

Generating Customer Insights in Mid-sized B2B Companies: Integrative Review and Future Research Directions

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Abstract

Mid-sized businesses (MSB) and particularly mid-sized B2B businesses (MSB2B) are often overlooked by scholars researching innovation management. However, MSBs are very important for the economy worldwide, and their growth depends on the developments of new products. The early identification and consideration of customers' hidden needs are crucial for the successful development of new, differentiated products in MSBs. Techniques that can be used to generate customer insights are often referred to by the term voice of the customer (VOC). However, extant research on the value of VOC techniques is ambiguous, making it difficult for MSBs to decide which techniques may be most useful. This issue is compounded by MSBs having limited resources and limited knowledge about these techniques. Similarly, awareness of best practices for identifying customer needs is lacking, particularly as they relate to different types of innovation projects and different project stages. This integrative review clarifies these issues for MSB2Bs. Based on an analysis of the limited research on techniques for revealing hidden needs in MSB2Bs, practical, actionable recommendations are provided, including suggestions for which hidden needs techniques are most useful for MSB2Bs and best practices in this area. Future research directions are identified, and managerial implications for industrial product innovation in MSB2Bs are discussed.

Keywords: Voice of the Customer (VOC); Hidden Need; Mid-sized; Product; Development; Innovation; Company; Industry; Business-to-business; B2B; Ethnography; Market Research; Repertory Grid; Lead User; Customer; Insight; Hidden; Latent; Interview, Review.

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1 Introduction

Much of the research on innovation management has concentrated on start-ups, large corporations, and the business-to-consumer (B2C) sector, thus overlooking *Mid-sized Businesses* (MSBs) and particularly those operating in business-to-business (B2B) markets. MSBs, which are sometimes referred to as *mid-market enterprises* (MMEs), are an important part of the economies of many countries. Economists have proposed various characteristics of MSBs and even different definitions for different countries (HSBC, 2017). Although there is no consensus, comparing various reports (HSBC, 2017; Malsh et al., 2012; North et al., 2011) leads to a definition of a company that has

turnover in the range of 10M to 1B Euro and employs from around one hundred to several thousand people. Such businesses are “the unsung heroes of America’s economy” (Anonymous, 2015) and are crucial to the growth of the United Kingdom (UK) (North et al., 2011) and the European Union (EU) (Mazars, 2017). In particular, MSBs in Germany — the so-called *Mittelstand* — have a reputation for technological prowess and export performance and have become known as the *hidden champions* of the German economy (Simon, 1990). Surprisingly, MSBs have largely been ignored by management researchers and government policy-makers (HSBC, 2017).

Despite their technological expertise (Lilien, 2016), MSBs that operate in B2B markets (MSB2Bs) face strong competition. For example, US manufacturers face turbulent markets in which customer needs are changing significantly (Wiersema, 2013). In such markets, B2B companies perceive product innovation as their top priority (Goffin et al., 2021; Cortez and Johnston, 2017; Pine, 2015). However, to innovate, MSBs must understand their customers’ needs (Goffin et al., 2021), as doing so is an antecedent of successful innovation (Griffin and Hauser, 1993). A challenge is that developing customer insights is associated with high costs and ambiguity in data analysis (Atuahene-Gima, Slater and Olson, 2005; Cillo, De Luca and Troilo, 2010; Tandrup, Schultz and Salomo, 2014).

Companies’ ability to generate deep customer insights is dependent on acquiring knowledge about appropriate techniques and building the capability to deploy them. Traditional market research techniques like surveys and focus groups have significant limitations (Deszca et al., 1999; Kandybin, 2009) and do not always help customers articulate their real needs (Healy et al., 2007; Leonard-Barton and Rayport, 1997; Roberts et al., 2005). The needs that customers struggle to articulate are called *hidden needs* or *latent needs* (Kärkkäinen et al., 2001; Goffin et al., 2010). Identifying hidden needs is a necessary aspect of breakthrough innovation (Deszca et al., 1999) and requires special techniques (Goffin et al., 2021).

Mid-sized B2Bs (MSB2Bs) often fail to identify customers’ hidden needs, which leads to incremental rather than breakthrough innovation (Cortez and Johnston, 2017; Hadjikhani and LaPlaca, 2013; Seiler et al., 2020; Simon, 2009; Venohr and Meyer, 2007). MSB2Bs’ new product development (NPD) is often under-resourced (e.g., Balau, Bij and Faems, 2020), so many MSB2Bs are not familiar with appropriate techniques (Goffin et al., 2021). Similarly, many MSB2Bs do not distinguish between incremental and breakthrough NPD projects in terms of their management approaches, tools, and metrics.

The marketing and innovation literature has focused primarily on B2C companies (Dant and Brown, 2008), but these findings may not apply to B2B companies, as they and their markets differ significantly from the B2C context (Homburg et al., 2009). For example, the B2C domain tends to have standardized, clearly defined products, while the B2B domain tends to be heterogeneous in terms of products and customers (who often require customized products). In addition, B2Bs’ purchase decisions are usually made by a number of actors, termed the *Decision-Making Unit* (DMU), so the process tends to be complex. MSBs need guidance on which techniques they can use to identify the needs of all members of the DMU. These techniques are often referred to as *Voice of the Customer* (VOC) techniques (Cooper and Dreher, 2010; Griffin and Hauser, 1993), but scholars have not considered the knowledge and resources that MSBs need to apply them in a B2B context.

We conducted an integrative review of the literature to identify the full range of VOC techniques available and to determine which of them are applicable to MSB2Bs, in terms of the knowledge and resources required. Our research adopts the perspective of *market-based theory*, which emphasizes the importance of firms having a high regard for market knowledge and close relationships with their customer base (Sinkula, Baker & Noordewier, 1997). Overall, our research answers four

research questions (RQs):

- RQ1: What is the state of knowledge in the literature on techniques to identify customers' hidden needs?
- RQ2: Which are the most suitable VOC techniques for MSB2Bs to identify their customers' hidden needs?
- RQ3: What concrete recommendations can be made for practitioners on the use of VOC techniques?
- RQ4: What are the most important opportunities for academic research in this field?

The rest of this paper is structured as follows: First, the methodology for the integrative review is explained. Then a review of VOC techniques is given, including a discussion on the ambiguity in how the term "VOC" is used. Next, three suitable techniques with which MSB2Bs can identify their customers' hidden needs are explained. Subsequently, their strengths and weaknesses are analyzed, followed by case examples of where the techniques have been used successfully in MSB2Bs, with best practices identified. Finally, the discussion and conclusions section considers the study's contribution to research and practice, and identifies areas where further research is needed.

2 Review Methodology

We chose an integrative review methodology that was based on established approaches for conducting a literature review (see Appendix, Table A1) and applied recommended review guidelines (Snyder, 2019). Based on our assessment, critique, and synthesis of the literature on using hidden needs techniques to generate customer insights in MSB2Bs, we provide an overview of the knowledge base, critically review and combine perspectives and insights from various fields of research, determine managerial implications, and derive future research directions.

Our review methodology follows the recommendations of Torraco (2005) and Snyder (2019) for an integrative literature review. The four phases of our review—design, conduct, analyze, structure and write the review—are summarized in Table A2, together with guiding questions (see Appendix). We consulted the three leading databases --ABI/INFORM, Business Source Elite (EBSCO), and JSTOR-- to ensure full access to the relevant academic literature. As illustrated in Figure 1, the search process consisted of seven steps: The database search (Step 1) focused on the period between 1995 and 2020 and used the search terms "customer", "innovation", "product development", "need", "company" and "business-to-business." A wide search at this stage was chosen to ensure that no relevant articles were missed. Step 1 identified approximately 18 000 articles. Subsequently, we screened the titles (Step 2) and the abstracts (Step 3) of these articles using strict rules about which articles should be included and which should not (see Appendix). This substantial but necessary work identified 49 articles based on content (Step 4). After excluding another 22 articles as not directly relevant in Step 4, we conducted a backward search (Step 5) and a forward search (Step 6) using cross-references, which identified 12 additional relevant articles. The final literature sample for in-depth analysis consisted of 39 articles and book contributions (listed in the Appendix). Two researchers worked independently on conducting the search process to ensure a robust process and the identification of all relevant articles.

