

Customer involvement in product development

Using Voice of the Customer for innovation and marketing

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215

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Abstract

Purpose – Being innovative and bringing new products to the market fast is important for firms to stay competitive. Customers are important for providing input to product developments in industrial markets. The purpose of this paper is to increase understanding of how firms use Voice of the Customer (VoC) in product development and how VoC can complement other customer involvement methods.

Design/methodology/approach – The paper is based on a qualitative case study of a global leading and innovative firm, a maker of tools for the automotive industry. The study provides detailed insight into the implementation of VoC for product development.

Findings – The process of customer involvement in product development through VoC is explored. The study shows that by using the VoC method, firms can gather knowledge for input to product development projects while developing relationships with a larger number of customers. The findings point out that VoC can be modified to focus on customer needs related to product development as well as marketing efforts requiring cross-functional collaboration. The VoC method is suitable for combining with other customer involvement methods such as project involvement and pilot testing. Through VoC, firms have the chance to benchmark across industries and regions.

Research limitations/implications – The paper provides insights into the VoC process of customer involvement aimed at product development. The case study provides an illustration of how an industrial firm uses VoC in product development. The paper points out the importance of managing external (customer) involvement in product development and internal (cross-functional) collaborations.

Practical implications – A set of questions that firms can ask themselves before embarking on customer involvement has been developed. The paper shows that customers can be involved at a number of points in time, have a wide range of roles and contribute different knowledge. VoC is suitable for combining with other customer involvement methods.

Originality/value – The contribution of the paper consists of a case study illustrating how customer involvement in product development can be achieved through VoC. A number of customer involvement methods for product development are discussed for combining with VoC, showing how different methods are complementary in product development.

Keywords Case study, Innovation, Marketing, Customer relationships, Cross-functional

Paper type Research paper

1. Introduction

Collaborative development between firms is increasing as products include new technologies and are expected to have rapid market introductions. External collaborators have been identified as sources of innovation (Knudsen, 2007; von Hippel, 1988) that improve firms' product development (Lau *et al.*, 2010; Un *et al.*, 2010). Firms collaborate with a number of actors to obtain input for new innovative ideas and to access new technology, as no firm can have all new knowledge in-house. In product development, firms collaborate with a range of partners in their network and supply chain. There is extant literature on supplier involvement in product development (for an overview, see Johnsen, 2009). A more recent literature stream on open innovation includes a wide range of collaboration partners (Chesbrough, 2003; Dahlander and Gann, 2010). The research presented here focusses on the less studied area of customer involvement in product development.



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Customers are identified as valuable for providing input for new innovative ideas (Öberg, 2010; Von Hippel, 1986). Existing customer relationships are important resources in product development (Laage-Hellman *et al.*, 2014). There are a number of methods for firms to collect information and input for innovative efforts from customers. How customers are involved and contribute to the development depends on the aim of the involvement and at what point in time the customer is involved. Customers have been identified as being particularly helpful in the early phases of development, for identifying and verifying needs and ideas (Blazevic and Lievens, 2008; Coviello and Joseph, 2012). For this purpose, firms can use a number of different methods, such as surveys, interviews and focus group studies.

One method for early customer involvement in product development is the Voice of the Customer (VoC; see e.g. Cooper *et al.*, 2002; Griffin and Hauser, 1993; Matzler and Hinterhuber, 1998; Shen *et al.*, 2001). VoC is a marketing and quality tool that can be applied when involving customers in product development. VoC is used for collecting information in order for firms to make better decisions (Aguwa *et al.*, 2012). When using VoC, firms need to not only listen to the present and past experiences of customers but also include future trends (Shen *et al.*, 2001). By focussing VoC more on future needs and trends, firms can gain important insights for their product development. Prior studies of VoC point out that firms are not exploring the full potential of VoC when engaging with customers (Bharadwaj *et al.*, 2012; Stank *et al.*, 1997).

There is extensive research on methods of customer involvement, such as surveys, focus groups, interviews, joint product development projects and observations (see e.g. Anderson *et al.*, 1992; Flint, 2002; Laage-Hellman *et al.*, 2014; Öberg, 2010). However, to our knowledge, there have been few studies of VoC that investigate how firms use VoC for product development. The aim of this paper is therefore to increase our understanding of how firms use VoC in product development to capture customer needs. The paper also aims to show how VoC complements other customer involvement methods in product development. Hence, an innovative firm in an industrial market is studied, providing insights into the process of conducting a VoC. The paper reports on how this firm uses VoC in the product development process (PDP) and works with customers in product development, as well as the implementation and consequences of VoC.

The paper is structured as follows. First, the theory of customer involvement in product development is introduced. Next, the methodology is described, including data collection and data analysis. This is followed by the case description, which presents the case and shows how the firm uses VoC. Thereafter, discussions and conclusions are presented, including managerial implications and suggestions for future research.

2. Theoretical framework

2.1 Customer involvement in product development

In collaborative product development, organisations jointly develop new products. External collaborations are important. Several studies point to an increased need for firms to involve external actors in product development (Chesbrough, 2003; Gupta and Wilemon, 1990). Inter-organisational collaborations can involve a number of actors, for instance suppliers, universities, customers, competitors or other organisations. Faems *et al.* (2005) show that the more firms collaborate with different external partners, the more likely they are to create new or improved products that become a market success. Similarly, Becker and Dietz (2004) point out that external collaborations in product development enhance the probability of creating new products.

It is shown that firms increase their innovation capability by involving customers in their product development and technological innovation efforts (Ayoub *et al.*, 2017; Lin *et al.*, 2010). By involving customers in product development, firms improve the effectiveness of the development process (Fang *et al.*, 2008). However, involving customers in product development efforts can also be challenging. Lin and Huang (2012) point out that while

having strong relationships with customers in collaborative efforts is beneficial in the form of efficiency and effectiveness of the development project, it has a negative influence on innovativeness. The authors explain that close relationships facilitate knowledge transfer but inhibit a broad range of knowledge. Hence, close relationships may harm innovativeness but facilitate knowledge acquisition during the development project. Meanwhile, Fang (2008) points out that co-development with customers that requires a high level of interaction will delay the development process. An additional challenge is that customer involvement seems to be more complex in international settings, making them more dependent on relational variables, where the customer interaction demands more resources due to geographical distance and cultural differences (Ritter and Walter, 2003). Hence, the selection of collaboration partners is important. It is suggested that firms should strive to collaborate with attractive customers such as lead users, financially attractive customers and customers with whom the firm has a close relationship (Gruner and Homburg, 2000).

