

## Co-creating with Companies: A design led process of learning

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### *Abstract*

*Design emerged and spread at the beginning of the industrial era in a strongly industrial and product-oriented environment. Therefore it developed and consolidated around the notion of industrial product. Today, different voices are calling for a new role for design as a driver of innovation. Especially the notion of co-design, intended as the process of involving customers and end users in developing new products and services has been largely discussed as a source of competitive advantage and as a key element of innovation for companies. Co-design can help companies in generating new and alternative solutions that can satisfy the market needs mainly exploiting approaches and tools that allow customers to express their creativity. On the contrary scarce attention has been spent on the phenomenon of “co-designing with companies”, as a participated design process that takes place between professional designers and people working in companies. This form of co-design shows different characteristics with respect to co-designing with end users. It emerges as a complex process that: (i) aims to apply design methods and competences to investigate the current problems that impair a company to innovate; (ii) considers co-designers as experts, who bring into the innovation process their expertise, along with the company’s culture, values, rules, processes, technologies (which may at the same time impair or enable innovation); (iii) is a learning process, during which co-designers can observe and make practice with the way in which designers investigate the space of a problem and develop visions of the future that can support innovation; (iii) normally ends with ideas for artifacts and services, but also with intangibles results, such as new business models, new processes and rules, new competences, new organizational structures, which may affect the company’s vision, strategy, culture, leadership and processes of development, pushing the company towards transformational changes.*

**Keywords:** *co-design, design processes, organizational change*

## Introduction

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Co-design is an approach to design research and practice rooted in the tradition of User-Centered Design (Norman, 1995) and Participatory Design (Ehn, 1988), which involves users and other stakeholders in the design process. Applied in the development of innovation for companies, co-design often takes the name of 'co-creation', and deals with how organizations can co-create effectively involving consumers in generating new ideas and products.

Many companies are developing strategies to create and manage modes of continuous user-driven innovation and to make profit from them, mainly through co-design platforms and collaboration with lead users. Co-creation can be beneficial to companies because active collaboration with potential users often leads to capturing consumers' latent needs, and to develop innovative ideas (Chesbrough and Appleyard, 2007; Christensen and Raynor, 2003; Cautela, Rizzo, Zurlo, 2009).

Here design competences are applied to facilitate the involvement of users and to design and exploit participatory tools and techniques to support companies in designing with their customers (Brown, 2009).

A consistent series of contributions in design research has largely experimented with the co-design methods and techniques to engage users in the design of products, services, experiences, and the correspondent design strategies (Brant and Mattelmaki, 2009; Ehn, 2008; Sanders and Stappers, 2008). Also literature from managerial science has treated the issue, mainly under the umbrella of open innovation, analyzing the characteristics of markets, companies, communities, products, services and experiences that feed this phenomenon (Chesbrough, 2003). More recently, design research investigated how design practice could assist the management of organizations, and under the concept of "design thinking" was suggested the use of certain aspects of the design competences in management. This approach, claimed in the field of design (Brown, 2009) as well as in the field of design management (Martin, 2009), is seen as a fresh approach in order to solve problems that companies face in developing innovation by focusing on people and their needs and desires in a co-design trajectory.

However, the practice of co-creation is based on the belief that anyone can be creative and contribute to the generation of ideas (Sanders and Stappers, 2008), and its application in productive contexts has mainly resulted in the commitment of the top management of organizations in using external designers as consultants to apply co-design processes and techniques to envision innovative solutions for customers and with customers, that companies should subsequently exploit to innovate in the market. Assuming this point of view, co-design approach results in a form of externalization of the process of innovation to an external design team composed by design experts and customers that never affects the company internal processes.

But the good development of new products, even in cooperation with users, is not always sufficient to guarantee their realization and success. A large number of issues were identified that strongly affect innovation in organizations, such as cross divisional work, cross disciplinary work, resistances to changes and to overcome dogmas, need of new competences, inefficiency of production and business processes (Sange, 1990; Hamel and Prahalad, 2000).

This paper discusses two cases of co-design processes in companies involving professional external designers, people from the company's management and employees

coming from different divisions/areas, bringing specific knowledge about the company and its market. Common characteristics to both cases are that the companies:

- are product developers;
- wish to innovate adopting design knowledge;
- have in-house competencies for the development of products.

The analysis of cases has focused on the results of the process of co-design between external designers and people working in companies. The analysis pointed out two classes of artifacts: a set of new ideas and solutions for products and services that the company will be able to offer to the market; a set of intangibles results, linked to a transfer of competences coming from the design approach, as the capability to analyze and frame problems by adopting new processes, new competences, new rules and procedures, which in turn can affect the entire company's culture.

