

# Crowdfunding for Design Entrepreneurship and Co-Creation

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Reward-based crowdfunding has become an effective method for designers to realize their product concepts and to promote the phenomenon of design entrepreneurship. Beyond financial aid, crowdfunding platforms allow design entrepreneurs to broadly interact with a large number of people. This interaction serves as a learning process for them to practice co-creation activities with consumers and grow their businesses. This study explores the phenomenon of design entrepreneurship through crowdfunding, particularly how design entrepreneurs manage the new product development process in the crowdfunding context and co-create value with crowdfunding backers. We conducted a 2.5-year case studies, with five designer-led startups in Taiwan, to obtain holistic findings to understand how design entrepreneurs manage co-creation activities in the crowdfunding context. Findings of this study show that the design entrepreneurs adjusted the NPD activities to cope with the fundraising process. The crowdfunding experiences enabled them to learn how to conduct co-creation activities to grow their businesses. The co-creation can contribute to the entire NPD process, from ideation to post-launch. According to the data analysis, we elaborate the co-creation activities in three dimensions: co-creation form, engagement platform, and engaging actors. The co-creation activities at different stages of the NPD process were further discussed in this paper.

**Keywords:** *reward-based crowdfunding; design entrepreneur; co-creation; new product development*

## 1 Introduction

Crowdfunding offers an alternative and a democratic approach to fundraising by drawing on relatively small contributions from a large number of individuals on the Internet (Belleflamme, Lambert, & Schwienbacher, 2013; Silver, Berggren & Fili, 2016). Among various crowdfunding platforms, reward-based ones are the best received and have attracted designers to raise necessary funds for introducing their ideas to the market, enabling them to launch startups or to develop small ventures (Gerber, & Hui, 2013). In the past, designers rarely established their own firms and placed their design ideas into production and market because funds from venture capitalists and banks were usually unavailable in the early development phases of startups. Without these funds, design entrepreneurs would face pressure due to funding gaps (Robb & Robinson, 2014). Thus, reward-based crowdfunding

has become an effective method for designers to realize their product concepts and to promote the phenomenon of design entrepreneurship.

In addition to financial aspects, crowdfunding allows project creators to reach a large number of individuals and receive inputs from potential consumers that can support in decision-making. Viotto da Cruz (2018) argued that crowdfunding serves as an informational mechanism, which provides a valuable source of information on the interest of potential consumers about the project. Information such as the number of project investors (backers) and how much each backer values the project alleviates part of the uncertainty prior to a new product's release in the market. Furthermore, entrepreneurs can receive feedback through suggestions, questions, and opinions that potential consumers leave on the campaign page during the product development process. The value of crowdfunding extends beyond the funds raised. Crowdfunding backers who invest on a project can become a community of active customers that provide external knowledge and boost the project. Designers usually initiate their crowdfunding campaigns in the early new product development (NPD) process. Therefore, they can involve customers (backers) in the product development through crowdfunding. The inputs from customers are a valuable reference that assists designers in adjusting their ideas to meet market needs and in enhancing the product performance.

Web-based platforms have considerably lowered the barrier for consumers to express their opinions and contribute to the improvement of new products. In the Web 2.0 context, consumers are no longer merely passive recipients, rather they are taking an increasingly active role in the NPD process to co-create value with companies (Berthon, Pitt, McCarthy, & Kates, 2007). The integration of consumers as external sources of knowledge is an essential concept of open innovation (Chesbrough, 2003). The knowledge offered by external actors assists nascent entrepreneurs to adjust new products to the external environment, which embodies the paradigm of open innovation (Mollick, 2016; Stanko & Henard, 2016). The shift from simply exploiting customer knowledge to co-creating value with customers has been a distinct culture in reward-based crowdfunding (Sawhney & Prandelli, 2000; Hanna, Rohm, & Crittenden, 2011).

Crowdfunding entrepreneurs benefit from the received funds and also obtain access to a large number of potential customers who are willing to be involved in NPD (Tung & Liu, 2018). Web-based platforms allow entrepreneurs to broadly interact with a large number of people. This interaction serves as a learning process for crowdfunding entrepreneurs to practice co-creation activities with consumers and grow their businesses. Considering that many designers in Taiwan start or grow their businesses through reward-based crowdfunding, their experiences can shed light on the effect of crowdfunding on design entrepreneurship. This study explores the phenomenon of design entrepreneurship through crowdfunding, particularly how design entrepreneurs manage the NPD process through crowdfunding and co-create value with crowdfunding backers. Although interest in crowdfunding research has increased, few studies have focused on co-creation by design entrepreneurs in the crowdfunding context. Because research in this design field is young and fragmented, we conducted 2.5-year case studies to obtain holistic findings regarding design entrepreneurship and co-creation value in the crowdfunding context.

