

Empowering Customer Engagement with Lean Service: a case study

Maria Henriqueta Almeida

Researcher at UNIDEMI Research and Development Unit for Mechanical and Industrial Engineering
NOVA School of Science and Technology
Caparica, Portugal
mh.sousa@campus-fct.unl.pt

António Grilo

Full Professor in Industrial Engineering and Management
Head of Department of Mechanical and Industrial Engineering
NOVA School of Science and Technology
Caparica, Portugal
acbg@fct.unl.pt

Abstract

The services employment figures in the world's biggest economies demonstrate that the service sector has become the largest sector of the economy in most developed countries. As studies demonstrated that Lean has a positive effect on operational performance, service providers are adopting Lean, where Lean Service is the application of Lean to services. This research presents a case study with qualitative and quantitative methods approach, where a new online free service of knowledge transfer was created in co-creation with a customer focus-group. Two years of investigation were carried out, from April 2021 to April 2023, with a total of twenty-four online sessions, meaning fifty-one hours of knowledge transfer to a universe of 1118 customers. It became evident an empowerment in customer engagement, through co-creation and customer experience, where 89% of the customers attend more than one online session, and 31% more than five. The implementation process was surveyed through a series of interviews to obtain the voice of the customer and customer experience, and based on quantitative data, it became clear that the Lean Service helped to empower customer engagement.

Keywords

Customer engagement, Customer Co-Creation, Customer Experience, Lean, Lean Service.

1. Introduction

As service industries represent the tertiary sector, which encompasses all economic activities besides agriculture, industry and construction (INE 2018). Based on the services employment figures in the world's biggest economies, the service sector has become the largest sector of the economy in most developed countries (Almeida-Sousa, 2021), meaning this sector contributed the most to the Gross Domestic Product in the most productive economies (Statistica, 2023).

Organisations and individuals operating in the service sector focus on using knowledge, information, and expertise to provide services, where the expansion of the service industry is a result of the increase in knowledge, the rapid technological growth, and the development of fast communication tools and infrastructures that have occurred in the last decades (Statistica, 2023).

From literature review, services key characteristics are intangibility, heterogeneity, perishability, inseparability, simultaneity, variability, and labour intensity (Arfmann and Barbe, 2014; Bowen and Youngdahl, 1998). The service industry has a growing pressure to reduce costs, increase flexibility, improve quality, and cut down on lead times (Suárez-Barraza et al., 2012), hence, increasing competitiveness is a target for every service company.

The adoption of production principles in service sector became real (Levitt, 1972) and the first Lean study in service industries dates from 1998 by Bowen and Youngdahl, where the authors explained the transfer of Lean principles from manufacturing into service environments.

Therefore, Lean has moved from application in production to being used in other sectors, such as the service sectors (Arlbjorn and Vagn Freytag, 2013). As studies demonstrated that Lean has a positive effect on operational performance (Kamble et al., 2020; Martensson et al., 2019), service providers have been adopting strategies towards a Lean-organised work environment ever since (Leyer and Moormann, 2014).

In Sasagawa et al. (2022) literature review it is highlighted that Lean improves performance, communication, and team cooperation, as well as customer satisfaction. Berraies and Hamouda (2018) concluded that customer satisfaction, innovation and financial performance are improved through customer empowerment.

Additionally, Opata et al. (2020) research concluded that customer value co-creation behaviour has a significant role in determining customer satisfaction. For Osborne et al. (2013) customer experience transforms customers into services co-creators, therefore, it is important to empower and engage customers, integrating them in the products and/or services conception process (Berraies and Hamouda, 2018).

To involve customers in service conception process, organisations should plan and perform knowledge transfer to its customers, where company employees must have the culture of sharing knowledge. As learning from experiences is important in Lean (Alves et al., 2012), the way an organisation deals with these learning experiences can either enforce or hinder learning, so, sharing knowledge throughout its network is important towards sharing success and failures (Oosterhout, 2023) along with improving customer engagement.

