

Paper submitted to the 35<sup>th</sup> IMP Conference 2019, IÉSEG School of Management, Paris  
August, 28-30

**The value co-creation journey: a longitudinal process unfolding in a network through collaboration**

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Keywords: value co-creation, collaborations, business relationships, network, periods, roles, lighting

Abstract

The aim of this paper is to develop our understanding of the co-creation process in business networks. This paper contributes to the IMP approach in two ways. First, it contributes to a partly unexplored research area at the intersection between value co-creation and collaborations; second, it studies co-creation across several network settings from a small firm's perspective and identifies the role played by the various actors involved in this process.

## INTRODUCTION

This paper investigates the value co-creation process in business networks by focusing on the key periods that characterize it as well as the collaborations among the actors involved and the specific roles these play during the process. Relying on an in-depth case study over the development, sale and installation of a customized lighting solution, we show that co-creation connects settings with different logics, for instance one focusing on developing the technical side of the solution and another more centered around using it (cf. Håkansson & Waluszewski, 2007). Co-creation also implies that elements such as actors and resources belonging to different network settings become connected by means of other elements such as, for instance, specific business relationships and collaborative episodes, which stretch from one setting to another.

More specifically, our central research questions are: (1) how did the actors engage in various collaborations? and (2) what were the consequences of these collaborations on the value creation journey? In practice, we answer these questions by looking at the *roles* of the involved actors and at such consequences as *combining*, *un-combining* and *re-combining*

*resources* and the associated values emerging from such interactions (Baraldi, Gressetvold & Harrison, 2012; Håkansson & Waluszewski, 2002).

Our study adds to the literature on the co-creation of value in business networks by focussing on the evolution of the co-creation process, which we view as a complex and time-consuming journey, similar to the “innovation journey” (Dooley & Van de Ven, 1999; Van de Ven et al., 1999). In particular, we identify four periods in the co-creation journey, which are based on salient episodes in this journey and frame key changes in the resource combination and interaction patterns among the actors in a network (cf. Håkansson & Waluszewski, 2002; Baraldi et al. 2012). These periods entail turning points in how resources are created, combined, re-combined or un-combined in the evolution of a technical solution co-developed and eventually utilized by several actors in the lighting design network we study.

There are few studies using co-creation as a framework to identify stages or periods in co-creation development. For example, Frow et al. (2015) develop a design framework based on the objectives and structural dimensions of co-creation, and Cova and Salle (2008) isolate the business network focus of value co-creation in a staged approach. Our longitudinal journey adds to these perspectives and provides a more detailed process-based understating to the evolution of co-created innovation in networks.

Our study provides an in-depth analysis of a very particular context, namely, a small firm whose customised product technology is realised in a professional network, that is, custom-made lighting solutions finally implemented in a building project by architects, contractors, and clients. This contributes to the growing body of IMP work that focuses on the smaller firm and, in particular, to innovation in this context (Aaboen, La Rocca, Lind, Perna & Shih, 2017; La Rocca & Snehota, 2014; McGrath, Medlin & O’Toole, 2017). The paper is organized as follows: after providing our theoretical framing, we describe our methodology. Then, we present our analysis – which includes a table summarizing the case study – and discussion.

## THEORETICAL FRAMING

### Value co-creation in networks

The IMP approach to co-creation roots this concept’s developed, primarily, in services marketing as a complementary process to interaction when a particular goal is in focus, for example, co-created innovation, or as a label to a particular cooperative process, for example, co-production. Co-creation logic in interaction is less divisible to the individual actor as the control over any process is more dispersed across a network (Gadde & Håkansson, 2008; La Rocca & Snehota, 2014). That is, co-creation in a markets-as-networks approach is contextual and continually changing, and to avoid seeing it only as an outcome requires taking a longitudinal approach (McGrath, Medlin & O’Toole, 2017; Slotte-Koch & Coviello, 2010). Therefore, a range of actors can influence and participate directly in the co-creation of an innovation in a network. The value appropriation from co-creation is perceptual to each of the actors involved and is multi-layered. The value co-created is exploited in many ways, for example, as a revenue stream now and in the future, as a new asset to be exploited in the future, as an influence over, and in the future development of, relationships both direct and indirect in the network.

Value co-creation in a network, as a forward moving concept, takes place when actors collaborate for a specified purpose such as, in the case of this paper, accomplishing an innovation. These collaborative episodes vary in the degree and depth of the engagement of

actors (Lynch, O'Toole & Biemans, 2016). Some of these collaborative episodes will generate direct economic value, especially the later ones, but all will have some benefit to the project being developed or indeed may hasten its decline if there is no long-term perceived value for the actors to be gained from their involvement.

