic understanding of value co-creation (Vink *et al.*, 2021).

In a SES, there are coordination mechanisms, *institutions*, understood as emerging social practices, not established and pre-established structures (Wieland *et al.*, 2016), such as tacit rules, symbols, meanings and tacit “rules of the game” (Koskela-Huotari and Vargo, 2016), that are able to modify human behaviour and coordinate the interactions and resource integrations among actors (Vargo and Akaka, 2012; Gambarov *et al.*, 2017). Institutional agreements, made up of sets of institutions, can coordinate the interactions among the different SES levels (Vargo *et al.*, 2015).

SES emergence, based on shared intentionality (Taillard *et al.*, 2016), entails the development of new properties, such as new resources, value, institutional arrangements and practices, and is derived from the interactions of actors and resources (Polese *et al.*, 2021b). Emergence, with institutionalization, can be understood as constitutive processes in the creation, maintenance or interruption of SES (Vargo *et al.*, 2022).

According to service-dominant logic, innovation is the combinatorial evolution of new useful knowledge and practices providing new solutions for new or existing problems (Vargo *et al.*, 2015), leading to the creation, renewal and transformation of pre-existing knowledge (Toivonen and Kijima, 2019) in a recombination process of

integrating existing resources or inventing new resources aimed at redefining value propositions (Åkesson *et al.*, 2016).

Innovation takes place in a network of actors (Nambisan and Sawhney, 2011) who integrate their resources to co-create value, which allows an expansion of the density of resources and favours the emergence of innovation (Colurcio *et al.*, 2017; Caridà *et al.*, 2017) and are interested in innovation co-generation, through an open process co-created by all actors involved (Mele *et al.*, 2014).

Innovation, according to the service perspective, is focused on the end user (Helkkula *et al.*, 2018), who has become a co-innovator (Mele *et al.*, 2010). In fact, innovation can be fostered by a bottom-up approach from skilled users, forcing a revision of the traditional boundary between professionals and amateurs (Quattrociocchi *et al.*, 2017) and requiring enterprise marketers to develop five capabilities for realizing value innovation in an Industry 4.0 environment (Matthyssens, 2019).

Helkkula *et al.* (2018) propose a value-centric service innovation perspective based on the integration of four archetypes with different effects in terms of value co-creation.

According to the first archetype, output-based innovation depends on the proposal of a new offer, guaranteeing effects in terms of *value-in-exchange*.

For the second archetype, process-based innovation determines a change in the service creation process, which requires changes in skills and knowledge, with effects in terms of *value-in-use*.

The third archetype is experience-based and conceptualises innovation as strictly linked to the changing individual consumer's experience, thanks to the new proposal; it implies effects in terms of *value-in-experience*.

The fourth archetype refers to the system dimension of innovation: innovation is the outcome of a reconfiguration of resources, actors and institutions, with effects in terms of *value-in-context*.

This approach, and the fourth archetype, is consistent with the innovation concept proposed by Koskela-Huotari *et al.* (2016), according to whom innovation does not occur when a new product, or a service, is introduced into a market, rather it is a process that develops through changes in the institutional arrangements that regulate the integration practices of resources in SESs.

Following this interpretation, technologies can foster service innovation (Vargo *et al.*, 2020) and are understood as an operant resource that, acting on others, contributes to the creation of value, service innovation and systems training or retraining (Akaka and Vargo, 2014).

Innovation depends on the institutions that lead to the emergence of new resources and on institutionalization, such as the maintenance, disintegration and change of institutions (Vargo *et al.*, 2015).

Witell *et al.* (2015) hearten to go beyond the positive aspects of innovation, moving steadily towards a concept of innovation understood in its social and behavioural meaning (Kashef *et al.*, 2021).

Innovation can be understood as co-created through a set of new practices performed by actors who integrate resources to improve the value proposition (Russo-Spena and Mele, 2012).

Due to the recognised impact of technology on value co-creation, there is the need to also observe how introducing new technologies can modify resource integration practices. For this

reason, Skålén *et al.* (2015) reframe value proposition as a configuration of different practices that can be described through three aggregates: provision practices, representational practices, managerial and organisational practices.

