

PEER DESIGNERS AS STRONG INFLUENCERS ON THE DESIGN PROCESS OF FOOD STARTUPS

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ABSTRACT

As design research expands its horizon, there has been a recent rise in studies on nontraditional designers. Previous studies have noted the positive effect of diversity in generating ideas. Among different sources of influence, peers outside the design team have been noted for their positive impact on the design process, yet the research on this topic is still in its early stages. Using qualitative data from 40 small and medium-sized enterprises (SMEs) in the American and Finnish food and beverage industries, the current study examines their interactions with other SMEs, shedding light on the influence of peers on creating new design solutions. The findings suggest that peer companies can act as a frequent and impactful source of inspiration for product design ideas. The most prevalent forms of interaction were co-creating products, sharing information, and sharing ingredients. Furthermore, the interactions were voluntary, organic, and improvisational in nature, and physical proximity or previous connections often initiated the interactions. Taken together, a great number of peer influences contributed towards creative new solutions.

Keywords: New product development, Design practice, Design process, Collaborative design

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1 INTRODUCTION

Creativity manifests itself in various degrees in any design process (Dorst and Cross, 2001). One important factor for creativity in a design project is diversity. Previous studies suggest that the cross-functionality of a product design team is closely linked to the innovativeness of its products (Vissers & Dankbaar, 2002; Chattalas et al., 2016). Multiple perspectives, which come from the diversity of the members in terms of their background, experience or knowledge (Alves et al., 2007), can encourage novel ideas (Kurtzberg, 2005), novelty being one of the indicators of creativity.

One way of achieving such diversity is expanding the stakeholders involved in the design process. Among different stakeholders, peer designers outside of the immediate design team have been noted to have a major impact on design outcomes. A recent study showed that graphic designers with more cohesive local online networks of peers produced more novel images (Wachs et al., 2018). Furthermore, incorporating peer feedback and support can help novice designers grasp and make sense of design problems (Kim and Lee, 2010). In co-creational settings where users act as designers, peer designers can help achieve better design outcomes by sharing information about a new tool, such as an online toolkit (Franke et al., 2008).

While the design literature recognizes the positive effect of peer influence on creative processes on an individual level, its importance on the firm level has been well noted in management literature. The origin of innovations is no longer at an individual firm but the network of stakeholders the firm is embedded in (Pittaway et al., 2004). A firm's purposive inflows and outflows of knowledge accelerate innovation (Chesbrough, 2003); the firm's network not only increases these flows of knowledge but also facilitates the diffusion of innovations (Gellynck and Kühne, 2010). Collaborative product development has been demonstrated to dilute risk (Farrukh et al., 2003), enhance exchange of expertise (Camarinha-Matos and Abreu, 2007), reduce time-to-market (Littler et al., 1995) and increase innovativeness of new products (Feller et al., 2005). Consequently, in both design and open innovation literature, there is a visible trend towards more alliances and partnerships (Gassman et al., 2010) as well as co-creation (Han, 2012).

However, early studies on collaborative innovation have been largely focused on large corporations (Colurcio et al., 2012), while the small and medium-sized enterprises' perspective is still vastly underexplored. In fact, developing a well-established partner network is more of a necessity than an option for smaller companies, because collaboration is an efficient way to overcome the resource limitations, the so-called liability of smallness (Bougrain and Haudeville, 2002). In order to keep up with the development of the market and meet customer demand (Colurcio and Russo-Spena, 2013), small companies have to innovate, warranting further research on the topic.