1.1 Objectives

Although literature describes the applicability of Lean to services (dos Reis and Vieira, 2015), research is still needed in tertiary sector (Gupta et al., 2016). Indeed, despite the increase in Lean Service research, little research has been done on quality improvement in after-sales services using a Lean Thinking approach (Guachamín and Arteaga, 2021). Consequently, this study intends to contribute to deepening the Lean philosophy applied to the service sector and to embrace the call for future research on Lean Service.

Cui and Wu (2018) pointed out that less research has been done from the organisations' perspective to understand how companies can manage the well-recognised challenges of customer involvement, as well as the implications of this involvement for long-term innovation strategy and overall performance.

Co-creation is a voluntary activity as it depends greatly on willingness and ability of both the company and customers (Opata et al., 2020). Consequently, this two-year long research aims to contribute with an organisation perspective, to a deeper understanding of the customer experience and co-creation for a long-term strategy.

From this point of view, this study intends to demonstrate the importance of customer participation as a co-creator of a new service in the knowledge domain. The investigation purpose was to implement combined organisational actions, supported by Lean Service to empower and involve customers in a knowledge service conception process, with the goal of achieving a positive impact on customer engagement and sustain a long-term customer strategy.

2. Literature Review

2.1 Lean Service

In 1998, John Krafcik introduced the term Lean to tell apart the Toyota Production system (TPS) from the automobile manufacturing company bearing the name Toyota. Toyota had a singular context due to Japanese culture, plus the social and economic constraints from the Second World War. These were determinant factors in consolidating its strategy and organisational culture, where workers were committed to company's goals to pursue perfection and were at the same time respected by the organisation (Almeida-Sousa, 2021).

Hence, Toyota was able to create a systems company based on continuous improvement and respect for people, where TPS was a management system and a business philosophy (Ohno, 1988). In Womack et al. (1990) Lean gained wider expression, and in 1996 these authors defined the following Lean principles: value, value stream, flow, pull and perfection.

Furthermore, in 2003, the concept of *Lean thinking* was defined in Womack and Jones (2003) and it stated that Lean could be applied to any organisation outside Japan, whenever the *thinking* behind each principle was correctly understood. Consequently, Lean thinking moved from manufacturing to other sectors, particularly to services (Womack and Jones, 2005).

Lean Service (LS) is the application of Lean principles to services (Ahlstrom, 2004). Suarez-Barraza et al. (2012) had described LS history, and several studies proved the applicability of Lean in services industries, such as: Education, Information Technology, Health Care, Public Sector, Financial Services and others (Ferreira et al., 2018; Freitas and Freitas, 2020; Juliani and de Oliveira, 2020; Leyer and Moormann, 2014; Radnor and Johnston, 2013; Staats et al., 2011).

Additionally, these cited authors also demonstrated the applicability of some Lean tools and practices originating from manufacturing to the tertiary sector such as Voice of the Customer (VoC), Voice of the Employee (VoE), process and work standardisation, Value Stream Mapping (VSM), 5S, Kaizen, visual management, waste elimination and problem solving (Almeida-Sousa, 2021).

Although the thinking or philosophy behind Lean principles when applied to services remains unchanged from manufacturing, adjustments must be made in LS implementations, as services are delivered by people-to-people (Gupta et al., 2016). Thus, the context of the tertiary sector must be considered in Lean adoption, particularly the social dimension, as services are highly dependent on people, where the human dimension is a relevant element in this sector (Abid et al., 2006), and, as mentioned, the expansion of this service sector results from the increase in knowledge. Hence, the importance of reinforcing the human dimension and the integration of performance and culture (Duarte and Cruz-Machado, 2020).

2.2 Customer engagement

The conceptual roots of engagement are in psychology and organisation behaviour fields, where engagement is a concept that contains aspects of compassion, cognition, and behaviour (Hollebeek, 2011). In the customer domain, Patterson et al. (2006) defined customer engagement (CE) as the level of a customer's physical, cognitive, and emotional presence in their relationship with an organisation.

Furthermore, customer engagement is a motivational state that occurs by virtue of interactive co-creative customer experiences with a focal agent/object in a service relationship, which occurs under a specific set of context-dependent conditions (Brodie et al., 2011). In Anita et al. (2022) investigation it was demonstrated that customers feel engaged within an organisation when they are emotionally, cognitively or intentionally involved in certain activities while enjoying the company's services.

