Bridging the Co-creation Gap Between Co-creators, Companies and Living Lab

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This is a working paper

Why this paper might be of interest to Alliance Partners:

Living labs offer a new open innovation platform for companies to engage in co-creation. This study offers first insights into the operational activities, design structures and data collection approaches which are implemented to facilitate the co-creation process in living labs. Particularly, living labs and companies gain deeper understandings on the specific factors that are relevant to consider when engaging in co-creation. The study integrates findings from a systematic literature with primary data collected with managers and researchers of a living lab called JOSEPHS, co-creators and companies that have utilized the living lab. Five critical factors enabling co-creation were identified: Customer Engagement, Relationship Management, Operating Principle, Design Layout, and Data Collection Approach. Within these five factors, an integrative list of 50 co-creation elements are presented to provide further detail about how co-creation can be facilitated in living labs.

The papers included in this series have been selected from a number of sources, in order to highlight the variety of service related research currently being undertaken within the Cambridge Service Alliance and more broadly within the University of Cambridge as a whole.

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Living labs offer a new open innovation platform for companies to engage in co-creation. Empirical investigation about co-creation enablers in this setting is however scarce. This paper analyses factors that facilitate co-creation in living labs. The study integrates findings from a systematic literature with primary data collected with managers and researchers of a living lab, co-creators and companies. Five critical factors enabling co-creation were identified: Customer Engagement, Relationship Management, Operating Principle, Design Layout, and Data Collection Approach. Within these five factors, an integrative list of 50 co-creation elements provides further detail about how co-creation can be facilitated in living labs.

In today's customer-empowered world, co-creation capabilities are critical to the future growth of a company (Bhalla, 2010). Reaching beyond their own boundaries, companies aim to enhance internal innovation and expand their markets. An open approach to innovation (Chesbrough, 2003; Vanhaverbeke, 2006) requires the inclusion of more activities and actors than those of traditional innovation models (van de Vrande et al., 2009). Living labs offer a new platform for companies to engage with customers in a process of co-creation (Lusch et al., 2007) to understand both existing and emerging user needs (Westerlund & Leminen, 2011). Following Westerlund and Leminen (2011, p. 20), this study defines living labs as *"physical regions or virtual realities where stakeholders form public-private-people partnerships (4Ps) of firms, public agencies, universities, institutes, and users all collaborating for creation, prototyping, validating, and testing of new technologies, services, products and systems in real-life contexts"*.

In order to develop new products and services that better meet consumers' wants and needs, it is crucial to identify elements that facilitate co-creation in living labs. In spite of a growing body of literature (e.g. Følstad, 2008; Almirall et al., 2012; Leminen et al., 2012), living lab practices are still under researched, and a theoretical as well as methodological gap continues to exist with respect to the limited amount and visibility of living lab literature vis-a-vis the rather large community of practice (Schuurman, 2015). Furthermore, understanding multiple stakeholders in the co-creation process in living labs is complex due to their diverse interests. Rosado et al. (2015, p. 81) point out *"the need for more specific descriptions of the practice of running a living lab, i.e. how to organize a living lab's activities, how to involve different stakeholders, ways of collaboration, co-ordination etc., combined with a more conceptual concern with the possibility of reconciling the interest of these different stakeholders"*. This study explores and analyses factors that are critical to the facilitation of co-creation in living labs by integrating findings derived from existing literature with primary data collected with managers and researchers of a living lab called JOSEPHS as well as companies and co-creators. This paper therefore not only attempts to bridge the

gap between research and practice, but also does so considering the perspective of diverse stakeholders.

Following the introduction, section two describes the approach to the systematic literature review and discusses the theoretical background relevant to the understanding of co-creation. The third section outlines the research design. Together with findings from the existing literature, results from the primary data collection are presented in section four. Finally, section five concludes the study discussing contributions to academic research and practice.

Systematic Literature Review

A systematic approach to review existing literature was employed due to its objective, transparent and unbiased approach (Tranfield et al., 2003; Mulrow 1994). Scopus was identified as the most relevant scholarly database to screen the literature of interest. Keyword pairs relating to co-creation in living labs were used to specify the literature of interest and to ensure that relevant studies are included and no study is excluded without thorough evaluation (Meline, 2006). Finally, snowball sampling was employed to ensure all influential papers are included.

The application of specific inclusion and exclusion criteria led to the identification of 65 papers and articles in press. Further scrutiny resulted in the elimination of duplicates; furthermore, only those papers discussing living labs in the context of business literature were considered. This process resulted in the selection of 43 articles for full review and ultimately in 11 relevant sources for this study that are concerned with concepts facilitating co-creation. Based on snowball sampling, 18 additional relevant papers were identified. In relation to this study, a total of 29 articles were used to analyse elements facilitating co-creation in living labs.