Eslami and Lakemond (2016) show that customers are included in development projects at different points in time, such as during the early phase for idea creation and during the end phase for testing. Kaulio (1998) identifies prototyping as an important part of the end phase of customer involvement in product development, while Kandemir *et al.* (2006) point out the importance of testing the product with the final customer. Gruner and Homburg (2000) show that customer involvement during the early and late stages is associated with new product success. The authors found no such indication of customer involvement in the middle of NPD projects. However, some studies suggest that customers should participate in all development phases (Carbonell *et al.*, 2009; Coviello and Joseph, 2012).

2.2 Customer roles in product development

A number of customer roles have been identified in innovation efforts (Coviello and Joseph, 2012). Customers can transfer into new roles continuously during the project or enter and exit the project in different phases. Customer roles are not limited to individual projects; they also have roles that contribute to the development of the firm. By affecting the firm on a company level, customers continuously contribute to innovations at the firm (Öberg, 2010). In addition, customers' roles are related to when, in the development phase, the customers are involved. The early development phase includes a number of customer roles, with customers involved in the pre-product phase (Öberg, 2010), concept development (Kaulio, 1998) and ideation (Eslami and Lakemond, 2016; Nambisan, 2002). Further examples of customer roles in the early phases include identification of needs (Laage-Hellman *et al.*, 2014), customers as a source of latent needs, requester and development buyer (Coviello and Joseph, 2012), customers as evaluators of concepts (Laage-Hellman *et al.*, 2014) as well as passive users and active informers (Blazevic and Lievens, 2008). Customer complaints and suggestions are potential streams of ideas (Brockhoff, 2003; Lagrosen, 2005).

Lead users, such as leading-edge customers, generate new innovative product concepts (Carbonell *et al.*, 2012; Von Hippel, 1986). Olson and Bakke (2001) show that lead users generate specific product concept ideas. By collaborating in product development with customers that are lead users in industrial markets, firms rely on customers that are ahead of the market, hence serving a need that other customers will eventually also develop (Lüthje and Herstatt, 2004). Customers are viewed as technical advisors when firms ask them for technical input or guidance through development and testing (Coviello and Joseph, 2012). In order to understand what customers need, Ulwick (2002) points out that firms should ask customers what they want a new product or service to do for them.

Customers are bidirectional creators when they point out a problematic issue and make suggestions as well as provide solutions to the problem (Blazevic and Lievens, 2008). A co-developer is a customer who is directly involved in the project, with the firm and the customer jointly developing parts of, or the complete, product. These customers are involved

in a wide range of innovation tasks (Nambisan, 2002). Callahan and Lasry (2004) show that the importance of end-user input in development projects varies depending on the level of newness of the product. Users can be involved in both product testing and product support for other users (Nambisan, 2002). Laage-Hellman *et al.* (2014) show that customers can evaluate final products through surveys, product clinics and field testing. Coviello and Joseph (2012) present a number of customer roles. The authors show that when a customer is an approver, it provides information about the product to other potential customers and seeks approval from standards authorities for the new technology. In the same line, a promoter refers the product to other potential customers and uses its own network to promote the product. When customers provide feedback on the project or product, at any point during the development, the customer is described as a sounding board. Similarly, a customer that provides opinions, feedback or data on the project has a role as a critic. Finally, the authors also identified customers as early buyers and as providing funding for the R&D project.

2.3 *Methods of customer involvement in product development*

Firms involve customers in product development using a number of methods, such as sending surveys to customers; having customers participate in development projects, focus groups, reference groups, interviews, observation and ethnographical studies; and involving customers in product clinics and field testing (see e.g. Anderson *et al.*, 1992; Flint, 2002; Laage-Hellman *et al.*, 2014; Lagrosen, 2005). Customer surveys are an indirect form of contact with customers, providing the opportunity to reach out to a large number of customers. Through surveys, firms can collect a wide range of knowledge, such as information about the market, customer satisfaction and aspects about the product (Anderson *et al.*, 1992; Laage-Hellman *et al.*, 2014).

In contrast, close customer involvement can be sought with individual customers to participate in specific product development projects. These collaborations have direct contact with customers, who participate in firms' product development projects. In such collaborations, customers can provide technical knowledge and participate in problem-solving tasks (Eslami and Lakemond, 2016). Another rather time-consuming method is observation or participant observation, with an ethnographic approach (see e.g. Cooper *et al.*, 2002; Flint, 2002). Lagrosen (2005) found that firms have limited interactions with customers in product development, mainly due to it being too costly and the belief that customers would not provide innovative input. Other methods for involving customers in product development include having customers in focus groups and conducting interviews with customers. Another type of direct customer involvement method is through product clinics and field testing. At product clinics, customers can evaluate new products and solutions and thus provide feedback on features and product characteristics. In field testing, customers try out the product at their premises. Product clinics and field testing are both carried out at the later stages of the PDP. However, Carbonell and Rodriguez-Escudero (2014) point out that although firms collect information from customers, this information is not always heard in the firms' decision-making processes.

The theoretical discussion is summarised in a theoretical framework on customer involvement in product development (Table I), focussing on six aspects of customer involvement methods. Table I shows the characteristics of these six aspects: number of customers involved, customer relationship, customer contact, customer involvement, customer roles and customer's knowledge contribution.

2.4 *Voice of the Customer*

This paper focusses on VoC as a method to collaborate with customers in product development. VoC is a marketing and quality tool aimed at making firms listen to their customers (Bharadwaj *et al.*, 2012; Griffin and Hauser, 1993; Stank *et al.*, 1997). It is a

structured way to collect information and analyse customer input. VoC includes personal visits and follow-ups, which build a stronger relationship with the customer. Firms use VoC as a method for gathering and analysing information from customers. It is shown to be a suitable method for firms to involve customers in their innovation efforts (Griffin and Hauser, 1993). Firms can use VoC to improve a product, service or process, and thus become more innovative in their offering to customers. VoC investigates customer needs and collects a description of these needs using the customers' own words. Needs are divided into basic, articulated and exciting needs (Matzler and Hinterhuber, 1998). As some customers are prioritised, so their needs can be. The needs are divided into a hierarchy: strategic needs, tactical needs and operational needs. Griffin and Hauser (1993) suggest that 20–30 customers should identify at least 90 per cent of customer needs in a customer segment. The authors point out that individual interviews as well as focus groups can be used to identify needs. Matzler and Hinterhuber (1998) point out that firms should not only collect customer needs, but also ask customers to evaluate the product and get their opinions on competitors' products. Hence, VoC is also used as a tool for benchmarking against competitors. An overview of VoC is shown in Figure 1.