The current study examines collaborative innovation from the perspective of peer company influence on idea generation and development in micro-sized packaged food and beverage enterprises. Among different market sectors, the food and beverage industry holds special significance due to the active role of individual-level players (Ramirez-Portilla et al., 2016). The industry, traditionally characterized by its maturity, low innovativeness and slow growth, has been pushed recently by societal and technological changes to explore collaborations as a strategy for innovation and success (Knudsen, 2007; Capitanio et al., 2010). It is also reported that micro-sized enterprises (MSEs) in the food industry leverage their networks to combat their size-related disadvantages (Brinkmann et al., 2014). Although collaborative interactions with different stakeholders sparks new product ideas (Kukko-Liedes et al., 2019), research on food companies' cross-industry interactions and small food companies' interactions remains scarce (Schiefer et al., 2009). By interviewing 20 MSEs in Finland and 20 in Northern California, we shed light on the influence of peer designers across a variety of arenas and development phases in packaged food and beverage MSEs. The current study does not include the evaluation of the collaboration outcomes' creativity based on their variety, quantity, feasibility, or novelty (e.g. Shah et al., 2003; Sarkar; & Chakrabarti, 2011). We instead look at the manifestation of creativity in the collaboration outcomes and the peer influences in developing those.

2 METHODOLOGY

In order to gain knowledge of the peer influences on product development between MSEs, or companies with less than 10 employees (El Madani, 2018), the data was collected through semi-structured, in-depth thematic interviews. We conducted interviews with 20 Northern Californian and 20 Finnish food and beverage MSEs that each had at least one packaged product in the market. All companies had less than

10 employees except one Finnish enterprise. About half of the Finnish companies had multiple founders, so those companies participated in a series of interviews, resulting in a total of 59 interviews (20 from North California and 39 from Finland). The interviews were conducted with the companies' individual founder, a group of founders, or other early key personnel. Although the interviewees were not professional designers, they functioned as designers in their companies, identifying consumer needs and applying those to their product design process. Therefore, we regarded them as designers and their peer companies as peer designers. We defined one's peers as other companies of similar size that do not have any formal responsibility for the focal company's product development process.

Adopting a critical incident approach (Flanagan, 1954; Klein et al., 1989; Chell, 2004), we prompted interviewees to discuss meaningful events, thus tapping into their motivations and other underlying factors that affected the interactions. The themes covered in the interviews ranged from the companies' product design processes to stakeholder interactions and collaborations. The interviews were conducted in either English or Finnish. Some Finnish quotes were translated into English for presentation purposes in the current paper.

All interviews were audio recorded and transcribed. The data was then analyzed through thematic analysis. First, all mentions of the companies' interactions with their stakeholders in their product design process were identified. From these, we singled out the instances involving influence of peer companies. The peer companies included direct competitors, other small companies in the food industry, and small non-food companies. The non-food MSEs mentioned in the data were included in the analysis because their collaborations with the food MSEs were very analogous to the food-food MSE collaborations. In the context of peer collaboration, the small non-food companies behaved similarly to the small food companies. Altogether, there were 31 instances of peer influences in the Northern Californian data and 42 in the Finnish data, summing up to a total of 73 instances. The final step of analysis was thematic coding (Braun and Clarke, 2006) of the peer influences. We found three domains of peer designer influence (product / management / production related) and eight subcategories that define the type of influence (see Table 1). Additional themes coded were the frequency (single interaction / a series of interactions / unclear), origin (event / invite or contact from partner / network / vicinity / unclear), intentionality (intentional / casual / unclear) and phase of product development (pre-development / product development and testing / commercialization) of the peer influences. For example, the following quote was categorized as a product-related influence (*special flavour*), single interaction (*for a festival*), unclear origin (*a nameless organization not clear if from existing connections or vicinity*) and clear internationality (*speciality for a festival*), having taken place in the pre-development phase (*the influence took place before the development started*).

"The collaboration went quite organically. We agreed with their organization that we would do a special flavour. With the actual development of the flavour, we had quite free hands - the only restriction being that it would be a specialty for a festival." (Finnish kombucha MSE)

3 RESULTS

The peer influences took place in the three following domains: product, management, and production (see Table 1). The described peers were all companies similar in their sizes and stages, oftentimes sharing the same sales channels and convening in the same events. In the US data, among the 31 instances of peer influences, 26 involved food companies and the rest involved non-food companies. One peer influence from a direct competitor was reported from a sake maker. The Finnish dataset showed a similar breakdown of peers in the 42 instances, with 27 influences from food companies, 11 from non-food companies, and 4 from competitors. All in all, the peers were an integral part of the companies' product design process, as highlighted in the quote below:

"We have a really close relationship with [the partner]. For example, we did a big event with them a couple of weeks ago. We are really grateful for the close collaborative relationship. We are throwing ideas at each other as well as getting and giving feedback. I mean, they have built a successful and well-recognized business and, thus, have some kind of a perspective on what works and what doesn't." (Finnish honey MSE)

Although the majority of influences came from peers within the same industry, the food companies were also willing to launch products with non-food companies and work with their direct competitors. Oftentimes, these collaborative relationships with non-food peers would lead to solutions new to either

one or both of the collaborating companies. The novelty was manifested as co-created products distinguished from any previous products of the collaborators, as an innovative use of ingredients that would otherwise go to waste, or as tailor-made production equipment. For instance, a sake maker based in Northern California would ask his local competitor for honest feedback, and a brewery in Finland would engage with their competitors by co-brewing a beer. Furthermore, a US ginger beer company was equally excited about a future collaboration opportunity with a candle maker and a past collaboration with a cookie dough company. A Finnish coffee MSE collaborating with a designer highlighted the importance of the collaboration for their brand, saying:

“Design is important and will be important also in the future. Collaborating with a design brand on a special coffee design may not be that significant sales-wises, but branding-wise it plays a big role.” (Finnish coffee MSE)









However, we observed some differences in the firms’ propensity to partner with peer companies depending on the food category of the firm. From both Northern Californian and Finnish datasets, the companies selling alcoholic beverages demonstrated the highest number of collaborative interactions. The collaborators were leveraging not only the alcoholic beverage itself but also the byproducts of its production, such as koji from sake-making or scoby from kombucha-making.

3.1 Domains and types of influence

Overall, the peer companies frequently had an impact on each other’s product development process. The largest portion of the influences led to co-creations of completely new products rather than an iteration of existing products, implying that the influences sparked creativity among the peer companies. Altogether, there were 25 of these product co-creation instances (US - 29% of total instances, Finland - 38% of total instances). Co-creation took the form of designing and creating new products that required both peers’ prolonged dedication, distinguishing co-creation from the cases in which a peer company merely provided a new product idea. For instance, a ginger beer company collaborated with a local ice cream company to launch a new ginger-flavored ice cream, and a chocolate maker collaborated with a distillery to create a gin-infused chocolate.

“It is a collaboration that is nice to talk about as it supports both of our brands. I’m not sure if it still is, but at least it was the only gin-infused chocolate in the world. And this is a fun fact to share.” (Finnish chocolate MSE)

Table 1. Types of peer influences across Northern Californian and Finnish companies

Domain	Type of influence			Total	Total of instances
 PRODUCT-RELATED	Product co-creation	9	16	25	
	Product design	5	2	7	
	Package design	0	1	1	
	Testing	1	1	2	
 MANAGEMENT-RELATED	Information sharing	8	8	16	
	Branding	2	3	5	
 PRODUCTION-RELATED	Ingredient sharing	5	6	11	
	Production collaboration	1	5	6	

Other product-related influence types encompassed product design, package design, and testing. Influences on product and package design introduced a new flavor or package or led to the iteration of existing ones. Lastly, peer influences on testing, which refer to either testing a product or a package, were present in only two instances. Such package designs and testing collaborations all had a certain degree of novelty. Without the peers, the companies otherwise would not have come up with such novel outcomes. For instance, a kombucha company collaborated with a festival organization to create a new flavor, which later became a permanent addition to their product portfolio. Without the initial partnership with the festival organization, the flavor would have not been developed.

The second largest domain for influence was the management side of product development, which included sharing helpful information on production processes or working on branding together. In fact, information sharing was the second most common type of influence overall. The 15 information-

sharing instances (US 26% of total instances, Finland 19% of total instances) had a wide range, from a casual conversation to a long-term mentorship. All the information shared brought novel insights to the focal company. For instance, a peer company would share the applicability of a new ingredient or share a small piece of advice on which equipment to use at a farmer's market. More committed information-sharing instances included a long-term symbiotic relationship between a milk and kefir (a drinking yogurt) company, as captured in the quote below, and a convivial relationship between a honey company and a distillery located in the same rural region. Influences on branding, the other management-related influence type, entailed joint events, product bundles and outsourced social media.