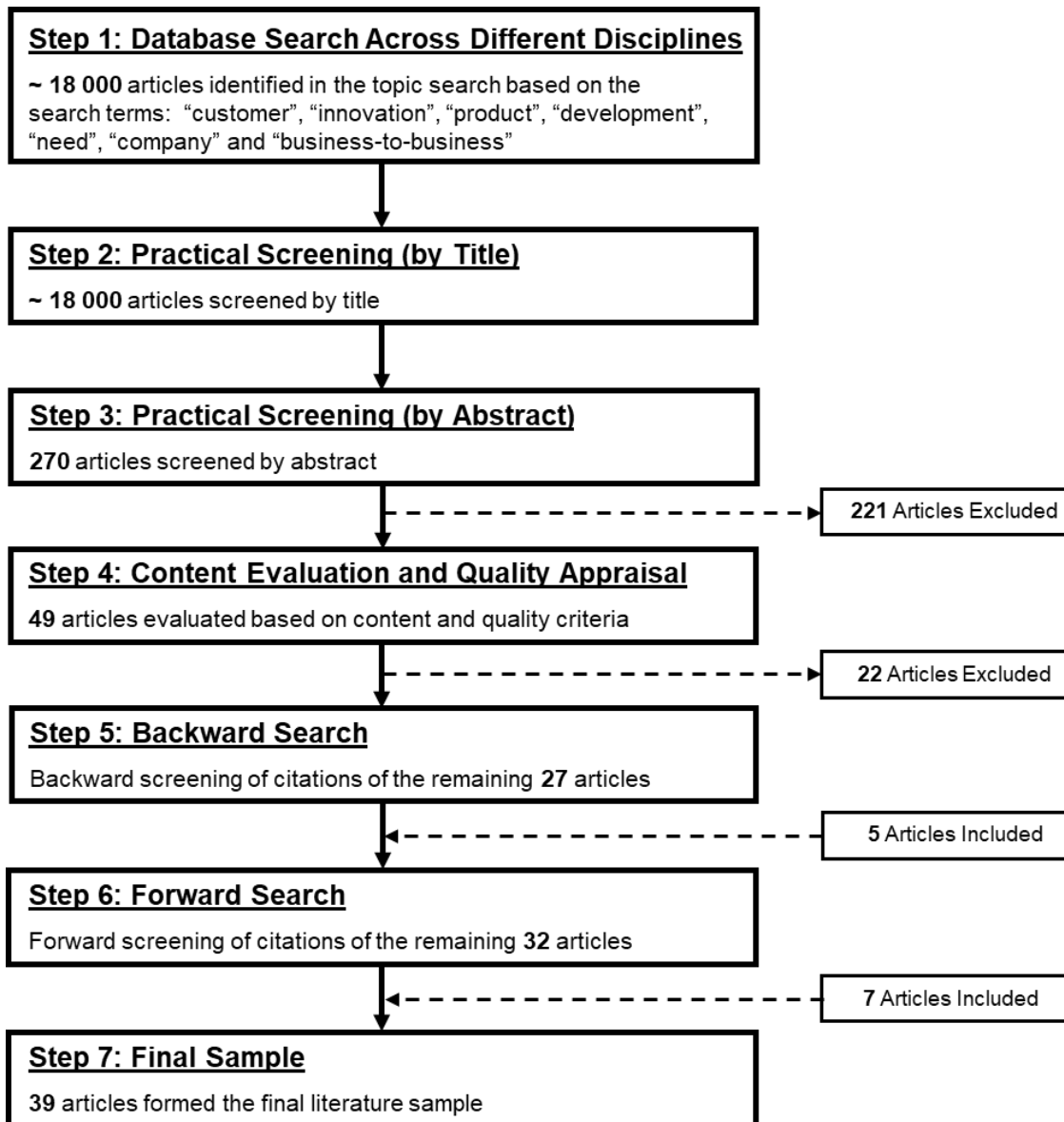


Figure 1. Flow Chart of the Search Process of the Integrative Literature Review

3 Customer Needs and VOC Techniques

3.1 Types of needs

The literature differentiates between customers' *expressed needs*, which customers can easily articulate, and *hidden needs*. The former are needs which the customer is aware and can communicate without difficulty (Kumar et al., 2000; Narver et al., 2004). However, there are two main limitations related to expressed needs. First, as they are relatively easy to identify, competitors will also be privy to this information, making it difficult or impossible to develop a differentiated product based on expressed needs. Second, research has indicated that expressed needs tend to lead to incremental innovation because customers, whose imaginations are usually rooted in today's products, can easily suggest improvements to existing products but are less able to envision breakthrough innovations, particularly as they may be unaware of new technological possibilities. This issue is exemplified by the quotation attributed to Henry Ford: "If I had asked people what they wanted, they would have said faster horses."

It follows that identifying and addressing customers' hidden needs can enable more significant innovations that can be differentiated from competitors' products. However, achieving this competitive advantage comes at a price, as B2B researchers must take the time to probe deeply into the customer's perspective using appropriate VOC techniques.

3.2 The ambiguity around VOC

There is significant ambiguity around the way the term "VOC techniques" has been used. Some authors have used it as a collective term, whereas others have referred to VOC as a technique in itself. We use VOC as the collective term for techniques that can be used to identify customer needs and preferences. Scholars have produced various lists of VOC techniques, but these lists have not been collated into a definitive list. Furthermore, the techniques have been either listed (e.g., Cooper and Dreher, 2010; Schweitzer and Tidd, 2018) or described (e.g., van Kleef et al., 2005), but the knowledge required and the resources necessary to deploy them have not. Another factor that has led to ambiguity in the term is that certain techniques are more appropriate for concept generation (developing product ideas) and others for concept testing (gaining customer feedback on products), but this difference has seldom been mentioned. Finally, which VOC techniques can generate ideas for breakthrough and radical innovations, as opposed to ideas for incremental innovation, has not been made clear.

3.3 VOC techniques

Table 1 shows the VOC techniques discussed in the 39 articles and book contributions identified in the literature review. Selected references are given for readers who want to learn more than the short descriptions that the table provides.

Ethnographic Market Research is conducted directly in the customer's environment and is often based on video recordings of customers as they use products. This kind of research consists mainly of observing the problems customers experience with existing products (Elliott and Jankel-Elliott, 2003) but it also identifies users' emotions connected to the use of products (Bruce et al., 2007). Therefore, the technique is also called *Empathic Design* since it helps market researchers understand and empathize with customers (Leonard and Rayport, 1997). Ethnographic market research is recognized as being very useful for generating novel ideas at the front-end of NPD (Rosenthal and Capper, 2006).

Category Appraisal (including preference analysis) is a set of procedures used to produce a visual representation of where a product is positioned versus competitors' offerings, or how

Table 1. Overview of selected VOC techniques and their suitability in terms of quality of insights, training effort and resources required

	VOC METHOD	SELECTED REFERENCES for a description of the VOC method	FACTOR 1 Quality of insights for breakthrough innovation	FACTOR 2 Training effort required	FACTOR 3 Application resources required
1	Ethnographic market research	Goffin et al. (2012) Woermann (2018)	High	Medium	Medium
2	Category appraisal	Moskowitz and Marketo (2007)	Medium	Medium	Medium
3	Conjoint analysis	Green et al. (1978) Green et al. (2001) Morgan (1997)	Low	Medium	Medium
4	Focus groups	Caterall et al. (2007)	Low	Low	Medium
5	Free elicitation	Simpson et al. (2012)	Low	Low	Low
6	Information acceleration	Richard et al. (2012)	Low	Medium	Medium
7	Repertory grid	Tan et al. (2002) Fransella et al. (2004)	High	Medium	Medium
8	Laddering	Trocchia et al. (2007)	Medium	Medium	Medium
9	Lead user technique	Urban et al. (1988) Lüthje et al. (2004)	High	Medium	Medium
10	Zaltman metaphor elicitation technique	Zaltman (2001) Coulter et al. (2013)	Medium	Medium	Medium

brands are perceived by typical consumers. It identifies the key attributes that influence customers' perceptions (Moskowitz and Marketo, 2007) and maps customers' perceptions onto those attributes. The technique can be used to identify where there are gaps on the market, but it is based on existing products, so it is incremental in nature.

Conjoint Analysis, which is often listed as a VOC technique, uses an experimental approach in which respondents state their preference from a set of pre-prepared product profiles (describing, for example, price and a few attributes) (Wittink and Cattin, 1989). The product attributes used in the profiles are typically the most common ones in the market, so conjoint analysis is not suitable for front-end NPD investigations that seek to generate unique ideas. However, it is an effective tool for price-positioning of products in the final stages of NPD.

Focus groups, probably the best-known VOC technique, are based on group discussions (Caterall et al., 2007). A moderator focuses the attention of 8-10 participants on a topic related to product usage and facilitates the ensuing discussion. Focus groups are known to develop incremental rather than radical product ideas, partly because according to Sandberg (2002, p. 3),

“Focus groups have potentially enormous value, but not the way most companies use them.”

Free Elicitation uses in-person interviews in which respondents communicate the features of a particular product set that they find most relevant to their needs. *Information acceleration* extends these techniques and employs multimedia stimuli.

The *Repertory Grid* from psychology is an advanced technique that probes customers' perceptions of existing and future products. It uses nonparametric factor analysis to derive an idiographic measure of a personality or product/brand (Napier et al., 2009).

Laddering is a prominent VOC technique that creates a means-end chain that links customers' perspectives on product attributes with the perceived consequences and value of these product attributes (Trocchia et al., 2007).

Lead User Technique targets the perspectives of selected customers who have particularly advanced knowledge of a product or product category and are ahead of the market (e.g., regarding technological possibilities) (Urban et al., 1988).

Finally, *Zaltman Metaphor Elicitation Technique* is an important VOC technique in which participants create collages that characterize their feelings and experiences about a product category (Coulter et al., 2013).

As these brief descriptions indicate, the VOC techniques vary so widely that they should not be considered a homogeneous set of alternative techniques. In particular, the techniques differ in the type of information they gather from the customer's perspective. All of the above listed VOC techniques provide room for customers to express their perspectives and needs and so tap into customers' expressed needs. However, we need to understand whether a VOC method can generate deep customer insights.

3.4 Assessing VOC techniques

Although the literature review identified ten VOC techniques, none of the 39 articles discussed how these techniques could or should be applied in the B2B sector. Therefore, to indicate the suitability of each technique for MSB2Bs (and address RQ2), we consider three factors:

- Factor 1: the level of insight a technique can generate for breakthrough innovation (low / medium / high)
- Factor 2: the amount of training that is required to apply the technique (low / medium / high)
- Factor 3: the resources (time, manpower) a technique requires (low / medium / high).