Brodie et al., (2011) summarised that the underlying conceptual foundation of customer engagement is the customer experience and the co-created value. Indeed, several studies combined customer engagement with customer co-creation value and customer experience as demonstrated in Anita et al. (2022) research.

Regarding customer co-creation, Opata et al. (2020) cited Durugbo and Pawar (2014) and Yi and Gong (2013) to explain that customer value co-creation shows how customers spend time, effort, and other resources to share information, ideas, and suggestions and involve in decision making during service production and delivery process.

To empower this co-creation, innovation can play an important role to facilitate the process of customer engagement interaction with the company, and service operators can improve the quality of a company's services through its customer service experience (Anita et al., 2022).

Based on the above mentioned literature review, the present study investigates customer engagement through customer co-creation and customer experience, where innovation plays an important role. . In fact, in this research customers were involved as co-creators to develop a new and innovated service in the knowledge domain. Customer experience gathered through this innovation process was crucial to provide important insights to build and consolidate this new service offer.

2.3 Customer and Lean

Services must have a deeper customer focus mindset and develop a collaborative and open approach to better understand and deliver what customers value most (Radnor and Johnston, 2013). As Lean is viewed as a philosophy (Bhasin and Burcher, 2006), the Toyota unique context demonstrated that during a Lean journey it is crucial to take into consideration the organisation perspective, meaning that it is important to analyse and understand the organisation culture (Amaro et al., 2020) as well as the company relationship/partnership with its customers.

Rahmanian and Rahmatinejad (2013) highlighted that the success in Japan in applying Lean was due to its culture, as Japanese developed 'universities' in the manufacturing context, where research and development was empowered to allow continuous improvement. Consequently, employees also need to be empowered with knowledge, to avoid and reduce knowledge waste within organisations (Klein, 2023).

Studies have examined customer motivation to participate and their ability to contribute within service companies (Cui and Wu, 2018), thus, organisations must understand customer needs to be able to offer a unique experience and design experiences that go beyond pure technical delivery services (Cepeda-Carrión et al., 2023). Moreover, studies also show that customer participation has a positive mediating effect on external effectiveness (Samuelsson, 2023).

In Womack and Jones (2005) it is suggested that Lean Service should have the following principles:

- Completely solve customers' problems by ensuring that all goods and services work, and work together;
- Do not waste customers' time;
- Provide exactly what the customer wants;
- Provide what is wanted exactly where it is wanted;
- Provide what is wanted where it is wanted exactly when it is wanted;
- Continually aggregate solutions to reduce customer's time waste and hassle.

Therefore, for Womack and Jones (2005), Lean Service should support companies to answer customers' needs with a *just in time* approach. As LS has its focus on customer and aims to incorporate the *Voice of the Customer* within organisations, this investigation demonstrates that the combined social/technical actions that Lean Service offers can empower customer engagement.

3. Methods

The present investigation is a qualitative and quantitative study conducted through a descriptive approach, gathering information from different sources. In order to conduct the investigation, the approach used was a *case study* to describe the dynamic context within which the events occur (Yin, 1994). As case studies are rich and provide empirical descriptions of circumstances of a phenomenon, they are typically based on a variety of data sources (Yin, 2003).

The investigation was conducted at a Portuguese organisation (anonymised in this paper and nominated by X), which delivers services to entities, particularly to their employees, named in this study as customers. The organisation X is

characterised as an infrastructure business, based on Hager and Singer (1999) three types of business definition (product innovation; customer relationship management and infrastructure management). Hence, this organisation has standardised processes to make activities and outputs as routinary and predictable as possible, building and managing facilities for high volume and repetitive operational tasks, where the goal is to create economies of scale to keep costs lower (Hager and Singer, 1999).

To improve its Service Level Agreements (SLA), X is defining strategies to empower customer engagement by upskilling its customer community, where transferred knowledge plays an important role. As training is a resource and time-consuming activity and operates costs to customers, the purpose was to create a free online short-period knowledge transfer (with one-and-a-half-hour duration) to share learnings with the customer community. In short, to provide an online free service, available to all customers and supported by the existing knowledge contents, where in each session a different topic was presented. So, organisation is using the strategies argued by Hager and Singer (1999) to build customer relationship businesses, by knowing individual customers' circumstances and preferences, and anticipating their needs.