Bharadwaj *et al.* (2012) suggest that VoC can be used throughout the firm and help firms become customer-focused. Jaworski and Kohli (2006) show that firms and customers use VoC to co-create, i.e. the firm and the customers both engage in the learning process. A study of manufacturers of electronics and computer equipment found that the use of VoC could affect the creation and delivery of a superior value proposition (Bharadwaj *et al.*, 2012). Stank *et al.* (1997) show that firms that use VoC and conduct personal meetings with their customers have more satisfied customers. The authors believe that VoC has the potential to give firms much more satisfied customers. It is suggested that their somewhat limited result for customer satisfaction is due to individuals being more or less skilled in customer interaction and the collected information not always being analysed and realised as the firms had planned. Hence, Stank *et al.* (1997) believe that firms have the potential to improve the way they use VoC.

Aspects of customer involvement	Examples of characteristics
Number of customers involved	From a single customer to a large number of customers
Customer relationships	From distant relationship to close partnership
Customer contact	Direct or indirect
Customer involvement	Early, late and project involvement
Customer roles	Idea generator, identification of needs, lead user, co-developer, pilot user, etc.
Customer's knowledge contribution	Areas such as marketing, cost developments, future trends and technical knowledge

Table I. Customer involvement in product development framework

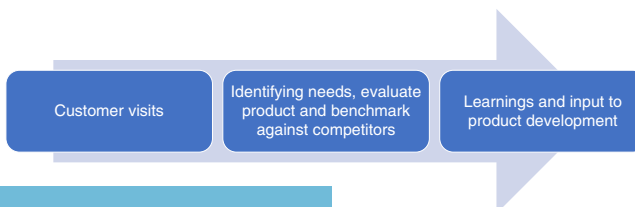


Figure 1. VoC overview

3. Method

This study applies a qualitative single case study methodology to gain a rich insight into customer involvement through VoC in product development. The single case study method is used as it pays attention to the context and enables the telling of a story, as explained by Dyer and Wilkins (1991). The case study method is well established within the literature of customer involvement in product development (see e.g. Eslami and Lakemond, 2016; Laage-Hellman *et al.*, 2014; Lagrosen, 2005). The context of an industrial setting was chosen. A firm, here called Auto, was selected because it operates in an industrial market, is a world-leader of the product range under study and has recently invested a large amount of resources into VoC aimed at product development for a number of product segments. Auto's first VoC was conducted by Auto's R&D unit together with the sales and marketing units.

Auto is a global company developing and manufacturing industrial products. Auto has manufacturing and R&D facilities located in more than 20 countries. The firm has its own operation in more than 90 countries and about 45,000 employees. The business organisation of Auto that is studied here was sampled in collaboration with the firm to ensure that the case was rich in information (Patton, 2002). The chosen organisation focusses on developing industrial tools for the automotive industry. The automotive industry places high demands on the products used in its production line, and customers often ask for innovative efforts from Auto. These customers implement new technologies while placing high demands on availability and quality. The study focussed on how Auto implements and executes VoC.

Data were collected through a combination of documentation and interviews. Documents were the main data source in this study, including information from VoC interviews, development of the decks and analyses made by Auto. In addition, documents related to Auto's PDP, customer involvement and VoC process were studied in depth. The collected material included product presentations, archival documents, internal documents, strategic documents, guidelines, project documentation, VoC documents and PDP documentation. Interviews at Auto were conducted with key individuals involved in VoC, product development and customer relationships. An interview guide focussing on aspects of customer involvement in product development in general and on VoC in particular was made. Semi-structured interviews with six knowledgeable informants were conducted, as interviews are an efficient method for collecting data (Eisenhardt and Graebner, 2007). Interviews allowed for collection of in-depth information about the case. By conducting semi-structured interviews, it was possible to ask follow-up questions and further explore certain topics that emerged during the interviews. The interviewees' roles were VoC manager, global R&D manager, product marketing specialist, sales manager, customer zone manager and business manager. The interviews lasted between 1 and 4 h. The individual responsible for the VoCs under study, who had conducted the majority of the VoC interviews with Auto's customers, was interviewed on multiple occasions.

Following the interviews, the respondents were involved continuously in the case description and data analysis through follow-up e-mails and telephone calls. Data were analysed by building up the case description according to chronological events. Iteration with informants at Auto was an important part of mapping events as they occurred in the project. A within-case analysis was conducted (Eisenhardt, 1989) in which important milestones, customer involvement and cross-functional collaborations were identified. The collected data were analysed following the framework of this study. In addition, interactions between the firm and the customer as well as across functions in the firm were coded to facilitate analysis of the data (Miles and Huberman, 1984).

4. Using VoC for product development at auto

4.1 An overview of product development

At Auto, new products are created through the PDP. This includes concept studies and pre-studies followed by product projects. Product development with low technical and

commercial risk, based on existing products, is most often run separately from the PDP. Extending an existing range, facelift projects, specific customer projects and minor adaptations are examples of this kind of development. The PDP focusses on bigger innovation steps and has a number of stages: concept study, pre-study, product project, project planning phase, design and industrialisation phase and, finally, launch. In this paper, projects run in the PDP process are called product development projects.

Auto has a number of ways to understand customer value and capture customer needs for product development projects. Auto conducts interviews with customers, studies customers by observing workers in production and tries to be a customer by working in the customers' environment. Historically, customers often go to Auto with suggestions for new solutions. "The customers tell us what kind of solution they want. That is not always the best way. Auto needs to identify the customers' needs. The best solution may be something that the customer has not considered" (Business Manager).

4.2 The first VoC

Auto has recently implemented the VoC method for customer involvement in product development. Auto believes that VoC is a structured way of gathering knowledge about customers' needs, and VoC is used to acquire customer input for product development. The VoC method was initiated by Auto's global R&D manager with the aim of collecting input for future product development projects. "We needed to work systematically with our customers, focus on innovation and collaborate with marketing" (Global R&D Manager). Hence, the VoC implementation originated from R&D but was executed in collaboration between R&D and marketing and sales. This required coordinated efforts as R&D was located on one site and marketing was located globally. Auto's CEO has highlighted the importance of VoC, pointing out that it makes a structured and strong analysis of customer needs while maintaining Auto's innovation focus and allows Auto to speak to customers in a way that is relevant to each individual customer.