Assessments based on these factors are included in Table 1. We based our assessments on the literature's descriptions of the techniques, supplemented by our own experience of applying these techniques at a number of companies.

Looking at the first and most essential of the three factors (whether a technique can generate insights for breakthrough innovation), only three VOC techniques have 'high' potential for this: ethnographic market research, repertory grid interviewing, and the lead user technique (techniques #1, #7, and #9 in Table 1). Factor 2 (Column 5) shows that a "medium" level of training effort is required to use these three techniques, so MSB2Bs should not underestimate the time and effort required. Other VOC techniques, such as focus groups and free elicitation are easier to learn but they do not give such deep insights. The resources (time and people) needed to deploy these three VOC techniques is also assessed as being at a "medium" level.

Although the assessment is somewhat simplistic, it indicates that MSB2Bs that want to generate these kinds of customer insights must be ready to learn new techniques and reserve the resources to apply them. These hurdles probably explain why few companies in the B2B sector use sophisticated techniques for identifying customers' hidden needs (Goffin et al., 2021).

Overall, based on the analysis of our final literature sample for this integrative review, three methods have real potential for MSBs and MSB2Bs: ethnographic market research, repertory grid interviewing, and Involvement of the user / lead user technique. These three VOC methods are described in more detail in the following sections.

4 Three Key Techniques for MSB2Bs

4.1 Ethnographic market research

Ethnographic market research uses field visits to unveil the central problems and issues a target group experience (Arnould and Wallendorf, 1994; Boddy, 2011; Goffin et al., 2012). The approach differs from other prominent techniques in that researchers visit the environment in which customers use products or services to observe. Examples in the B2B context include observing the processes used by design engineers, or video-recording employees operating production line equipment.

Ethnographic market research combines *systematic observation* with *contextual interviewing*—that is, interviews conducted in the target group’s own environment (Goffin et al., 2012), so researchers immerse themselves in the target group’s natural setting, observing issues first-hand through the perspective of the target group and making copious field notes. Ethnographic market research facilitates interaction with users from which “the developer develops empathy for the problems” customers face (van Kleef et al., 2005, p. 192). While the technique is primarily qualitative, it can have quantitative elements. For example, researchers’ field notes, recordings, and interview transcripts can be coded and the codes analyzed quantitatively, increasing the objectivity of the conclusions (Hair and Clark, 2007). It should be noted that the target group’s statements and explanations may not be consistent with what researchers observe, so ethnographic market research is not passive observation but a complex technique that combines qualitative and quantitative analysis methods to generate a deep understanding of the target group, its typical environment, and the problems it faces. Developing solutions for the problems observed requires that externally generated knowledge about user needs be integrated with internal knowledge on technical capabilities (Veryzer and de Mozota, 2005).

In a comprehensive study of marketing research and product design, Luchs et al. (2016) reviewed 252 articles published in influential marketing journals from 1995 to 2014. They concluded that ethnography can enable the identification of unaddressed and latent needs (Luchs et al., 2016), making this approach particularly relevant to NPD. Similarly, van Kleef et al. (2005, p. 197) stated that ethnographic market research can generate ideas for “(really) new products.”

Ethnography can be applied in five steps (Goffin, Lemke, and Koners, 2010): understanding the field through preliminary visits, choosing the type of observations to be made, gaining full access: defining the sampling strategy (what and when to observe), and collecting the data and, where permissible, making video recordings. Extant research has identified several factors that influence the success of ethnography, including whether contextual interviews in the data collection step are based on well-prepared semi-structured, unambiguous questions. Once the data is collected, the data is coded and a so-called “thick description” is derived, based on which hypotheses are generated and tested.

Ethnographic market research is starting to be used more often in practice. It provides flexibility and generates insights that can lead to real breakthrough innovation. Researchers can generate surprising results, in part because of the combination of interviewing and observing in the target group’s social environment. The technique appears particularly valuable in the early stages of the NPD process, when finding hidden needs is particularly important. For these reasons, this technique is appropriate and useful in MSB2Bs (Hair and Clark, 2007). However, the technique

also comes with some limitations, researchers must do much more than observe; both the interviews and the observation require comprehensive and detailed preparation, which makes the technique time-consuming. When there is no clear focus on a topic or question, outcomes are likely to be too general to be useful.

The technique has features that make it particularly useful for B2B settings. The typical long-term nature of business relationships in the B2B context, along with the typically pronounced interaction between the parties, provides the foundation for researchers to gain access to customer sites. Customers in the B2B context are often interested in obtaining a highly individualized product, so they are often open to such cooperative market research. Overall, we conclude that this technique is a practical and useful one in the context of MSB2Bs.

4.2 Repertory grid interviewing

Repertory grid is a market research technique that aims to unpack customers' (often unconscious) product perceptions. It originates from the work of psychologist George A. Kelly and has been applied in various disciplines, including B2C and B2B market research (Lemke, Clark, and Wilson, 2011; Marsden and Littler, 2000; Sampson, 1972).

Repertory grid interviewing requires several steps (Goffin, Lemke, and Koner, 2010), usually conducted as one-to-one interviews. In the first step, *elements* are identified. In market research that seeks to unveil hidden customer needs, interviewees name five or six products that they know (e.g., B2B components from various suppliers). In the second step, the interviewee compares and contrasts the elements, identifying *constructs*. Typical constructs include “easy to assemble,” “high quality,” and “easy to integrate with other components.” After a construct is identified, the interviewee rates each element against the construct, typically on a scale of 1-5, in the third step. This step allows the elements (e.g., B2B components) to be quantitatively compared. The literature provides various ways to develop a clear understanding of the constructs, such as laddering.

Over the course of the interview, the interviewee is asked multiple times to compare and contrast different elements, which elicits more constructs. A grid with the constructs in the rows and the elements in the columns is developed such that the grid's cells show how the interviewee rates each element on each construct. A typical interview that addresses five or six products will elicit 7-10 constructs from the interviewee. It should be noted that the technique identifies the interviewee's own, unbiased perceptions (constructs). Once around 20-30 interviews have been conducted, there is sufficient data to group constructs into categories that give clear insights into how interviewees perceive, in this case, several B2B products.

Depending on how the repertory grid interview is designed, the data generated can be analyzed using principal component analysis, cluster analysis, or other analysis methods to identify the most important constructs. The technique also provides a sound way of drawing an interviewee's *cognitive map* — that is, how a product category is perceived (Caldwell and Coshall, 2002; Tan and Hunter, 2002)

As the constructs are directly related to the elements discussed (e.g., B2B components), the constructs and the ratings generate ideas on how product design can be optimized. The approach provides insights into which constructs are most important to customers, thus unveiling customers' hidden needs, especially when existing solutions score poorly on the relevant constructs.

While the technique provides a comprehensive way to show how the target group perceives existing products, it has two primary limitations (van Kleef et al., 2005). First, the technique works only when the interviewees have sufficient knowledge about the market and the existing products, which imposes a certain bias on the data and its interpretation (Lemke et al., 2011).

Second, as the technique is used mainly to identify the target group's evaluations of existing elements, it does not immediately provide information or insights on ideas for future products or features. However, based on the way the technique was originally developed in psychology, repertory grid interviews can be enhanced to stimulate comparisons of existing elements with an imagined "ideal" product.

The literature includes numerous empirical studies that illustrate the usefulness of repertory grid for innovation, particularly the identification of hidden needs. For example, Lemke et al. (2011) employed the technique in interviews in B2B and B2C settings and provided recommendations for how to apply it in these two contexts. Tursch et al. (2014) discussed various repertory grid studies and the quality of the results generated, focusing on the smartphone market.

The repertory grid technique is useful in a B2B context, as it can be used to explore customers' perceptions of the complex products and services that such contexts often imply. For example, Goffin et al.'s (2006) large study investigated the services and service levels that automotive suppliers should offer and the long-term business relationships they should establish. In investigations of the B2B context, repertory grid interviews should be conducted with members of the DMU and should compare these members' cognitive maps to fully understand the needs of the DMU. The extra effort connected with doing so is typical of B2B market research, as the DMU in the B2B context is more complex and is not a specific drawback of the repertory grid technique.

4.3 User-involvement techniques

While both ethnographic market research and repertory grid interviewing generate insights and data from the target group, the involvement of the target group is limited. Both approaches survey and/or observe the target group, but the researchers clearly remain in the "driver's seat" of the application and the creativity it creates, and their questions determine the procedure of the application and, thereby, the outcomes. To address this limitation, user-involvement techniques offer a more active role for the target group. Lead user technique and crowdsourcing are the two major techniques involving users directly.

Lead user technique. The innovation and marketing literatures offer various innovation diffusion models (e.g., from Rogers) (Churchill, Hippel, and Sonnack, 2009; Desiraju, Nair, and Chintagunta, 2004; Rogers, 2010) that show a specific order in which different customer groups purchase a novel product for the first time. These customer groups differ in their appetite for novel solutions. While some of the customers in a target market have a strong desire for novel products and buy newly-introduced products immediately (e.g., for reasons of curiosity), others wait, find out about the new products later, or just want to see whether the product works. Lead users are typically the first customers and are willing to purchase a product to test it, or they are the customers that use products in the most demanding situations (van Hippel, 1986; Urban and Hippel, 1988). In some instances, lead users are waiting for a solution before a suitable product enters the market. Lead users have a strong interest in solving their specific problems and are consequently willing to contribute to product development and testing. Lead users are typically creative people with foresight who have a good idea of what technologies and markets will develop.

