

Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

Industrial Marketing Management

journal homepage: www.elsevier.com/locate/indmarman

Industrial innovation management in the age of digital transformation: The risk of too strong selling capabilities

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ARTICLE INFO

Keywords:

Digital transformation
 Industrial innovation management
 Selling capability
 Knowledge adoption
 Salesperson adoption
 Sales and innovation performance

ABSTRACT

In the rapidly evolving landscape of industrial innovation, a major hurdle for business customers is the inherent uncertainty associated with adopting new products. This uncertainty is often exacerbated by the digital transformation, which contributes to an overwhelming influx of information. Central to this challenge is the inadequacy of knowledge transfer from salespeople to business customers, leading to a suboptimal understanding of the new offerings and consequently, a reluctance to adopt these innovations. Despite its significance, the strategies to effectively mitigate this issue have remained largely unexplored. Our study addresses this gap by examining the impact of salespeople's selling capabilities on the adoption of knowledge by business customers. Selling capability, defined as the capability of individuals to perform salespeople's tasks, emerges as a critical factor in facilitating customers' understanding and acceptance of new industrial innovations. We conducted comprehensive surveys with business customers focusing on their experiences with recent incremental industrial innovations, complemented by objective purchase data from company records. This research is pioneering in empirically establishing that the adoption of knowledge by customers acts as a mediating factor between salespeople's selling capabilities and the purchase of innovations. Intriguingly, our findings reveal the existence of an optimal level of selling capability necessary for effective knowledge transfer, which varies depending on specific contingencies. This discovery is crucial for sales, innovation, and marketing managers, suggesting that relying solely on selling capabilities might be insufficient. We recommend the integration of additional strategies, such as assertive listening, to enhance knowledge transfer. Such strategies can prevent the pitfalls of overreliance on selling capabilities alone and foster a more effective adoption of industrial innovations among business customers. Our findings offer valuable insights for professionals aiming to navigate the complexities of selling industrial innovations in the digital age, providing a nuanced understanding of how to tailor their approach to improve customer receptivity and adoption rates.

1. Introduction

“New products are the lifeblood of firm performance” (Narayanan & Manchanda, 2009, p.424) and ensure companies' economic growth and success. On average, however, only one out of seven innovations prove to be an actual success (Cooper, 2019). One of the main reasons for customer's reluctance to adopt innovations is their perceived uncertainty about the benefits and use of the innovation (Bonney et al., 2022; Talke & Hultink, 2010).

In the age of digital transformation customers have much more product information at their disposal than ever before (Hochstein et al.,

2021). However, more information does not automatically mean that a customer actually has more knowledge about a new product (Ahearne et al., 2022). Rather, there is a risk that the amount of information available online can quickly lead to information overload for customers (Wilson & Abel, 2002). This overload can additionally increase the perceived uncertainties when evaluating an innovation.

The customer's perceived uncertainty about the benefits and use of the innovation may be caused by the malfunctioning transfer of knowledge from salespeople to the business customer (Bonney et al., 2022); however, to date there has been limited understanding of how to address the missing link between customers' knowledge adoption and

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<https://doi.org/10.1016/j.indmarman.2024.01.008>

Received 2 May 2023; Received in revised form 28 December 2023; Accepted 10 January 2024

Available online 28 January 2024

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the salesperson. This is surprising because successful knowledge transfer is an important factor in sales performance, especially for new products (Bonney et al., 2022; Verbeke et al., 2011). Our study aims to shed light on this initial stage of product adoption and to find ways to foster customers' knowledge adoption in order to successfully pass through the innovation decision process stages towards the final new product adoption.

We suggest that salespeople's selling capability, which is the individual's learned capability to perform the sales tasks (Rentz et al., 2002), is a crucial key to fostering customers' knowledge adoption. Salespeople's selling capability has been examined as an important factor for selling performance in general (Rentz et al., 2002; Singh et al., 2017; Verbeke et al., 2011) but not for customers' knowledge adoption (Ettlie, 1980; Mittelstaedt et al., 1976; Parthasarathy et al., 1995; Sanguinetti et al., 2018; Talke & Heidenreich, 2014).