The VoC process at Auto is presented in Figure 2. First, market segments for VoC are identified. In the first VoC projects, the market segment was one specific product type, a hand-held tool often used by operators in automotive factories. Second, in order to collect information from customers, in-depth interviews were conducted with 70 of Auto's most strategic customers globally. The customers were located in North America, Europe and Asia. They were all well-known, innovative and important customers to Auto. "It was important to map our customers, decide which companies to talk to and identify who at the company to interview" (Global R&D Manager). These customers were large manufacturing firms that produce cars, heavy machinery, heavy vehicles and similar products. Individuals at the customers who were interviewed had a wide range of roles such as factory manager, quality manager, production manager and purchasing manager. The interviews focussed on fundamental questions, asking the customer to explain what was important, what it needed and why.

These interviews were conducted in collaboration between one R&D representative and one marketing specialist. Ten R&D representatives and ten marketing specialists conducted

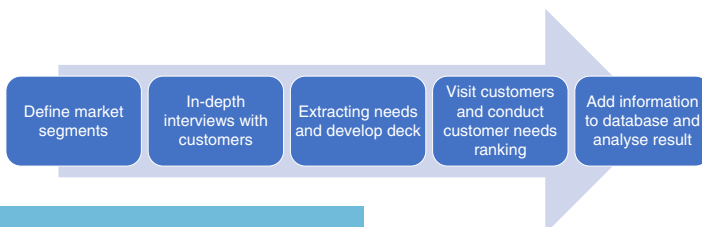


Figure 2.
The VoC process at Auto

the interviews. "It was important for Auto that R&D and marketing collaborated in conducting the in-depth interviews; these functions needed to understand the other party's intent. VoC is not a struggle between functions, it is a collaborative effort in which different functions have different roles during the interviews" (VoC Manager). Hence, Auto collaborated cross-functionally in the VoC process, and individuals who did not know each other got to work together. Efforts were put into understanding and aligning objectives of the two functions. In this internal collaboration, the functions acquired a better understanding of the other function's work as well as its respective short- and long-term objectives.

Third, the interviews were transcribed, resulting in over 800 pages of text. Auto structured and analysed the text, and identified needs. These needs were put on post-its on walls and then grouped into specific needs. In total, 23 groups of needs were identified. Each Post-it contained the exact words of the customer. "It is important to keep the formulation from the customers when extracting needs; this is a Voice of the Customer, not the Voice of Auto" (VoC Manager). In order to be identified as a customer need, it had to have a direction, not be easily measurable and not be a technical solution. The needs also had to have a similar level of abstraction and not be easily misinterpreted. From the 23 groups, 25 customer need cards were developed. Needs concerned issues such as "Easy maintenance is important" and "Low weight and ergonomic handling is vital", which were statements from customers.

Fourth, customer rankings were conducted in North America using the deck of 25 cards. Auto visited customers and conducted about 100 rankings in the automotive industry in the USA. The deck of cards was presented to the customers and each customer prioritised the needs. The customers ranked the needs from most important to least important and answered how good Auto was at fulfilling each need compared with two competitors. This provided an opportunity for Auto to learn more about its customers and further develop their relationship. "During the ranking of cards, we learned more about the customer and which needs were important to each customer. We asked them to explain their ranking and why some needs were more important than others" (Marketing specialist). The customer respondents had a number of different roles at the customer, including quality experts, technical experts, plant managers, production manager, production technician, project leaders, purchasers and maintenance managers.

Fifth, the results and statistics were put into a database and analysed. Examples of rankings were related to the quality of the tool, ergonomics, use of digitalisation, design, cost, service and similar issues. The analysis of the data included a SWOT analysis, ranking distributions, trends and customer analysis. In this database, it was possible to sort different customers and respondents to see trends and differences between customers. The database grew as more organisations in Auto conducted VoC and added their findings to the database. The database is of value to a number of functions in the firm. "R&D uses the database to get customer input when discussing ideas for pre-studies, testing a new technology or planning to develop a component. Marketing and sales use it to make sure they focus on what is important to specific customers in their customer communication" (VoC Manager).

4.3 The second VoC

After finalising the first VoC project, Auto's marketing department in North America decided to conduct a second VoC. From the first VoC, Auto learned that customers would have preferred fewer cards, about 15 cards instead of 25. Hence, Auto selected the top 12 needs from the first deck to be included in the new deck. Three additional cards were developed by Auto's sales and marketing team, focussing on sales attributes for this specific market. These cards included issues such as warranty, delivery and price. Hence, this VoC was aimed at sales and marketing rather than product development. Auto then conducted 40 rankings with automotive customers (the majority of these had not been involved in the

first VoC) in North America using the 15 cards. These customers were large automotive firms with manufacturing sites in North America. The results from ranking the needs were not very different from the first VoC. However, in this second VoC, Auto spent more time interviewing and discussing issues with the customers. As less time was spent on sorting the cards, more time could be spent on learning from the customer. Future trends were discussed and specific technical details could be explored. “They told us that quality was most important. But what do they mean by quality? This had to be explored individually with each customer and each representative, as quality does not mean the same thing to different customers or functions at the same customer” (Marketing specialist).

The second North American VoC was thus more in-depth with a qualitative approach, and more time was spent letting the customers explain why a need was ranked as it was. This VoC focussed on future sales potential, with the interviews including a more short-term focus, such as future investments at the customer. Hence, this VoC was aimed at sales and marketing providing information that would enable Auto to tailor future sales pitches to different customers. Compared with the first VoC, in the second VoC, Auto learned more about the customers’ key reasons for buying their products as well as the most important issues to the customers and why they were so important. In addition, Auto learned about its competitors from the customers, as part of the VoC was to answer how good Auto was at fulfilling each need compared with two competitors. “VoC is useful for benchmarking. We now know more about our competitors’ market shares and why customers choose some of our competitors” (Customer Zone Manager).