Therefore, the scope of this case study was to deliver a new service in the knowledge domain to company X customers, involving them as co-creators, through their involvement in the conceptual idea and throughout all phases of the service process.

During the two-year-research several LS were used to help in this case study:

- *The Voice of the Customer* – to deeply understand customers' needs and requirements;
- *The Plan-DoCheck-Act (P-D-C-A)* – to go through continuous improvement cycles;
- The Kanban board – to define priorities and manage tasks within the co-creation team;
- *Team meetings* – stand-up virtual meetings to inform on progress and ask for support.

Moreover, as studies demonstrated the synergies between Lean and Knowledge Management (Lota et al., 2019), the following Knowledge Management techniques were used in combination with Lean:

- Storytelling – to capture the tacit knowledge shared through a story;
- Communities of practice - groups of people with a common interest.

4. Data Collection

As the purpose of organisation X is to empower customer engagement, and therefore provide a better service in accordance with the SLA defined with their customers, a Lean social-technical approach was followed to support the co-creation process and customer experience. The research took place from April 2021 to April 2023 and involved, on the part of organisation X, the knowledge management team and its middle managers who had experience in Lean Service.

Aiming at a customer engagement increase through customer co-creation and experience, the investigation went through two different phases:

- 1st phase – April to August 2021 – co-creation process defined and tested with a focus-group of 32 customers;
- 2nd phase – September 2021 to April 2023 – customer experience obtained from twenty-four online sessions delivered to 1,118 customers.

The first phase lasted from April to August 2021, thus, in April 2021, the research protocol was defined, as well as the data sources and the methods of investigation. To strengthen the research validity and the reliability of the results as per Yin (1994) several sources were used: (1) customer information; (2) attendance of third-party knowledge transfer sessions to understand the model used on online sessions; (3) analysis of literature reviews (4) customer feedback and requirements and (5) analysis of Lean Service tools and techniques.

During this period, a *P-D-C-A* Lean cycle was defined. The co-creation process and customer involvement were approved by managers, where a focus group was defined and operations topics were determined, such as the type and number of questions to address during the focus-group interviews.

In June 2021, 3 entities with 32 customers from several hierarchical levels, where 85% were women, were invited to join the aforementioned focus group, and they accepted to be part of the co-creation process. These entities were selected based on the following criteria: the size of the entity, their level of innovation, their prior availability to participate in co-creation projects and their type of partnership with organisation X. To be involved in all phases of the innovation process, working together with the organisation employees, 2 customers were chosen from each of the three entities (6 customers in total and all women), where it was possible to learn, share experiences, grow together and set-up the new service. To share and learn within the group, the technique of *community of practice* was used.

To support the teamwork, Lean Service provided an important support. The *Voice of the Customer* was applied in combination with *storytelling* to deeply understand the customer perceived value, as well as their customer experience. Additionally, *kanban* was used to manage activities, define priorities, and provide an easier way of communication, where each team member participated. Also, a short period of time for *team meetings* was defined to share progress, issues and to ask for support when needed.

On 14th and 15th July 2021, the service was tested in two online knowledge transfer sessions to the 32 focus-group customers. Interviews were conducted, supported by the research protocol to collect qualitative information, where the Lean tool *Voice of the Customer* was used again, based on Womack and Jones (2005) Lean Service principles, to collect their requirements and wishes.

During the two-knowledge transfer online sessions the customer experience feedback was required through semi-structured interviews, and the following was agreed upon:

- Knowledge topics: the top topics to be addressed in future knowledge transfer sessions; whether they considered these online sessions useful and effective; whether the session content should be published, and what kind of information should be presented during the session: whether only static and theoretic information, or also interactive and dynamic information, such as demonstrative videos;
- Logistics topics, such as: how the online session should be conducted with camera and micro on or off; whether it should be recorded or not, how the chat should be used), the duration time of each session and if there should be one or more sessions per day (one in the morning and another one in the afternoon); the best period of the month to deliver the sessions.

