

Co-creation with customers to innovate in a service SME: insights from an action research approach

Co-creación con clientes para innovar en una pyme de servicios: perspectivas desde un enfoque de investigación-acción

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- Article received:
31 January, 2024
- Article accepted:
10 June, 2024
- Published online in articles
in advance:
29 August, 2024

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DOI:

<https://doi.org/10.18845/te.v18i3.7286>

Abstract: Open innovation proposes information exchanges between the company and external stakeholders to improve the results of innovation processes. In this work we adopt the open innovation approach to enhance a company's innovation performance by implementing co-creation practices with customers. To do this, we rely on design thinking, a framework focusing on the relationship with end users, and adopt action research as a research methodology. The research is carried out in a service SME, characterised by being knowledge-intensive and offering innovative and customised services with high value added. We identify several co-creation practices and examine their degree of adoption by the company and prioritise those that should be implemented. For academics, this work contributes to increase the stock of knowledge on co-creation in the context of SMEs. The study offers valuable insights to practitioners into how an innovation framework that incorporates co-creation practices helps to improve the firm's innovation results, while presenting a methodology that facilitates collaboration with researchers on innovation projects.

Keywords: Co-creation; Open Innovation; Design Thinking; Action Research.

Resumen: La innovación abierta propone el intercambio de información entre la empresa y su entorno externo para mejorar los resultados de su proceso de innovación. En este trabajo adoptamos el enfoque de la innovación abierta para mejorar los resultados de innovación de una empresa mediante la aplicación de prácticas de co-creación con los clientes. Para ello, nos basamos en *design thinking*, un marco de trabajo centrado en la relación con el usuario final, y adoptamos la investigación-acción como metodología de investigación. La investigación se lleva a cabo en una PYME de servicios, caracterizada por ser intensiva en conocimiento y ofrecer servicios innovadores y personalizados de alto valor añadido. Se identifican una serie de prácticas de co-creación, se examina su grado de adopción por parte de la empresa y se priorizan las que deben ser implementadas. Este trabajo es de interés para el ámbito académico porque cubre brechas de investigación relacionadas con la co-creación en el contexto de una PYME y el uso de la metodología de investigación-acción en la gestión de la innovación. Para los profesionales, por una parte ofrece conocimientos sobre un nuevo marco de innovación que incorpora prácticas de co-creación para mejorar sus resultados, y por otra presenta una metodología que facilita la colaboración con investigadores en proyectos de innovación.

Palabras clave: Co-creación; Innovación Abierta; *Design Thinking*; Investigación-Acción.

1. Introduction

Innovation management is constantly evolving towards a shift from a closed innovation model, where information neither enters nor leaves the company, to an open innovation paradigm (OI), in which the information flows outside and inside the company are key to maximize its results (Chesbrough, 2003). Co-creation with customers can be considered a particular type of OI (Frow et al., 2015), since it is a way of creating value based on the bidirectional transmission of information to and from customers, who are introduced into the innovative process as if they were an internal part of the company (Vanhaverbeke et al., 2008; Von Hippel et al., 2011). In the literature on innovation management, several authors have highlighted the relevance of co-creation in firms as illustrated by the successful practices that actively incorporate co-creation with customers and other stakeholders (Dodgson et al., 2006; Ramaswamy, 2009; Von Hippel et al., 2011).

In this setting, design thinking (DT) can be considered a method for generating innovative ideas which provides a framework to innovate collaboratively by co-creating with customers (Brown, 2008). It is characterized by being human-oriented and having a strong focus on empathy, experimentation, and the construction of prototypes (Brown & Martin, 2016). Thus, from the beginning of the innovation process, customers provide their needs and both the company and the customer provide knowledge to co-create a solution (Liedtka, 2014).

We focus on the context of an innovative SME aiming at improving the results of its innovation process by incorporating co-creation practices with customers. In doing so, we adopt action research (AR) as the research methods approach. AR is a problem-solving research methodology (Coughlan & Coughlan, 2002), which is especially appropriate when there is a need to design and implement a planned action to address a stated common problem or need for researchers and practitioners. It has been applied in different research fields related to business (Erro-Garcés & Alfaro-Tanco, 2020), such as operations management (Coughlan & Coughlan, 2002), human resources (e.g., Rejas-Muslera et al., 2012), or entrepreneurial promotion in clusters (e.g., Poveda Mora & Leandro Elizondo, 2012). In particular, as it has been stressed in the literature, AR has potential benefits for the improvement of innovation management, due to the proximity and direct access to the entities and people in action in the companies, the high understanding of processes and cultural and tacit aspects in the context, or the possibility of continuation of the participant observation after the realization of the qualitative techniques (Ollila & Yström, 2020; Ottosson, 2003). In addition, the iterative and learning character of AR is particularly beneficial for exploring complex socio-technological problems in the sphere of innovation management (Guertler et al., 2019).

Considering the above, in this work we aim to propose an innovation framework for the development of new services in a small firm, through the implementation of co-creation practices with customers in a context of OI. In doing so, we rely on DT to depict the stages of the innovation process and follow an AR methodology. In particular, we propose the following objectives: (1) determine which co-creation practices with customers have been identified in the literature and how they relate to the DT methodology, (2) diagnose the degree of current adoption of customer co-creation practices in the company, and (3) identify the most suitable co-creation practices to be prioritized according to the current innovation process of the company and its context.

This paper is structured starting with a literature review section, followed by a description of the research methodology and design. Next the main results are introduced, and the conclusions are presented.

2. Literature review

2.1. Co-creation with customers, a way of doing Open Innovation

OI is defined as the use of internal and external knowledge flows to accelerate internal innovation and expand markets for external use of that innovation (Chesbrough, 2003). A few years after intense work in the field, H. Chesbrough redefined the concept as the paradigm that assumes that organizations can and should use both internal and external ideas, as well as internal and external channels to market, while continuing to advance their technology (Chesbrough, 2014), creating value during the process for all parties involved. OI therefore requires the creation of value networks.

Companies that are more successful in their innovation results are those that are better able to connect with different external collaborators, as well as with customers (Ind & Coates, 2013). The concept of value co-creation has been developed as a new paradigm in the management literature in recent years, which allows companies and customers to create value through their interaction with organizations (Ribes Giner *et al.*, 2017). The most common co-creation process is focused on vertical collaborations with customers or suppliers (Lafuente *et al.*, 2023). Customers are actively involved in working with firms to create value, not only for themselves but even for the general public at large, including such social issues as ethics and the environment (Lee *et al.*, 2012). Defined as the joint, collaborative, concurrent, peer-like process of producing new value, both materially and symbolically (Galvagno & Dalli, 2014), co-creation is a way of doing OI (Frow *et al.*, 2015), and is used as an effective way to innovate the business model and improve the effectiveness of the innovation process (Chesbrough & Schwartz, 2007; Hidalgo & Herrera, 2020). Some previous reviews of the literature about co-creation are as follows: Ranjan and Read (2021), Leclercq *et al.* (2016), Voorberg *et al.* (2015), Bharti *et al.* (2015) and Galvagno and Dali (2014).