To address our questions we use the co-creation journey metaphor to capture the development of the innovation between the actors over time in an effort to identify and categorize periods of co-creation that signpost critical phases in the innovation journey involving various actors in a network. This co-creation journey ebbs and flows among the actors as resources are combined, recombined and uncombined (Lynch, O'Toole & Biemans, 2016). The roles and tasks the actors perform change as the perceived resources required to develop the innovation change (Laage-Hellman, Lind & Perna, 2014). In the IMP view resources are not defined in a static way but in use between actors in a network (Finch, Wagner and Hynes, 2012; Ford, Gadde, Håkansson & Waluszewski, 2008). Resources flow and new resources are created between actors and in the network as they adapt and invest in the project (Baraldi & Strömsten, 2006; Baraldi, Gressetvold & Harrison, 2012).

### Periods in the co-creation journey

We identified these periods abductively from the case study, but we present them here to frame theoretically our study. The initial period of development is likely to be more intense amongst the actors who are developing the idea for the market – we label this period *opportunity co-creation*. Various constellations of resources are explored between the partners as they assess the combination of resources that they expect might work best in the market (Gadde, Hjelmgren & Skarp, 2012). All the initial ideas will not work so resources will have to be recombined and, in some case, uncombined and eventually discarded in this period. This period can involve some intensive work on technical and design issues to do initial road testing of ideas to ensure they are workable.

The second period in the co-creation process is one where the innovation is designed in the network – we label this period *design co-creation*. This period includes the engagement of a wider pool of experts on the proposed innovation, that is, the design is now co-created to a more saleable idea in a wider network. This broader engagement will facilitate a reflection and assessment among the partners on whether to invest more resources in this version of the innovation or whether to recombine the resources around a new adapted idea emerging from this process. This resource combination period is one of working with a larger set of actors and reflecting on potential, and developing further the market or going back and adapting resources in the project to further open the network to the new idea (Cantú, Corsaro & Snehota, 2012; Jaakkola & Hakanen, 2013).

The third period of co-creation is about adding *services* to the innovation to actually get it into market. We label this period *intangible co-creation*. These co-created intangible resources are, primarily, marketing and communication ones which add also the intangible service resources of the partners to communicate and market the final combination of ideas in association with their partners and into new networks, and with and to existing and new personal contacts.

The final period of the co-creation process is the realization, whereby the solution is finally made available to the customer for direct use, that is, in our case study the finalization of a particular lighting installation in a new building and the contract and delivery system around this. We label this period as *activated value co-creation*. This period includes both the activation of the contract and the delivery system for the innovation, and the economic value

is realised to the parties involved in the innovation. The roles and task to be performed combine negotiation and specification on final design to be realised on-site and on final prices. In addition, the production, logistics and installation tasks have to be performed by all the actors involved (Sinkovics, Kuivalainen & Roath, 2018). These latter activities will be new to the initial partners in the co-creation process and have to be co-created with a range of other, often new actors. The value can only be realised when the (lighting) solution is installed and is working on-site, which require several adaptations to be made for the first time. In replicated future projects, this period is likely to be similar but never quite the same. Unique aspects of final use, delivery, logistics, and engagement with the on-site contractors will be part of this period, which is layered onto the production and supply network of, in our case study, the lighting designers/producers. The construction project network has its own constraints and resource demands (Crespin-Mazet, Havenvid & Linné, 2015) that the partners have to adapt to and invest in, especially in terms of their personal time and commitment, as a failure would impact on their core network and reputation.

#### A NOTE ON METHODOLOGY

Our method relies on an in-depth, longitudinal qualitative case study (Yin, 2009). The empirical material was collected in several waves, with earlier versions of our study based on data that focused on drawing a general map of the co-creation journey and penetrating on single relationships. The subsequent wave of data collection has instead focused on grasping better the network level of this process as well as its details in terms of collaborative episodes. These data collection and analytical steps were necessary in order to dig deeper into the historical process of value co-creation and also capture the roles of the various involved actors (the focal company, key suppliers, installation partners and final customers).

The single case study strategy has been chosen due to the explorative nature of this study (Ibid). 12 face-to-face interviews have been conducted with representatives of the two key actors who initiated the studied value co-creation process, that is, lighting solution provider Antrox and its materials supplier NelDesign. More than 600 e-mails exchanged between Antrox and NelDesign have been analyzed in order to develop a chronology of the key events behind technology and market development. In addition to the interviews, data was also collected in the form of internal reports and brochures.