Provision practices entail the development of interaction practices and operating practices that ensure the fulfilment of value propositions by properly satisfying customers' needs in line with their expectations and fostering value creation.

Representational practices concern the articulation and communication of the value proposition both internally and externally through the enhancement of information sharing and resource integration between actors.

Managerial and organisational practices provide and share value propositions by aligning provision and representational practices and the resources integrated through these practices (Skålén *et al.*, 2015). They can involve team-building practices, networking practices and knowledge-sharing practices.

Innovation can result from an adaptation in which existing resources are integrated in new ways through existing practices, from the integration of new resources through existing practices, the integration of existing resources into new practices or from a combinatorial process of new resources through new practices (Skålén *et al.*, 2015).

3. Methodology

To address the aim of the paper of evaluating to what extent the introduction of digital technologies in the retail sector can stimulate a service innovation, the research adopts an exploratory approach based on a case study (Yin, 2009), a qualitative technique that is strictly connected to the perception of users and allows deepening the "how" and "why" of a given phenomenon (Swanborn, 2010). Through case studies, empirical research seeks to investigate the phenomenon by favouring the free expression of the interviewees and the spontaneous emergence of ideas and solutions (Flyvbjerg, 2011) to replace, according to an inductive approach (Thomas, 2006), theoretical constructs or propositions starting from empirical evidence (Eisenhardt and Graebner, 2007). The exploration of the observed phenomenon allows a better interpretation and description, thanks to easier identification of the problem (Tellis, 1997).

3.1 Research design

The research path was defined based on the key concept of this work, service innovation, which allows the identification of the categories of analysis.

Given that, as clarified in the theoretical background, to foster a service innovation, new resource integration practices, or existing practices to integrate new resources or existing resources in new ways, must be stimulated and become institutionalised, the categories of analysis of the present work have been identified in the aggregates of practices identified by Skålén *et al.* in 2015:

- *provision practices*, aimed at improving the satisfaction of customers when they approach the value proposition;
- *representational practices*, to allow effective communication between the parties and ensure that the entire value proposition is described, has meaning and significance and is communicated both internally and externally; and

- *managerial and organisational practices*, through which the focus is on the definition and transmission of the value proposition, with attention both within the company and externally.

However, given that an analysis of the practices produced by the new technology is not sufficient to analyse the different outcomes emerging from service innovation, the results related to each category of practices will be analysed as outcomes of innovation in terms of value co-creation by using service innovation archetypes as an interpretative lens (Helkkula *et al.*, 2018).

For this reason, organisational practices and managerial practices will be split into two different categories of practices because they can influence, in a different way, the emergence of value co-creation phenomena.

3.2 Selected case: Ditron

The case study of this work concerns the analysis of Ditron company, as it is a virtuous case of a national leader in the design and production of cash registers and scales, always heedful to contextual and market need changes and *first mover* in its reference market.

Ditron is a company engaged in a B2B market, and its main target is retail, organised distribution and large organised distribution; as of 2008, it is an undisputed leader in the retail market with a market share of over 50%. Ditron is one of the main players in the Italian market. Ditron, always careful to contextual conditions and emergencies, observed and reacted to one of the most important changes in the commerce sector in Italy: the introduction of the mandatory nature of electronic invoicing and the transmission of fees to the Revenue Agency for all points of sale (starting from 2020), forcing all merchants who issued invoices for their business to set up internet connectivity within the shop and to exchange their cash devices with advanced devices that would allow telematic transmission of immediate invoices.

The company, thus, had to respond promptly to the needs of its target by offering technologically advanced and complete solutions through product innovation.

The new solution is a new type of cash register that enables a smart cash point because of the application of software to hardware that allows the transmission, per second, of the fees and data collection activity. The collected data can favour more precise and functional decisions for the survival of companies (Carrubbo *et al.*, 2017). Ditron aims to become a smart factory

capable of co-creating and disseminating knowledge and sharing information and decisions.