In contrast to the traditional model of innovation that only conceives customers as a market, a new paradigm emerged in which they are also conceived as innovators (Thomke & Von Hippel, 2002; Von Hippel *et al.*, 2011). The co-creation of value with customers significantly benefits companies because they obtain high-value information from the users of their products, while at the same time developing internally the improvement of the value proposition with proposals coming from the customers themselves (Vanhaverbeke *et al.*, 2008). Thus, customers not only provide feedback, but participate as active partners in the value creation process to obtain beneficial outcomes for them (Prahalad & Ramaswamy, 2004a, b).

Adopting co-creation practices with customers requires company management to design specific processes to gain a clear awareness of customer needs, and to foster the co-creation of value (Ramaswamy, 2008). Co-creation can be understood as a cooperative process involving customers and organisations interactions in all creative activities, both in the initial phase (idea generation, conceptualization) and in the final phase (design and testing) of the development of a new product or service, improving the co-innovation process and value creation (Romero & Molina, 2011). This requires firms to adapt and modify their internal resources and processes from a structure focused on value creation from within, to value creation with a focus on the customer and customer interactions (Prahalad & Ramaswamy, 2004a; Ramaswamy, 2009).

Companies can adopt different co-creation practices, which involve different degrees of interaction with the stakeholders. Table 1 summarises some of the co-creation practices identified in the literature together with the bibliographical references where they appear. As it is shown, companies can use different types of face-to-face sessions and workshops with customers in an open, non-structured way, to detect challenges or to find solutions to the challenges. Web resources are also often used in stages related to challenges when the objective is to get information from a high number of informants, either from external (external experts) or internal (employees or internal experts) sources. When companies work on a specific idea, face-to-face sessions predominate over the use of the web. These sessions, in which there is already a clear focus and are usually managed following a project management approach, are less open and more directed.

Table 1: Summary of co-creation practices

Co-creation practice	Description	References
1. Challenge discovery workshops with customers from the same market	Develop face-to-face workshops with customers with similar needs in the same market, to discover and discuss common challenges to be solved.	(Ind & Coates, 2013; Micheli et al., 2019; Von Hippel et al., 2011)
2. Challenge discovery workshops with customers from different markets	Develop face-to-face workshops, with customers from different markets, to discover similar challenges that have been solved in different ways, to enrich and help “think outside the box”.	(Stickdorn et al., 2018; Von Hippel et al., 2011; Wylant, 2008)
3. Successful case study sessions	Organisation of sessions between customers and other collaborating companies to present success stories and promote debates that can generate common interests in future innovation projects.	(Micheli et al., 2019; Stickdorn et al., 2018)
4. Internet platforms for interaction between business and customers	Websites where companies and customers can share their interactions and experiences about new offerings.	(Ramaswamy, 2009, 2008)
5. Intranet participation platforms between the company and employees	Intranet-based technology platform for dialogue with employees and discovery of problems reported by customers.	(Ramaswamy, 2010, 2009)
6. Discussion of challenges in internal innovation teams with invited customers	Creation of a “future design team”, where regular strategic meetings are held to discuss a vision for the future of services and the market. Selected customers are invited to discuss or exchange ideas.	(Ramaswamy, 2009; Von Hippel et al., 2011)
7. Collaborate with external expert “mentors”, validated together with customers	Awaken the creativity of intrapreneurs within the organisation by engaging in discussions with “mentors” from beyond the walls of the organisation, inside or outside the market.	(Ramaswamy, 2009, 2010)
8. Find solutions and external expert contacts from existing OI platforms	Using external OI platforms such as Innocentive and NineSigma to find solutions to problems, both from within an organisation and from experts/ retirees willing to help with their expertise.	(Dodgson et al., 2006; Ramaswamy, 2009)
9. Finding solutions and expert contacts from internal OI platforms	Develop innovation platforms that showcase challenges to external entities that can propose solutions.	(Dodgson et al., 2006; Ramaswamy, 2009)
10. In-house innovation teams to develop ideas	Project development between groups of employees and invited customers. Selection process of best projects, guided by evidence and feedback from colleagues and customers.	(Piller & West, 2014; Von Hippel et al., 2011)
11. Prototype testing toolkits	Providing customers with a “customer innovation toolkit”, with which they can design and prototype, giving valuable feedback to the company.	(Thomke & Von Hippel, 2002)
12. Living Labs	Test service/product prototypes in a real environment, together with customers or other selected strategic partners. Obtaining feedback to further develop the idea.	(Nyström & Leminen, 2011)
13. Working groups to analyse possibilities of “exploitation of results”.	Area created by members of the marketing, commercial and business teams, together with customers, to evaluate options for exploiting market results.	(Chiaroni et al., 2011)
14. Stable innovation network	Create collaborative networks or temporary groups, for the development or commercial exploitation of the results of an innovative product.	(Chesbrough, 2003)
15. Search for partners in cluster associations	Approaching cluster associations to seek partners and new ideas for value creation.	(Chesbrough, 2003; Wylant, 2008)

2.2. Design Thinking as a lever to foster co-creation with customers

DT is a methodology for generating innovations characterised by being human-centred, where the designer empathises strongly with the person who has the problem to make proposals, iterate, and arrive at the best possible solution (Buxton, 2007).

The DT methodology has been structured in three main phases (Brown, 2008): (1) inspiration, which analyses the user or customer's problem and context; (2) ideation, consisting of creating solutions and prototyping; and (3) implementation, with testing in a real market context. Over time, given the importance of the problem understanding and prototyping stages, these phases have been further differentiated into: (1) problem understanding, (2) observation, (3) point of view definition, (4) ideation, (5) prototyping and (6) testing (Hasso Plattner Institut, 2016). In any case, all proposals are based on an iterative process of learning and exploration, following the principle of "trial and error" together with the end user (Hurni & Grösser, 2017).

DT has been considered both a methodology and a mindset for designing innovations through a co-creative process, thus contributing to a culture of innovation in companies (Brown & Martin, 2016). Co-creation with customers occurs in DT in all its phases, initiating contact from the beginning in the phase of problem understanding, to obtain direct feedback from the end user, and continuing with their active participation also in later phases of ideation of the solution and testing of prototypes (Hurni & Grösser, 2017; Liedtka, 2011). As this co-creative process enables the exchange of information, it is a transformation towards OI in companies (Edwards *et al.*, 2015).

2.3. Co-creation practices and Design Thinking

The co-creation practices listed in Table 1 can be related with the phase of the DT process in which a company following this innovation methodology could use it. Table 2 shows the correspondence between the DT phases and the co-creation practices.