4.4 Conducting additional VoCs

Today, Auto has five additional segments that are going through the VoC process. Each segment conducts in-depth interviews globally and extracts customer needs. Several organisations can then use the decks that have been developed to conduct customer rankings. So far, almost 400 customer rankings have been conducted at Auto. The information learned from the VoCs in each segment is shared, and thus each new VoC can start with checking the database to see if the information required is available or if customers need to be visited to perform customer rankings.

One example of an additional VoC is from a specific product development project, where R&D and marketing jointly started by investigating the VoC database to see if they could extract relevant information from their segment. They discovered that much information was available, but not from one particular customer group, the aviation industry. Hence, R&D and marketing jointly conducted 27 need rankings with customers in the aviation industry. These data were added to the database. “It is important to use the database, but it is also important that each product development project conducts additional customer need rankings. By talking to our customers, we learn what is important and why” (VoC Manager). Adding more information to the database increases Auto’s knowledge about its customers and their needs. By conducting structured VoCs, information becomes useful not only for a particular project but for other parts of Auto as well. Hence, within Auto, knowledge about different segments can be shared through the VoC database.

Another example of a VoC conducted at Auto was a market-driven VoC conducted in South America, where the aim was to increase sales. VoC was used to learn more about the customers and further develop customer relationships. “The VoC was made for this particular market with a specific aim, but it is still important that Auto’s deck is used so that the knowledge can be shared within the whole company, not only for one marketing unit” (VoC Manager). Marketing units at Auto benefit from the database by being able to identify which needs are important to specific customers and how different functional roles (such as individuals from the quality department, purchasing or maintenance) rank needs differently. Thereby, they can customise their communication with customers, adapting

the communication to different functions at these firms. Hence, what is relevant to that specific individual can be discussed. VoC also provides opportunities for them to learn more about each customer.

4.5 VoC outcomes

VoC is used as input for new innovation ideas at Auto. Important information about future needs, trends and developments in the industry is gathered for the R&D department through VoC. At the early stages of product development projects, Auto uses VoC to get customer input to identify needs. "We add customer focus and knowledge to our product development process" (Marketing specialist). The ranking allows for comparisons to be made between different types of customers and industries. "A ranking comparison gives us a visual to more easily understand customer needs" (Business Manager).

In addition, Auto was able to benchmark each need with two competitors, since customers provided information on how well Auto performed for the specific need compared with two competitors. Hence, Auto was able to learn about each customer's view of competitors' products and offerings as well as compare Auto's standing across industries and geographical regions. This provided important market information for each region's marketing and sales. Through the database, it was possible to get an overview of the customers' views on competitors globally as well as across industries. This provided important input for future strategic marketing decisions. Hence, it was important to collect and store information centrally.

Using the results from individual VoCs that have been conducted in specific customer segments or geographical regions for other segments or geographical regions has been somewhat problematic. That is because the meaning of, for instance, "quality" varies between industries and applications. By using different languages in the VoCs, translation has also resulted in some nuances being lost from quotes and statements. Hence, replication of cards and customer quotes has not always been successful.

The results from VoCs have been used at Auto when R&D has formulated needs and requirements for new products. The individuals from R&D who have been involved in interviewing customers have gained a better understanding of their customers, the customers' needs and future trends in the industry. The VoC database is available to the R&D department for collecting information and insights into customers' views on requirements for future products. Hence, the VoC database provides input for future development projects. Within Auto, the VoC method is promoted by top management, which provides legitimacy to VoC globally at Auto. When R&D starts new product development projects, one early step of the PDP is to search for information in the VoC database. If information cannot be found there, then R&D, in collaboration with the product owner, can initiate a VoC in a specific segment or region.

Auto has found that customers see benefits from being involved in the VoC process.

"Customers appreciate that we spend time and effort understanding what is important to them" (Business Manager). By conducting rankings and interviews, Auto continues to build relationships with customers. "Voice of the Customer builds trust and shows that we are a partner that cares for our customers" (Marketing specialist). Conducting VoC is also a way of questioning old truths and preconceptions. In addition, Auto builds structured and reusable knowledge that is valuable input for innovative efforts. In fact, sales personnel at Auto have been surprised, as they have learned new things about their customers and increased their understanding of them.

5. Discussion and conclusion

This paper provides insights into the process of conducting VoC and points to the importance of involving customers in product development. By using VoC, firms have a

strategic and structured way of collecting information from customers. By starting a product development project by conducting a VoC, firms put customer focus on product development from the start. By interviewing and conducting need rankings with a larger number of customers in the same segment, firms collect information from a broad knowledge base. The VoC method also allows some adaptability, as demonstrated in the VoCs conducted in North and South America by Auto. The first VoC in North America focussed on customer needs, mostly to provide input for product development projects. The second VoC had a shorter-term focus aimed at providing more knowledge to the marketing and sales department in the USA and to strengthen customer relationships. Similarly, the VoC in South America had a clear aim to increase sales.

Following the case study, questions that the firm needs to consider when involving customers in product development are provided (Table II). Firms need to consider how many customers to involve, if direct contact should be used and what kind of relationship it has with these customers. Other issues relate to the timing of involvement, the customers' roles and knowledge contribution. From the case study at Auto, it was clear that internal issues also needed to be addressed in customer involvement, such as which functions needed to be collaborated, in the case of R&D and marketing and sales. Global companies with many operations also needed to consider how the firm should collaborate across borders (e.g. how to involve customers operating globally, how responsibilities should be divided globally and how to spread the knowledge gained from customers). Finally, firms need to consider which customer involvement methods to combine in product development.

In the following section, each of the aspects in Table II will be discussed by combining VoC with other customer involvement methods for each aspect.

First, the number of customers to involve varies between customer involvement methods. Close-relationship customer involvement methods are often limited to a few customers being involved directly in specific development projects (see e.g. Eslami and Lakemond, 2016; Öberg, 2010). Such collaborations require much interaction on a daily basis to solve specific issues. Other customer involvement methods may involve a larger number of customers but then have limited interaction possibilities when issues can be discussed directly, for instance when customers answer surveys related to customer needs or evaluation of products, resulting in indirect contact (Laage-Hellman *et al.*, 2014). Engagement with customers provides opportunities to strengthen relationships between the firms. However, firms have limited resources and therefore may not be able to work with a large number of customers simultaneously (Laage-Hellman *et al.*, 2018). The number of customers to involve in a VoC varies. At Auto, the number varied between 30 and 100. As each VoC contributes to the VoC database, the number of customers involved increases as VoCs in new industries and new geographical areas are added.