## **2 Literature Review**

### **2.1 Crowdfunding and Open Innovation**

The concept of crowdfunding originated from crowdsourcing, which is the practice of obtaining information, ideas, or support in accomplishing certain tasks from a large number of people, especially those in the online community (Belleflamme, Lambert, & Schwienbacher, 2014; Martinez, 2017). Crowdfunding involves a collective effort from the “crowd” to raise funds online for a new project. This paper focuses on reward-based crowdfunding, in which backers are motivated by what they receive at the end of the project in return for their investment. Many entrepreneurs and fledging startups gravitate toward reward-based crowdfunding and utilize it as a pre-order platform to materialize their product concepts and launch their businesses. The mechanism of crowdfunding benefits from the collaborative nature of humans (McAfee, 2010). Crowdfunding entrepreneurs can connect, communicate, and collaborate with a large number of backers. Backers who provide feedback and ideas potentially assist entrepreneurs in improving initial ideas as products progress to market launch. The injection of a large amount of external knowledge contributes to NPD. Thus, crowdfunding can be seen as a manifestation of an open innovation paradigm in which the “crowd” contributes significantly to knowledge creation in addition to their financial contributions (Lewis-Kraus, 2015).

Innovation performance is related mainly to internal capabilities and organizational linkages with external entities (Piller, Vossen, & Ihl, 2011). Open innovation combining internal with external resources is an approach to boost innovation culture within a company. Despite increasing interest in open innovation, few studies have paid attention to startups and SMEs (small and medium-sized enterprises) because the implementation and management of open innovation can be overwhelming for small firms (Bogers et al., 2017; Brunswicker & Van de Vrande, 2014). Furthermore, due to a lack of internal resources, small firms depend on open innovation more than big companies do for acquiring knowledge, ideas, and relationships from external actors. With this consideration, crowdfunding allows small firms to retrieve knowledge through interaction with backers and obtain insights for enhancing market performance. Crowdfunding entrepreneurs can access individuals outside their firms and integrate them as external sources of knowledge. Regarding crowdfunding as a platform for entrepreneurs to connect with external entities, collaboration with external actors helps entrepreneurs to sensitize themselves toward open innovation practices. Attention should be paid to how entrepreneurs practice open innovation in the crowdfunding context to more thoroughly understand the effects of crowdfunding on entrepreneurship.

### **2.2 Customer Co-creation in the Crowdfunding Context**

Co-creation can be viewed as a particular form of open innovation (Barczak, 2012). Prahalad and Ramaswamy (2004) advocated co-creation experience and stated that firms can co-create unique value with customers to unlock new sources of competitive advantage. Customer co-creation has been acknowledged to contribute to the early NPD stage, where customers contribute novel ideas, select which specific ideas should be pursued, or both (Kahn, 2005). Internet-based infrastructure has lowered the barriers for consumers to participate in the NPD process and allows them to play various roles, such as co-innovators, co-ideators, co-producers, co-designers, co-developers, and co-promoters (Agrawal & Rahman, 2015). The forms of customer co-creation can be widened through the involvement of diverse online and offline platforms (Frow et al., 2015). Focusing on music and film projects on Spain’s crowdfunding platforms, Quero, Ventura, and Kelleher (2017) identified

that backers contribute to projects in several ways, including co-ideation, co-investment, co-testing and co-launch, co-valuation of ideas, co-consumption, and co-design. Driven by user-centered design philosophy, designers are trained to use approaches such as observation and interviews to obtain insights of users for defining the product based on what they need. The participatory approach advocates the collective creativity of designers and users working together in the design development process (Sanders & Stappers, 2008). Crowdfunding offers design entrepreneurs a platform to collaborate with potential users in NPD process, which increases the odds of product success. To assist designers in identifying opportunities for co-creation through crowdfunding, this study aims to understand how design entrepreneurs perform co-creation in the crowdfunding context to start or grow a sustainable business.