### Co-creating with companies as a learning process: evidences from two case studies

Literature on managerial sciences (Cheesbrough, 2003; Verganti, 2009) as well as from design research (Deserti, 2009; Deserti and Rizzo, 2011) pointed out how innovation does not hold value in itself (or only for end users), but must be rooted within the need of a company (or a market) to develop changes, exploiting valuable opportunities and building new specific business models.

Meanwhile, literature from organizational sciences underlined how innovation is very hard to be achieved, or even detected, for organizations with a strongly established culture. Employees have deep-rooted beliefs on what the value proposition of their company is and on how to sustain it, and it can be difficult to enroll them in new visions, drawing the attention of the company on new ideas (Schön, 1983; Polyanyi, 1998). Within this frame, the problem of modeling and transferring processes to support companies in innovation was discussed as linked to the activation of creativity as a basic attitude for the envisioning of the change. The strong role recognized to creativity in traditionally “non-creative” activities let to look at the design culture and practice as a source of process models and as a mindset, which could be more effectively applied combining the renewal of the offering with the development of new correspondent business models (Bucolo, 2011).

The work of Schön (1983) and Polyanyi (1998) indicates that design can be a creative approach to learning that can help people in companies to:

- overcome their organizational and cultural dogmas and beliefs;
- see the big picture, discovering new customers' insights and latent needs;
- visualize alternative value propositions and business models.

Central to this approach is the ability of the designer to interpret complex contexts to build and visualize multiple futures, which are then deconstructed to reveal needs, constraints and opportunities (Madhavan and Grover, 1998).

In this paper we present 2 different experiences of co-design processes in companies, with the purpose of investigating this peculiar form of co-design, connecting it to a process of learning that takes place inside an organization, or else that turns into an organizational change.

Cases have been selected applying the following criteria:

- representing examples of application of design tools and methodologies for co-design in real industrial contexts;
- aiming to envision changes and to develop innovation overcoming organizations' dogmas;
- aiming to achieve these results activating high levels of employees' participation.

We will use the cases afterward described to derive some evidences, supporting us to argument that when co-design takes place between a group of people working in a company and external design experts, its effects can be classified in two classes of artifacts: a set of new ideas and solutions for products and services that the company will be able to offer to the market; a set of intangibles results, linked to a transfer of competences coming from the design approach, such as new ways to analyze and frame problems by adopting new processes, new competences, new rules and procedure, which in turn can affect the entire company's culture.

## **Business model innovation through a design-based process: the case of an Italian manufacturing company**

### **The context**

The experience of a machinery manufacturer in Italy offered the opportunity to test a set of tools for business model design and innovation and verify the quality of the output. In recent years the company faced a consistent decline in sales of machinery due to global competition and market conditions. The company was forced to re-think its strategy and business model. The fundamental challenge was the one of developing a consistent line of business shifting from products to services. One of the most critical aspects in designing this change was in the strong manufacturing culture of the company, and the fundamentally technical and mechanical background of most of the employees. These aspects made it very difficult for the company to "see" a different future and a different way to make its profit.

The solution that the company decided to choose to overcome these difficulties was based on the massive involvement of a large part of the employees (150 people) in a series of ten innovation workshop, planned and facilitated by designers, aimed at designing possible business models for new services (Pini, 2011).

### **The project phases**

The project was structured in three phases that involved different subjects within the organization and generated different results.

The first phase was the definition of the overall goal of the innovation process, and the expected impact of the ideas generated on the whole performance of the company. Together with the top management, designers proceeded to establish the innovation agenda for the company by: i) identifying the lines of business development depending on the available resources and the overall corporate strategy for the years to come; ii) selecting an area of development that could be addressed through innovation workshops; iii) establishing a goal for the innovation teams that might be at the same time challenging and yet accessible. In this case, top managers decided to attribute to the different teams the same goal: i.e. to increase revenues by 10% in the next three years through the introduction of new services, without affecting the current product lines.

The second phase was focused on configuring and managing innovation workshops. These workshops were managed through the support of facilitators familiar with the co-

design approach, and were structured around two phases: (i) Overcoming organizational dogmas and envisioning the future; (ii) Designing a possible business model for the service offering.

The third phase was devoted to analyze results obtained during each workshop and to generate, starting from data, clusters of ideas that could be supported by common business models.