3.3 Data collection and analysis

To carry out the case study and, specifically, the data collection activity, 20 interviews were conducted with the top management of the company, which is on the property in Ditron. The interviewees are considered key informants (Eisenhardt and Graebner, 2007) and therefore experts on the phenomenon studied and not representative of the general population.

A reasoned-choice and non-random sampling method was used for the selection of key informants, given the explanatory and non-descriptive purpose of the research. The actors involved in the decision-making process of Ditron were therefore selected: the directors of the various functions involved in the introduction of the new technology, such as the director of the sales/marketing function, the director of the production function, the director of the R&D function and the director of the administration and finance function (Table 1). They have been considered expert representatives for research purposes, being aware of the different phases of the introduction of the new technology in their market, from the initial analysis of the situation to testing its usefulness in the design phase, both at the launch and in the marketing phase.

Each participant was interviewed four times for each step related to the implementation of the new innovative proposal (from the design to marketing phase).

The interviews, which lasted approximately one hour each, were recorded and then transcribed. They were led using semi-structured questionnaires in which key concepts had been defined as conversation drivers. This type of flexible conversation allowed us to grasp some key inputs considered relevant and strategic by the interviewees in their performance, so-called *active data* (Holstein and Gubrium, 2016). These data have been considered as starting points for new, unplanned questions, useful for enriching the understanding of concepts incorporated in the information sought, or for enriching them, to improve the quality of the detectable results. The transcripts of interviews, considered primary data, were analysed with thematic analysis (Braun and Clarke, 2012) by using a logical inductive approach. After preliminary familiarization and coding, themes were generated based on repeatedly expressed concepts. The themes have been reviewed and named, connecting them to the theoretical framework, to contribute, with empirical evidence, to the theory validation.

Table 1 Key informants and responsibilities in the innovative process

Interviewee's position in Ditron	Responsibilities in the innovative process
Sole director	Decision maker and booster of the guidelines for the strategies to be implemented according to the corporate vision, mission and macro-objectives
Commercial/marketing director	Study of the commercial feasibility of the new proposal: from the market analysis, in the pre-realization phase, to marketing plan design and to the introduction of the new proposal in the market, in the post-realization phase
R&D department manager	Design and prototyping of the new device
Production department manager	Actual production of the new technological tool
Director of administration and finance	Evaluation of the economic and financial impact of the introduction of the new technology
Source: Author's elaboration	

4. Findings

The introduction of a new tax regulation, which required the traceability of payments to retailers, meant that Ditron Ltd. reformulated its proposal on the market. This event generated the birth of a new SES characterised by old and new actors, new ways of relating, new logics of interaction, new resources to be integrated and new co-creative practices. The analysis reveals the main resource integration practices (RQ1) and the key patterns of innovation (RQ2) developed by Ditron through the creation of a new technological ecosystem that supported the renewal of the value proposition.

4.1 RQ1: resource integration practices

During the data analysis carried out according to the theoretical framework, considering the practices as research drivers, four main conceptual nodes emerged, as can be deduced from excerpts from the interviews (Table 2).

4.1.1 Provision practices: data exchange as blueprint of a new value proposition

The speed with which the context evolves and changes requires companies to continuously identify and propose new solutions; for this reason, Ditron felt the need to retrain its proposal from the mere production and supply of a good. Although the product offered was, in any case, the cash register or the scale, thanks to the integration of a software system with the hardware and a cloud storage system, this product allowed us to acquire data that, once processed, would have enabled retailers to make more informed decisions based on more precise information.

Ditron, as a machines supplier, has therefore understood the disruptive importance of an approach oriented towards dematerialisation and has therefore begun to propose itself to its customers as a supplier of solutions through data (as shown in Table 2). Ditron allows retailers to collect data stored in the cloud. Retailers could access this cloud platform (Sixtema), managed by Ditron, following specific negotiations.