Thus, we find challenge discovery workshops, case study sessions, or the use of internet platforms in the phase of inspiration, collaboration with experts or in-house workshops in the phase of ideation, testing with toolkits or living labs in the phase of prototyping, and working groups or network management in the phase of implementation-exploitation.

Table 2: Co-creation practices related to the corresponding DT phase

DT phase	Co-creation practice
Inspiration	1.Challenge discovery workshops with customers from the same market
Inspiration	2.Challenge discovery workshops with customers from different markets
Inspiration	3.Successful case study sessions
Inspiration	4. Internet platforms for interaction between business and customers
Inspiration	5.Intranet participation platforms between the company and employees
Inspiration - Ideation	6. Discussion of challenges in internal innovation teams with invited customers
Ideation	7. Collaborate with external expert "mentors", validated together with customers
Ideation	8. Find solutions and external expert contacts from existing OI platforms
Ideation	9. Finding solutions and expert contacts from internal OI platforms
Ideation - Prototyping	10. In-house innovation teams to develop ideas
Ideation - Prototyping	11. Prototype testing toolkits
Ideation - Prototyping	12. Living Labs
Implementation - Exploitation	13. Working groups to analyse possibilities of "exploitation of results"
Implementation - Exploitation	14. Stable innovation network
Implementation - Exploitation	15. Search for partners in cluster associations

3. Methodology and research design

3.1. Action Research: definition and scope

As indicated above, we based our research on the AR methodology. According to Coughlan and Coughlan (2002), the defining characteristics of AR applied to business management are: it is action in action, rather than about action; it is participatory, as the lead team consists of researchers and practitioners of the company; it is simultaneous with action; and it is defined by a sequence of iterative events based on the implementation of a proposed change to solve the problem (research question) and ongoing learning to improve the solution, focused on solving the problem. Consequently, in this work we adopt the AR methodology as its characteristics make it suitable for the required context: the company needs to solve a problem (stated objectives) with the collaboration of researchers, who will help in the process of change, while generating scientific knowledge as a result of the whole process.

3.2. Design and implementation of Action Research methodology

The company where the AR process is applied is a digital business consulting firm focusing on marketing and digital product development, web and mobile apps. It has 40 employees and is located in Spain. This section describes the AR process we designed to carry out this research project.

3.2.1. Phases of Action Research

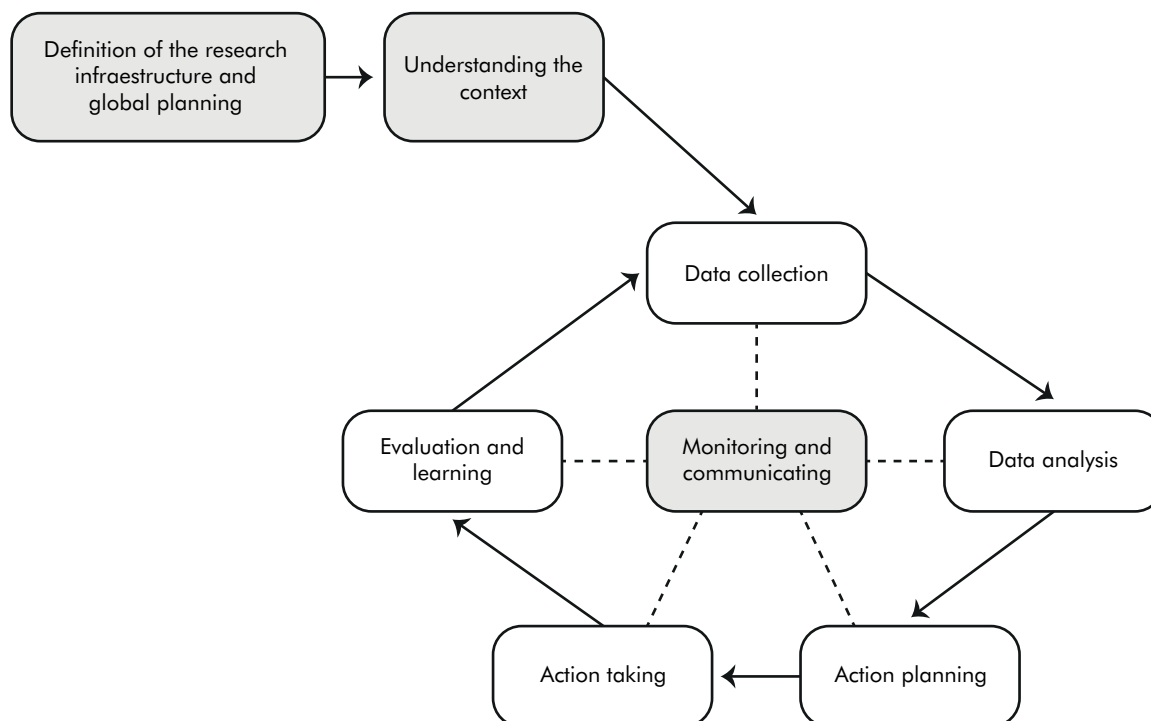
According to Lewin (1946), the AR process is based on the execution of 4 main phases: observation, reflection, planning, action. These phases are repeated iteratively in cycles in which each time there is learning from the results obtained, to reflect again and plan the new action to be carried out for continuous improvement, until reaching a satisfactory solution to the problem, both for researchers as well as for companies.

According to Coughlan and Coughlan (2002), as a prelude to the above basic iterative cycle, the methodology should start with an initial phase of “understanding the context and objectives”. These authors detail that the observation phase is divided into (1) data collection, using the different qualitative research techniques, and (2) feedback, where researchers and practitioners share what they have observed and make their contributions. They also clearly visualise a “monitoring” stage of all the phases in the process, carried out by the researchers, in which the academic validity is corroborated, controlling for the correct academic dissemination and scientific rigour of the method.

In addition, in any AR process it is also important to define and agree on the research infrastructure. It implies that the researchers and the team in the company must establish the specifications and agreements that constitute the research environment on aspects such as the objectives, conditions or sanctions, scope, resources involved, responsibilities and the dissemination of results (Baskerville, 1997).

With this in mind, we initiated the AR process by: (1) defining the research infrastructure and overall planning, and (2) understanding the context. Next, we followed the works of Lewin (1946) and Coughlan and Coughlan (2002) and proposed an iterative cycle consisting of the phases of data collection, information analysis, action planning, action implementation, evaluation and learning. In this iterative cycle, a phase of monitoring and communication was implemented to ensure academic validity (Coughlan & Coughlan, 2002) (Figure 1).

In the following paragraphs we describe the work done so far, where the AR team has progressed to the “Action Planning” phase of Iteration 1.