The lead user approach leverages the particularities of this small customer group by integrating them into ideation and product development processes (Brem, Bilgram, and Gutstein, 2018; Droge, Stanko, and Pollitte, 2010). Interestingly, this technique departs from typical market research techniques that go to great length to establish representativeness in their sampling, as the lead user approach focuses on a select group of (potential) customers and leverages their foresight on how the entire market might develop.

The lead user approach is conducted in three steps approach (Goffin, Lemke, and Koner, 2010).

First, potential lead users are identified and recruited. Recruitment is often easy, as lead users are often willing to contribute, however, identifying those who are interested in a specific trend can be time-consuming and require creative solutions. In the second step, the lead users participate in workshops. Several lead users from related disciplines are often involved to trigger creative interactions. In the last step, the ideas are evaluated and developed. Lead users often remain part of the next steps in the NPD process (e.g., prototyping).

Lead user technique is an effective way to look into the future of the market, but it has some limitations (Urban and Hippel, 1988). For example, in some markets there are few lead users, there may be no lead users in others, or lead users may be hard to identify. In addition, lead users are not representative of the entire market. While practical examples have shown that carefully selected lead users that participate in new product development can identify future possibilities and developments of the market, researchers must determine whether the lead users and their ideas are too far removed from the needs of the broad market.

Brem et al. (2018) identified the main challenges of the lead user method as time, manpower, costs, and intellectual property (IP) issues. Despite the high potential of the lead user method in terms of developing new products and services, new strategic directions, applications, and technology platforms (Eisenberg, 2011), companies rarely repeat the method, or integrate it into their standard NPD processes (Brem et al., 2018).

Innovation crowdsourcing. While the lead user technique uses a select set of lead users, innovation crowdsourcing distributes tasks or a problem related to an innovative product to a large number of people who are external to the organization (Goffin, Lemke, and Koner, 2010; Lüttgens et al., 2014). Crowdsourcing builds on two major observations: First, no matter how good and creative people in a company are, there are always many more people outside the organization, some of whom are probably more brilliant. Second, people outside the own organization are often willing to contribute to product development for the sake of personal challenge and beating others (Bayus, 2013; Simula and Ahola, 2014). Innovation crowdsourcing posts questions or problems to a broad “crowd” and offers incentives for the best solutions. Companies have applied this technique to save costs but also when they could not solve an issue internally. In this way, the company gets access to a vast repertoire of external ideas. Cases studies have shown that the analysis and evaluation of numerous ideas can be time-consuming, but well-managed processes and evaluation procedures help to keep the resource use at a reasonable level.

Innovation crowdsourcing has the potential to generate useful ideas, possibly even hidden customer needs when the task is described clearly (Howe, 2008), yet there is no guarantee that good ideas will emerge. In addition, corporate reality is that only a few companies (especially the big and prominent ones) can generate interest and a large crowd. Another limitation of this technique is that the number of ideas depends on how broadly or narrowly the topic is defined. The more general the topic and the question, the more ideas can be expected but the less likely they are to address a specific problem adequately. Finally, IP rights can require substantial legal support throughout the process.

Researchers have started to empirically investigate the performance and knowledge generated by user-involvement methods. Zogaj and Bretschneider (2012) reviewed the appropriateness of user-involvement and found that methods that integrate customers actively in NPD are more effective at generating knowledge on customers than methods that integrate customers only passively (Zogaj and Bretschneider, 2012). The lead user method, the focus group approach, and innovation communities allow innovation managers to benefit from combining the knowledge of multiple customers specific solutions and ideas jointly (Zogaj and Bretschneider, 2012).

Using evidence from 186 B2B service firms, Heirati and Siahtiri (2019) discussed how service

innovativeness can be strengthened via collaboration with customers and suppliers. While not directly referring to crowdsourcing and addressing a large number of external persons, the authors provided some ideas on integrating customers and suppliers in innovation. Their framework examines the effects of customer and supplier collaboration on service novelty and when a specific type of collaboration is most beneficial (Heirati and Siahtiri, 2019). The findings suggest that managers should set clear objectives for collaboration with customers and suppliers. This is because, while the development of B2B services can benefit from collaboration with customers, the development of meaningful service innovations can be most positively influenced by collaboration with suppliers (Heirati and Siahtiri, 2019).

While these studies have provided support for customer involvement as an important tool in the innovation process, Cui and Wu (2018) found that more research is needed. They reviewed empirical articles on customer involvement in innovation published in eight leading marketing and innovation journals between 2001 and 2017 and concluded that the literature on this topic is highly diverse and fragmented, lacking a common understanding of what it constitutes and its theoretical underpinnings (Cui and Wu, 2018). The development of a better strategic perspective is recommended to identify the drivers of effective customer integration and its impact on customer involvement in innovation, on innovation performance, firm strategy, and long-term competitive advantage (Cui and Wu, 2018).

Overall, user-involvement approach is an effective and useful technique for detecting hidden customer needs, but it comes with challenges that may be particularly salient in the B2B context, where individualized, complex solutions prevail. Therefore, identifying appropriate lead users for such very specific products and services could be challenging. The same applies to crowdsourcing of ideas, as if the problem is extraordinarily specific, sufficient external expertise may be lacking. In these circumstances, crowdsourcing might not be effective. While there might be some conditions under which user-involvement is the gold standard for an MSB2B, we postulate that these situations are rare, as the limitations of these techniques are likely to prevent their effective application in the majority of MSB2Bs.

5 Case examples from MSB2Bs

The literature review showed that research has not specifically considered the importance of MSB2Bs identifying hidden needs. Similarly, the challenges such companies face in applying VOC techniques have not been investigated, and practice is moving ahead of academic knowledge in this area. During recent years, we have observed various projects in which MSB2Bs applied VOC techniques, which are listed in Table 2. Such cases should be documented together, as they can demonstrate the value of identifying hidden needs, identify best practices for other MSB2B companies, and demonstrate the need for more systematic research on the topic.

Table 2 shows that companies in wide-ranging sectors, including medical supplies, precision components, and greenhouse climate control, have applied the VOC techniques. This shows that, despite the training effort and resources required, MSB2Bs can successfully apply VOC techniques to identify customers' hidden needs, as will be illustrated in three examples.

Table 2: MSB2B companies where VOC techniques have been applied.

	Company / Country	Revenues / Employees / Sector / Reference	VOC Techniques Applied		
			Ethnographic Market Research	Repertory Grid Technique	Lead User Technique
1	Altro Ltd., UK	£143 million sales / 800 employees / walling and flooring for construction, healthcare and transport / Goffin et al., 2021	Yes	Yes	Yes
2	Heitkamp & Thumann Group, Germany	\$583 million sales / 2,000 employees / Suppliers of precision components for the battery and pharmaceutical industries / Zoominfo, 2021a	Yes	Yes	No
3	Westfalia Metal Hoses GmbH, Germany	\$83 million sales / 400 employees / Supplier of complex assemblies consisting of flexible metal hoses or gastight decoupling elements, including bent pipes, thermal insulation, and connection technologies for trucks, buses, agricultural vehicles and construction machinery / Zoominfo, 2021b	Yes	Yes	No
4	Mölnlyke Health Care, Sweden	\$1.29 billion sales / 7,500 employees / medical surgical supplies and wound care / Weigel and Goffin, 2015	Yes	Yes	Yes
5	Ludwig Svensson, Sweden	€80 million sales / 400 employees / greenhouse climate control products for horticulture / none	Yes	Yes	No
6	Merlyn Showering, Ireland	\$7 million sales / around 100 employees / shower units for construction and DIY / none	Yes	Yes	No
7	Coillte, Ireland	\$113.4 million sales / 1,000 employees / forestry and wood products for construction / Kierans, 2015	Yes	Yes	Yes

5.1 Ethnographic market research at Altro, Ltd.

Altro, Ltd. is a family-owned British manufacturer of flooring and walling products for the construction, transport, and healthcare industries (Goffin et al., 2021). The company has used ethnographic market research, carefully observing the day-to-day 'usage' of products in hospital environments and interviewing hospital architects, administrators, medical staff, and even cleaners.

One key insight generated by Altro's research was the need for a product range that is aimed specifically at highly secure mental health environments and offers high levels of robustness and safety to both patients and staff. Altro had not realized that the characteristics of its industrial products were exactly those needed for such specialized healthcare applications. As Antonio Lourenco, product insights manager at Altro, explained, "I thought the gap in the market meant we needed to develop new products. I was surprised to find we already had products that were perfectly suitable to the high-secure environment, when applied correctly. Until now, these products had only been targeted at industrial applications." (Goffin et al., 2021, p.24).

The ethnographic research also showed that healthcare customers had difficulty specifying the products they needed. The many inefficiencies and misunderstandings between the parties involved led Altro to offer specification workshops for members of the typical healthcare DMU. According to Lourenco, "Our experience in healthcare has demonstrated the importance of identifying hidden customer needs and now we are applying our ethnographic techniques in other sectors such as transport, too." (Goffin et al., 2021, p.24).