Retailers could have access to this cloud platform (Sixtema), managed by Ditron, following specific negotiations. The technology is placed on the market by Ditron and supplied to retailers to enhance the exchange practices on the market; the data are exchanged between the consumer and the retailer at the payment and, through the cloud platform, are returned by Ditron to the retailer as information.

4.1.2 Organisational practices: data-oriented organisational patterns through new resources and skills

The practices included in this aggregate are organisational and team-building practices with which work is organised and roles are assigned, based on skills, to optimize the process of defining the value proposition.

Ditron understood that it had to deal with the innovative processes undertaken by continuously reorganising its structure. Over time, it has thus taken the form of a fragmented company organised into different business units, each oriented towards its own reference market. Fragmentation, based on a functional structure enriched with logical units relating to different functional areas, both internal and in outsourcing, has made it increasingly agile and quick to react and manage contingencies to preserve its competitive position and its market share.

The introduction of the new technology has led to the need to integrate a new unit specifically dedicated to the management of new ICT technologies within its structure. This, as is also clarified in the literature, determines the need to acquire or develop new skills (Visvizi *et al.*, 2021); in Ditron, this process was implemented through new hires or specialist training, new technological resources useful for data collection and processing and new collaborative relationships with software houses (as shown in Table 2).

Even the retailers, through the data, could have obtained information on the capacity of their structure, identifying the physical areas of the store that perform best, concerning the largest number of purchases recorded and the performance of their employees. It could allow retailers to define strategies aimed at greater efficiency in terms of

Table 2 Extracts of interviews

Aggregates of practices	Extracts of interviews
Provision practices	"In recent years, we have completely changed our vision, understanding that we must increasingly place ourselves as service providers . . . to be able to reply more effectively to customer expectations, whose approach is: 'You do it! I don't want problems!'. . . we understood that today data are more important than machine [0..] we are no longer just cash register sellers but we propose a solution made up of a series of integrated objects that, through their integration, solve a problem . . ."
Organizational practices	". . . we periodically organize for our staff training courses on the technological innovations proposed . . . we periodically organize events in which we invite our best dealers, to enhance and reward the budget results achieved, but also to share the organizational culture . . ."
Representational practices	"Thanks to the collaboration with Repas Ltd., we can collect not only generic data of anonymous consumers, but personal data of clearly identifiable consumers . . . previously retailers only had a receipt value to monitor the densest time slots . . . now they can have more information for more informed decisions . . . acquiring, sharing and using this information can help them improve their performance according to customers . . ."
Managerial practices	"We have always recognized the importance of the network, in fact, our mission is based on the idea that different players operating within the same context must tend to weave networks of connections that amplify the built and disseminated message . . ."

Source: Author's elaboration

resource management and effectiveness in terms of achievable results.

4.1.3 Representational practices: personal data-based proposals drawn, thanks to new partnerships

These practices involve the description and modelling practices being useful for making value propositions meaningful and the interaction practices through which the company communicates value propositions to customers or creates them collaboratively.

During the interviews, the importance of having outlined, following the introduction of the new technology, new ties with actors operating in the same context but hitherto distant in terms of resource compatibility emerged several times. Among them, Ditron underlines the strategic importance assumed by the collaboration established with the company providing food vouchers, for certain categories of workers, Repas Ltd.

This condition appeared particularly interesting, as it laid the foundations for the redevelopment of Ditron's value proposition to its customers but also of retailers to consumers. Ditron is thus configured not only as a data supplier but also as a personal data supplier (as shown in Table 2).

The relevance of personal data is disruptive: merchants could have acquired more detailed information on consumers and been able to observe their purchasing behaviour and preferences. This would enable them to design increasingly personalised offers based on the needs and preferences detected for each one, thus establishing a direct relationship with consumers focused on their emotions and on the proposal of an increasingly unique shopping experience.

4.1.4 Managerial practices: data-driven culture fostered by a shared intention

These practices are networking and knowledge-sharing practices through which the focus is on dialogue with the outside world and resource integration.

Ditron, through its new proposal, intended to enhance and share knowledge associated with the collection and analysis of data capable of generating information flows.