“We really like the [mentor company’s] values. We’ve been their believers and supporters for so long and we use their milk to make our product...They really are like mentors in a way. They helped us with everything... So that’s why I’m good friends with them.” (Northern Californian kefir MSE)

Influences on the production process (n = 17), which were further divided into ingredient sharing and production collaborations, were also prevalent in the data. First, ingredient sharing was composed of either upcycling ingredients or sourcing ingredients from peers. For example, a Finnish chocolate maker collaborated with a cosmetics company to find further uses for their production waste. Another example of ingredient sharing was a tofu company in the US supplying okara, a protein-rich byproduct of tofu, to another company, which would powderize the okara and make vegan cookies. In particular, the ingredient sharing collaborations consisting of upcycling ingredients presented a degree of innovativeness and novelty for the participating companies as the ingredients shared were not ones traditionally used by the participants. Production collaborations included instances of production outsourcing, production equipment sharing, and production tests. The degree of involvement varied from renting a competitor's production facilities for a test run to outsourcing the entire production to a peer food company.

3.2 Frequency and development phase of influences

Another notable characteristic of the peer influences was their recurrence. In both datasets (see Table 2), more than two thirds of the instances consisted of a series of interactions. In other words, both parties were committed to the collaborative relationship for an extended period of time. This might be due to the fact that product co-creation was the most common type of influence; this type of influence typically required substantial commitment of time and resources from both partners to succeed. Altogether, 20 of the 58 serial collaborations were co-creation instances. As all of the co-creation influences led to creation of a new product, it seems that creative efforts play a part in a serial collaboration. Single interactions, on the other hand, often consisted of a single event or single exchange of insights. From the single interactions, 7 out of 17 instances comprised sharing information and thus had a characteristic of novelty, as the information and insights shared were about new ingredients, new production methods or industry insights previously unfamiliar to the focal company.

Table 2. Frequency and development phase of peer influences across Northern Californian and Finnish companies

Theme	Category			Total
 FREQUENCY frequency of a collaboration	Series of interactions	24	29	53
	Single interaction	4	13	17
	Unclear	3	0	3
 TIMING product development stage(s) of a collaboration	Pre-development only	4	5	9
	Pre-development & Product development and testing	0	2	2
	Product development and testing only	6	13	19
	Product development and testing & Commercialization	1	2	3
	Commercialization only	6	2	8
	Pre-development & Commercialization	0	0	0
	All phases	12	18	30
Unclear	2	0	2	

The interactions often started in the early phases of product development, in contrast to merely cooperating to market finished products together. In fact, the majority of the relationships spanned all three phases of product development: pre-development, product development and testing, and commercialization. Only 8 instances (US 19% of total, Finland 5% of total) took place in the commercialization phase. From the individual phases, the middle phase of product development and testing was the most common phase for peer influences. The influences that happened in this phase often entailed sharing production equipment or ingredients. For example, a distillery would do a barrel swap with another distillery. In other cases, the companies were sharing information rather than physical goods. For instance, a functional beverage company asked a competitor how to best conserve the bubbles in a sparkling drink. There were also instances in which the companies collaborated on new package design; a honey company would hire a design agency to develop sustainable new packaging for them.

3.3 Origin and intentionality of influences

In our dataset, even the committed relationships often started small (see Table 3). In the US data, about one half of the relationships were triggered by simply sharing the same production facility or event venue. Being in the same production facility gave the peers an opportunity to easily start a conversation and discuss collaboration ideas, as shown in the quote below.