### 3 Method

This study aims to understand the impact of crowdfunding on design entrepreneurship. It particularly focuses on the co-creation value provided by backers in the NPD process through crowdfunding. Due to the limited research on the aforementioned topic, this exploratory study adopted a qualitative approach involving multiple case studies to obtain information regarding the issue. Interviews were conducted with crowdfunding entrepreneurs who could offer real-time accounts and retrospective views on the phenomenon of interest. The qualitative data from design entrepreneurs who initiated crowdfunding campaigns can provide insights into how the existence of crowdfunding promotes designers to turn into design entrepreneurs and co-create value with backers in the NPD process.

#### 3.1 Selection of Cases

The cases considered in this research were selected according to the crowdfunding experiences of design entrepreneurs. The criteria for identifying suitable cases for this research were as follows: (a) The crowdfunding project was created by a designer-led firm, (b) the crowdfunding project had met its objective in terms of finance and would subsequently be realized.; (c) the crowdfunding entrepreneur had developed products through funded campaigns; and (d) the entrepreneur was planning to initiate another crowdfunding project in the near future. These criteria allow researchers to collect comprehensive data of the entire NPD process from ideation to post-launch. Therefore, we first searched for crowdfunding campaigns initiated by design entrepreneurs mainly on the Taiwanese crowdfunding platforms, flying V and ZecZec, and the US crowdfunding platforms, Kickstarter and Indigogo. Five designer-led firms that developed different products, including 3D printers, watches, stationery, mobile phone accessories, and novel wallets, met the criteria and agreed to participate in the research. Table 1 provides details of the participating firms, including details of their crowdfunding projects, platforms they have launched on, and the year of the first project.

*Table 1 Profile of Firms participating in this study*

Firms	Crowdfunding Project	Platforms	Year of the 1 <sup>st</sup> project
A	3D printers	ZecZec, Makuake	2013
B	watches	ZecZec, Kickstarter	2015
C	stationery	ZecZec, Kickstarter	2014
D	mobile phone accessories	ZecZec, Flying V, Kickstarter	2013
E	novel wallets	Flying V, Kickstarter	2014

### 3.2 Data collection

The primary data were collected through in-depth interviews conducted in two rounds within 2.5 years. In-depth and long-term case studies allowed us to observe the effects of crowdfunding on the design entrepreneurial process and obtain sufficient data to strengthen the research findings and interpretations. The first interview was conducted during January–May 2016, and the second interview was conducted during December 2017–April 2018. An artifact-based interview method was adopted for the research. During the interview, we provided cue cards containing text related to NPD activities, which aided interviewees in recalling their experiences. The interviewees were asked to use the cue cards to illustrate how they planned NPD activities and the crowdfunding process, as displayed in Figure 1. The interviewees were then provided a semi-structured questionnaire that addressed the following topics: (a) the company’s NPD process and their plans to run a crowdfunding campaign, (b) co-creation activities in each stage of the NPD process, (c) outcomes of co-creation in the crowdfunding context, (d) the challenges involved, and (e) questions about the overall results.

All the interviews were conducted face-to-face, recorded, transcribed, and sent to the participants for their comments and approval. The secondary data covered media documentation, publicly available registers, and company social media, which ensured data triangulation through multiple sources of evidence.



Figure 1. Interviewees used cue cards to illustrate the NPD process for crowdfunding

### 3.3 Data Analysis

After completing the interview transcriptions, data analysis was performed according to the principles of grounded theory methodology. We read the content collected for each case and analysed the data. Because the data was collected from multiple sources, data triangulation allowed the facts regarding each design entrepreneur to be validated. The data were encoded and categorized to form conceptual and expressive groupings. We then interpreted the data according to the research objectives. After performing profound analysis of each case individually, cross-case analysis was completed to identify patterns in the stories and obtain insights regarding how the design entrepreneurs adjusted the NPD process to crowdfunding and conducted customer co-creation through the NPD process. Insights triangulation among researchers was used throughout the data analysis process to ensure the reliability and objectivity of the findings.