This inevitably requires moving beyond the boundaries of the company into a network of actors and resources (as shown in Table 2). In redeveloping the cash point, Ditron not only responded to a regulatory imposition but also wanted to redevelop the entire shopping experience within the store for both the individual point of view and its goals for survival, complying with a win-win perspective. A series of actors could benefit, for example, retailers, store employees and actors embedded in the consumer network.

The Ditron context is here understood as a SES, the formation of which depends on an emergency process in which the development of shared intentions allows collective action (Taillard *et al.*, 2016) and on activities and interactions in

which actors connected by shared institutional logic integrate and use the available resources (Lusch and Vargo, 2014). It is clear that the enhancement of knowledge, as understood by Ditron, is possible only if all SES actors share the same vision regarding device usefulness, centred on a culture that, in this specific case, is data-driven, to generate a shared intention.

However, the interviews repeatedly showed a resistance degree of retailers. There is a high percentage of Ditron customers who have not subscribed to access the data collection platform and use the tool as hardware without aiming to reconfigure their value proposition by benefiting from the information acquisition service connected to it.

Although the need for joint action for a collective benefit has been stressed several times, this condition has, in fact, undermined its effective implementation in practice.

4.2 RQ2: the service innovation archetypes

The results detected in the case study allow us to identify some enabling factors (Table 3) potentially capable of impacting the innovation proposed by Ditron. The new cash point, as designed, could allow actors to use data and information to create and share knowledge useful for improving the relationship with the customer and greater operational efficiency of the structures.

Thanks to the new technological tool, actors could review their interactions, generating new institutions and shaping new value co-creation processes, with effects within the SES observed as a whole.

To analyse the different kinds of novelties developed by Ditron, service innovation archetypes (Helkkula *et al.*, 2018) have been used (Table 4). It is possible to argue that the company, albeit unconsciously, has placed itself within its reference market as a supplier of a potentially innovative proposal, stimulating new co-creative dynamics among actors.

The new provision practices, characterised by a new value proposition based on the exchange of data, can produce effects in terms of *value-in-exchange*, as an offer not previously available to the customer, intended both as a retailer (customer of Ditron) and as a final consumer (potential customer of the retailer). The new value proposition is based on data, considered the main resources, which through the introduction of the new technology could now be shared and integrated.

Different levels of the SES are involved: the technology is provided by Ditron to the retailers, the data are provided by the customer to the retailers at checkout and, through the cloud platform, are given back by Ditron to the retailers in the form of information.

New organisational practices, characterised by new data-oriented organisational patterns based on new resources and skills, can produce effects in terms of *value-in-use*. Both Ditron

Table 3 Case study results and service innovation enabling factors

Aggregates of practices	Results	Enabling factors
Provision practices	Data exchange	New value proposition
Organizational practices	Data-oriented organizational patterns	New resources and skills
Representational practices	Personal data-based proposals	New partnerships
Managerial practices	Data-driven culture	New vision based on shared intention
Source: Author's elaboration		

Table 4 Case study results and service innovation enabling factors and archetypes

Aggregates of practices	Results	Enabling factors	Service innovation archetypes
Provision practices	Data exchange	New value proposition	Output-based archetype
Organizational practices	Data-oriented organizational patterns	New resources and skills	Process-based archetype
Representational practices	Personal data-based proposals	New partnerships	Experiential archetype
Managerial practices	Data-driven culture	New vision based on shared intention	System archetype

Source: Author's elaboration

and retailers can now review the organisation of their structure, equipping it with new specialist skills that can improve the consumer's perception of value at the moment of use. Ditron has hired new staff with new specific skills in data analysis. To improve the quality of the service offered, retailers could reorganise their store, enhancing the spaces and skills deemed most interesting by consumers based on the greater impact on the bill.

Representational practices, characterised by personal data-based proposals, are possible, thanks to new partnerships and can produce effects in terms of *value-in-experience*.