“So I thought I’m gonna have to make the pie myself...So I took the steps to rent space in a commercial kitchen... I met these two brothers who had a food truck. And they said, ‘Oh, can you make peanut brittle for our food truck?’” (Northern Californian brittle MSE)





The Finnish dataset had much fewer collaboration relationships that emerged from sharing the same space. The descriptions of farmer’s market and incubator culture, which were prevalent in Northern California, were absent in the Finnish interviews. There was, however, an example in the Finnish data of one rural cluster, where two of the studied companies that were collocated would interact due to the proximity and collaborate quite spontaneously for co-creation and information sharing.

In about a quarter of both the Finnish and the American peer influences, the MSEs that were not collocated leveraged their existing networks to collaborate. Because they were using their existing networks, the process was quicker and less burdensome than starting to network from scratch. Furthermore, familiarity with each other’s ways of working among the peers may have enhanced the interactions. Nevertheless, it was less common for the MSEs to actively look for and cold-call a completely new company to collaborate. In the Finnish data, however, the origins could not be determined in two fifths of the instances.

The analysed intentionality of the peers further highlights the casual nature ($n = 30$) of how the influences happened. Half of the influences took place in a casual way, both unexpectedly and unintentionally. These influences did not, at least in the beginning, happen with a clear goal, but started simply because the peers wanted to work on something together. There might have been some preliminary ideas about what the peers might work together on that would become more refined during the collaboration. For example, an insect food MSE was ideating with a bakery to find the ways they could collaborate in terms of both production and new insect-containing baked goods. However, a significant portion of the interactions were intentional ($n = 24$) and had a clear goal in mind from the very beginning, be that co-creating a product, sharing ingredients or exchanging insights. Sometimes the casual interactions turned into more intentional, strategic collaborations along the way. The casual and intentional natures of the interactions were described, for instance, in the following way:

“We were put in touch, and we’re just talking about stuff before, then we were like, ‘hey, why don’t we do a collab?’” (Northern Californian ginger beer MSE)

Table 3. Origin and intentionality of peer influence across Northern Californian and Finnish companies

Theme	Category			Total
 ORIGIN where from a collaborator originated	Event	2	1	3
	Invite / contact from partner	5	9	14
	Network	7	10	17
	Vicinity	12	5	17
	Unclear	5	17	23
 INTENTIONALITY degree of structure and clear goal-orientation of a collaboration	Intentional	12	12	24
	Casual	11	19	30
	Unclear	8	11	19

4 DISCUSSION

Construing food MSE founders as product designers, the current study recognizes the importance of peer designer influence, especially peer collaboration, on the product design process. Packaged food and beverage entrepreneurs reported frequent instances of incorporating peer feedback and developing new products with other peer designers. Based on the findings, we propose peer designers as a new stakeholder group of pivotal importance to the new product development process, one requiring more attention from the design research community.

4.1 Peers' influence as a catalyst for novelty

In the current study, peer designers' influence appeared as a frequent and impactful source of inspiration for the MSEs' new product development process. Analogous to what Foster et al. (2017, p. 6) observed in the craft beer industry, "a powerful picture of community values and goodwill between craft producers" emerged from the interviews. A notable characteristic of the peer influences was their spontaneity and novelty. The most common form of peer influence was co-creation of novel products. Such collaborations were often initiated organically and sometimes unexpectedly. Despite the fact that those were unplanned and required extra resources, many of the MSEs were willing to commit to the co-creations, bringing a valuable addition to their product portfolio. Indeed, many of the peer interactions had humble origins, starting without a clear goal or from pre-existing networks. However, many ended up lasting for an extended period of time and spanned through multiple stages of the product development process. In addition to the aforementioned co-creation, the peer influences had significant design impacts in terms of shared ingredients, shared production equipment and shared insights.

The past research has highlighted a few different facets of the benefits of peer designer influence: better understanding of the design problem, better design outcome, a voluntary support system, and increased novelty of the final product (e.g., Kim and Lee, 2010; Franke et al., 2008; Wachs et al., 2018). To build on the list, the current study suggests peer designer influence as a catalyst for novel product development. Although the expandability of this finding to different fields requires further research, we believe that the bigger design community can potentially benefit from leveraging more peer designer influences. Influence from peers can be used as a tool to overcome, for example, design fixation, along with the existing tools such as reflecting on the roadblock and introducing external triggers (Smith et al., 2011; Crilly, 2015).