Furthermore, in August 2021, and based on the pilot it was possible to understand the customer feedback, their suggestions and perceive their customer experience. All this information was crucial to obtain insights, which were incorporated in the new service offer. Throughout the month of August 2021, the first 'real' session was prepared with the co-creation team.

The second phase started in September 2021, where a new *P-D-C-A* cycle was set-up to support the full process. All entities were invited to participate in the online free knowledge transfer sessions and were able to invite their employees to participate. From September 2021 to January 2023 twenty-four sessions were delivered to 5,772 participants as demonstrated in the next section.

From February to April 2023, it was possible to (1) use Lean and KM tools and techniques to analyse the data gathered and the customer experience; (2) identify, with the customers, further topics to share in future sessions; (3) prepare a bi-annual integrated action plan involving the customer; (4) start internal actions to improve customer documentation; (5) train the trainers for future knowledge sessions.

5. Results and Discussion

5.1 Numerical Results

As previously mentioned, organisation X is an infrastructure business, with standardised processes to provide services to a large number of customers in a structured way, and based on Lean Service principles, where tools such as quality on the source, voice of the employee and continuous improvement cycles are used to improve operations.

Nevertheless, organisation X also aimed to improve customer engagement by working closer with its customers based on two pillars: customer co-creation and customer experience, where Lean is supporting this approach. During the

two phases, Lean Service with a technical and social approach helped the co-creation team (X employees and customers, plus managers) to build the offer.

It is important to recall that in 2021 and in 2022, the COVID-19 pandemic situation introduced new ways of working. The online illiteracy was exposed, and teleworking was established, so the context was an important factor regarding the acceptance of this online innovation. In fact, due to this particular time of COVID-19, organisation X decided that it was important to empower customer engagement, by investing on customer's cognitive and emotional presence, particularly to improve their customer relationship.

Hence, during the first phase of the investigation and in a nutshell, through a co-creation process with the customer, and under a specific set of context-dependent conditions, a new service was launched: a free, online, short-time consuming knowledge transfer session. After a successful pilot with 32 customers and two online sessions, the second phase started with the first 'real' three sessions (in September 2022), where all customers were invited by e-mail to participate.

All entities had the opportunity to participate, and during the delivery of the twenty-four sessions (from September 2021 to January 2023), 1,118 customers filled in the attendance form. Being an online free service, customers had the opportunity to participate in the sessions they wanted, thus, 89% of the 1,118 customers participated in at least one session, and 31% in five or more. Regarding the sessions, comparing the customers who filled in the participation form and the ones that really attended the session, the withdrawal rate was 15%, with an average attendance of 240 participants per session.

Additionally, and regarding the customer focus-group involved in the co-creation process (the three entities selected by 32 customers), it was also verified that all these three entities always had employees participating in the twenty-four sessions, resulting in a 100% level of commitment and engagement with the new service offer.

Moreover, in previous customer satisfaction surveys (from 2019 to 2021), when customers were asked to suggest topics to improve the organisation X services, training was among the top five. In fact, the lack of time and skilled resources to provide training over several working days was one of the issues within this organisation. Although the new service delivered described in this research cannot be considered training, but rather a short period of knowledge transfer and sharing, from the customers perspective, they identified that this service is minimizing and mitigating the identified training gap.

Regarding customer engagement with this new offer and the organisation X, through the comparison of the customer satisfaction annual survey from 2021 and 2022, it was verified that the overall index of customer satisfaction increased in 2022. A deeper analysis of the 2022 data shows that from the 535 answers obtained from the 602 customer survey participants who were asked (in an open question) to identify what most influenced the success of the services provided by the organisation X, 9% considered the new service to be what most influenced their satisfaction. Additionally, and regarding the same question, it was verified that 81% of the inquired customers considered the X employees and the service they provide plus their culture of empowering relationship with the customer (customer engagement) the main key factor for the success.

Based on the aforementioned results, as this case study was supported by Lean Service through its social and technical approach, with several tools and techniques implemented, it was demonstrated that the Lean Service helped to empower customer engagement in organisation X.