The provision of the consumer's personal data can produce a double effect: it makes Ditron's proposal more interesting for its customers, as it is able to potentially improve their value proposition and performance; consequently, it can allow retailers to implement a new decision-making method focused on consumers, which goes beyond the concept of offer and aims to involve the consumer in an increasingly personalised experience to establish a lasting relationship, favouring a co-creative perspective.

Managerial practices, characterised by a data-driven culture spread, made possible due to a new vision based on a shared intention, could influence the *value-in-context* by determining new ways of integrating resources among actors which, once institutionalised, actually determine innovation.

The new technology imposes a cultural change in the ways in which actors establish relationships and interactions focused on the exchange of knowledge and new resources useful for co-creating value.

5. Discussion

The results of the case study, obtained through an inductive approach, make it possible to contribute to the literature by answering both research questions (*RQ1* and *RQ2*) in an affirmative way.

These findings allow reinterpreting service innovation as a result of new technology-mediated resource integration practices in SES (*RQ1*), detected due to the use of the practices classification of Skálén (2015), and conceptualising the outcomes and patterns of innovation by exploring their effects in terms of co-creation of value (*RQ2*), using the archetypes of Helkkula *et al.* (2018).

However, a relevant factor emerged from the case study: the resistance registered by retailers to adopt all the functionalities related to the technology has led to a stop in innovation. This result is coherent with the developments today in the sector, as also demonstrated by the Adyen study (Adyen Retail Report 2022) concerning retailers in Italy. Although these are aware that digital transformation can represent a significant lever of

growth, only 22% of them have already started a process of digital integration of the business to meet new consumer needs, such as the offer of a buy online–return in-store service. This reveals the relevance of actors in the co-development of innovation and can represent an insight for future research that should further explore the role played by the final customers and the impact suffered by them in the context of the digital transformation in SES. Therefore, in the following paragraphs, two of the main critical issues that emerged from the case will be discussed to also highlight future lines of research on service innovation.

5.1 Greater transparency to boost shared intention

Retailers have held back the innovation proposed by Ditron for many reasons. Firstly, the retailers' age, size and lack of technological skills have led to difficulties in planning the complete digitalisation of the store; however, uncertainty about the future and error fears, as well as the characteristics of one's business (typically family business in small stores based on a direct and long-standing relationship with consumers), have contributed to slowing down innovation.

However, greater use of technology seems to be the only way for small retailers to preserve their competitiveness and increase profitability (Aithal *et al.*, 2022), but it is required that these smart technologies be simple and capable of improving the end customer experience through improved purchasing efficiency (Roy *et al.*, 2018) to support them in building a brand image among their consumers (Ram and Selvabaskar, 2022).

Doubts concerning cloud security arise due to the loss of control and transparency over the data and processes running in the cloud, which can undermine user confidence in these systems (Flittner *et al.*, 2016). Cloud service providers must act in terms of protecting the transparency of security in the cloud, activating and communicating security practices implemented to protect the data and processes entrusted to their management, to increase customer confidence in the use of the cloud service (Ismail *et al.*, 2016). It is believed that the resistance of organisations to adopt cloud computing solutions, despite the advantages offered, depends precisely on a lack of security transparency, generating little trust and doubts in terms of responsibility (Ismail and Islam, 2020).

Oliveira *et al.* (2014) argue that understanding the determinants of cloud computing is critical to driving adoption. They detect five factors that can influence cloud computing adoption: relative advantage, complexity, technology readiness, top management support and company size. Complexity is understood as the perception of innovation difficulties to understand and use (Rogers *et al.*, 2014). According to Borgman *et al.* (2013), the technological and organisational context can influence implementation decisions. Meanwhile,

data security and confidentiality and privacy concerns, although they may not be effective inhibitors (Oliveira *et al.*, 2014), commonly emerge as the main concerns of users (Armbrust *et al.*, 2010).