### **Workshops aims, structure and tools**

It was agreed with the company management to involve a large portion of the employees (150 individuals) in the innovation process with the following aims: i) offer a signal of radical change in the current company's culture, centered on product and functional fragmentation; ii) work with teams composed of people coming from all the functional areas of the company to acquire different and sometimes conflicting points of view, cross-fertilizing the participants.

Each workshop was structured in 4 modules lasting 2-4 hours, and generated a specific output that was functional to the success of the following activities.

*Overcoming organizational dogma.* This was the first module for the participants, placed right after a short introduction on the workshop goals and agenda, and a definition of services and business models. In this stage, participants were asked to define a set of beliefs on the company and the market that they perceived as possible dogmas, limiting their ability to innovate, and then to report them on post-its, sticking them randomly on a wall.

*Scenario building and knowledge generation.* Following the disclosure of the dogmas, participants were asked to depict a possible market scenario, representing through the use of characters the major changes that would take place in the different macro environmental categories (political, economic, social, technological, etc.) in the near future, as well as in the internal environment of their company.

*Insights identification.* On the base of the different stories presented, participants defined the insights related to the main concerns and interests of the characters previously depicted.

*Service idea generation.* Using the Empathy map as a starting point, participants generated ideas of possible services that might help their customers in satisfying their emerging needs, avoiding threats depicted in the scenario. In this phase of the workshop, people found useful to return to the dogma wall to subvert dogmas as a trigger for more creative thinking.

*Business model design.* On the set of ideas selected, participants were asked to draw the possible business model to support their service and turn it into a business system capable of generating the expected increase in revenues.

Scenario building and storytelling techniques were adopted to generate insights related to the needs and expectations of customers, overcoming dogmas limiting the ability to see customers and their needs under a different perspective; business model definition techniques, based on the model proposed by Oserwalder and Pigneur (2009), were adopted to define coherent value-chain solutions.

## Results

As a whole the project produced 30 different business model prototypes related to services, capable to sustain the expected increases in sales given by top managers as an overall goal for the project. Business model canvases, collected and clustered in families, were presented to the top management for further implementation. Business models dealt with the creation of new services for different customer segments: i) large global companies; ii) small companies and industrial districts; iii) retailers and distributors. The different clusters of business models were created grouping together services that presented similar concepts, served a similar segment of customers or displayed some similarities in the value proposition and revenue models. The most promising areas of innovation were related to small companies and retail. The cluster of services for small companies is focused on the idea of “mobile open workshops”, allowing craftsmen and small producers to access machineries and assistance without buying machineries that could be used only randomly for a specific production or a small lot. The company would provide technical assistance, machinery setup and run an online reservation system, where customers could ask for consulting on the specific set of machineries needed to perform a specific task. The revenue stream is guaranteed through a pay-per-use billing model.

Maps of the organization dogmas. People were forced to see together and cluster dogmas. For example there might be managerial dogmas (“we have no time to plan long-term activities”; “new ideas cost a lot of money”, etc.); market dogmas (“our customers are very traditional and do not like new ideas”; “there is no future in serving small businesses”, etc.); competitive dogmas (“we have to follow the market leaders”; “we cannot compete on costs”; etc.) or organizational ones (“careers are made in functional areas”; “it is difficult to integrate people coming from different sectors in our company”). The elicitation of dogmas allowed participants to discuss about them and develop a more open-minded approach to the observation and the perception of external threats and opportunities. Particular attention was given to the discussion of market and customer dogmas, since participants tended to follow the beaten path on this subject, representing their customers in a traditional and oversimplified way, and displaying resistance to consider the elements of value that customers might like to receive apart from the product.

Scenarios for the next three years. Scenarios for the final markets aimed to define the major internal and external challenges to be faced in the near future. The clustering of scenarios served as a base to create stories with a dominant theme, in which customers are the main characters, adopting storytelling techniques as the backbone of the activity. Some groups depicted scenarios dominated by the issue of the scarcity of resources and the need to increase the rate of savings in transformation processes, due to increase in all company’s costs; others focused on environmental issues, de-localization of small companies or digitalization of retail and distribution.

Insights were related to the main concern and interests of the characters previously depicted. The tool that was adopted to produce insights is the empathy map of Xplane (Fig.1) (Osterwalder and Pigneur, 2010).