Figure 1: Action Research methodology based on Lewin (1946) and Coughlan and Coughlan (2002)

3.2.2. Definition of the research infrastructure: global planning

The AR infrastructure was defined by the AR team (researchers and professionals) (Table 3). Firstly, an agreement was signed between the company and the institution to which the research team belongs (Universitat Jaume I), defining the scope and main objective (problem posed by the company) to be worked on, the people in charge on both sides, the estimated duration of the project, the expected deliverables, the ownership of the results, as well as the information that should remain confidential (in this case, for example, personal data of the participating staff, among others).

Also, the composition of the team participating in the project was agreed, defining the roles of both the researcher and the company professionals. It should be noted that the main researcher was employed in the company, and that this project was part of his doctoral thesis. In addition, the communication elements in each phase were also agreed, as well as the approach to disseminate the results.

As part of this agreement, a global project plan was also designed (Figure 2), in which we established the phases, timing, how and when the objectives would be met, which techniques would be used, as well as the expected results and communication actions. Note that objective 4 was defined but the actions achieved are not included as it is outside the temporal scope in this work. As it concerns for the data gathering stage, and in line with [Erro-Garcés and Alfaro-Tanco \(2020\)](#) view on AR as a meta-methodology or an umbrella process that involves the use of various qualitative and quantitative instruments, the working team agreed using a set of research instruments, such as documentary analysis, participant observation, semi-structured interviews using questionnaires with open answers, and focus groups. All these instruments were grouped within the global methodology of AR.

Table 3: Action Research infrastructure

Area	Researchers	Professionals
Scope and conditions	Signing of a collaboration agreement between the company and the university within the framework of an industrial doctorate project. Definition of scope, objectives, duration, deliverables, and ownership of the results.	
Human resources involved: roles	<p>Role: Principal Investigator (PI) - Author of the doctoral thesis in progress - Chief Innovation Officer (CIO) in the company</p> <ul style="list-style-type: none"> - Coordinating all phases and driver of change; implementation of improvement proposals. - Observing and analyzing the results in an objective way and based on scientific knowledge. - Trainer on the applied methodology, coordination of workshops and interviews. - Editor of the results throughout the work. <p>Role: responsible researchers (RR) at the Universitat Jaume I. Supervisors of the doctoral thesis in progress.</p> <ul style="list-style-type: none"> - Reviewing the work carried out. - Providing a theory-based guide to possible ambiguities that may arise. - Coordinating the results dissemination in the academic environment. 	<p>Role: Principal supervisor in the company - CEO</p> <ul style="list-style-type: none"> - Close collaboration with the participating researchers. - Validation of the instruments used and protocols to be applied. - Responsible for the application of the new protocols proposed in the framework. - Review and feedback on the results reports to be disseminated in the professional environment. <p>Role: Chief Executor in the company - COO</p> <ul style="list-style-type: none"> - Close collaboration with the participating researchers in the implementation and application of new methods and protocols. - Review and feedback on the results reports to be disseminated in the professional environment.
Results dissemination process	<ul style="list-style-type: none"> - Articles in scientific journals - Papers at innovation and management conferences 	<ul style="list-style-type: none"> - Articles in professional journals - Reports of results to be disseminated within the company, in clusters and in governmental institutions.

3.2.3. Understanding the context

We analysed the business model and the context of the company in order to understand the initial situation on which we were to work. We used two qualitative information gathering techniques (Creswell, 2014): documentary analysis and participant observation. The documentation analysed comes from the following sources (Coghlan, 2019): annual reports, product development reports, reports on the business model and marketing strategy, personal experiences and the corporate website. Participant observation by the lead researcher was also important, as he is directly involved in the company’s day-to-day business and current innovation processes, which allowed him to validate the information gathered, expanding on it through conversations with employees.

After collecting and analyzing the information obtained from both techniques, we first made an analysis of the implications on stakeholders (Table 4) and, second, we introduced the business model of the company (Table 5), and built its business model canvas (BMC) (Table 6), tool developed by Osterwalder, which facilitates business models being represented in a simple but very clear way, considering the main economic areas of the company (Osterwalder et al., 2005).

In addition, we complemented the original BMC, focused on the economic layer, with the contributions of the Triple Layered Business Model Canvas (TLBMC) (Joyce & Paquin, 2016), which integrates the environmental (Table 7) and social (Table 8) layers built from the product/service life cycle. In this way, we not only focus on co-creation to create economic value, but also to create greater environmental and social benefit. Each layer of the canvas provides horizontal coherence

within itself. Looking at the three layers as a whole, there is also vertical coherence between them, thus providing a more holistic view of sustainable value creation in the enterprise. (Joyce & Paquin, 2016).

On a horizontal level, the business model of our company in its economic layer is based on digital marketing consultancy and software development. At the environmental level, the model highlights mainly the energy consumed by the digital consumption of content and the production of computer code. On a social level, digitalization brings great advantages and improvements in our daily lives, but we must also consider the negative social impact of the excessive consumption of digital content. According to this, the company must be aware of the challenges in all these vectors when innovating and co-creating.

On the other hand, we visualize the vertical coherence of the model representing a common number on each layer blocks that are interconnected. So, for example, we have vertical block 2, composed of Customer Segments (economic layer), Use Phase (environmental layer) and End-User (social layer), where we face the challenge of the user receiving the service, while he/she in the future uses the services and consumes energy, or collaborates with other users and the company to improve the service and improve at the same time the life of every individual.

We also highlight the interconnection in blocks 6 and 7, in which the company's human resources participate in key activities to offer the service, having an environmental impact on the consumption of hardware and energy to carry out their work, and where at a social level we must analyze how a greater or lesser degree of reconciliation in working hours, collaboration with suppliers or the use of teleworking affects the above aspects. In this way, we once again enrich the innovation challenges of this area of the business model with the use of the TLBMC.

Figure 2: Global Planning of Action Research

Understanding the context 6 months	Iteration 1: Data collection and analysis 6 months	Iteration 1: Action planning 6 months	Iteration 1: Action taking, evaluation and learning 12 months
<p>Research questions Propose an innovation framework for the development of new services in a small firm, through the implementation of co-creation practices with customers in a context of open innovation.</p> <p>O1.- Determine which co-creation practices with customers have been identified in the literature and how they relate to the DT methodology.</p>	<p>O2.- Diagnose the degree of current adoption of customer co-creation practices in the company.</p> <p>O3.- Identify the most suitable co-creation practices to be prioritized according to the current innovation process of the company and its context.</p>		<p>O4.- Design and evaluate internal protocols and new roles to apply co-creation practices.</p>
<p>Methodology, techniques Documental Analysis Participative Observation</p>	Interviews and Focus Group	Focus Group	Doc. Analysis, particip. observation, interviews, focus groups
<p>Results List of co-creation practices based on literature review. Business Model. Stakeholders analysis.</p>	Diagnosis of current co-creation activity in the company and selected practices to be prioritized.	Action Planning document.	Roles and protocols to be applied Results of the implementation; evaluation and learning. Improved protocols to be applied Results of the implementation; evaluation and learning for future research and action.
<p>Communication: academic and professional diffusion</p>	Paper at R&D Conference Company report	Scientific article in progress Company report	Thesis Paper in conference Scientific articles Company report