Given that Ditron's customers are small retailers, reluctant to change and with poor technological skills (according to what emerged during the interviews), it might be useful to share with them a broader vision to enable them to use the new technology, where the pursuit of one's own individual benefit depends on the pursuit of a common benefit. The ability of an actor to recognise himself as part of a system, made up of other actors with the will to survive themselves in the system, causes actors to be willing to act "for" the system's survival, co-creating value for the whole system and not directly for them. This means that individualism is overtaken by a much broader concern, which is the survival of the system (Polese *et al.*, 2017a, 2017b).

Therefore, it can be argued that greater transparency in cloud computing design and data processing could support retailers in a better understanding of the technical specifications and potential of this device and greater confidence in change.

5.2 Shared intention as a service innovation driver in service ecosystem

Facilitating the development of shared intentionality at every level favours greater opportunities for value co-creation, closely linked to service innovation, understood according to the SES perspective.

Intentionality implies the commitment of individuals to take actions and achieve their goals, while shared intentions imply that actors participate in a shared activity, therefore favouring interdependence and the emergence of SESs (Taillard *et al.*, 2016). When the actions envisaged by the actors are interdependent, they develop shared intentions. Among the mechanisms that characterise these intentions are the conditions of shared knowledge. To pursue stable change, the adoption of an innovation mindset (Troisi and Grimaldi, 2022) and a learning orientation must be pursued (Troisi *et al.*, 2021).

Shared intentions contribute to fostering the institutions within a SES. The SES perspective allows a better understanding of value co-creation emergence dynamics, as social and economic actors propose value and interact through institutions, technology and language to co-create value (Vargo and Lusch, 2010). Therefore, crucial are the coordination mechanisms capable of regulating interactions and exchange, the institutions, which are determined on the basis of shared intentions and impact service innovation, because according to the service-dominant logic, innovation does not emerge when a new product is introduced in a market or a new service is provided (Koskela-Huotari *et al.*, 2016) but when there is the institutionalization of new practices and solutions to co-create value among the actors (Akaka *et al.*, 2017).

Innovation, as a combinatorial evolution of new useful knowledge, is driven by the combinatorial evolution of value propositions and the emergence and institutionalization of new solutions (Vargo *et al.*, 2015). Institutions can outline the usage of technology, which can enable the emergence of new institutions, changing the SES (Barile *et al.*, 2017). Technology is understood as useful knowledge or value proposition, both a result and means of co-creation of value and innovation, able to favour the emergence of new value propositions and new SES

(Kaartemo *et al.*, 2018). A different use of technology can determine a remodelling of actors, interactions and relationships and favour the emergence of new knowledge, values and social practices (Polese *et al.*, 2021a). However, the value of technology could depend on the perception of users (Megaro *et al.*, 2022); in fact, different meanings can be attributed to technology based on personal, social and contextual perceptions (Edvardsson *et al.*, 2018), which can have different impacts on shared intentionality.

According to value-centric service innovation (Helkkula *et al.*, 2018), the latter is understood as a better value co-creation in service innovation. The actors, engaged in mutually beneficial actions in the integration of service offerings with other resources (Gummesson and Polese, 2009) and according to an A4A perspective (Polese *et al.*, 2017a, 2017b), create a viable value (Polese *et al.*, 2018) that is unique for their situation and context.

Actors must share a smart culture by adapting it to environmental changes and gradually co-designing a smart future (Ciasullo *et al.*, 2020).

Retailers have adopted the new technology proposed by Ditron because they are loyal to the brand, even if this cash point is more expensive than others offered by competitors. This shows a high brand loyalty but a substantial difference between brand image and brand identity, as Ditron had designed the new tool as a new value proposition associated with a series of connected services and potential benefits that have not been fully adopted by the market. Indeed, they are now using this technology but are not taking advantage of all its features; in fact, although the conditions for innovation have been potentially posed, no new institutions have emerged among all the actors encompassed within this SES.

This means that the users' shared intentions, in this case provided by the willingness to use the tool, influence the service innovation emergence, which, in turn, depends on institutionalization.