**Figure 1. Some examples of the insight map**

This map, based on a short emphatical description of the customer (what he sees, feels, hears, thinks, and which are the main activities he/she undertakes), forced participants to act and think like the customer they described. Starting from these descriptions, participants were able to identify the pains and the gains that their customers wanted to avoid and achieve. As a result of this process, participants could identify latent needs and wants of their potential customers, overcoming their product-based corporate culture, and developing a clearer vision of their effective necessities, which did not appear linked to the usage of machineries, but to the future of their companies, the digitalization of marketplaces, the environmental concerns and the lack of skilled manpower.

The service ideas. Service idea for small companies were generated on the insight that most of the craftsmen are focused on daily activities, feel a strong uncertainty about the future, and are not willing to invest in new machineries or develop new skills. The set of service ideas aimed at helping customers in creating new value for their company, and were focused on developing a more positive stance towards innovation and production flexibility.

Service ideas for retailers were based on the dominant idea of reducing the need of stock and inventory through the digitalization of the outlet and many customer relationship processes. The service offered should be based on an open platform, where dealers and retailers could configure their virtual shop and optimize customer services and spare parts assistance. The service designed would work not only for the products of the company, but as a sort of digital wholesaler or e-commerce platform, thus allowing to manage all products and suppliers. The revenue model is linked to the site consultation, and is based on a service fee plus extra price for custom-fit services.

In general terms, the results of the project were satisfactory, providing not only a set of new ideas but also different business models, allowing the choice of different assets needed, key processes, cost structures, channels of distribution and relationship, and revenue models. The future challenge is to reward the work of all the people that took part to these initiatives in order to create a positive environment for future innovation activities. From an organizational culture perspective, the workshops helped the participants to gain a wider vision of the different roles and functions within the company,

and to overcome some deep-rooted dogmas strongly limiting their ability to see alternative futures for the company.

## Innovating a company's culture through the development of a new brand and product-service system

Brinna is a new Brazilian home furniture brand, part of MD Móveis Group, located in Rio Grande do Sul. At the time when the project started (November 2005), the company was producing unbranded products, positioned in the mid-low segment of the market, and was developing the awareness that this segment would be in a nearby future completely controlled by the organized distribution, which was already leaving very small margins to producers, making them compete just on price.

The company asked our research group to guide a cultural transformation, shifting from the capability to operate in a traditional industrial environment to the capability of interpreting a post-industrial context.

### Project structure

The request from the company was turned into a long-term cooperation project (5 years), with an intensive first phase (2 years) structured in sequential and concurrent steps.

The first step consisted in the construction of a long-term strategy, based on the development of a portfolio of brands with different competitive aims and positionings. These competitive positionings stretch from the mid-low to the high-end segments of the market, and on the introduction of design knowledge and competences inside the company.



**Figure 2. Project structure and main steps**

The second step of the project consisted in the development of a R&D department, characterized by an advanced model of interaction between functional areas, which were put in the same space to make them exchange knowledge and ideas, and work together from the early stages of the development of the new products.

The third step consisted in the development of the first new brand, in terms of opportunities, positioning, values, expected characteristics of products, and the definition of its visual identity.

The fourth step consisted in a wide research, meant as a tool to nurture the development of new products.

The fifth step consisted in the development of the initial product portfolio, which was structured through a workshop involving young designers: the basic idea was that our institution should not get in competition with professionals, but integrate their work offering them opportunities. The subsequent steps, not described here, were finalized to the transformation of conceptual ideas in solutions, and the establishment of a production and retail system.

### Workshop aims, structure and tools

The workshop involved 25 young designers, supported by 4 experts with a wide experience in the sector. The conduction of the workshop was highly structured, and did not start with a simple brief, but with the presentation of a preliminary research, conducted in 6 months, synthesized in 3 dossiers delivered to all the participants:

- company and market research, whose main aim was to define the technological and market framework (capabilities of the company, competitors, peculiar characteristics of market etc.);
- blue-sky research, whose main aim was to provide a set of innovation pathways and inspirational references, in form of scenarios and moodboards;
- brand-identity research, whose main aim was to provide guidelines on the new brand, which was still not existing.

The design brief was thus a synthesis of the dossiers, defining specific requests to designers in terms of expected products. The goal of the workshop was to develop conceptual solutions of new products, starting from the system of constraints and opportunities described in the dossiers.

The workshop was conducted in a 2 months period, during which designers were structured in teams, free to organize their time except for 6 reviews with experts, giving technical support on the development of products. Reviews were organized as seminars, so that each team could interact with the other teams and with the experts, exchanging ideas and stimulating both a cooperative and a competitive attitude.