## 4 Results

According to the research results, the design entrepreneurs adjusted the NPD activities to cope with the fundraising process, as displayed in Figure 2. The design entrepreneurs pitched new products before proceeding to full production and simultaneously worked on product development along with commercialization. Research indicated that co-creation in reward-based crowdfunding typically contributes to the late phases of the product

development process (Lipusch, Dellermann, Oeste-Reiß, & Ebel, 2018). In this 2.5-year study, our interviewees noted that they extended co-creation practices in the entire NPD process after initiating the first crowdfunding project. The crowdfunding experiences enabled them to learn how to conduct co-creation activities to grow their businesses. According to the data analysis, we elaborate the co-creation activities in three dimensions: co-creation form, engagement platform, and engaging actor. The co-creation activities at different stages of the NPD process are further discussed below.

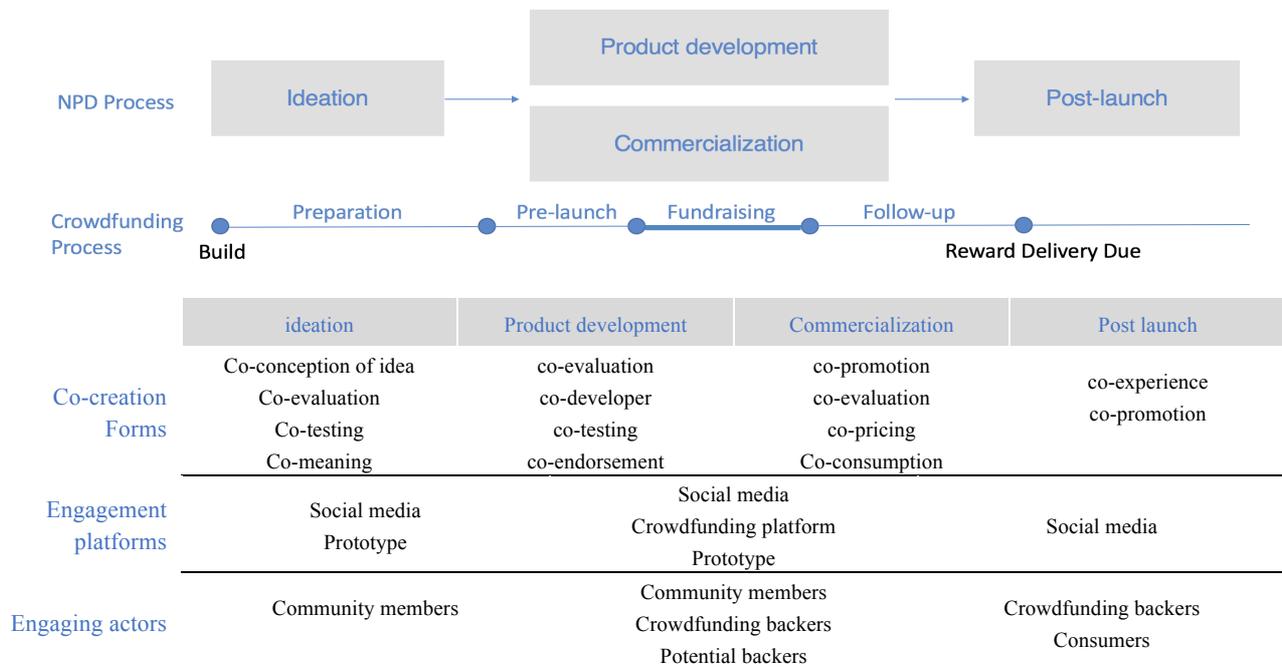


Figure 2. Co-creation activities in the NPD process within crowdfunding context

#### 4.1 Co-creation in the Ideation stage

After each crowdfunding project, the interviewees gradually established their customer community and learned to engage their community members in NPD process. Most crowdfunding backers were committed costumers who were recognized as an essential part of the formation of the “community of active users.” Therefore, the customer community comprised primarily of crowdfunding backers, representing an important group of co-creation partners. Engaging consumers in the ideation stage can contribute to the success of new products. The findings of this study indicate that the community members participated in the following co-creation activities: co-conception of ideas, co-evaluation, co-testing, and co-meaning. The engagement platforms involved social media and prototypes.