Aspects of customer involvement	Questions to consider
Number of customers involved	How many customers should be involved?
Customer relationships	What kind of relationship do we have with these customers?
Customer contact	Should we use indirect or direct customer contact?
Customer involvement	When should the customer be involved?
Customer roles	What role should the customer have?
Customer's knowledge contribution	In what area do we want the customer to contribute knowledge?
Internal collaboration	Which internal functions need to collaborate? Which geographical areas need to collaborate?
Complementarities of customer involvement methods	How can different customer involvement methods be combined?

Table II.
Revised framework of customer involvement in product development

Second, with regard to customer relationships and customer contact, firms need to make conscious selections of which customers to involve (Carbonell *et al.*, 2012). The VoC method at Auto involved existing customers, where marketing and sales typically knew the customers well. Hence, few new customer relationships were established through VoC. VoC may therefore not be the best choice when aiming to increase market share by adding new customers. VoC includes personal visits and discussions with a large number of customers, hence overcoming the weakness of surveys of limited possibilities for interaction, as well as the weakness of customer involvement in specific projects of limited numbers of customers from which to learn and strengthen the relationship. Single customer involvements in specific projects allow for close customer interaction, particularly in the early and late phases of the development projects (Laage-Hellman *et al.*, 2018; Öberg, 2010). Other methods, such as customer interviews and focus groups, have many similarities with VoC, the interview itself and the possibility of discussing issues with one or a few customers. Observation includes spending a long time at one or a few customers, which gives the firm the chance to observe and participate in using its own product in a real environment (Flint, 2002). However, this kind of ethnographic study is very time-consuming and can thus not be made at a large number of customers.

Third, VoC is an early involvement method where customers provide information about future needs and trends. Comparing VoC with other customer involvement methods, it is clear that VoC includes customer roles such as identification of needs, resources for ideas, requester and idea generator (Blazevic and Lievens, 2008; Coviello and Joseph, 2012; Eslami and Lakemond, 2016; Laage-Hellman *et al.*, 2014). A combination of different customer involvement methods could be applied to gain as much customer input as possible, adjusted to the specific aims at the firm (see e.g. Anderson *et al.*, 1992; Laage-Hellman *et al.*, 2014). VoC could also be used as a screening process to identify potential customers to involve in more in-depth collaborative development projects or for participating in product clinics and pilot testing. Hence, VoC is not a method suitable for all types of customer involvement; instead, it is a complementary method of early customer involvement for gathering innovation input while simultaneously strengthening customer relationships.

Fourth, VoC provides an opportunity to learn from customers, which has been shown to be important (Shamma and Hassan, 2013). In VoC, the customers' knowledge contribution is provided in the early phase of product development. The VoC method allows for a wide range of information to be collected, since both the interview questions and the selected customer interviewees can be modified depending on the aim of the VoC. Hence, a different set of questions and interviewees can be sought. Similarly, surveys, interviews and focus groups can be adapted to the type of information firms want to collect. In collaborative product development projects, customers mainly provide technical knowledge (Eslami and Lakemond, 2016). Through observation, firms learn many things about how the product is used, including, e.g. what issues customers may have with the product and which aspects of the products need to be improved. On the one hand, customer involvements in product clinics provide customer input on the tested product for future developments, bringing knowledge of customers' expectations and requests for future products (Laage-Hellman *et al.*, 2014). On the other hand, field testing provides information about the developed product from customers, allowing for small technical and designer adjustments.

Fifth, involving customers in product development has consequences for the internal collaborations across functions within firms. Cross-functional collaboration is often used in product development in which customers are involved (Lagrosen, 2005). In the VoC at the studied firm, R&D and marketing and sales collaborated across functions to conduct interviews with customers. The functions needed to coordinate and align their agendas for this specific task. While R&D had a long-term focus on collecting information about future demands, trends and technologies, marketing had a more short-term objective, which was to collect information about potentials for future sales. The coordination efforts needed are in line with previous studies,

showing that as departments within firms specialise, they need to coordinate in order to achieve the firms' overall goal (Carlile and Reberich, 2003). Other customers' involvement methods typically also include cross-functional collaborations, such as between R&D and marketing in product development projects, and between R&D and production in pilot testing. Since the VoCs were conducted in multiple geographical locations, while R&D was located on one site, the collaboration in Auto was also across geographical borders. The customer contacts that marketing had in different geographical areas were vital for booking VoC interviews with customers. To access customers, R&D needed the collaboration from marketing to identify both suitable customers and interviewees at these customers.

There are some limitations and disadvantages to using VoC for product development. The case study showed some difficulties accessing new customers to include in the VoC. Hence, the firm relied on customers that they already knew well, where it was easy to get access to interview personnel. The need cards sometimes limited discussions with the interviewees, as the topics of discussion were dictated by the cards. Hence, customers had few opportunities to discuss other issues that were not included on the cards. Another disadvantage with the cards proved to be the number of cards. By having a high number of cards many aspects of a product could be discussed, but due to the limited time each need could only be discussed somewhat shallowly. A final issue with the need cards was that replication of cards proved somewhat difficult since applications, industries and geographical areas have different needs. A final consideration was the firm's high reliance on the individuals that conducted the interviews. They all received some training, but in order to collect information for product development projects, individuals needed to understand the product, the customers' business and application, trends in the industry as well as build customer relationships. To achieve this, the firm had representatives from both R&D and marketing and sales. However, these individuals often did not know each other beforehand but needed to be in sync when interviewing customers. This could prove challenging in the early phases of the VoC.

The study has a number of managerial implications. First, the discussion shows that VoC has both similarities and differences compared with other customer involvement methods in product development. VoC provides firms with the possibility to involve a larger number of customers to provide information and knowledge. Interviewees at the customers can have a wide range of roles, such as users, buyers, developers and managers. Hence, depending on the aim of the VoC, suitable customer roles must be sought. VoC complements other customer involvement methods in product development. VoC can also be used as a screening process to identify potential customers to involve in more in-depth collaborative development projects or to participate in product clinics and pilot testing. Hence, VoC is not a method suitable for all types of customer involvement; instead, it is a complementary method of early customer involvement for gathering innovation input while simultaneously strengthening customer relationships. However, for small firms, the VoC may prove too costly. In that case, a small firm can embark on a smaller-scale VoC, involving a few hand-picked customers. The VoC can help small firms improve their customer relationships while learning the needs of these customers.