### Results

The result was the development of nearly 100 ideas for new products, in the form of conceptual designs, ranging from simple freestanding objects to more complex systems and families of objects.



**Figure 3. One of the conceptual solutions (Alberti, Colombo)**

Most of the products presented innovative characteristics, more on the form and use sides rather than on the technological one, since one of the assumptions was to use traditional technologies that the company already possessed or could easily acquire.

The final presentation involved the owners of the company, however, was not intended as a gate in a linear process. The application of a typical funnel model., such as Cooper's stage-gate, was refused in the early steps of the project, considering that it would create a contradiction between efficiency and capability of sustaining creativity and innovation.



**Figure 4. One of the final products**

The selection of the concepts passed through a prototyping phase, conducted in the following months by the company with the help of designers and prototypists, representing the first nucleus of the R&D department. The prototyping phase gave a better understanding of what could be immediately produced, and what would need revisions or improvement of production capabilities.

Almost no solution was discarded, since the general idea was that all the innovative conceptual solutions could be useful, and that the problem was not just to select the ones that would have gone on to the further step of development, but to build a “shelf innovation” approach, preserving solutions that could be adopted in the future.

## Lesson learnt

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Cases reported in this paper are examples of application of co-design in new contexts. They report experiences of use of design skills to help companies in facing the problem of innovation, applying co-design to involve the different internal expertises. The aim of these kinds of processes is to force out-of-the-box thinking in situations where the deep knowledge and the familiarity with the solutions inhibit innovation. Here designers are triggers of new visions, even when the design intervention is limited to the ideation of new products (second case), forcing the company's employees to learn how to think in a systemic way.

In fact, analyzing and comparing cases in detail we found that:

Even if their initial aim was to design a new product or service for the company, both cases ended with the conception of innovative business models, based on a dynamic and systematic change at different levels of the organization;

Co-design was conceived as an experience/learning process with a twofold aim: (i) forcing employees to encompass their limits in envisioning innovation, and (ii) educating them to the potentiality of the design approach. To support the first goal we adopted a series of tools, that we call strategy tools, including scenarios for envisioning, trend books, promising cases, promising design trajectories. Strategy tools synthesize professional designers' vision on the innovation trajectories that the company could implement. These tools represent challenges to employees' ideas and suggestions on new possible directions, stimulating innovation. To support the second goal we used a series of tools, that we call co-design tools, including storyboards, probes, creative exercises, quick and dirty prototypes, sketching techniques, designed to allow employees to express their ideas and visualize them.

Co-design took place among designers and people from different companies' divisions to facilitate learning and mutual collaboration among people from the companies. With the use of homogenous teams it would have been more difficult to overcome dogmas and cultural limitations, since the perceptions of all the participants would have been aligned on pre-built ideas influenced by their functional role.

Designers acted as triggers of new visions that led both companies to reflect on strategic changes. Designers helped figuring out new scenarios and trajectories, making them available as subjects of discussion in the co-design process.

Moreover, both cases represent a change in the way in which co-design has been intended and practiced until now. They have moved beyond the paradigm of envisioning innovation by designing with end users. Instead, they begun helping companies in exploiting internal resources, driving existing competences in re-defining solutions and approaches to the market.

The analysis of cases pushes us to reflect on two different issues: (i) where design skills were applied; (ii) which are the results of these experimentations.

About the application of the design skills and competences, we observed that companies are increasingly grappling with problems that are ambiguous in nature: neither the problem nor its direction or outcome is clear at the outset. As a consequence if designers were traditionally implied in productive contexts to respond to a given brief, in the analysed cases their involvement begins before the design brief is formulated (in the second case the preliminary dossiers were developed by a design-led team). The role played by design in the first case was much more that of facilitating a collaborative process among different company's expertises. This meant enabling people to work together for mutual benefit, far from what might be traditionally described as a design approach. In fact, the results of the project are mainly represented by the creation of artefacts which helped to illustrate the identified opportunities (scenarios, business models, new positioning maps).

In the second case we observed that the adoption of a design-led approach in the development of new products brought the company to re-design the structure of its organisation: from the internal competences to the production processes; from the brand values and identity to the communication strategies and processes. The results of the process are linked with the diffusion of design culture within the company: new competences and a new internal design centre, new production processes, new partnerships with external suppliers, new distribution chains, new products.

Assuming this point of view, as previous studies already started investigating, organisation itself seems to become object of design (Buchanan, 2004), revealing the potential of design in leading the radical changes that companies should adopt to face the problem of innovation (Burn, Cottam, Vanstone, Winhall, 2006).

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