5.2 Repertory grid technique at Heitkamp & Thumann Group

The Heitkamp & Thumann Group, which produces precision components for a number of industries, has trained its staff to apply VOC techniques since 2014 (Heitkamp & Thumann Group, 2020; Seiler et al., 2020; Goffin et al., 2021). A number of market investigations have been based specifically on the repertory grid technique, with the analysis based on the Kano model (Matzler and Hinterhuber, 1998). This approach has helped the group of companies to identify and address performance-related needs and the need for "excitement" in the field of pharmaceutical respiratory drug delivery devices, precision-formed battery components, automotive parts, production machines, and tool equipment (Heitkamp & Thumann Group, 2020; Seiler et al. 2020; Goffin et al., 2021). As Hans-Jürgen Neugebauer, a former managing director of several business units at the Heitkamp & Thumann Group, explained, "Repertory grid interviews are ideal for the development of new products in mid-sized B2B companies. It is a win-win for both the innovator and the customer, as the resulting products address the customer's excitement needs and, therefore, often have a sustainable differentiator". Using a study conducted by organizational psychologists, the Heitkamp & Thumann Group found that an open and ambidextrous business culture is essential to underpin the deployment of VOC techniques in MSB2Bs (Seiler et al., 2020).

5.3 Repertory grid technique at Westfalia Metal Hoses GmbH

Westfalia Metal Hoses GmbH, is a supplier of complex assemblies consisting of flexible metal hoses or gastight decoupling elements, including bent pipes, thermal insulation, and connection technologies for trucks, buses, agricultural vehicles and construction machinery. The company has used VOC techniques to develop ideas for its long-term strategy and has used repertory grid technique to understand the needs of truck manufacturers both today and in the future. Westfalia Metal Hoses has utilized repertory grid not only with its customers but also with interviews of staff. As Dr. Stefan Hauk, managing director of the Westfalia Metal Hoses GmbH, explained, "You can run repertory grid interviews also internally with your engineering, project management and sales departments. This triggers a very valuable learning process to ensure that an organization is properly prepared for a product launch. Furthermore, it shows how well the project manager, the product designer and the sales representative are aligned in terms of developing a product with a viable, attractive value proposition."

5.4 Combining techniques at Mölnlycke

Mölnlycke, a Swedish company that develops disposables and procedure packs for surgical applications and wound-care products. The company used external experts to train nearly 40 employees from various functions (including R&D, marketing, strategy, sales and finance) in VOC techniques as “scouting teams.” Similar to Heitkamp & Thumann, the company employed VOC techniques using workshops, which were designed to build the right culture, to build a capability for breakthrough and radical innovation (Weigel and Goffin, 2015). A member of the executive board explained, “Looking back, we realize that it really helped at the beginning to have invested time in a cultural workshop for the Scouting Team, to help them develop their cross-functional ethos” (Weigel and Goffin, 2015, p.32).

Mölnlycke successfully applied three techniques in combination and found this approach particularly useful. Each technique gave different perspectives about customer needs and the emotions connected with using its products. The structured way the results were analyzed was also important. For example, the R&D manager said, “For me, it was a great experience because I have a passion for finding customer problems... but I have never approached it in such a structured way before. Ethnography was totally new to me but powerful” (Weigel and Goffin, 2015, p.34). A full cross-functional team was involved in both data collection and analysis. Mölnlycke also found that the scouting (market research) generated ideas not only for radical products but also for significant improvements to existing products (e.g., adding “excitement” features that competitors did not offer). As a result, incremental innovations have driven sales and have provided a faster than expected payback for the investment in VOC training and deployment.

5.5 Key points for MSB2Bs

A number of key points from the case companies in Table 2 are relevant to any MSB2B that is considering using VOC techniques (answering RQ3). These points are also pertinent to the large number of B2B companies that may not yet appreciate the power of VOC techniques (c.f. Goffin et al., 2021). Our tentative observations indicate that much can be gained from applying VOC techniques but five specific factors should be considered.

Type of innovation projects. VOC methods can help MSB2Bs generate ideas for incremental, breakthrough, and radical innovations. The ideas for incremental innovation can be implemented quickly, thus leading to a fast return on investment. However, the greatest value of VOC techniques lies in generating ideas for breakthrough and radical innovation projects. It is likely that, for such projects, a combination of VOC techniques (repertory grid interviewing, involvement of the user, ethnographic market research) will be needed to identify customers’ hidden needs, which may give companies the ability to develop unique, differentiated offerings that create real competitive advantage.

Timing of VOC. The right time to apply VOC techniques is before project scoping and prototyping, when it is not too late to implement the insights gained from the market research. The results in terms of hidden needs identified should be reconfirmed through additional interviews and prototype-testing before finalizing the design.

Which customers to research. Research should be conducted with a wide variety of DMU members because they all influence their purchase decisions and their needs can differ. A stronger market offering will emerge from considering all members of the DMU.

Required training effort. As most MSB2Bs are not aware of VOC techniques, their NPD teams must be trained on the techniques. While this training effort should not be underestimated, once understood, VOC techniques can be applied to multiple projects, so the training effort expended can bring multiple returns. In addition, as few MSB2Bs use VOC techniques, the time

and effort spent on training can lead to real competitive advantage. MSB2B managers should ensure adequate resources and training so customer needs can be identified early in the NPD process.

The right toolbox and organizational ambidexterity. Only when a firm is capable of identifying opportunities early on, strategic discussions can take place concerning whether an opportunity can be addressed based on the company's core competencies. However, a prerequisite for this strategic discussion and for effective scouting is the implementation of the right tool box in terms of techniques for identifying customers' hidden needs. Mastering the techniques described in Section 4 will make the scouting and NPD processes more effective, resulting not only in a more ambidextrous MSB2B culture but also in a higher success rate for breakthrough innovation.

6 Discussion

6.1 Implications for Research

We derived implications from the academic literature and from our case examples. Our review indicates that some of the VOC methods that are identified in the literature, date back to the 1950s but others, such as crowdsourcing are more recent. However, our findings show that context-specific research on VOCs methods, especially in the context of MSB2Bs, is rare. Thus, our conclusions resonate with calls in the literature to contextualize innovation-management-related concepts and to establish the boundaries of these concepts.

Our case examples indicate that the major VOC methods we focused on have been employed in a small number of companies, although the majority of MSB2Bs are almost certainly unaware of them. Our conceptual analysis of the literature and the case examples indicate that the way VOC techniques are applied and the timing at which they are used should be based on the type of innovation project. For radical innovation projects that may target unknown markets, our findings indicate that a project team should apply all three methods—repertory grid interviewing, involvement of the user, ethnographic market research—once a prototype is available and before the project is kicked off. The availability of a prototype can motivate MSB2Bs customers to take the time to discuss their needs. Breakthrough innovations should apply at least a combination of the repertory grid and lead user technique, and as for radical innovations the right time to apply these techniques is before the project kick-off but after a first prototype is available. Findings on customers' hidden needs should be reconfirmed through additional interviews before the product's design is finalized.

Our investigation shows that the effort required to learn and apply VOC techniques in resource-constrained MSB2Bs is probably inappropriate for incremental projects. Some of the case companies that had already learned VOC techniques did apply them to incremental projects, enabling them to identify certain new product features and ways to segment their markets. However, because of the prominent challenges many MSB2Bs face, in terms of resource constraints, limited skills regarding identification of hidden needs, and often only a limited number of large customers, this kind of effort is not always viable. In such cases, our literature review, conceptual reasoning, and case examples suggest that running a number of repertory grid interviews with the most important customers' DMUs before the project kick-off is valuable for radical innovation and breakthrough projects.

Our case examples also provide some first exploratory insights into the appropriate time when VOC techniques should be applied. The correct timing appears to be early in projects, as prototypes become available, as otherwise it will be too late to address customer needs, based on the market insights gained, in an effective way.

6.2 Implications for managerial practice

Our study provides useful points for practitioners in MSB2Bs. Specifically, our research informs these decision-makers as follows:

Train the project and sales team. The project manager and the NPD and sales teams should be trained in applying VOC techniques. The methods described in Section 4 should be part of the NPD toolbox in every MSB2B. MSB2Bs that are not accustomed to applying these techniques should give them a chance in some NPD projects to investigate their potential.

Understand customers' hidden needs before scoping and starting a project. Although it sounds simple, customers' hidden needs must be understood before kicking off an NPD project. Many companies "fall in love" with an idea and develop a product that does not address the excitement needs (Matzler and Hinterhuber, 1998) of the envisioned key customers. As a result, these products are not well differentiated from the competition and have little chance to meet their commercial objectives. To avoid long development cycles and costly project redirections, customers' hidden needs must be identified early on. Once these hidden needs are identified, discussion regarding whether and how the company's core competencies can address its customers' identified excitement and performance needs should take place.

Be flexible in choosing the appropriate VOC technique. The combination of the techniques described in Section 4 is likely to lead to the deepest understanding of customers' hidden needs (Goffin et al., 2010). However, because of resource constraints, the B2B market's peculiarities, market fragmentation, and/or confidentiality issues, MSB2Bs cannot always apply several VOC techniques. However, it is better to use one VOC technique instead of no technique at all.

Inform B2B respondents about the results. Gaining access to B2B customers can often be difficult. In B2C situations, interviewees can be paid, whereas other kinds of motivation are required in B2B contexts. However, B2B respondents are often interested in knowing about the results, so offering a summarized report that anonymizes the respondents can be a motivation.

Do not underestimate the value of data analysis. Analyzing largely qualitative data is uniquely challenging. A moderator who has experience with qualitative data analysis is essential to ensure deep insights are generated. Companies like Moelnlycke found that they needed extensive support for their first market research but later became much more efficient at generating customer insights (Weigel and Goffin, 2015).