Co-creation Elements

A first evidence from the analysis of the literature is the relevance of concepts such as involvement, integration (Nambisan & Baron, 2007; Almirall & Wareham, 2008; Baron & Harris, 2008), and participation (Aarikka-Stenroos & Jaakkola, 2012). In order to facilitate co-creation, it is indeed vital that customers' behavioural manifestation toward a brand or firm reach beyond purchase. Van Doorn et al. (2010) discuss the importance of customer engagement behaviour (CEB) which investigates customer activity beyond interactions with a provider. One of the most essential elements affecting CEB includes attitudinal factors. These encompass, but are not limited to, trust (de Matos & Rossi, 2008), customer satisfaction (Anderson & Mittal, 2000; Palmatier et al., 2006), customer goals, resources, value perceptions (van Doorn et al., 2010), brand commitment (Garbarino and Johnson 1999), brand attachment (Schau et al., 2009), and brand performance perceptions (Mittal et al., 1999).

When discussing the conditions needed for successful value co-creation, CEB focuses on the resources contributed by customers. Jaakkola and Alexander (2014) remark how a firm's willingness to integrate customer resources into offering development affects the joint value co-creation process. The same scholars, also identify mobilizing behaviour, defined as customers utilizing resources to mobilize other stakeholders' actions towards the focal firm, as another co-creation enabling element. Jaakkola and Alexander (2014)

suggest that mobilizing behaviour offers the prospect of generating value co-creation opportunities beyond existing relationships accessing new customer and stakeholder relationships. Other scholars are trying to address the same issue by putting emphasis on strong relationships (Jaworski & Kohli 2006; Prahalad & Ramaswamy 2004; Arnold, 2017), high quality interactions (Payne et al., 2008; Jurietti et al. 2017; Voytenko et al. 2016; Hyysalo & Hakkarainen, 2014) and dialogue (Auh et al. 2007).

Value itself, however, must be considered as part of the collective social context (Edvardsson et al., 2011). Even if, the type of service determines the level of interaction (Lazarus et al., 2014) different customers may perceive the same service in a different way, and the same customer might regard the service differently between occasions in a different social context. The framework suggested by Payne et al. (2008) outlines contextual elements that are likely to have an influence on the level of effort a customer decides to invest on service co-creation. Specifically building on Normann's (2001) research, Payne et al. (2008) identify two sets of aspects: customers' own capabilities, skills, and motivation and the operant resources that the customers can access to accomplish those goals. On the provider's side, two aspects are vital to facilitating the exchange: the quality of its employees and the perceived quality of its facilities. Rust and Oliver (1994) add the customer–employee interaction to these elements: in the context of services, the interaction between service providers' employees and the customers propels value (Bailey et al., 2001). Moreover, Aggarwal and Basu (2014) suggest that the amount of effort exerted by a customer in the co-creation of value is positively influenced by the personal goal clarity that the individual has with respect to service outcomes and that the amount of effort exerted is positively affected by the perceived relevance of the service in achieving desired service outcomes. The extent of co-creation is also influenced by firms' willingness to co-create and consumers' willingness to co-create.

Yet to successfully engage with customers, their expectations have to be met (Füller, 2010). They only offer their time and talent if they consider co-creation to be rewarding. Empirical studies conducted in online settings show that customers are motivated to engage in non-transactional behaviours because they expect benefits such as enhanced knowledge and reputation, social benefits, and economic benefits (Füller 2010; Nambisan & Baron 2009). Expectation management is therefore crucial in the co-creation process (Baelden & Van Audenhove, 2015).

Research in the context of smart cities (Bifulco et al. 2017) suggests that living labs should engage a suitable and wide set of actors and resources for the co-creation of new services. More specifically, to increase usage and improve the abilities for actors to participate - regardless of the skill level – several studies (van der Graaf & Veeckman, 2014; Voytenko et al. 2016; Rosado et al. 2015) recommend offering different tools *"to guarantee that every citizen, also those who lack specific capacities, is able to become involved and be heard"* (van der Graaf & Veeckman, 2014, p. 82). Methods used in living labs must be interactive and engaging and accessible to all citizens irrespective of their skill level in order to create a real-life environment that is capable of stimulation co-creation (Franz, 2015; van der Graaf & Veeckman, 2014).