5.2 Graphical Results

The number of participants per session is presented in Figure 1. A total of 1,118 customers filled in the attendance form to participate in the sessions. As mentioned, 89% participated in more than one session, thus, the total number of participants in the twenty-four sessions were 5,772, with an average attendance of 240 participants per session.

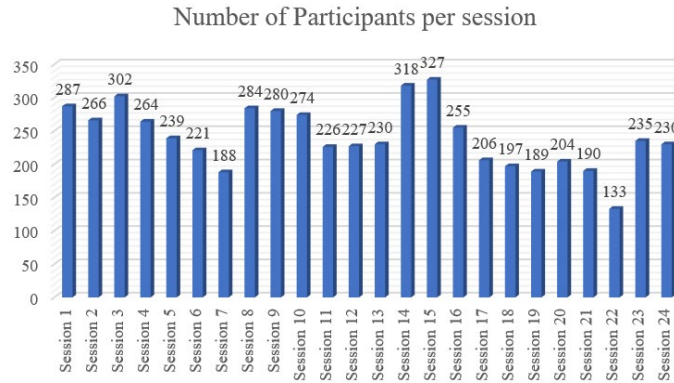


Figure 1 – Number of participants per session

Moreover, during the 1st phase of this investigation, one of the points discussed with the focus-group was when (what months of the year) these sessions should be delivered (in what quarter). The decision was to perform in all quarters to verify participation rates. Indeed, analysing these participation numbers by quarter (in figure 2), a conclusion is drawn: the success of the sessions did not depend on the quarter it was delivered, therefore this is not a relevant variable. To deeply understand it, researchers analysed the qualitative data obtained during each session.

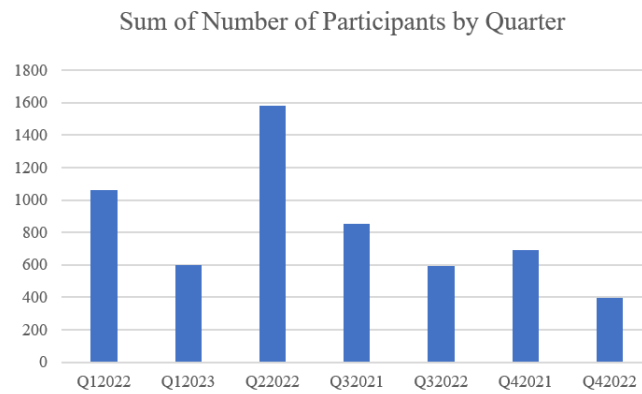


Figure 2 – Number of participants by quarter

Based on the qualitative data on customer feedback in each session, it becomes clear that the variable that most influenced the number of participants is the session subject itself. Hence, investigators cross checked this information with the figures of training topics requests by customers to X, and the training that X delivered in the last five years, and a correlation was confirmed. The topics addressed in quarter 2 of 2022 are in the top five of the training topics, followed by the ones delivered in quarter 1 2022, and lastly the quarter 1 2023. Therefore, training backlog and the one provided, are good sources for future topics in online sessions.

Moreover, from the universe of 1,118 customers that filled in the attendance form, some other information was gathered and can be observed in Figure 3: 62% of the customers interested in these sessions were customers with more than three years of experience with the organisation X services. Indeed, these experienced customers recognised the value of these free online knowledge transfer sessions and were engaged in them, as they were frequent participants in the sessions.

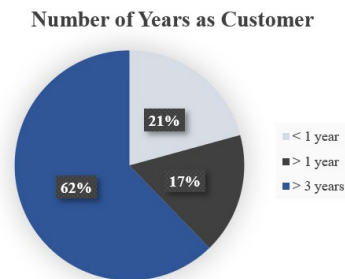


Figure 3 – Number of years being an organisation X customer

To analyse the level of engagement, particularly based on the customer experience, through semi-structured interviews, this group of 696 customers (with more than 3 years as organisation X customers) were inquired about the reasons *why they valued these sessions*. The following information was summarised: (1) useful to obtain more knowledge; (2) to have more contact with organisation X; (3) to know high skilled resources from organisation X; (4) to have the opportunity to ask questions in real time through the chat option; (5) to have access to the provided content, particularly the videos.