6.3 Limitations and avenues for future research

As with all research, our study comes with several limitations. First, our literature overview, conceptual reasoning, and case examples do not enable the level of confidence that sound, large-scale empirical research can generate. While our study offers a first understanding of the role of VOC techniques in MSB2B companies, its main purpose is to motivate further empirical research.

Our literature review and case examples focus on existing VOC methods, but it is likely that the ongoing digital transformation of data will produce new VOC techniques. Outside the MSB2B context, potentially digital start-ups, may already be using other data-driven methods. To get a full picture of VOC methods used across settings and industries, broader examination of VOC methods in use is necessary.

Finally, the choice of our case examples has obviously influenced our findings, at least to a certain extent. While our objective in choosing the case examples was to have broad coverage of industries and perspectives, other case examples might have resulted in different conclusions.

Based on considerations of the limitations of our current research, we propose the following suggestions for future research: First, the literature describes many VOC methods that were developed many years ago. For example, the repertory grid originates from Kelly's work published

in the 1950s. However, the ever-increasing availability of data on customers (e.g., their customer journeys, their online reviews, their social media behavior) might suggest a plethora of ways to learn about their hidden needs. Such approaches might be particularly relevant to B2B companies with repeat business generates historical data (e.g., transaction data) for each customer. The opportunities that such data offer to identify B2B customer needs requires further study.

Second, only a few studies have been conducted on the context in which each method is most useful, yet such research could be particularly useful for resource-constrained MSB2Bs. An integrative study that compares the techniques' effectiveness for MSB2Bs could help innovation managers to prioritize the three major techniques and choose the most appropriate one for the MSB2B setting.

Third, as NPD efforts become increasingly global, we must understand the national or cultural influence on the use and effectiveness of the VOC techniques. For example, lead users are individuals that have deep knowledge and industry vision, which they are vocal in sharing. In countries where collectivism is the norm, finding lead users might be more difficult. Future research should investigate this.

Fourth, while we briefly discussed whether each technique is more or less likely to lead to incremental or radical innovation, our thoughts were derived from conceptual arguments, not systematic empirical research. Future research could conduct an evidence-based, systematic analysis of which VOC technique is most suitable for which phase and type of innovation project. Further, whether incremental and/or radical innovations can emerge, likely depends on how a method is applied. Future research could elaborate empirically on the relationship between the use of a method and the likelihood of generating incremental, breakthrough, or radical innovations and the identified contingencies of such relationships.

Finally, systematic case studies could be conducted in MSB2Bs that are applying VOC techniques (and particularly the techniques that uncover hidden needs) for the first time. Studying these companies longitudinally would help researchers to clarify the time and effort required to learn the hidden needs, how and when the techniques should be applied, the insights they can generate, and the innovations to which they lead. Such detailed investigations can help MSB2Bs counter the mounting threat of commoditization in their markets (Goffin et al., 2021).

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7 References

- Adams, R, Bessant, J., & Phelps, R. (2006). Innovation management measurement: A review. *International Journal of Management Reviews*, 8, 21-47.
- Anonymous (2015). The mighty middle: Medium-sized firms are unsung heroes of America's economy. *The Economist*, May 3rd, available at: <https://www.economist.com/news/business/21564893-medium-sized-firms-are-unsung-heroes-america>
- Arnould, E. J., & Wallendorf, M. (1994). Market-oriented ethnography: Interpretation building and marketing strategy formulation. *Journal of Marketing Research*, 31, 484–504.

- Atuahene-Gima, K., Slater, S.F., & Olson, E.M. (2005). The contingent value of responsive and proactive market orientations for new product program performance. *Journal of Product Innovation Management*, 22(6), 464–482.
- Baumeister, R. F., & Leary, M. R. (1997). Writing narrative literature reviews. *Review of General Psychology*, 1, 311–320. <https://doi.org/10.1037/1089-2680.1.3.311>.
- Bayus, B. L.(2013). Crowdsourcing new product ideas over time: An analysis of the Dell idea storm community. *Management Science*, 59, 226–244.
- Biemans, W., & Griffin, A. (2018). Innovation practices of B2B manufacturers and service providers: Are they really different? *Industrial Marketing Management*, 75, 112-124.
- Boddy, C. R. (2011). Hanging around with people. Ethnography in marketing research and intelligence gathering. *The Marketing Review*, 11, 151–163.
- Bonner, J.M. (2010). Customer interactivity and new product performance: Moderating effects of product newness and product embeddedness. *Industrial Marketing Management*, 39(3), 485.
- Brem, A., Bilgram, V., & Gutstein, A. (2018). Involving lead users in innovation: A structured summary of research on the lead user method. *Int. J. Innovation Technol. Management*, 15(3) 1850022. <https://doi.org/10.1142/S0219877018500220>.
- Bruce, M., & Daly, L. (2007). Design and marketing connections: creating added value. *Journal of Marketing Management*, 23, 929–953. <https://doi.org/10.1362/026725707X250403>
- Caldwell, N., & Coshall, J. (2002). Measuring brand associations for museums and galleries using repertory grid analysis. *Management Decision*, 40, 383–392.
- Catterall, M., & Maclaran, P. (2007). Focus groups in marketing research. In R. Welk (Ed.), *Handbook of qualitative research methods in marketing* (pp. 255–267). Cheltenham: Edward Elgar.
- Christensen, C. M., Hall, T., Dillon, K., & Duncan, D. S. (2016). *Competing against Luck: The Story of innovation and customer choice*. Haroer Collins Publishers, New York.
- Churchill, J., E. v. Hippel, & Sonnack, M. (2009). *Lead user project handbook: A practical guide for lead user project teams*. Retrieved August 21, 2020, from <https://evhippel.files.wordpress.com/2013/08/lead-user-project-handbook-full-version.pdf>.
- Cooper, R.G. (1983). The impact of new product strategies. *Industrial Marketing Management*, 12(4), 243.
- Cooper, R.G. and Dreher, A. (2010). Voice of the customer Methods. *Marketing Management*, 19, 38–43.
- Cortez, R.M., & Johnston, W. J. (2017). The future of B2B marketing theory: A historical and prospective analysis. *Industrial Marketing Management*, 66, 90–102.
- Cui, A. S., & F. Wu. (2018). Customer involvement in innovation: A review of literature and future research directions. *Innovation and Strategy*, Published online 12 June 2018; 63-98.
- Dant, R. J., & Brown, T.J. (2008). Bridging the B2C and B2B research divide: The domain of retailing literature. *Journal of Retailing*, 84, 371–397.
- Davis, J., Mengersen, K., Bennett, S., & Mazerolle, L. (2014). Viewing systematic reviews and meta-analysis in social research through different lenses. *Springer Plus*, 3, 511. <https://doi.org/10.1186/s13063-014-0511-1>.

[//doi.org/10.1186/2193-1801-3-511](https://doi.org/10.1186/2193-1801-3-511).

DBIS - Department for Business, Innovation & Skills, UK. (2011). Statistics comparing the characteristics of mid-sized businesses in the UK with those in other European countries, UK Official Statistics. Retrieved December 20, 2011, available at: <https://www.gov.uk/government/statistics/mid-sized-businesses-international-comparisons>.

Desiraju, R., H. Nair, & Chintagunta, P. (2004). Diffusion of new pharmaceutical drugs in developing and developed nations. *International Journal of Research in Marketing*, 21, 341–357.

Deszca, G., Munro, H. & Noori, H. (1999). Developing breakthrough products: Challenges and options for market assessment. *Journal of Operations Management*, 17 (6), 613-630.

Donaldson, W.G. (1995). Manufacturers need to show greater commitment to customer service. *Industrial Marketing Management*, 24 (5), 421.

Droge, C., Stanko, M.A., & Pollitte, W.A. (2010). Lead users and early adopters on the web: The role of new technology product blogs. *Journal of Product Innovation Management*, 27, 66–82.

Duffy, M. (2018). Influencers and consequences of organisational commitment within Sheffield city region's mid-sized businesses. Doctoral, Sheffield Hallam University.

Economist. (2015). The mighty middle: Medium-sized firms are unsung heroes of America's economy. *The Economist*, May 3rd, available at: <https://www.economist.com/news/business/21564893-medium-sized-firms-are-unsung-heroes-america> \T1\textquoterights-economy

Eggers, F., Kraus, S., & Covin, J.G. (2014). Traveling into unexplored territory: Radical innovativeness and the role of networking, customers, and technologically turbulent environments. *Industrial Marketing Management*, 43(8), 1385.

Eisenberg, I. (2011). Lead-User Research for Breakthrough Innovation. *Research-Technology Management*, 54, 50–58.

Elliott, R., & Jankel-Elliott, N. (2003). Using ethnography in strategic consumer research. *Qualitative Market Research: An International Journal*, 6, 215–223.

European Union (EU) (2015). User guide to the SME definition. European Commission, Ref. Ares (2016) 956541 -24/02/2016; ISBN 978-92-79-45322-9, Luxembourg, 2015.

Fransella, F., Bell, R., & Bannister, D. (2004). *A manual for repertory grid technique*. Wiley.

Geyer, F., Lehnen, J., & Herstatt, C. (2018). Customer need identification methods in new product development: What works best? *International Journal of Innovation and Technology Management*, 15 (1).

Goffin, K., Beznosov, A. & Seiler, M. (2021). Countering commoditization through innovation: challenges for European B2B companies, *Research Technology Management*, 64, 4, July-August 2021, 20-28.

Goffin, K., Karantinou, K., & Sakellariou, E. (2020). From user insights to foresights: Applying video-based ethnographic narratives and user innovation in NPD. *Technological Forecasting and Social Change*, 153.