Table 4: Stakeholders Analysis

Stakeholder	Name	Relation
Employees	Employees	They bring work and expertise to the company's activities.
Partners in product development	IT Research Institute	Partner in strategic technological projects, providing work, expertise and good practices for the technology team.
Collaborators during product development	IT based company	Collaborator for the development of mobile apps related to technological developments.
Suppliers / Collaborators	Facebook/Google/LinkedIn	Advertising platforms through which campaigns are carried out
Suppliers / Collaborators	Hosting Company	Web Hosting Provider
Suppliers / Collaborators	Freelance - Content Writers	Specialist Content Writers
Suppliers / Collaborators	Translation agency (put in suppliers before).	Translation.
Suppliers / Collaborators	Influencers	For specific campaigns
Suppliers / Collaborators	Web developers (punctual, there is always some kind of inconvenience).	One-off development projects
Suppliers / Collaborators	Traditional and specialized media (architecture, design, etc.)	Communication
Distributors of our products	Company	Distributor of specific technological products developed. Joint idea generation for the development of new solutions for current customers or new segments (especially industrial sector).
Support Consultants	Local Agency	Advice on public aids.
Support Consultants	Financial consultancy	Tax advice.
Competitors (with whom you have some kind of relationship)	Advertising Agency	They are competitors because they can take away specific services. They collaborate because they carry everything that is an offline marketing strategy, and they bring us customers.
Collaborators to obtain information and generate opportunities	National association for development of Customer Experience	Participation in outreach events
Collaborators to obtain information and generate opportunities	Local association of Marketing	Participation in outreach events
Collaborators to obtain information and generate opportunities	Local association of Tech Companies	Network of technology companies in the region
Collaborators to obtain information and generate opportunities	Local University	External internships Strategic Projects

Table 5: Business model of the digital consulting firm

Scope of analysis of the Business Model	Business area 1: Branding Services	Business area 2: Web Development Services
Product / Service Line	Branding and digital marketing	Technological developments
Target customer segment(s)	A medium-sized national company that is committed to digitalization and value marketing.	
Value proposition: why does the customer need this service/product?	To improve their results based on the opportunities presented by the Internet, for their businesses and sectors.	Cover their technology needs, especially as a result of a marketing analysis.

Table 6: Business Model Canvas (economic layer)

5. Partners Hosting provider (Professional hosting / Amazon). Tech company: app development / possible further collaboration. Suppliers at the editorial level (social media). Influencers who collaborate in campaigns, dissemination. Specialized media (design, architecture, ...). Institute of Information Technology.	6. Activities Commercial action. Project management. Account management: customer relationship. Strategic consulting. Innovation management / Development of new services.	1. Value Proposition Branding and digital marketing Expertise. Security & Trust. Proposal / Tailor-made project. Technological developments Tailor-made developments. Adaptation to customer needs. Experience and prior knowledge of the projects. Technology Consulting.	3. Customer Relationship Branding and digital marketing One-to-one - relationship with the account manager. Regular meetings. Technological developments Web maintenance & Technology support.	2. Customer Segments A medium-sized national company that is committed to digitalization and value marketing.
	7. Resources Human resources. Technological applications (Facebook, Google, LinkedIn ads). Zoho and Google suite. Web platforms custom software development.		4. Channels Cross-selling. References. Google Searches. Marketplaces for advertising and marketing agencies. Business Documents. Video Calls / Calls / Business Meetings. Email, phone, WhatsApp.	
8. Costs Human Resources - 65%. Infrastructure - 10%. Expenses associated with services - 25% (Facebook, Google, LinkedIn, media).		9. Revenues Monthly fee linked to marketing management fees (most important). Initial marketing strategy consulting. Cost per technological project. Bags of hours for web maintenance.		

Table 7: Business Model Canvas (environmental life cycle layer)

<p>5. Supplies and Out-sourcing Branding and Digital Marketing Energy for PC work. Technological developments Energy for PC work – Software development.</p>	<p>6. Production Branding and Digital Marketing Digital work of community managers and designers. Technological developments Digital work of developers.</p>	<p>1. Functional Value Branding and Digital Marketing Periodical communication of branded and corporate content in digital media. Technological developments Periodical consumption of web and mobile app services.</p>	<p>3. End-of-Life Hardware recycling.</p>	<p>2. Use Phase Branding and Digital Marketing Energy consumption of end-user digital information consumption. Technological developments Energy consumption of web and mobile apps end users.</p>
	<p>7. Materials PC and smartphone</p>		<p>4. Distribution Branding and Digital Marketing Network use for social media. Technological developments Network use for webapps and mobile apps.</p>	
<p>8. Environmental Impacts Carbon footprint from production and use phases.</p>		<p>9. Environmental Benefits Branding and Digital Marketing Good environmental practices that are transmitted at the corporate level in society. Technological developments Reduced environmental impact achieved through digitisation of client processes, such as improved productivity or reduction of material waste.</p>		

Table 8: Business Model Canvas (social stakeholder layer)

<p>5. Local Communities Collaboration with other technology companies to achieve common improvements.</p>	<p>6. Governance Family business with a friendly and approachable owner; transparency in decision making.</p>	<p>1. Social Value Branding and Digital Marketing Helping companies better communicate their corporate image and services. Technological developments Developing new web and apps that improve products and services.</p>	<p>3. Societal Culture Branding and Digital Marketing Better informed society; promoting good practices, and optimal user experience in the consumption of digital media. Technological developments Promoting good practices, and optimal user experience in the consumption of web and mobile apps.</p>	<p>2. End-User Branding and Digital Marketing More accountable organisations and better-informed customers. Technological developments Increase of productivity with new web and app developments.</p>
	<p>7. Employees Flexible working hours; possibility of teleworking and family reconciliation; promotion of extra-occupational relations.</p>		<p>4. Scale of Outreach Developing long-term relationships for collaboration in technology clusters and partnerships.</p>	
<p>8. Social Impacts Negative consequences of excessive use of digital media.</p>		<p>9. Social Benefits Branding and Digital Marketing Better-informed society and use responsible of products and services. Technological developments Use of web and mobile apps that make life easier for society.</p>		

3.2.4. Iteration 1: Data collection and analysis

At this stage we aim to give response to objective 2, *diagnose the degree of current adoption of customer co-creation practices in the company*, and objective 3, *identify the most suitable co-creation practices to be prioritized according to the current innovation process of the company and its context*.

To find out the degree of adoption of co-creation practices with customers, we conducted semi-structured interviews with the management committee of the company, made up of the four area managers of the company: Chief Executive Officer (CEO), Chief Operations Officer (COO), Chief Technology Officer (CTO) and Chief Marketing Officer (CMO). They were selected because they are directly responsible for the current company processes and are direct participants in the innovation committee that manages the innovation processes.