For influences from peer designers to be implemented more widely, several aspects have to be considered. First, although the MSEs showed a positive attitude towards their past co-creation projects with their peers, the question about their monetary value remains unanswered. The MSEs did not reveal much information about the monetary outcomes or consumer reactions to the co-created products. However, the fact that the majority of the peer interactions were recurrent hints that the MSEs perceived these collaborative relationships to be successful.

Second, close-knit peer influences might be more typical for some market environments than others. We observed that some firms were more prone to partner with peer companies than others. The tendency to partner was highest among the companies operating in the otherwise highly regulated alcoholic beverage industry. In contrast, some companies reported few to no instances of

collaboration. It seems that certain product categories require strict management of intellectual property and a heavy R&D process and thus may not benefit much from peer collaboration.

4.2 Peer diversity

It is noteworthy that the food companies were influenced by their peers from both the food and non-food industries. Granted, the food companies were influenced more by other food companies than by non-food companies, and the observation is aligned with that of the existing research. Knudsen (2007) showed that food and beverage companies collaborated preferably with partners from their own sector, most likely due to similarity of knowledge bases and, thus, easier inter-organizational interactions.

Yet the food companies also were influenced by non-food companies in their development processes. Past research has focused on innovation collaborations within the same value chain, including vertical alliances with customers or suppliers and horizontal alliances with competitors (e.g., Fearne et al., 2001, Van de Vrande et al., 2009). Less explored are cross-industry partnerships in which the partners operate in the industries that have little or no resemblance to one another. The innovation efforts in these cross-industry relationships are known to often be compromised due to the cognitive distance between the source of knowledge and its application (Gassman et al., 2010).

In contrast to the findings of the previous research, the current study did not reveal any cognitive barriers to accepting influences from non-food companies. Quite the contrary, the results showed that the peer's industry had no significant effect on the eagerness of the MSEs to engage with them nor on the end results of the influence. What enables such low cognitive barriers has yet to be investigated in future research, but it is possible that a shared status as entrepreneurship was more important than a shared industry in these cases. If such a pattern of perceived commonalities amidst diversity could be expanded to other industries and companies of various sizes, more designers could benefit from the diversity that comes with the influence, which is shown to increase creativity (Kurtzberg, 2005).

4.3 Limitations and future research

The findings await further refinement in the light of further research, especially in the three following avenues. First, it remains to be seen whether the findings can be generalized to the traditional field of design. Because the interviewees were mostly founders, they had a high degree of freedom with the design of the products. For in-house or design consultancy teams that are more reliant on project sponsors, such freedom may not be taken for granted. More research is needed to illuminate the influence of peer designers in various naturalistic settings. Second, more systematic and quantitative research should be conducted to assess the impact and practical benefit of peer designer influence. The innovativeness of the end products was not evaluated in the current paper, but objective measures, such as sales statistics or interviews with the customers could help gauge the innovativeness of the outcomes and benefit of the influence. Failure cases or peer collaboration with a negative outcome can also bring interesting insights into the limitation of Open Innovation (Huizingh, 2011). Lastly, future research should examine different facets of peer influence. The current paper mostly reported the peer designers' involvement at the product level, but the peer designers also had effects at other levels. For example, at the company level, the new product outcome of the influences introduced a new marketing or outreach opportunity. How these different organizations influence one another on an ecosystem level posits an interesting arena for further research.

Overall, the current study shows that peer companies play a frequent role in influencing product design of the food MSEs. The largest portion of these influences led to co-creating a product together, implying that peers were a catalyst for introducing novelty into the product portfolio. Furthermore, the MSEs were equally eager to partner with both food and non-food industry peers. Nevertheless, as a great number of the peer influences were still somewhat spontaneous and casual, there remains potential for more systematic and organized leveraging of peers in new product design.

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