Goffin, K., Lemke, F., & Koners, U. (2010). *Identifying Hidden Needs: Creating Breakthrough Products*. UK: Palgrave Macmillan.

Goffin, K., Lemke, F. & Szwajczewski, M. (2006). An exploratory study of 'close' supplier-

- manufacturer relationships, *Journal of Operations Management*, 24, 189-209.
- Goffin, K., Varnes, C.J., van der Hoven, C., & Koners, U. (2012). Beyond the voice of the customer: Ethnographic market research. *Research-Technology Management*, 55, 45–53.
- Green, P. E., Krieger, A. M., & Wind, Y. (2001). Thirty years of conjoint analysis: Reflections and prospects. *Interfaces*, 31(3_supplement), 56-573. <https://doi.org/10.1287/INTE.31.3S.56.9676>.
- Green, P. E., & Srinivasan, V. (1978). Conjoint analysis in consumer research: Issues and Outlook. *Journal of Consumer Research*, 5(2), 103. <https://doi.org/10.1086/208721>.
- Griffin, A. (1992). Evaluating QFD's use in US firms as a process for developing products. *Journal of Product Innovation Management*, 9(3), 171–187.
- Griffin, A., & Hauser, J. (1993). The voice of the customer. *Marketing Science*, 12(1), 1–27.
- Hadjikhani, A., & LaPlaca, P (2013). Development of B2B marketing theory. *Industrial Marketing Management*, 42(3), 294–305.
- Hair, N., & M. Clark, M. (2007). The ethical dilemmas and challenges of ethnographic research in electronic communities. *International Journal of Market Research*, 49, 1–13.
- Hatton, C., Kolk, M., Eikelenboom, M., & Beaumont, M. (2017). Four approaches for staffing and structuring a product development team to identify the crucial unmet needs of B2B customers. *Strategy & Leadership*, 45 (2), 25-32.
- Healy, M.J., Beverland, M.B., Oppewal, H., & Sands, S. (2007). Understanding Retail Experiences - The Case for Ethnography. *International Journal of Market Research*, 49 (6), 751-778.
- Heirati, N., & Siahtiri, V. (2019). Driving service innovativeness via collaboration with customers and suppliers: Evidence from business-to-business services. *Industrial Marketing Management*, 78, 6-16.
- Heitkamp & Thumann (2020). Retrieved October 14, 2020, from Web site: <https://www.ht-group.com/en.html>
- Hippel, E. v., (1986). Lead users. A source of novel product concepts. *Management Science*, 32, 791–805.
- Howe, J. (2008). Crowdsourcing: Why the power of the crowd is driving the future of business. *Journal of Consumer Marketing*, 26(4), 305-306.
- HSBC (2017). Hidden impact: Unlocking the growth potential of mid-market enterprises 2017, Accessed: 31 August 2020: https://slidelegend.com/queue/hidden-impact-hsbc-commercial-banking_5a9698701723dd1eae00a6e3.html.
- Kandybin, A. (2009). Which innovation efforts will pay? *MIT Sloan Management Review*, 51 (1), 53-60.
- Kärkkäinen, H., Piipo, P., Puumalainen, K., & Tuominen, M. (2001). Assessment of hidden and future customer needs in Finnish business-to-business companies. *R&D Management*, 31 (4), 391-407.
- Kierans, I. Developing a business model innovation capability within an established company. PhD thesis, Cranfield University, 2015.
- Khan, K. S. (2001). Undertaking systematic reviews of research on effectiveness: CRD's guidance for those carrying out or commissioning reviews. York: University of York, NHS Centre for Reviews

& Dissemination.

Kumar, N., L. Scheer, & Kotler, P. (2000). From market driven to market driving. *European Management Journal*, 18, 129–141.

Lemke, F., Clark, M., & Wilson, H. (2011). Customer experience quality: an exploration in business and consumer contexts using repertory grid technique. *Journal of the Academy of Marketing Science*, 39, 846–869.

Leonard-Barton, D., & Rayport, J.F. (1997). Spark innovation through empathic design. *Harvard Business Review*, 75 (6), 102-113.

Liberati, A., Altman, D. G., Tetzlaff, J., Mulrow, C., Gøtzsche, P. C., Ioannidis, J. P. A., Moher, D. (2009). The PRISMA statement for reporting systematic reviews and metaanalyses of studies that evaluate health care interventions: Explanation and elaboration. *Annals of Internal Medicine*, 151, W–65. <https://doi.org/10.7326/0003-4819-151-4-200908180-00136>

Luchs, M.G., Swan, K. S., & M.E.H. Creusen. (2016). Perspective: A review of marketing research on product design with directions for future research. *Journal of Product Innovation Management*, 33 (3), 320-341.

Lüthje, C., & Herstatt, C. (2004). The lead user method: an outline of empirical findings and issues for future research. *R&D Management*, 34, 553–568. <https://doi.org/10.1111/j.1467-9310.2004.00362.x>.

Lüttgens, D., P. Pollok, D. Antons, & Piller, F. (2014). Wisdom of the crowd and capabilities of a few: internal success factors of crowdsourcing for innovation. *Journal of Business Economics*, 84, 339–374.

Malshe, A., Roper, S., Eeekhoff, J., Gubitta, P., Parigi, B. & Campagnolo, D. (2017). The Mighty Middle: Why Europe's future rests on its middle market companies; Accessed 1 September 2020.

Marsden, D., and D. Littler. (2000). Repertory grid technique – An interpretive research framework. *European Journal of Marketing*, 34, 816–834.

Matzler, K., and Hinterhuber, H. 1998. How to make product development projects more successful by integrating Kano's model of customer satisfaction into quality function deployment. *Technovation*, 18(1), 25–38.

Mazars. (2017). Optimizing Mid-Sized Businesses: A performance analysis of Europe's mid-sized companies. Management report, available at: www.mazars.ie.

Miremedi, M., Musso, C., & Oxgaard, J. (2013). Chemical innovation: An investment for the ages. *McKinsey on Chemicals*, available at: <https://www.mckinsey.com/industries/chemicals/our-insights/chemical-innovation-an-investment-for-the-ages#>

Morris, M.H., & Davis, D.L. (1992). Measuring and managing customer service in industrial firms. *Industrial Marketing Management*, 21(4), 343.

Moskowitz, H., & Marketo, C. (2001). Selecting products for category appraisal studies? Fewer products do almost as well as many products. *Journal of Sensory Studies*, 16, 537–549.

Mues, N. (2020). The journey of the hidden champion – Why family businesses constantly escape the innovator's dilemma. *27th International Product Development Management Conference*, Antwerp 6-8th June, 2020.

Napier, N. P., M. Keil, & Tan, F.B. (2009). IT project managers' construction of successful

project management practice: a repertory grid investigation. *Information Systems Journal*, 19, 255–282.

Narver, J., & Slater, S. (1990). The effect of a market orientation on business profitability. *Journal of Marketing*, 54, 20–35.

North, D., Baldock, R., & Vickers, I. (2011). Research into Mid-Size Business Growth. BIS Department for Business Innovation & Skills report, UK, available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/16422/11-1409-research-mid-size-business.pdf

Palmatier, R. W., Houston, M. B., & Hulland, J. (2018). Review articles: Purpose, process, and structure. *Journal of the Academy of Marketing Science*, 46, 1–5. <https://doi.org/10.1007/s11747-017-0563-4>.

Penttinen, E., & Palmer, J. (2007). Improving firm positioning through enhanced offerings and buyer-seller relationships. *Industrial Marketing Management*, 36 (5), 552.

Pine, B.J. (2015). How B2B companies create economic value by designing experiences and transformations for their customers. *Strategy & Leadership*, 43 (3), 2-6.

Richard, P., Coltman, T., & Keating, B. (2012). Designing IS service strategy: an information acceleration approach. *European Journal of Information Systems*, 21: 87–98.

Roberts, D., Baker, S., & Walker, D. (2005). Can we learn together? Co-creating with consumers. *International Journal of Market Research*, 47 (4), 1-21.

Rogers, E. (2010). *Diffusion of Innovations*. New York: Free Press.

Rosenthal, S.R., & Capper, M. 2006. Ethnographies in the front end: Designing for enhanced customer experiences. *Journal of Product Innovation Management* 23 (3), 215 – 237.

Sampson, P. (1972). Using the repertory grid test. *Journal of Marketing Research*, 9, 78–81.

Sandberg, K. D. 2002 . Focus on the benefits . *Harvard Management Communication Newsletter*5(4), 3-4 .

Schweitzer, F., & Tidd, J. (2018). *Innovation heroes: Understanding customers as a valuable innovation resource*. World Scientific Publishing Europe Ltd.

Seiler, M., Cott, A., Torres, V., Reif, J., Kugler, K., Gammel, J. & Brodbeck, F. (2020) Combining values-based and evidence-based innovation management: Impact on innovation culture and idea generation. *ISPIM Proceedings 2020*, ISBN 978-952-335-466-1.

Simon, H. (2009). Hidden champions of the twenty-first century: The success strategies of unknown world market leaders, London: Springer.

Simpson, B. J. K., & Radford, S. K. (2012). Consumer perceptions of sustainability: A free elicitation study. *Journal of Nonprofit & Public Sector Marketing*, 24(4), 272-291. <https://doi.org/10.1080/10495142.2012.733654>.

Simula, H., & Ahola, T. (2014). A network perspective on idea and innovation crowdsourcing in industrial firms. *Industrial Marketing Management*, 43, 400–408.

