Stakeholders’ Collaboration on Innovation in Food Industry

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Abstract

In the dynamic economic environment where knowledge is vastly distributed, companies can no longer rely on their own research and are pushed to utilize outside sources to sustain growth. At the same time, the food industry involves a large number of horizontal and vertical relationships, the very dynamic nature of these relationships play a role in innovation. The primary purpose of the research is to study interactions and relations between stakeholders in the food industry, particularly in Sweden, to gain an understanding of the driving forces for development in food processing and packaging technologies. Also, gain insight into the innovation process at major packaging solution providers (PSP) and process equipment manufacturers (PEM), their interaction, collaboration, and information sharing with food manufacturing companies (FMC). Study shows the views of industry experts strongly reflect that the role of suppliers of processing and packaging in the food industry is “contractual” in nature, whereas ingredient suppliers tend to be more mature partners in the innovation process. The innovation process at major food machinery and packaging companies corresponds well to the ‘food-machinery framework’ of open innovation (Bigliardi et al., 2010). It is apparent that the food industry is taking steps to integrate external knowledge sources in the innovation process, still suppliers continue to play limited strategic role in innovation. This study shows that some barriers to collaboration were identified and they can be grouped into two types: technical and perspective. Technical factors constitute lack of technical expertise amongst food manufacturers, requirement for legal framework and difficulty in predicting future needs.

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1. Introduction

The food industry involves large number of horizontal and vertical relationships, the very dynamic nature of these relationships play role in innovation (Cannon T. 1994). The role of suppliers and their relation with manufacturers in improvement process has long been recognized (Petroni & Panciroli, 2002). Numerous studies recognize that supplier-customer collaboration in new product development (NPD) has a positive impact on product quality, cost and time to market (Clark, 1989). In order to fully capitalize on supplier-customer collaboration it becomes vital to understand the dynamic relation between packaging and processing industry and need to operate closely, develop ways to identify good partners and create & maintain fruitful collaboration (Birkinshaw et al, 2007).

Based on the understanding that the role of suppliers is crucial for technical innovation in food industry, the study is based around understanding of the interaction between food manufacturing companies (FMC) and their suppliers. There has been emphasis and prior research with focus on the role of retailers and ingredient suppliers in innovation, as they induce most visible innovations and a market push (Van der Valk & Wynstra, 2005; Traill & Meulenberg 2002). However the research on collaboration with actors on the other side of food system including packaging and processing equipment industries as well as academia is rather limited.

The primary purpose of the research is to study interactions and relations between stakeholders in food industry, to gain an understanding of the driving forces for development in food processing and packaging technologies. Also gain insight into the innovation process at major Packaging solution provider (PSP) and Process equipment manufacturers (PEM), their interaction, collaboration and information sharing with food manufacturing companies (FMC). This understanding can then be utilized to identify the barriers for collaboration.

The interactions can be defined in terms of involvement in NPD, research collaboration, sharing of production data. Previous research has focused on quantitative evaluation of food manufacturing industry and their suppliers (Ettrit, 1983; Petroni & Pancirolli, 2002). In this study a qualitative approach was adopted which relies on the nature of interaction, degree of interaction as well as at what level the interaction is carried out.

2. Methodology

The research follows an inductive approach which starts with a premise and structure is built around the conceptual framework and the research objectives. The research design is in between tight pre-structured one and loose emergent one. Secondary data collected through literature survey was utilized to develop a conceptual model.

Primary data was collected through interviews with experts from the industry and academia who have experience in working with innovation and collaboration. A non-probability sampling technique was adopted selecting the experts based on three criteria purposeful, strategic and convenience. Semi-structured interview technique was followed where respondents were asked for their opinion on specific open-ended questions. The responses are interpreted along the way and used to investigate further with a sub-question. The interviews were transcribed to text and categorized under common themes which for analysis and comparison. To ascertain the credibility of the data it was triangulated and compared to literature.

3. Results and Discussion

Idea generation is at the front end of innovation, in the majority of food companies these new product development processes are still based on internal innovation factor (Bigliardi et al, 2013). One expert from Tetra Pak Processing AB mention that traditionally the ideas came from academia or from the technical staff within the company and a research project started with a technical solution in mind. The success rate for such projects is very low and in the competitive market situations companies are forced to reconsider this approach to innovation. There has been realization that innovation is about problem solving and thus now the front end of innovation is based on need finding, market push, competitor products as well as advances in institutional research. This shift call for a better understanding of the customers as well as end users end consumers, collaboration with suppliers and research organization.