The 232 customers with less than one year of organisation X services, mentioned (1) the opportunity to have free online ‘training’ sessions; (2) to have an integrated view of the different services provided; (3) to participate in sessions with other customers, where they can learn from each other. The fact is that in several sessions, questions raised by participants were answered by other participants.

Lastly, the 190 customers with one year of experience, informed that their customer experience within this service was (1) to review and consolidate knowledge; (2) structure ideas and ask questions; (3) to understand how documentation is structured and (4) a communication way to make it easier for them to find the correct information on each subject.

6. Conclusion

The purpose of the paper was to demonstrate how Lean can support the organisation to empower customer engagement towards a long-term customer strategy. The research presented a case study in the knowledge domain where customer co-creation and customer experience were the conceptual basis to develop the customer engagement concept. With the purpose of empowering a co-creation project to share experience, a pilot was set-up with 32 customers and important insights were gathered.

Working closely with a customer focus-group allowed to define a new online and free service regarding knowledge transfer. The co-creation process based on Lean social and technical dimensions turned out to be a crucial approach to understand the requirements and needs of the customers and the importance of sharing knowledge.

After two years of investigation, twenty-four free online sessions were performed, meaning fifty-one hours of knowledge sharing, delivered to a total of 1,118 customers. The total of participants in all sessions was 5,772, with an average of 240 participants per session. On average, participants have a higher rate of attendance and participation in several sessions. Based on the quantitative data gathered, a high level of customer engagement was evidenced, where 89% of the customers participated in more than one session, and 31% in more than five. The qualitative data obtained in each online session, supported by semi-structured interviews conducted at the end of the session, allowing for perceiving the customer experience and to involve customers in the decision of the subjects addressed in future sessions.

Lean Service social and technical approach helped to deliver the full investigation. Therefore, in this case study supported by Lean Service, it was demonstrated that Lean Service helped to empower customer engagement in organisation X.

Despite the contribution of this paper to Lean Services, being a single case study, has its inherent limitations. Nevertheless, and based on the results obtained, to proceed this investigation and help organisation to continue to empower customer engagement, a third phase is now being prepared, supported by Lean Service, where customer co-creation and customer experience will continue to be the pillars of future research towards a long-term customer strategy.

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Biography

Maria Henriqueta Almeida is a service delivery manager with over 20 years of experience. Her background is in Information Technology & Finance in different industries, managing teams across Portugal, EU, UK and USA. As an Agile, Lean, Design Thinking and Business Process expert, her focus is to create and empower top and high-performance teams, helping organisations to sustain their continuous improvement path. She holds a Ph.D in Industrial Engineering from NOVA School of Science and Technology, and she is a researcher at the Research and Development Unit for Mechanical and Industrial Engineering (UNIDEMI). Her main research interests include lean service, knowledge management, customer services, continuous improvement sustainability, artificial intelligence applied to finance and organisational culture.

António Grilo is a Full Professor in Industrial Engineering and Management at NOVA School of Science and Technology. He is the Head of Department of Mechanical and Industrial Engineering, Director of the research center UNIDEMI, Board Member of NOVA.ID, and a founder and active member of the Laboratório Associado de Sistemas Inteligentes (LASI). He is a former Director of the PhD Program in Industrial Engineering, former President of the Board of Directors of the Incubator Madan Parque, and former Board Member of UNINOVA. As a professor he lectures Technological Entrepreneurship, Information Systems, Decision Models, and Strategy Management in bachelor, master and doctoral programs. He has over 100 papers published in international scientific journals, conferences and book chapters in the area of Interoperability, Digital Platforms, applications of Artificial Intelligence and Blockchain in Industry and Services. He has managed over 20 research & development and innovation projects, mainly associated with companies. His recent focus has been on connecting academy and corporations for transferring knowledge and know-how to practitioners through executive training, being the coordinator of Pós-Graduação em Gestão da Supply Chain, Pós-Graduação em Agile Project Management, Inspiring Tech Safari. He has also a passion for supporting the development of start-ups and entrepreneurship at the university environment.

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