The structure of the interviews consisted of two parts (see [Appendix 1](#)). The total duration of each interview was between 50 and 60 minutes. The first part of the interview was based on a semi-structured questionnaire formed by questions about the degree of implementation of each one of the 15 co-creation practices previously identified in the literature review. The second part asked the degree of interest for the company, from the point of view of each of the interviewees, in each one of the co-creation practices. It was assessed on a 5-point Likert scale ranging from not at all interesting (1) to very interesting (5). It should be noted that the respondents were allowed an open response to each option, so that they could justify the answer, and thus provide us with more in-depth information about their motivations. The information obtained from these responses was coded according to each of the co-creation practices.

3.2.5. Iteration 1: Action Planning

The information obtained in the previous stage formed the basis for action planning, i.e. planning the implementation of the selected co-creation practices. To address this issue between the lead researcher (as a coordinator) and the four members of the management committee of the company (as participants), based on the same selection criteria as for the previous interviews, we used the focus group technique and followed a semi-structured group interview ([Alvesson & Deetz, 2011](#)). This structure follows consistently and systematically the identified themes, i.e. the list of most interesting co-creation practices for the company obtained in the previous phase. The group was then asked to talk about the challenges at the structural level, in terms of roles and action protocols, that, in their view, the company would face when trying to implement these new co-creation protocols. We qualitatively analysed the information obtained by breaking it down into themes or clusters of information ([Creswell, 2014](#)) related to (1) roles and protocols and (2) enablers and barriers they visualise. This information allowed us to detect specific work packages to be considered in the next phase of the AR cycle: Action Taking.

3.2.6. Iteration 1: Action taking, evaluation and learning

Once the planning of the action was carried out, the phases of execution of the action (implementation of the selected practices), evaluation of results and learning, are to be addressed. This phase is out of the temporal scope of this work.

4. Results

In the first part of the interview conducted with the professionals during the data collection phase, we obtained as a result a diagnosis of the current degree of adoption by the company of these co-creation practices with customers ([Table 9](#)).

The results show that most of the co-creation practices were not yet being implemented by the company, hence the potential for improvement and their concern to address them. There are three of the co-creation practices that they were using: “Challenge discovery workshops with customers from different markets”, “Discussion of challenges in internal innovation teams with invited customers” and “Search for partners in cluster associations”.

There is room for improvement in all of them because they rarely involve customers, and when they do, it is not very well planned. As for practices “Successful case study sessions” and “In-house innovation teams to develop ideas”, they have not been put into practice, but the interviews confirm that there have been previous internal meetings dealing with these ideas, which the management saw as positive.

In the second part of the interviews, we identified the most suitable co-creation practices to be prioritized according to the current innovation process of the company and its context. [Table 10](#) summarizes the average scores related to the interest in each of the co-creation practices analysed, as well as the main comments. We can highlight that the company sees co-creation as more important in the inspiration phase, in which potential challenges to innovate are analysed and discovered together with customers. In addition, we observe that, in general, physical interaction with customers is seen as more useful, as opposed to proposals for web interactions. This is due to the SME characteristic of the company, with a small customer group, close to the national level, and easy to contact.

Moving on to the “Action planning” phase, as an initial result of the focus group, it was agreed with the company that in Iteration 1 of the implementation process of the co-creation practices (action phase), we will carry out ([Table 11](#)): challenge discovery workshops with customers from the same market, challenge discovery workshops with customers from different markets, successful case study sessions, in-house innovation teams to develop ideas and stable innovation network. The results of the focus group allowed us to further analyse the best rated practices, so that they can be adapted to the needs of the company. In [Table 11](#), we also describe the main conclusions obtained regarding how we should plan these specific action protocols, as well as the roles involved.

Table 9: Degree of implementation of co-creation practices in the company

Co-creation practice	Not implemented	In progress	Partially implemented
1. Challenge discovery workshops with customers from the same market	X		
2. Challenge discovery workshops with customers from different markets			X
3. Successful case study sessions		X	
4. Internet platforms for interaction between business and customers	X		
5. Intranet participation platforms between the company and employees	X		
6. Discussion of challenges in internal innovation teams with invited customers			X
7. Collaborate with external expert “mentors”, validated together with customers	X		
8. Find solutions and external expert contacts from existing OI platforms	X		
9. Finding solutions and expert contacts from internal OI platforms	X		
10. In-house innovation teams to develop ideas		X	
11. Prototype testing toolkits	X		
12. Living Labs	X		
13. Working groups to analyse possibilities of “exploitation of results”	X		
14. Stable innovation network	X		
15. Search for partners in cluster associations			X

Table 10: Interest in different co-creation practices

DT Phase	ID. Co-creation Practice	Score	Interesting notes from the Open-Ended Response
Inspiration	1. Challenge discovery workshops with customers from the same market	4,2	Very interesting, but you have to be specific and not spend a lot of time with the customer. They should see the shop as productive. Preparation for reluctance in very local and competitive markets. Conversely, in more open markets, it is considered more enriching.
Inspiration	2. Challenge discovery workshops with customers from different markets	4,2	From the outset, the customer should see promising expected results due to the collaboration. Reluctance for reasons of competitiveness is avoided. However, the markets must have some similarities in their needs. Participants must share similar positions in their companies.
Inspiration	3. Successful case study sessions	4,0	Better with customers from different markets, more enriching and more motivation expected to participate and discuss.
Inspiration	4. Internet platforms for interaction between business and customers	2,8	Usually, the same users participate. Most of them don't collaborate and are just listeners.
Inspiration	5. Intranet participation platforms between the company and employees	2,8	Usually, the same users participate. Most of them don't collaborate and are just listeners.
Inspiration - Ideation	6. Discussion of challenges in internal innovation teams with invited customers.	4,0	Interesting but important to consider the need to allocate time to employees and offer them a return for the time spent, so that they become more motivated. Difficulty due to the high level of work to fulfill customer services.
Ideation	7. Collaborate with external expert "mentors", validated together with customers	3,4	Away from the customer, which is seen as less interesting. In consulting firms, employees are already seen as "experts," and marketing needs change very often. However, it might be interesting to invite experts in different but related areas, such as philosophy or sociology.
Ideation	8. Find solutions and external expert contacts from existing OI platforms	3,2	Don't expect successful results. The selection is often based on price, which is not the best option.