Sinkula, J.M., Baker, W. E., & Noordewier, T. (1997). A Framework for market-based organizational learning: Linking values, knowledge, and behaviour. *Journal of the Academy of Marketing Science*, 25, 305–318.

- Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research*, *104*, 333-339.
- Tan, F. B., & Hunter, M. G. (2002). The repertory grid technique: A method for the study of cognition in information systems. *MIS Quarterly*, *26*, 39.
- Torraco, R. J. (2005). Writing integrative literature reviews: Guidelines and examples. *Human Resource Development Review*, *4*, 356-367. <https://doi.org/10.1177/1534484305278283>.
- Tranfield, D., Denyer, D., & Smart, P. (2003). Towards a methodology for developing evidence-informed management knowledge by means of a systematic review. *British Journal of Management*, *14*, 207-222.
- Trocchia, P. J., Swanson, D. L., & Orlitzky, M. (2007). Digging deeper: The laddering interview, a tool for surfacing values. *Journal of Management Education*, *31*, 713-729. <https://doi.org/10.1177/1052562906293611>.
- Tursch, P., Steinberg, F. & Woll, R (2014). A first step towards engineer-oriented adaption of the Repertory Grid Technique. *Total Quality Management and Business Excellence*, *25*, 7-8, 734-749.
- Urban, G., & Hippel, E. v. (1988). Lead user analyses for the development of new industrial products. *Management Science*, *34*(5), 569-582.
- Van Kleef, E., van Trijp, H.C.M., & Luning, P. (2005). Consumer research in the early stages of new product development: A critical review of methods and techniques. *Food Quality and Preference*, *16*(3), 181-201.
- Venohr, B., & Meyer, K.E. (2007). The German miracle keeps running: How Germany's hidden champions stay ahead in the global economy. Working Paper (30), Fachhochschule für Wirtschaft Berlin, IMB Institute of Management Berlin, Berlin.
- Wagner, E.R., & Hansen, E.N. (2004). A method for identifying and assessing key customer group needs. *Industrial Marketing Management*, *33* (7), 643-655.
- Weigel, T. & Goffin, K. (2015). Creating innovation capabilities: Mölnlycke Healthcare's 'Journey', *Research Technology Management*, *58*(4), 28-35.
- Wittink, D. R., & Cattin, P. (1989). Commercial use of conjoint analysis: An update. *Journal of Marketing*, *53*, 91-96.
- Woermann, N. (2018). Focusing ethnography: Theory and recommendations for effectively combining video and ethnographic research. *Journal of Marketing Management*, *34*(5-6), 459-483.
- Wong, G., Greenhalgh, T., Westhorp, G., Buckingham, J., & Pawson, R. (2013). RAMESES publication standards: Meta-narrative reviews. *BMC Medicine*, *11*, 20. <https://doi.org/10.1186/1741-7015-11-20>
- Zogaj, S., & Bretschneider, U. (2012). Customer Integration in New Product Development - a literature Review Concerning the Appropriateness of Different Customer Integration Methods to attain Customer Knowledge. *ECIS*.
- Zoominfo (2021a). Retrieved July 29, 2021, from Web site: <https://www.zoominfo.com/c/heitkamp-thumann-group-companies/346891030>
- Zoominfo (2021b). Retrieved July 29, 2021, from Web site: <https://www.zoominfo.com/c/westfalia/55394464>

8. APPENDIX

Table A1. Approaches to literature reviews (Snyder, 2019)

Review approach	Systematic review	Semi-systematic review	Integrative review
Typical purpose	Synthesize and compare evidence	Overview research area and track development over time	Critique and synthesize
Research questions	Specific	Broad	Narrow or broad
Search strategy	Systematic	May or may not be systematic	Usually not systematic
Sample characteristics	Quantitative articles	Research articles	Research articles, books, and other published texts
Analysis and evaluation	Quantitative	Qualitative/quantitative	Qualitative
Examples of contribution	Evidence of effect, Inform policy and practice,	State of knowledge, Themes in literature, Historical overview, Research agenda, Theoretical model,	Taxonomy or classification, Theoretical model or framework

Table A2. Review phases, review strategy and underlying guiding questions based on Snyder (2019) and Adams et al. (2006)

Phase 1: Design the review

- Is this review needed and what is the contribution of conducting this review?
- What is the potential audience of this review?
- What is the specific purpose and research question(s) this review will be addressing?
- What is an appropriate method to use of this review's specific purpose?
- What is the search strategy for this specific review?
- Are the review team, the scope and nature of the question and the search strings specified?

Phase 2: Conduct the review

- Does the search plan developed in phase one work to produce an appropriate sample or does it need adjustment?
- What is the practical plan for selecting articles?
- How will the search process and selection be documented?
- How will the quality of the search process and selection be assessed?
- Were the assumptions above tested in a preliminary search of electronic databases?

Phase 3: Analysis

- What type of information needs to be abstracted to fulfill the purpose of the specific review?

- What type of information is needed to conduct the specific analysis?
- How will reviewers be trained to ensure the quality of this process?
- How will this process be documented and reported?
- How should the content analysis of data set and the sorting of measures into first order categories defined by the analytic framework be organized?
- Did you consider reviewing the measures against the framework for gaps?

Phase 4: Structuring and writing the review

- Are the motivation and the need for this review clearly communicated?
- What standards of reporting are appropriate for this specific review?
- What information needs to be included in the review?
- Is the level of information provided enough and appropriate to allow for transparency so readers can judge the quality of the review?
- The results clearly presented and explained?
- Is the contribution of the review clearly communicated?

Table A3. Final literature sample and selection rules of the integrative literature search process as described in Figure 1

Final literature sample	<p>The final literature sample for in-depth analysis consisted of the following 39 articles and book contributions:</p> <p>Kärkkäinen et al., 2001; van Kleef et al., 2005; Atuahene-Gima et al., 2005; Rosenthal et al., 2006; Goffin et al., 2006; Venohr and Meyer, 2007; Hair and Clark, 2007; Dant and Brown, 2008; Chruchill et al., 2009; Simon, 2009; Droge et al., 2010; Goffin et al., 2010; Cooper and Dreher, 2010; Lemke et al., 2011; Zogaj and Bretschneider, 2012; Goffin et al., 2012; Hadjikhani and LaPlaca, 2013; Tursch et al., 2014; Eggers et al., 2014; Kierans, 2015;</p>	<p>Weigel and Goffin, 2015; Pine, 2015; Christensen et al., 2016; Luchs et al., 2016; Hatton et al., 2017; HSBC, 2017; Hatton et al., 2017; Mazars, 2017; Cortez and Johnston, 2017; Schweitzer and Tidd, 2018; Brem et al., 2018; Cui and Wu, 2018; Biemans and Griffin, 2018; Duffy, 2018; Geyer et al., 2018; Woermann, 2018; Heirati and Siahtiri, 2019; Seiler et al., 2020; Goffin et al., 2021;</p>
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Selection rules applied in Figure 1	<p>We screened the titles (Fig. 1, Step 2) and the abstracts (Fig. 1, Step 3) of the articles and books using the following rules about which articles and other publications should be included or excluded:</p> <ol style="list-style-type: none">1. A link to the key words above (see Fig.1) needs to exist.2. The title must be linked to the field of innovation and to VOC techniques or to generating customer insights.3. The abstract or book summary needs to be linked to the field of generating customer insights or to applying hidden needs techniques.4. The abstract or book summary must be linked to one of the four research questions of this integrative review (see RQs in section 1).
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Biographies



Matthias Seiler. Matthias Seiler is CEO of BFI GmbH and managing partner of Innovation Management & Business Development GmbH. Prior to his current positions he worked for almost 20 years as executive director of innovation management for an international group of companies and as director of new business development and innovation in the chemical industry. He also teaches innovation management and marketing at Heinrich-Heine-University Düsseldorf, Germany. Since 2004 he has overseen business units, departments and large-scale projects in the process, chemical, pharmaceutical, steel, and automotive industry in Asia, the US and Europe. He received his PhD in process/plastics engineering and thermodynamics from the University of Erlangen-Nuremberg and an Executive MBA from Mannheim & ESSEC Business School.

CRedit Statement: Conceptualization, Methodology (integrative review and cases), Writing -

Review & Editing, Resources.



Andreas Engelen. Andreas Engelen is a full professor for management at the Heinrich-Heine-University in Düsseldorf, Germany. He has received his doctoral and post-doc degree from RWTH Aachen University. He has worked as a management consultant for a leading international consulting firm. His areas of research include corporate entrepreneurship, innovation management, and entrepreneurial growth. He has published his research in academic journals such as the Journal of Management, Journal of Product Innovation Management, Journal of Business Venturing, and Journal of International Marketing.

CRedit Statement: Conceptualization, Methodology (integrative review), Writing - Review & Editing, Resources.



Keith Goffin. Keith Goffin is Research Professor at Stockholm School of Economics and Emeritus Professor at Cranfield School of Management. Prior to joining academia, he worked in management roles in the medical electronics industry. His research interests are innovation strategy, project-to-project learning, and identifying customers' 'hidden needs'. He has published extensively and his book Innovation Management: Effective Strategy and Implementation is one of the leading textbooks on innovation. He also acts as a consultant to organisations such as Agilent Technologies, BASF, Bosch, Haier, Johnson & Johnson, Reckitt-Benckiser and Sanofi.

CRedit Statement: Conceptualization, Methodology (cases), Writing - Review & Editing, Resources.