#### ANALYSIS AND DISCUSSION

We now single out from the case of the lighting solution Deko and the involved network a series of periods making up the value co-creation process and subsequently penetrate the content of these various periods. Moreover, we address our two research questions concerning how the involved actors collaborated, the roles they played as well as the consequences of such interactions on the resources involved during this value creation journey.

This value co-creation journey started in 2008 with the first tests concerning a new plastic material capable to embed lighting elements and peaked with the first installation in a major building project in Dubai in the summer of 2017. During these 9 years, actors dealing with technical development and production (Antrox, NelDesign, as well as several local sub-suppliers and technical experts) interacted with each other and also with actors dealing with using the various solutions, including different kinds of customers (hotel owners as final users, but also intermediate users such as architect Studitalia and the contractor FourZone). These actors relied on different economic logics, with the actors involved primarily with development and production focusing on technical novelty and production efficiency and the

actors on the using side of the network focusing on aesthetics, durability, and cost of using or owning (cf. Håkansson & Waluszewski, 2007; Baraldi, Gregori & Perna, 2011).

During the value co-creation journey, these various actors interacted and collaborated around particular artefacts such as the product(s) being developed (e.g., Deko), and got connected directly or through intermediaries (e.g., the architect Studitalia) acting as brokers. Some resources did not work well as connecting elements and soon disappeared during this journey: for instance Antrox LAB was a product that, despite its novelty and technically superior features, did not appeal to the using side of the network. And since there was no broker able to connect it to users interested in Antrox LAB's key feature of flexibility (and less concerned with aesthetics, its poorer value element), the product had to be basically discarded. An interesting overall feature of this value co-creation journey is accordingly its resilience, that is, it continues even if some of its elements are discarded and changed, so that the value-creating solution appearing and being implemented in the last period is different from the one invented originally (cf. Van de Ven et al., 1999).

Various kinds of material and immaterial resources are also continuously combined, un-combined, re-combined and discarded during this process: the constant willingness of the involved actors to retry and re-combine the resources after every episode of unsatisfactory combination seems to be a key driver that made this co-creation journey endure and overcome several barriers, technical as well as economical. Table 1 summarizes the four periods that we identified in this value co-creation process: they were already introduced in our theoretical framing, but they are inductively developed from the case and we now delve into their details here.

**Table 1: The four periods of the value co-creation journey**

<b>Period and time</b>	<b>Resources patterns</b>	<b>Key episodes</b>	<b>Collaborative patterns</b>	<b>Actors' roles</b>
<b>Opportunity co-creation</b> 2008-2014	Initial exploration of new resource combinations, attempted combinations, uncombining and discarding resources	-Joint analysis of Porotex applications for hosting lighting systems - Initiation and quit of the R&D project around Porotex -Formalization of new R&D project 'Antrox Lab' to continue studying Porotex -Emerging of technical problems -Discovering multiple uses of Porotex	-Antrox (Mr. Giraldi) meet NelDesign (Mr. Raschiatore) -Technical collaboration project Antrox-NelDesign -Antrox takes the lead of the R&D project and intensifies contacts with NelDesign	-Proposer and explorer with focus on matching technical solutions and general needs -Reconfiguring idea and agreeing on workable solutions -Technical leader -Simple and focused roles especially as small firms are involved
<b>Design co-creation</b> Late 2014-spring 2015	Assessing many previous combinations and re-combination of resources into a new crystallized idea	-First product Antrox Lab is developed -First attempt of commercializing the product Antrox Lab fails -Coating process revised -New version of the product is realized: the birth of Deko	-Antrox setup meetings with opinion leaders -Antrox and NelDesign intensifies interactions to find technical solutions -Antrox engages with a new supplier of coating	-Connectors to broader actor pool -Evaluators -Experts and influential actors -Technical problem solvers
<b>Intangible co-creation</b> Late 2014	Combining technical resource (product) with	-Deko is shown to Studitalia -Studitalia offers a business opportunity to Antrox -Deko specified material in	-Antrox setup meetings with potential customers (architects and small	-Marketer & communicator -Reputation builder over broader