According to Kang (2012), stakeholders should share mutual goals and trust others to realise a successful living lab. Further, the principle of mutual learning points to the need

of creating a common ground so that a variety of knowledge and values can be explicated, appreciated and applied to influence the co-creation process. Thus, Rosado et al. (2015) suggest employing a more systematic approach, such as regular meetings or workshops to improve the likelihood of mutual learning during the co-creation process.

Besides these soft aspects of co-creation, also the infrastructure and layout of living labs play a key role. Living labs require big and open buildings that are in line with the open innovation philosophy they are based on. Gascó (2017) emphasises that the infrastructure needs to reflect upon the open culture that stimulates innovation inside its walls.

Empirical Research Design

To gain an in-depth understanding of co-creation practices and the factors that facilitate co-creation in living labs, a single case study at the living lab JOSEPHS® - the service manufactory was conducted. The case study approach was selected to control for biases and explore the rather new phenomenon, co-creation in living labs, in greater depth (Yin, 2013). "JOSEPHS" - the service manufactory is chosen due to its set-up as an open and interactive innovation platform with co-creators.

Data Collection and Analysis

This study is based on data collection with a) management, research and operational staff of JOSEPHS, b) companies that have utilized JOSEPHS for their innovation activities in the past 2.5 years, and c) selected co-creators that regularly get involved in the co-creation process at JOSEPHS. Following Leminen et al. (2015, p. 8), this study adopts the term co-creator which is defined as an individual that *"seeks and solves problems, ideates and innovates, and develops the solutions together with the companies' R&D teams and other living lab actors on an equal basis"*. Therefore, in the context of this study, users and customers that participate in the co-creation process are considered to be co-creators. The data collection (Table 1) was carried out between November 2014 and September 2016.

Table 1 – Data Collection

Activity	Approach	Purpose
Pilot-Study	• 3 interviews with JOSEPHS team (3 hours) • Observations • Analysis of secondary data	Understanding of JOSEPHS as a project idea and collect background information about business model, historical background and current issues.
Living Lab perspective	• 2 focus groups with JOSEPHS team (8 hours) • Complementary Interviews (2 hours) • Observations	Understanding factors, mechanisms and characteristics for co-creation. Validation of findings from the first focus group.
Company perspective	• Focus group with 3 companies (4.5 hours) • Secondary data analysis • Paper-based survey	Evaluation of perceived co-creation processes in JOSEPHS; development of factors for the co-creation framework.
Co-creator perspective	• Focus group with 9 co-creators (2.5 hours)	Understanding co-creation factors that facilitate co-creator feedback in the co-creation process.

Findings and Discussion

Results coming from focus groups, interviews and observations were integrated with the results from the systematic literature review to provide a list of factors facilitating co-creation. 50 co-creation elements were grouped in five critical co-creation factors, according to a framework developed in an earlier study on co-creation facilitation in living labs (Greve et al., 2016): Customer Engagement, Relationship Management, Operating Principle, Design Layout, and Data Collection Approach. 13 co-creation elements were identified through data collection with companies, whilst 18 co-creation elements emerged engaging with living lab facilitators, and 16 with co-creators. Integrating this list with 21 co-creation elements already examined from the analysis of the literature, 50 unique co-creation elements are identified (Table 2).

Table 2 – Five critical factors for facilitating co-creation in living labs

Co-creation Factor		Co-creation Element	Literature	Living Lab	Companies	Co-creators
#1: Customer Engagement	1.1	Customer capabilities, skills & motivation	X		X	
	1.2	Willingness to co-create	X			
	1.3	Social context	X			
	1.4	Perceived relevance of service	X			
	1.5	Attitudinal factors	X			
	1.6	Mobilizing behaviour	X			
	1.7	Type of product/ service	X			
	1.8	Personal goal clarity	X			
#2: Relationship Management	2.1	Dialogue	X	X	X	X
	2.2	Managing expectation	X	X	X	
	2.3	Stakeholder interaction & participation	X			X
	2.4	Expected benefits	X			X
	2.5	Mutual learning	X			
	2.6	Managing relationships	X			
	2.7	Engage a suitable and wide set of actors & resources	X			
	2.8	Integration/ Involvement	X			
	Relationship: JOSEPHS – Co-creator					
	2.9	Convey seriousness of co-creator contribution		X		
	2.10	Tailored approach for guidance		X		
	2.11	Opportunity to give feedback about JOSEPHS		X		
	2.12	Recruitment & continuous training of guides		X		
	Relationship: JOSEPHS – Company					
	2.13	Background information about company		X		
	2.14	Sharing best practices			X	
	2.15	Consulting through a tailored project template			X	
	2.16	Creation of networking opportunities			X	
#3: Operating Principle	3.1	Comfortable atmosphere		X	X	X
	3.2	Proactive, enthusiastic guides		X		X
	3.3	Room for action/ interaction/ discontinuation		X		X
	3.4	LL as a consulting/ service provider			X	
	3.5	Continuous feedback & immediate adjustment			X	
	3.6	Establishing themes			X	