The interviewees established their own online communities on several social channels to forge strong relationships. Their community members were eager to provide feedback and suggestions regarding their usage experience, which helped spur discussions among community members. The contents generated by online communities offered a wealth of information about customer requirements and desires. The interviewees mentioned that they could tap into knowledge and ideas from their community members and identify new opportunities. The founder of Case B admitted that he had no idea regarding new products after the first campaign (watch). However, he received many requests and suggestions from

backers that motivated him to expand the product line and develop mechanic watches. From discussions with the community members, he gained the support and confidence to design new watches in various modes and develop mechanic watch through another crowdfunding campaign, which was more successful than the first campaign. Case D originally focused on protective cases of mobile phone, which allowed users to use their mobile phone as a camera when taking a picture. Many crowdfunding backers asked them to develop accessories such as compatible lenses to improve usage experience. To satisfy various user requirements, Case D developed new product lines, a new lens collection, bags, and accessories for enriching the product portfolio and strengthening the brand image. The lens collection ranging from regular lens to lenses with specific functions became a major product line.

In addition to gathering information from online communities, the interviewees engaged their community members in co-evaluation activities by sharing the concept with them and actively seeking their feedback. For example, Case B and E presented several new concepts to their online community members and asked them to cast votes or leave comments. The results allowed the entrepreneurs to understand consumer preference and served as a reference for making decisions. Furthermore, entrepreneurs can involve customers as co-testers by asking them to test a new prototype. Case A sent their core customers new modules or prototypes to obtain their testing feedback. The founder of Case A noted that they had developed a co-creation relationship with the backers since the first crowdfunding campaign in 2013. The backers that supported their first campaign were innovators or 3D printer experts. Their opinions were valuable and helpful for the firm to enhance and upgrade the features and attributes of new products.

The relationship with crowdfunding backers can be maintained even after crowdfunding. Social media provide a cost-effective platform for consumer–firm and consumer–consumer interactions and have drastically changed the value co-creation landscape. Involving consumers in the early stages of the NPD can enable entrepreneurs to be familiar with potential consumers for generating new concepts aligning with their needs or desires.

#### **4.2 Co-creation in Product-Development stage**

Activities during the product development stage involve design verification, final revision, and manufacturing. Customer co-creation helps in the calibration and refining of new products. The main actors engaging in co-creation activities include community members, crowdfunding backers, and potential customers, who contribute to product development through co-evaluation, co-development, co-testing, and co-endorsement. Engagement platforms include social media, crowdfunding platforms, physical events, and prototype products.

Before launching a crowdfunding project, the interviewees noted that they would seek inputs from potential consumers for design calibration, prioritization of product features, and validation of some details of the new product. They shared the product concept on social media to obtain feedback from their community members or used questionnaires to ask potential consumers to prioritize or evaluate the features for the new product. These activities allowed entrepreneurs to understand how consumers perceived the new product and how to refine the new offering.

During fundraising, crowdfunding creators obtain ongoing and timely feedback from the crowd interested in their projects. Interviewees stated that this allows them to listen to

customer voices and improve the initial idea to meet market acceptability. For example, Case E's wallet came with a magnetic design that allowed users to place the wallet on any metal board and easy pick up. However, many people were concerned that the magnetic design might demagnetize credit cards. Although Case E had tested the function and knew that the magnet did not result in such a problem, they finally decided to remove the magnetic function to mitigate the perceived risk. In addition to the feedback from Internet-based platforms, the interviewees also hosted offline events to showcase their project to invited backers or potential backers so that they could experience or test the prototype product in person. The participants in these physical events served as co-testers for using or experiencing the prototype products and providing feedback on the new offerings. Design entrepreneurs also used the opportunity to observe how people used or reacted to the new products. For example, the pen "Slide" designed by Case C creates a subtle hand feel to enrich user experience. During crowdfunding, Case C ran a couple of trial events to observe how people used and judged the prototype. They used this information to refine certain details regarding the final product to promote a better user experience.

An important contribution made by crowdfunding backers is that they commit to future consumption, suggesting that the product is endorsed by a group of consumers. This endorsement provides small firms the credibility that helps them negotiate with factories and move the idea to production. Design entrepreneurs lacking experience and reputation usually have difficulties in outsourcing external manufacturers. The success of crowdfunding can increase the firm's reputation and increase the likelihood of success in negotiating with external resources. For example, Case A did not meet the minimum order quantity when they came to the manufacturer; however, the success of crowdfunding signalled the project's potential and convinced the manufacturer to produce their machine. The number of backers and funds raised in crowdfunding become a support to entrepreneurs for seeking supply chain providers.