and up to 2015	services, marketing and communication resources and complementary knowledge	new building project -Antrox accept to elaborate an economic proposal for FourZone	distributors) -Antrox' e-mail marketing campaign -Antrox met Studitalia in Dubai and alliance to push Deko is formed -Antrox met FourZone for the first time in Dubai	network -Project gate keeper -Supporter of core solution by recommendation -Influencer in 1-to-1 relationships
<b>Activated value co-creation</b>  2016-2017	Implementing final resource combination in a fixed installation that realizes co-created value. Even more intangible service resources combined with focal technical solution to enable actual value-co-creation. Final adaptations to local installation conditions	-Technical discussions Antrox-FourZone-site manager - NelDesign finalizes prototype of Deko with big support of Antrox -Issues with the technical documentation etc. -Antrox' economical proposal is accepted by FourZone -Struggles with packing Deko and its logistics organization -Antrox accomplishes its technical tasks -Final checks on Deko/documentations -Deko is shipped to Dubai -Installation is completed in summer 2017	-Adversarial and heavy negotiations between Antrox and FourZone -NelDesign involves suppliers (new and old) to solve final technical problems -Antrox shares technical documents with FourZone -Technicians from Antrox and NelDesign teach and advice FourZone at the construction site	-Negotiator -Requirement setting -Challenger and skeptic -Adaptor -Teacher -Final problem solver and enabler

## CONCLUSIONS

This paper analyses the development of an innovation in a network using a value co-creation lens from a markets-as-networks (IMP) theoretical perspective. A longitudinal and process perspective is brought to the case situation as we aimed to understand how actors combine resources to create value in a network. To address this central research question we combined ideas from services marketing co-creation with the interaction logic played out in a variety of collaborative settings including in developing, producing and using the innovation in a network. We used an abductive knowledge creation cycle to develop novel insights into how value is co-created during an innovation journey in a network. The work avoids a pre-assigned view of the actors, their interaction pattern, their roles, and how resources were combined. Instead, the value co-creation is caught as 'reality-in-flight' – unfolding in a network over time, a process perspective (Pettigrew, 1997).

In the main, prior empirical research provides an understanding of the protocols and skills needed to collaborate such as information sharing, trust and problem solving (Aarikka-Stenroos et al., 2012; Lynch et al., 2016; McEvily and Marcus, 2005). We also comprehend the rationale for combining the idea of value co-creation with the IMP approach featuring actors interacting in a network (Cova and Salle, 2008), and the complexities of the structure of co-creation (Frow et al., 2015). How value is co-created and realised in a network setting is a missing link in both the markets-as-networks literature and in the innovation literature. We address this gap through proposing an innovation journey metaphor to capture how actors' roles and their collaborative interaction patterns, through resource combining, recombining

and uncombining, unfold to co-create value in a network innovation setting. The co-creation journey in this case is a nine-year one and it is only possible in a network of collaborating actors, but similarly it is constrained by its network context and, at the same time, singularly shaped by the network.

We have partitioned the co-creation journey into four periods, which represent significant collaborative episodes and junctures in the development journey. These have intuitive appeal and, when combined with the behavior of the actors and how they combine resources, may provide theoretical bracketing for future innovation studies using the interaction and interdependence assumptions of the IMP. The four periods were identified and labelled as – opportunity co-creation, design co-creation, intangible co-creation, and activated value co-creation. These periods are characterized by distinct collaborative episodes and are unique in terms of the roles actors perform and the resources combined, but they are not completed, from a business perspective, until the last period, when the innovation is installed on-site and the financial and value-in-use is realized by the actors. The co-creation journey, as conceived in this paper, is evolutionary and interdependent on actors to participate, undertake multiple and single roles, share, withdraw and adapt resources, and to perceive the value in this process. Our co-creation journey unfolds and spreads out across the network in its nine-year pathway to realized value. This unknown journey is dissimilar to innovation developmental processes which are undertaken by fewer actors and under the control of fewer actors, where a timeframe and pathway from idea generation to commercialization can be sequenced in a more lifecycle fashion, or indeed to co-created innovation where actor roles and resource contribution are pre-specified and development cycles are planned (Petersen, Handfield & Ragatz, 2005; Rothaermel & Deeds, 2004; Yenyiyurt, Henke & Yalcinkayo, 2014).

The more detailed content of the four periods in the value co-creation journey is presented in Table 1. It shows the distinctive nature of the four periods of collaboration and helps complete the abductive research cycle through detailing both the resource changes and actor roles in each period. The resources used in the innovation journey include many resource types, both tangible and intangible, that are co-created in interaction between two or more actors. The resources are not neatly categorized and are more visible when mobilized (Gadde et al, 2012; Ford et al., 2008; Ritter & Gemünden, 2003) between the actors. Another feature of the resources used in the network is that they can be combined, recombined and uncombined as needed by the actors. This process happens quite seamlessly and, for example, when resources are uncombined does not seem to affect the resilience of the network; it just continues working as an ecosystem for the actors involved. The roles of the actors are presented in detail in Table 1. These show that multiple actors are needed to enable the co-creation journey and that the actors sometimes play multiple roles simultaneously. Unique roles, up to twenty, are identified and we label many of these roles in a process way, as moving between the actors, for example, connector, influencer, explorer and evaluator.

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