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	3.7	Relevance for B2C & B2B			X	
	3.8	Understanding the concept of JOSEPHS				X
	3.9	Central location in city centre				X
#4: Design Layout	4.1	Clear structure & storyline		X		X
	4.2	Intuitive elements of familiar behaviour		X		X
	4.3	Self-explanatory signage		X		X
	4.4	Service Facilities	X			
	4.5	Infrastructure & layout of living lab	X			
	4.6	Access to operant resources	X			
	4.7	'Hands-free approach'		X		
	4.8	Design of Island: key elements & order		X		
	4.9	Reflect work-in-progress status to encourage feedback		X		
	4.10	Try out space				X
	4.11	Playful and interactive setting and design				X
	4.12	JOSEPHS layout: innovation as 1st impression				X
#5: Data Collection Approach	5.1	Interactive and engaging data collection tools	X	X		X
	5.2	Tailoring tools	X			X
	5.3	Explicit research question		X		
	5.4	Workshop to reach specific audience			X	
	5.5	Capture first impression & receive authentic feedback			X	
		Total Elements: 50	**21**	**18**	**13**	**16**

1. Customer engagement is defined as *"the level of a customer's physical, cognitive, and emotional presence in their relationship with a service organisation"* (Patterson et al. (2006, cited in Broedie et al., 2011, p. 256). Engaged customers play a central role in the development of new services and products, particularly in co-creating experience and value (Hoyer, et al 2010; Nambisan & Nambisan 2008; Brakus et al., 2009; Prahalad & Ramaswamy 2004). The findings from the systematic literature review show nine elements that influence customer engagement. However, companies only recognised customer capabilities, skills and motivations as a critical co-creation element.

2. Relationship management refers to *"the process of managing the relationships between an organization and its internal and external publics"* (Oluseye et al., 2014, p. 53). Although, eight concepts emerged through the systematic literature review that are associated with this factor, practitioner only discuss two of these concepts: managing expectation and dialogue. In addition to elements derived from literature, data gathered from the companies and living lab specifically highlight co-creation elements concerning the JOSEPHS-co-creator as well as JOSEPHS-company relationship. JOSEPHS' staff highlight that a tailored approach from them to guide the co-creators is needed, for example, in accordance to their level of knowledge. Thereby, providing company background information is vital for co-creators in order to make informed judgments in the co-creation process. Although JOSEPHS put emphasis on the fun and interactive part of the co-creation process, it is very important to convey the seriousness of co-creator contributions and to maximise feedback opportunities. To achieve this, HRM related activities, such as recruitment, and continuous training of guides play a pivotal role. A living lab facilitator describes: *"Obviously, we need to hire the right people who are able to do small talk. They are somehow outgoing, open, motivated, curious, open to new things […] they have to get to know new technologies, new products/services – so you have to be interested in new developments and they need to be proactive"*. However,

also the opportunity to give feedback about the living lab and co-creator experience itself is a factor that encourages the co-creation process. Also, a tailored project template from previous case studies is an element that supports firms in managing the co-creation process more effectively. "*Some type of project template which describes the process and how we interact, what are the milestones, what kind of documents do we sign, what input do I need*" (Company C). Also allowing for more transparency, accessibility of knowledge and learning are networking opportunities, and sharing of best practices among companies that have been at JOSEPHS at different points in time.