Second, there are a number of issues that managers need to consider when implementing VoC. The case of Auto points to the importance of having the support of top management (CEO) as well as management within R&D. It is important to have top management support when introducing the VoC method on a global scale. It also requires collaboration within the firm, particularly between R&D and marketing and sales, as well as external collaboration with customers. Meeting customers to conduct VoC requires planning, preparation and customer contacts in order to access knowledgeable informants at the customers. The VoC database becomes important company knowledge; however, the trade-off between providing specific product and project development input and providing knowledge that could be useful for the whole company needs to be considered.

Third, VoC was also useful for benchmarking purposes, with firms having the possibility to learn about competitors' products through customers and understanding why customers may rank some competitors higher. Since the cards of needs cover many topics, such as technology, quality, price, service, design and ergonomics, it is possible to understand the importance of these needs to the customer as well as how well competitors are perceived regarding fulfilling these needs. An analysis of competitors can be made within and across both industries and geographical regions.

Fourth, VoC provides a method to compare customers' needs globally and between industries and markets. However, there is a trade-off to consider, namely between specific knowledge and general knowledge. Firms need to consider what information to collect. VoCs originating from specific R&D departments may focus on a particular component or product; however, other parts of the firm (such as marketing and sales) may want customer information that is useful for marketing purposes and to strengthen the customer relationship. Hence, managers need to consider carefully who to involve within the firm as well as which customers and which customers' representatives to include in the VoC.

This study has a number of limitations. A single firm has been studied with the focus on how it conducts VoC. While the case provides detailed insights into the VoC process, it is limited to a single firm. The study is limited to considering the firm's perspective; it does not include the customers' views on VoC. Since anonymity of the firm was promised, no names of either the firm or its customers could be disclosed. Details of the need cards and the findings from the VoCs were considered intellectual assets of the firm and could not be shared publicly. This is obviously a limitation of the study, but rather than providing details about customers, cards and outcomes, the paper focusses on discussing customer involvement through VoC. Future studies could investigate the customers' views on VoC and their effect on development projects. Another interesting research avenue would be to explore the role VoC plays in customer relationships and how VoC can be used as a structured and strategic tool to improve relationships.

References

- Aguwa, C.C., Monplaisir, L. and Turgut, O. (2012), "Voice of the Customer: customer satisfaction ratio based analysis", *Expert Systems with Applications*, Vol. 39 No. 11, pp. 10112-10119.
- Anderson, J.C., Jain, D.C. and Chintagunta, P.K. (1992), "Customer value assessment in business markets: a state-of-practice study", *Journal of Business-to-Business Marketing*, Vol. 1 No. 1, pp. 3-29.
- Ayoub, H.F., Abdallah, A.B. and Suifan, T.S. (2017), "The effect of supply chain integration on technical innovation in Jordan: the mediating role of knowledge management", *Benchmarking: An International Journal*, Vol. 24 No. 3, pp. 594-616.
- Becker, W. and Dietz, J. (2004), "R&D cooperation and innovation activities of firms – evidence for the German manufacturing industry", *Research Policy*, Vol. 33 No. 2, pp. 209-223.
- Bharadwaj, N., Nevin, J.R. and Wallman, J.P. (2012), "Explicating hearing the Voice of the Customer as a manifestation of customer focus and assessing its consequences", *Journal of Product Innovation Management*, Vol. 29 No. 6, pp. 1012-1030.
- Blazevic, V. and Lievens, A. (2008), "Managing innovation through customer coproduced knowledge in electronic services: an exploratory study", *Journal of the Academy of Marketing Science*, Vol. 36 No. 1, pp. 138-151.
- Brockhoff, K. (2003), "Customers' perspectives of involvement in new product development", *International Journal of Technology Management*, Vol. 26 Nos 5-6, pp. 464-481.
- Callahan, J. and Lasry, E. (2004), "The importance of customer input in the development of very new products", *R&D Management*, Vol. 34, pp. 107-120.
- Carbonell, P. and Rodriguez-Escudero, A.-I. (2014), "Antecedents and consequences of using information from customers involved in new service development", *Journal of Business & Industrial Marketing*, Vol. 29 No. 2, pp. 112-122.

- Carbonell, P., Rodríguez-Escudero, A.I. and Pujari, D. (2009), "Customer involvement in new service development: an examination of antecedents and outcomes", *Journal of Product Innovation Management*, Vol. 26 No. 5, pp. 536-550.
- Carbonell, P., Rodríguez-Escudero, A.I. and Pujari, D. (2012), "Performance effects of involving lead users and close customers in new service development", *Journal of Services Marketing*, Vol. 26 No. 7, pp. 497-509.
- Carlile, P. and Reberntisch, E. (2003), "Into the black box: the knowledge transformation cycle", *Management Science*, Vol. 49 No. 9, pp. 1180-1195.
- Chesbrough, H. (2003), "The era of open innovation", *Sloan Management Review*, Vol. 44 No. 3, pp. 35-41.
- Cooper, R.G., Edgett, S.J. and Kleinschmidt, E.J. (2002), "Optimizing the stage-gate process: what best-practice companies do – I", *Research-Technology Management*, Vol. 45 No. 5, pp. 21-27.
- Coviello, N.E. and Joseph, R.M. (2012), "Creating major innovations with customers: insights from small and young technology firms", *Journal of Marketing*, Vol. 76 No. 6, pp. 87-104.
- Dahlander, L. and Gann, D.M. (2010), "How open is innovation?", *Research Policy*, Vol. 39 No. 6, pp. 699-709.
- Dyer, W.G. and Wilkins, A.L. (1991), "Better stories, not better constructs, to generate better theory: a rejoinder to Eisenhardt", *Academy of Management Review*, Vol. 16 No. 3, pp. 613-619.
- Eisenhardt, K. (1989), "Building theories from case study research", *Academy of Management Review*, Vol. 14 No. 4, pp. 532-550.
- Eisenhardt, K. and Graebner, M. (2007), "Theory building from cases: opportunities and challenges", *Academy of Management Journal*, Vol. 50, pp. 25-32.
- Eslami, M.H. and Lakemond, N. (2016), "Knowledge integration with customers in collaborative product development projects", *Journal of Business & Industrial Marketing*, Vol. 31 No. 7, pp. 889-900.
- Faems, D., Van Looy, B. and Debackere, K. (2005), "Interorganizational collaboration and innovation: toward a portfolio approach*", *Journal of Product Innovation Management*, Vol. 22 No. 3, pp. 238-250.
- Fang, E. (2008), "Customer participation and the trade-off between new product innovativeness and speed to market", *Journal of Marketing*, Vol. 72 No. 4, pp. 90-104.
- Fang, E., Palmatier, R.W. and Evans, K.R. (2008), "Influence of customer participation on creating and sharing of new product value", *Journal of the Academy of Marketing Science*, Vol. 36 No. 3, pp. 322-336.
- Flint, D.J. (2002), "Compressing new product success-to-success cycle time: deep customer value understanding and idea generation", *Industrial Marketing Management*, Vol. 31 No. 4, pp. 305-315.
- Griffin, A. and Hauser, J.R. (1993), "The Voice of the Customer", *Marketing Science*, Vol. 12 No. 1, pp. 1-27.
- Gruner, K.E. and Homburg, C. (2000), "Does customer interaction enhance new product success?", *Journal of Business Research*, Vol. 49 No. 1, pp. 1-14.
- Gupta, A.K. and Wilemon, D.L. (1990), "Accelerating the development of technology-based new products", *California Management Review*, Vol. 32 No. 2, pp. 24-44.
- Jaworski, B. and Kohli, A.K. (2006), "Co-creating the Voice of the Customer", *The Service Dominant Logic of Marketing: Dialog, Debate and Directions*, pp. 109-117.
- Johnsen, T.E. (2009), "Supplier involvement in new product development and innovation: taking stock and looking to the future", *Journal of Purchasing and Supply Management*, Vol. 15 No. 3, pp. 187-197.
- Kandemir, D., Calantone, R. and Garcia, R. (2006), "An exploration of organizational factors in new product development success", *Journal of Business & Industrial Marketing*, Vol. 21 No. 5, pp. 300-310.