6. Non-conclusive considerations

6.1 Theoretical and managerial implications

The identification of the criticalities emerging in the new ecosystem developed by Ditron allows us to trace the main implications of the work. The new technology alone is not sufficient for innovation but, for the latter to emerge, it is necessary that every actor of the SES acts to favour the institutionalization of new practices and solutions; the shared intentions of the SES actors to use the technology become essential for this to happen, and these could, in turn, be stimulated by greater transparency in the new systems, understood as an enabling factor.

These results have significant theoretical and practical implications. On the one hand, the findings of the case study show the urgency that future research can shift attention to the role of customers and other actors in the innovation process and not only to the technology producer. In fact, the perceived safety of users and their willingness to use technology can potentially influence the emergence of value co-creation by enhancing their perceived risk and preventing them from creating value. Moreover, the study reconceptualises service innovation in the digital era as a combinatorial evolution of new useful knowledge, driven by the redesign of value propositions and by the emergence and institutionalization of new solutions.

In this way, the study addresses the gaps identified in extant studies by showing how digital technologies reframe resource integration and value co-creation practices in retail ecosystems for the development of innovation.

On the other hand, managers can understand the key drivers for enhancing the proper exploitation of digital technologies and for reducing the level of stress of stakeholders in the use of technology. The classification of the different value co-creation practices implemented by Ditron and of the potential outcomes of service innovation can help management detect the different kinds of levels (design, technological infrastructure, strategies, process, experience) on which to reframe value proposition and creation.

6.2 Conclusions, limitations and future research

This work suggests considering each actor an active participant in the innovative process undertaken by a single company within a specific SES context. The empirical research reveals that the single and simple proposal of new technology does not determine an innovation, but to stimulate innovation, each actor must be reactive in reconfiguring his or her own value proposition, resources (Badr *et al.*, 2021) and, where necessary, even the structure.

In this work, it is suggested to scholars and practitioners that the enhancement of transparency in the systems used, both in technical terms (increasingly simple and user-friendly tools are needed given that end-users often do not have adequate skills to use them) and in terms of security concerns and privacy issues, can improve value co-creation.

Transparency poses doubts in terms of skills and approach to technology. Increasingly user-friendly and understandable tools would not only mitigate users' doubts regarding their safety and privacy protection but could also contribute to increasingly central capabilities co-elevation paths regarding the potential of actors to co-create value.

Upskilling could improve the predisposition of users to use them and therefore contribute to determining shared intentions and equifinality with respect to the objectives of the SES actors.

Moreover, considering shared intentions as drivers for service innovation contributes to the potential advancements of the literature, as it suggests that scholars also explore new theoretical variables that have not yet been adequately investigated, which may impact the willingness of users to use the new technology, fostering service innovation through the institutionalization of new practices and solutions.

No actors can be considered individuals and isolated entities. For this reason, the innovation proposed by Ditron has not been fully completed. Retailers have not implemented all the potential provided by the technology, and this has held back the emergence of new institutionalised practices and solutions. In this work, it is therefore supposed that shared intentions can be considered drivers for innovation, but for these to occur, an intervention aimed at greater transparency in cloud computing systems used, both in terms of technical standards and security concerns, could be an enabling factor of willingness to use.

The main limitation of this work concerns the audience of interviewees in the case study: the case study was carried out considering the point of view of one actor (Ditron) who promotes innovation.

For instance, knowing the point of view of the SES actors who have adopted the technology and detecting their perception in terms of utility and value, as well as the point of view of those who have not adopted it, with the aim of extrapolating the reasons, would allow us to validate or not validate the obtained results. The experience lived by retailers concerning the technology would increase the understanding of how much transparency has an impact, from their point of view, so that shared intentions can be generated, and how much their intentions can be compatible with those of other actors, such as Ditron.

This could be the starting point for future research that can propose comparative case studies or multiple case studies to assess the conceptual validity of the categories conceptualised in this study in other SES contexts, to analyse the perception and compare the standpoint of different stakeholders (intermediaries, final customers, IT providers, etc.) and to detect other enabling or inhibiting factors not detected in this analysis.

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Corresponding author

Antonietta Megaro can be contacted at: amegaro@unisa.it