While the idea generation and collaboration process in larger companies is more complex, to understand the innovation idea generation process in a multi-national packaging company (> 10000 employees) an aspect of
communication came to fore. There exist communication channels, a system to channelize requirements from customer, market and competitors, translating it into requirements, prioritizing it and using them to define research projects. The process is illustrated in below Fig 1.

![Fig 1. Communication channels for customer interaction in a multinational food packaging company](image)

Communication is on a global scale, where ideas and needs from different markets are collected into a central marketing function, converted into requirements, prioritized and finally fed to the centralized R&D. In this system the requirement owners i.e. the research and development team seldom comes in contact with the need owners (customers). In that sense communication channels hamper personal relations and thus a hindrance for collaboration.

Based on the understanding of the communication channels in multinational food packaging companies, flow of innovation projects and inputs from literature, an understanding of the innovation process was built. The innovation process is illustrated in Fig 2.

Most companies today operate on a global scale, supported by a trend of consolidation by merger and acquisitions in the food industry (Returners, 2014). Multinational companies having central R&D cater to customers in every corner of the world; this has let companies to develop innovation process to gather, filter and prioritize the ideas to lead. Also create partnerships and collaborate with other stakeholders.

In the above model ideas are collected from customers, market demands, competitor development, suppliers, consultants and technological advances in the industry and fed into an innovation funnel. Usually the marketing department filters these ideas, checks for feasibility and builds a business case around them. Ideas with a strong business case are prioritized and passed on to the research and development department. They work on the technical developments in collaboration with suppliers. The nature of this collaboration is mostly ‘contractual’. Academic or research institutes are engaged if any fundamental or basic research needs to be conducted. As the developments usually take several years to commercialize and owing to the dynamic market situation these is a need to check and reiterate the market needs as well as the business rational being the project. After the product is developed it is tested with an industrial partner or a trusted customer, fine-tuned and launched in the market. The actors are involved in the early stages of product development especially customers and academia (technology scouting). Their role in strategic development is limited and under-developed.
Further factors that limit the role of suppliers in collaboration and hinder collaboration were identified. Some common barriers to collaboration identified are legal hassles, documentation, and ownership of the research, agreements and setting up a legal framework (Sagay, 2011). Food manufacturers, especially SME see their suppliers as important collaborator for innovation, in their relationship there is exchange of market knowledge and ideas. The reasons cited by food manufacturing companies for limited collaboration with packaging are high cost of capital intensive and trial cost is also more, time consuming. It is much faster and cheaper to work with ingredients for new product development and develop new products new for the market. Another reason that prevents manufacturers to experiment with new processing and packaging technologies is skepticism about safety and the perception amongst consumers.

![Fig. 2. The innovation process for processing and packaging companies](image-url)
4. Conclusion

The views of industry experts strongly reflect the role of suppliers of processing and packaging in food industry is “contractual” in nature, whereas ingredient suppliers tend to be more mature partners in the innovation process. Petroni and Panciroli (2002) in their research on innovation as a determinant of suppliers’ roles and performance found a need for food machinery suppliers to make it their goal to move up from a “contractual” to “mature” or even a “strategic” partner in NPD and innovation.

Documenting the innovation process from industry perspective and role of suppliers in innovation, it can be noted that, the innovation process at major food machinery and packaging company corresponds well to the ‘food-machinery framework of open innovation (Bigliardi et al., 2010). It is apparent that food industry is taking steps to integrate external knowledge sources in the innovation process, still suppliers continues to play limited strategic role in innovation.

Gain insight into barriers to collaboration; some of the barriers to collaboration were identified and they can be grouped into two types: technical and perspective. Technical factors constitute lack of technical expertise amongst food manufacturer, requirement for legal framework and difficulty in predicting future needs. But the more imperative barriers are lack of trust, skepticism about new technologies and conflict of interest Trust continues to be the major barrier for collaboration. Especially with process equipment manufacturer and packaging solution provider where the technological edge accounts for their market advantage. The development for framework for engaging actors should be aimed at fostering trust and build a transparent as well as symbiotic relations. This is a major challenge that needs attention for further research.

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