- Kaulio, M.A. (1998), "Customer, consumer and user involvement in product development: a framework and a review of selected methods", *Total Quality Management*, Vol. 9 No. 1, pp. 141-149.
- Knudsen, M.P. (2007), "The relative importance of interfirm relationships and knowledge transfer for new product development success*", *Journal of Product Innovation Management*, Vol. 24 No. 2, pp. 117-138.
- Laage-Hellman, J., Landqvist, M. and Lind, F. (2018), "Business creation in networks: how a technology-based start-up collaborates with customers in product development", *Industrial Marketing Management*, Vol. 70, April, pp. 13-24.
- Laage-Hellman, J., Lind, F. and Perna, A. (2014), "Customer involvement in product development: an industrial network perspective", *Journal of Business-to-Business Marketing*, Vol. 21 No. 4, pp. 257-276.
- Lagrosen, S. (2005), "Customer involvement in new product development: a relationship marketing perspective", *European Journal of Innovation Management*, Vol. 8 No. 4, pp. 424-436.
- Lau, A.K.W., Tang, E. and Yam, R. (2010), "Effects of supplier and customer integration on product innovation and performance: empirical evidence in Hong Kong manufacturers", *Journal of Product Innovation Management*, Vol. 27 No. 5, pp. 761-777.
- Lin, M.-J.J. and Huang, C.-H. (2012), "The impact of customer participation on NPD performance: the mediating role of inter-organisation relationship", *Journal of Business & Industrial Marketing*, Vol. 28 No. 1, pp. 3-15.
- Lin, R.-J., Chen, R.-H. and Kuan-Shun Chiu, K. (2010), "Customer relationship management and innovation capability: an empirical study", *Industrial Management & Data Systems*, Vol. 110 No. 1, pp. 111-133.
- Lüthje, C. and Herstatt, C. (2004), "The lead user method: an outline of empirical findings and issues for future research", *R&D Management*, Vol. 34 No. 5, pp. 553-568.
- Matzler, K. and Hinterhuber, H.H. (1998), "How to make product development projects more successful by integrating Kano's model of customer satisfaction into quality function deployment", *Technovation*, Vol. 18 No. 1, pp. 25-38.
- Miles, M. and Huberman, A. (1984), *Qualitative Data Analysis: A Sourcebook of New Methods*, Sage Publications, Beverly Hills, CA.
- Nambisan, S. (2002), "Designing virtual customer environments for new product development: toward a theory", *Academy of Management Review*, Vol. 27 No. 3, pp. 392-413.
- Öberg, C. (2010), "Customer roles in innovations", *International Journal of Innovation Management*, Vol. 14 No. 6, pp. 989-1011.
- Olson, E.L. and Bakke, G. (2001), "Implementing the lead user method in a high technology firm: a longitudinal study of intentions versus actions", *Journal of Product Innovation Management*, Vol. 18 No. 6, pp. 388-395.
- Patton, M.Q. (2002), *Qualitative Research and Evaluation Methods*, Sage Publications, Thousand Oaks, CA.
- Ritter, T. and Walter, A. (2003), "Relationship-specific antecedents of customer involvement in new product development", *International Journal of Technology Management*, Vol. 26 No. 5, pp. 482-501.
- Shamma, H. and Hassan, S. (2013), "Customer-driven benchmarking: a strategic approach toward a sustainable marketing performance", *Benchmarking: An International Journal*, Vol. 20 No. 3, pp. 377-395.
- Shen, X.-X., Xie, M. and Tan, K.-C. (2001), "Listening to the future Voice of the Customer using fuzzy trend analysis in QFD", *Quality Engineering*, Vol. 13 No. 3, pp. 419-425.
- Stank, T.P., Daugherty, P.J. and Ellinger, A.E. (1997), "Voice of the Customer: the impact on customer satisfaction", *Journal of Supply Chain Management*, Vol. 33 No. 3, pp. 2-9.
- Ulwick, A.W. (2002), "Turn customer input into innovation", *Harvard Business Review*, Vol. 80 No. 1, pp. 91-97, 126.

- Un, C.A., Cuervo-Cazurra, A. and Asakawa, K. (2010), "R&D collaborations and product innovation", *Journal of Product Innovation Management*, Vol. 27 No. 5, pp. 673-689.
- Von Hippel, E. (1986), "Lead users: a source of novel product concepts", *Management Science*, Vol. 32 No. 7, pp. 791-805.
- von Hippel, E. (1988), *The Sources of Innovation*, Oxford University Press, New York, NY.

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