### **4.3 Co-creation in Commercialization Stage**

Commercialization activities focus on the marketing and selling of a product in terms of packaging, promotion, branding, and pricing to appeal to customers and entice them to make a purchase. Thus, running a crowdfunding campaign actually involves working on commercialization activities. To achieve success in a crowdfunding campaign, entrepreneurs learn how to reach out to a wide range of potential consumers and practice how to communicate with their potential customers. They engage prospective backers in co-creation activities, such as co-promotion, co-evaluation, and co-pricing, thorough social media and crowdfunding platforms.

Commercialization activities are started in the preparation stage of crowdfunding. Design entrepreneurs use various methods to seek the inputs of community members as co-evaluators for deciding marketing strategies or the price of new products. For example, design entrepreneurs use questionnaires to ask target audiences to prioritize the product features for deciding promotion strategies. The founder of Case B used advertisements on social media to understand target audiences' responses to their watches with different prices and specifications. The results of advertisement testing acted as a reference for them to set the price.

During the funding process, design entrepreneurs have to communicate with prospective consumers and respond to their comments and suggestions. The practice of communication with a large number of consumers enables entrepreneurs to learn how to market their product. The founder of Case D pointed out that their first crowdfunding project taught them

to verify the market opportunity and experiment marketing strategies. They adjusted the marketing strategy so that consumers could perceive the value of their product. The founder stated that:

*“...through running the crowdfunding project, we have learned how to communicate with consumers. We believed that our descriptions were clear enough for consumers. However, consumers did not understand them. We adjusted how we communicate with consumers according to questions and comments raised during crowdfunding.”*

The feedback from the crowd guides design entrepreneurs to judge their products from an audience or user point of view and increase the effectiveness of marketing communications. Crowdfunding provides nascent entrepreneurs a marketing communication tool for achieving effective marketing communication.

#### **4.4 Co-creation in Post-Launch Stage**

In terms of customer co-creation, post-launch activities include nurturing the community, continuously updating information, and maintaining customer relationships. Macht (2014) suggested that crowdfunding is the beginning of developing a long-term relationship with backers. The interviewees indicated that the relationship with backers was continuous rather than a one-time trading relationship. Each crowdfunding campaign can grow its consumer community, and the advent of social media has enabled design entrepreneurs to maintain lasting relationships with their backers. Community members contribute to co-creation activities such as co-experience and co-promotion in the post-launch stage.

Case A built their communities on various social media for bringing its owners together to discuss, support, and share. According to the feedback from backers' usage experiences, Case A learned to absorb the collected information and managed to keep improving their 3D printer. The customer experiences (whether favorable or otherwise) assisted them to continue improving the existing products for achieving customer satisfaction.

The founder of Case E mentioned that *“The first generation product on Kickstarter received a lot of feedback and complaints. To be better, we developed the second generation that was completely aimed at the improvement of the previous generation. And it worked, the negative reviews for the second version were much less.”* In addition to the discussion on the online community, backers would become product ambassadors and promote the product to their own community if they were satisfied with the crowdfunded product. Considering that many backers are lead users and early adopters, their endorsement assists in word-of-mouth enhancing of the product awareness.

## **5 Conclusion**

This research explores how design entrepreneurs co-create with customers in the crowdfunding context. This 2.5-year study aims to understand how design entrepreneurs manage co-creation activities in the entire NPD process and how this customer-centric process occurs in the design entrepreneurial process. For nascent entrepreneurs, crowdfunding is one of the channels to directly reach potential customers and know their customers better. The engaged users become valuable co-creation partners and have a positive impact on the entrepreneurial development of designers. Currently, in the increasingly complex and knowledge-intensive world, customer co-creation helps companies to cope with uncertain changes in the market demand. According to this study, entrepreneurs who want to maintain their firm's growth must focus on crowdfunding not

merely for the raised funds, but rather to develop a lasting and stable relationship with backers. Online platforms and tools have revolutionized the interaction between companies and their customers, where companies and customers can co-create value in a comprehensive and an efficient manner. The future competitive advantage of entrepreneurs would rely on their ability to maintain an active community and engage the community in co-creation activities that revitalize innovation. The involvement of consumers in NPD processes enables design entrepreneurs to access external knowledge for creating and developing their firms. As consumers evolve into multiple co-creation roles in NPD processes, design entrepreneurs should seek methods of working with this outside resource effectively and integrating consumer-centered approaches to innovate their offerings.

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