3. The Operating Principle of JOSEPHS can be defined as the concept and values that outline how the living lab operates. While it represents a critical factor in facilitating co-creation, no contributions are made through literature. However, nine co-creation elements are identified through data collection with living lab facilitators, companies and co-creators. Practitioners put emphasis on the importance of the comfortable and open atmosphere at JOSEPHS. Also, creating this atmosphere in workshops is key to derive honest answers and insights from co-creators: *"It has to be informal and casual. This is extremely difficult to achieve and not everyone can create this atmosphere. I think the idea of JOSEPHS to achieve exactly this is executed really well."* (Company B). The guidance provided by the living lab facilitator should be proactive and enthusiastic, whilst maintaining a neutral position and ensuring the independence to the companies. Thereby, facilitators should give co-creators room for action, interaction but also discontinuation in the co-creation process. A co-creator explains: *"The guides have to be aware how the person is interacting with the space"*. JOSEPHS' operating principle has to cater for the needs of different firms including B2C and B2B. Another key element of JOSEPHS' operating principle is the establishment of themes which change every three months, allowing co-creators to co-create across different business islands under one theme. Based on continuous co-creator feedback throughout the period of three months and an iterative feedback process to the company, immediate adjustments can be achieved and just in time learning takes place. Furthermore, JOSEPHS acting as a consultant, coach or service provider by assisting the company in the co-creation process more in-depth displays another key element of the operating principle facilitating co-creation. However, first and foremost, for co-creators it is key *"to understand the concept of JOSEPHS in order to enter the living lab in the first place, participate and leave feedback"* (Company A). Similarly, co-creators describe the central location in the city centre of Nürnberg as a great advantage.

4. To facilitate the co-creation process in a broader context, it is critical to consider the living lab's design layout. Adding to three co-creation elements present in the existing literature, this study identifies nine further co-creation elements. Interestingly, companies have not stressed any aspect that is related to the design layout of a living lab. Living lab and co-creators point out that intuitive elements that incorporate a familiar behaviour are helpful in order to maximise the opportunity to receive/give feedback. Specifically, living lab facilitator point towards the design of the business islands which should be structured in a way similar to a film script, incorporate key elements in a logical and coherent order. *"It has to have some logical flow"* (Living lab facilitator 1). Both, living lab and co-creators emphasise that the islands should also contain signage for self-explanatory description. Co-creators explain that the setting and design should be playful as well as interactive and incorporate a try out space which

is not highlighted by any other stakeholder group, nor literature. This research also found that it should be taken into account that trying out products as well as services and giving feedback may require co-creators to use their hands. Thus, living lab facilitator state a 'hands-free approach' should be employed, providing enough shelf space for items such as handbags that could hinder the co-creator to engage in the co-creation process. Equally, living lab facilitator point out that the product or service should reflect a work-in-progress status to encourage input from co-creators. According to co-creators, JOSEPHS' layout should be about innovation as a first impression.

5. Finally, the Data Collection Approach emerged as a critical co-creation factor. While two co-creation elements are emerging from literature, three additional aspects are revealed through data collection with practitioners. Literature, living lab and co-creators are in agreement that interactive and engaging data collection tools (Franz, 2015) help obtaining information on early product and service developments. Existing research further specifies that tailored tools increase usage and improve the abilities for actors to participate - regardless of the skill level (van der Graaf & Veeckman, 2014). Co-creators agree: *"The beauty of it is to give feedback in a variety of forms. For example, you have tubes where you can place something inside and in the end a 3D bar chart appears, or you can use sticky notes to write feedback […]. The variety of methods to give feedback addresses the play instinct of humans."* (Co-creator A). Besides these findings, three additional aspects are revealed through data collection with living lab facilitators and companies. Companies stress that a living lab should be prepared to capture co-creators' first impression and provide authentic feedback. Usually operating online, Company C explains why capturing the first impression through a living lab has been a valuable experience: *"If they [customers] see a product online, they have a first impression and for us to get this first impression is a make-or-break factor so that we know how to improve our products". […] To me JOSEPHS is actually the opportunity to receive feedback without asking.".* According to companies, workshops should be utilised to address very particular topics of interest to the company whereby the structure should be adapted to the complexity of the co-creation task. *"I believe that through the workshops one can get a bit more concrete with the topics and target audience"* (Company B). Living lab facilitator, on the other hand, focus on the importance of explicit research questions which are an important element to define the research objectives for the project. These should be formulated clearly and communicated in an appropriate manner to co-creators.

Conclusion

The framework developed through this study identifies 50 elements grouped in five critical co-creation factors; their implications for facilitating co-creation in living labs were examined and discussed. The contributions of this study are therefore both theoretical and practical. Findings corroborate and complement existing research (Greve et al, 2016).

This study found that literature, living lab, companies and co-creator are in agreement over only one co-creation element: 'dialogue'. Therefore, a large gap between theory and practice appears to exist. No patterns could be detected with regards to the agreement of important co-creation elements among the three different stakeholders.

Even if involving a limited number of participants, this study offers promising insights. The study contributes to practice by creating first insights into the operational activities, design structures and data collection approaches which are implemented to facilitate co-creation in living labs. Particularly, living labs and companies gain deeper understandings on the factors that are relevant to consider when engaging in co-creation.

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