Table 10: Interest in different co-creation practices (Continued)

Ideation	9. Finding solutions and expert contacts from internal OI platforms	2,8	Don't expect successful results.
Ideation - Prototyping	10. In-house innovation teams to develop ideas	4	It is very interesting here to involve employees with customers, due to the "gamification" aspect of testing in the selection and development of ideas.
Ideation - Prototyping	11. Prototype testing toolkits	2,6	More interesting for software development, less so for digital marketing services.
Ideation - Prototyping	12. Living Labs	3	More interesting for software development, less so for digital marketing services.
Implementation - Exploitation	13. Working groups to analyse possibilities of "exploitation of results"	3,0	Interesting, although to put it more in the long term. There are other priorities.
Implementation - Exploitation	14. Stable innovation network	3,8	It could enrich the process, but organization and control could be difficult.
Implementation - Exploitation	15. Search for partners in cluster associations	3,4	Divergent thinking is expected, due to different points of view, which could distance the focus. Need to control the participants, who could represent the entire value chain, rather than pitting competition between them.

In the second phase of questions within the focus group, we obtained greater depth by describing the aspects that could favour or hinder the proposed co-creation practices (Table 12). These aspects should be foreseen for the implementation in the next phase of “Action Taking”, during the development of the sessions with customers, given the special concern that the company showed about the possibility that they would not find interesting results in the initially proposed sessions, and therefore would stop participating early.

Table 11: Practices planned for implementation in the next phase of “Action Taking”. Insights into roles and protocols.

INSPIRATION	IDEATION	PROTOTYPING	IMPLEMENTATION
ID.1. Challenge discovery workshops with customers from the same market.	ID.10. In-house innovation teams to develop ideas.	ID.10. In-house innovation teams to develop ideas.	ID.14. Stable innovation network.
ID.2. Challenge discovery workshops with customers from different markets.	Creating an internal coded project to register innovation resources.	“Prototype” contest to submit ideas, so employees will be more motivated due to gamification.	Stay close to the local tech association.
ID.3. Successful case study sessions	Coordination by the role of “Innovation Team Coordinator”.	Feedback on each prototype by the rest of the employees, in monthly coordinated sessions.	Expert consulting for team management and administration.
A workshop every three months.	Invite customers and other expert collaborators at specific times, not all the time that the internal teams participate in workshops, in order to not saturate customers.	Final feedback with selected customers.	Sign a contract with all the clauses very clear by all parties.
Personalized invitation to customers and collaborators.		Selection of a team dedicated to developing the prototypes up to the implementation phase in real context.	Maintain continuous contact with customers and other members of the network, both physical and digital.
Internal area teams and role of coordinator to organize with related customers.			

Table 12: Results of the focus group: enablers and obstacles to be foreseen during the action-implementation phase

DT phase	Encourages co-creation	Hinders co-creation
Inspiration	Mix sessions in your company with sessions in the company of the customer; The actual live context is a big help.	Focus groups can have many biases. Triangulate data collection through videos, recordings, articles, global market.
Ideation	Reinforcement and feedback from the group to the idea generator gives motivation and willingness to participate.	Prevent the group from following the leader’s ideas. Mix teams so that natural leaders aren’t always in the same group.
Prototyping	Provide gamification whenever possible. It’s much more possible in a team.	Avoid very long and tiring sessions due to many participants.
Implementation	Teamwork allows for role-playing and more real interaction with prototypes.	Not letting the group know that the prototype isn’t final can cause frustration.
	Add new members to participate in the implementation, so that previous group bias is avoided, and results are better.	This phase requires an expert in project management and release of results. The lack of this role in the organization can lead to dissatisfaction with the results.

In summary, from this process, as an overall result, the company obtained an action framework containing the initial protocols approved on co-creation practices. Both to improve these protocols based on learning, as well as to address other additional practices, future iterations will have to be implemented. Also, from the point of view of the researchers, a valuable result is the acquired knowledge in terms of learning for further AR projects.

5. Conclusion

This paper presents the application of the AR methodology with the main objective of proposing an innovation framework for the development of new services, through the implementation of co-creation practices with customers in an OI context. The methodology is applied in an SME, which wishes to incorporate this innovation procedure to improve its innovation results. AR cycles are composed of these phases: data collection, data analysis, action planning, action taking, and evaluation and learning. In this paper we focus on the first stages, consisting of data collection and analysis and action planning.

About the results obtained in this research, co-creation practices with customers were investigated and the situation of the company regarding the adoption of these practices were diagnosed. In addition, we defined a plan to start implementing the co-creation practices prioritised by the company and considering structure requirements detected in focus groups between researchers and professionals. The AR methodology allowed us to set up the project, and to create an AR team made up of researchers and professionals who work together to respond to the problems posed and to obtain knowledge of interest both for the academy and for the company.

These results are relevant to academia, since we found in the literature that there is a need for research related to (1) identifying the impact of co-creation on innovation and organisational performance, such as the potential increase in customer loyalty and engagement, or the assessment of future synergies with customers because of co-creation with them (Frow, 2015; Saha & Goyal, 2022), and (2) analysing how organizations, and particularly SMEs, must adapt their internal structure, in terms of new roles of their human resources and specific protocols that they will have to follow to incorporate co-creation practices with customers (Elsbach & Stigliani, 2018; Ramaswamy, 2008). In turn, we generate theoretical knowledge on the application of the AR methodology in an SME, specifically to improve its innovation process. Although AR is considered a beneficial methodology for innovation management projects, there is little research on how it is applied in this context (Guertler *et al.*, 2020; Guertler *et al.*, 2019), so the study presented is of importance for academia.

The practitioners found the AR work methodology beneficial, as it allows them to participate in the process by proposing, validating, and learning from the results, which increases motivation for change. On the other hand, they also obtained academic feedback from the researchers on how to apply co-creation practices with customers to innovate, which would be very difficult to obtain in any other way.

From the point of view of practitioners, this research has important implications for the professional sphere, providing a robust methodology (AR) and new knowledge for developing innovation projects and adopting OI and co-creation inside companies, as a way to improve their innovation results, which, with no doubt constitutes a common and important challenge for any company. Based on this AR methodology and using the model of interview and focus group proposed in this paper, a company, with the help of expert researchers in this field, can be able to assess its current degree of adoption of the co-creation practices quickly and effectively, as well as develop its own action plan for improvement.

Future research in the same setting with the AR methodology should continue in the future, carrying out further iterations of application, evaluation, learning and improvement of the proposed innovation process. In our particular case, finishing iteration 1 and carrying on with further iterations constitute the base of future research. The identification of specific changes in the internal structure of the company at the level of co-creation protocols and new roles in the human resources to carry them out, constitute topics which can provide robustness to the innovative culture and boost the company results. Finally, due to the limited contextual

framework in this type of research with AR, new lines of future research are clearly required, related to the application and evaluation of results in other SMEs, clusters, or in other geographical areas, as well as for the consolidation of the AR methodology for the development of improved innovation processes.

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Appendix

Appendix 1: Semi-structured interview used for data collection in iteration 1

Part 1.

Listed below are 15 co-creation practices, each assigned to one of the 4 phases of the Design Thinking innovation process (Inspiration; Ideation; Prototyping; Implementation-Exploitation). The interviewer will give an explanation on each one to be completely understood by the respondent.

In order to know the degree of adoption of each of these practices by the company, please mark for each one of them if the practice is:

(1) Not implemented

(2) In the process of being implemented

(3) Partially implemented

DT phase	ID. Co-creation practice	Description	Response
Inspiration	1. Challenge discovery workshops with customers from the same market.	Develop face-to-face workshops with customers with similar needs in the same market, to discover and discuss common challenges to be solved.	(1) – (2) – (3)
Inspiration	2.Challenge discovery workshops with customers from different markets.	Develop face-to-face workshops, with customers from different markets, to discover similar challenges that have been solved in different ways, to enrich and help “think outside the box”.	(1) – (2) – (3)
Inspiration	3.Successful case study sessions	Organisation of sessions between customers and other collaborating companies to present success stories and promote debates that can generate common interests in future innovation projects.	(1) – (2) – (3)
Inspiration	4. Internet platforms for interaction between business and customers	Websites where companies and customers can share their interactions and experiences about new offerings.	(1) – (2) – (3)
Inspiration	5.Intranet participation platforms between the company and employees	Intranet-based technology platform for dialogue with employees and discovery of problems reported by customers.	(1) – (2) – (3)
Inspiration - Ideation	6. Discussion of challenges in internal innovation teams with invited customers.	Creation of a “future design team”, where regular strategic meetings are held to discuss a vision for the future of services and the market. Selected customers are invited to discuss or exchange ideas.	(1) – (2) – (3)
Ideation	7.Collaborate with external expert “mentors”, validated together with customers.	Awaken the creativity of intrapreneurs within the organisation by engaging in discussions with “mentors” from beyond the walls of the organisation, inside or outside the market.	(1) – (2) – (3)
Ideation	8.Find solutions and external expert contacts from existing OI platforms.	Using external OI platforms such as Innocentive and NineSigma to find solutions to problems, both from within an organisation and from experts/retirees willing to help with their expertise.	(1) – (2) – (3)
Ideation	9. Finding solutions and expert contacts from internal OI platforms	Develop innovation platforms that showcase challenges to external entities that can propose solutions.	(1) – (2) – (3)

Ideation - Prototyping	10. In-house innovation teams to develop ideas	Project development between groups of employees and invited customers. Selection process of best projects, guided by evidence and feedback from colleagues and customers.	(1) – (2) – (3)
Ideation - Prototyping	11. Prototype testing toolkits	Providing customers with a “customer innovation toolkit”, with which they can design and prototype, giving valuable feedback to the company.	(1) – (2) – (3)
Ideation - Prototyping	12. Living Labs	Test service/product prototypes in a real environment, together with customers or other selected strategic partners. Obtaining feedback to further develop the idea.	(1) – (2) – (3)
Implementation - Exploitation	13. Working groups to analyse possibilities of “exploitation of results”.	Area created by members of the marketing, commercial and business teams, together with customers, to evaluate options for exploiting market results.	(1) – (2) – (3)
Implementation - Exploitation	14. Stable innovation network	Create collaborative networks or temporary groups, for the development or commercial exploitation of the results of an innovative product.	(1) – (2) – (3)
Implementation - Exploitation	15. Search for partners in cluster associations	Approaching cluster associations to seek partners and new ideas for value creation.	(1) – (2) – (3)

Part 2.

For each of the above co-creation practices, please indicate, from your point of view, the degree of interest you think the company has in implementing each one of them. Please mark a value from 1 to 5, with 1 indicating no interest, and 5 indicating a lot of interest. Please note that you are allowed to give an open answer to the interviewer on the chosen option, so that you can justify the answer, and thus have more in-depth information about your motivations.

DT phase	ID. Co-creation practice	Description	Response
Inspiration	1. Challenge discovery workshops with customers from the same market.	Develop face-to-face workshops with customers with similar needs in the same market, to discover and discuss common challenges to be solved.	1 – 2 – 3 – 4 – 5
Inspiration	2. Challenge discovery workshops with customers from different markets.	Develop face-to-face workshops, with customers from different markets, to discover similar challenges that have been solved in different ways, to enrich and help “think outside the box”.	1 – 2 – 3 – 4 – 5
Inspiration	3. Successful case study sessions	Organisation of sessions between customers and other collaborating companies to present success stories and promote debates that can generate common interests in future innovation projects.	1 – 2 – 3 – 4 – 5
Inspiration	4. Internet platforms for interaction between business and customers	Websites where companies and customers can share their interactions and experiences about new offerings.	1 – 2 – 3 – 4 – 5
Inspiration	5. Intranet participation platforms between the company and employees	Intranet-based technology platform for dialogue with employees and discovery of problems reported by customers.	1 – 2 – 3 – 4 – 5
Inspiration - Ideation	6. Discussion of challenges in internal innovation teams with invited customers.	Creation of a “future design team”, where regular strategic meetings are held to discuss a vision for the future of services and the market. Selected customers are invited to discuss or exchange ideas.	1 – 2 – 3 – 4 – 5

Ideation	7. Collaborate with external expert “mentors”, validated together with customers.	Awaken the creativity of intrapreneurs within the organisation by engaging in discussions with “mentors” from beyond the walls of the organisation, inside or outside the market.	1 – 2 – 3 – 4 – 5
Ideation	8. Find solutions and external expert contacts from existing OI platforms.	Using external OI platforms such as Innocentive and NineSigma to find solutions to problems, both from within an organisation and from experts/retirees willing to help with their expertise.	1 – 2 – 3 – 4 – 5
Ideation	9. Finding solutions and expert contacts from internal OI platforms	Develop innovation platforms that showcase challenges to external entities that can propose solutions.	1 – 2 – 3 – 4 – 5
Ideation - Prototyping	10. In-house innovation teams to develop ideas	Project development between groups of employees and invited customers. Selection process of best projects, guided by evidence and feedback from colleagues and customers.	1 – 2 – 3 – 4 – 5
Ideation - Prototyping	11. Prototype testing toolkits	Providing customers with a “customer innovation toolkit”, with which they can design and prototype, giving valuable feedback to the company.	1 – 2 – 3 – 4 – 5
Ideation - Prototyping	12. Living Labs	Test service/product prototypes in a real environment, together with customers or other selected strategic partners. Obtaining feedback to further develop the idea.	1 – 2 – 3 – 4 – 5
Implementation - Exploitation	13. Working groups to analyse possibilities of “exploitation of results”.	Area created by members of the marketing, commercial and business teams, together with customers, to evaluate options for exploiting market results.	1 – 2 – 3 – 4 – 5
Implementation - Exploitation	14. Stable innovation network	Create collaborative networks or temporary groups, for the development or commercial exploitation of the results of an innovative product.	1 – 2 – 3 – 4 – 5
Implementation - Exploitation	15. Search for partners in cluster associations	Approaching cluster associations to seek partners and new ideas for value creation.	1 – 2 – 3 – 4 – 5