Current research on the effect of selling capability is twofold. On the one hand, it shows that selling capability has a positive influence on sales performance (Plouffe et al., 2014; Singh et al., 2017; Singh & Venugopal, 2015; Wachner et al., 2009). On the other hand, existing research shows that salespeople's selling capability only has a positive influence on customers' purchase decision under specific conditions (Ahearne et al., 2019; Alavi et al., 2018; Zboja et al., 2016). There is only limited research related to customer learning for existing cloud service solutions that addresses both positive and negative effects (Bonney et al., 2022). Furthermore, current research on the topic of selling capability often focuses on the perspective of the salesperson and therefore does not often consider the customer perspective (Alavi et al., 2019; Kimura et al., 2019; Limbu et al., 2016; Singh et al., 2017; Wachner et al., 2009). For example, Kaski et al. (2017) show that customers' and salespeople's expectations differ at an initial sales meeting and that buyers' expectations are not adequately met. Thus, we do not know when, from the customers' perspective, selling capability is beneficial for the (knowledge) adoption of customers. This issue might lead to a misapplication and mismanagement of selling capabilities, which can lead to the failure of an innovation. To address this, our study aims to answer the following main research question: “Are more selling capabilities always beneficial to customer knowledge adoption?”

Our study also addresses another limitation of prior research regarding the examined context factors at the knowledge adoption stage. Li et al. (2015) emphasize product attributes as the primary factor in adoption success, with the (perceived) degree of innovation being the most important product-specific factor (Kuester et al., 2012; Lee & Colarelli O'Connor, 2003; Lennon et al., 2007). In addition, according to the meta-analysis of Arts et al. (2011), customers' innovativeness plays a particularly important role as a specific adopter characteristic (Rogers, 2003).

Therefore, marketing and sales managers should urge their salespeople to address both the innovation-specific factor “perceived degree of innovation” as well as the customer-specific factor “customers' innovativeness” when communicating innovations; however, there are only limited insights on these aspects in the context of selling capability and knowledge adoption. This leads us to our second research question: “How do customers' innovativeness and the perceived degree of innovation affect the impact of the selling capability on customers' knowledge adoption in an innovation decision process?”

With a multimethod design and unique data, we ensure the reliability of our results and avoid common method biases (Podsakoff et al., 2003). Specifically, we conducted in-depth interviews, surveyed business customers about actual, incremental industrial innovations, and complemented this with objective purchase data from company records.

Our study makes three main contributions. To the best of our knowledge, we appear to be the first to empirically investigate and show that knowledge adoption mediates the relationship between salespeople's selling capability and customers' innovation purchase. This finding might shift the attention of innovation and marketing researchers and practitioners towards the knowledge adoption as a crucial success factor

for innovation adoption. Addressing the determinants of knowledge adoption could be one approach for reducing the high failure rate of innovations.

Second, after showing the central role of customers knowledge adoption in the innovation decision process, we explicitly focus our research on how to externally stimulate customers' knowledge adoption. This allows us to figure out how companies can actively initiate customers' product adoption process via salespeople's selling capability. We were thereby able to show that there is an optimum level of salespeople's selling capability, which should not be undercut nor exceeded to achieve customers' product adoption. This insight can save resources and increase the probability of success of an innovation.

Third, our findings indicate that this optimum level of selling capability is influenced by two contingencies: the perceived degree of innovation and the innovativeness of the customer. As a result, there is no need for a “the more the better mentality” in using selling capability to foster customers' knowledge adoption. Instead, salespeople need to adapt the use of their selling capability on both the degree of innovation and customers' innovativeness to achieve successful innovation adoption.

To conclude, we provide sales managers, innovation managers, and marketers with a better understanding of how to initiate new product adoption through salespeople. Our findings offer companies new possibilities, in particular, for specifically training salespeople in how they should use their selling capabilities to initiate a successful customers' product adoption.

2. Theoretical background

The literature relevant to this study can be divided into three categories, as depicted in Table 1.

The first research category includes the influence of salespeople's selling capability on selling performance in general. According to a meta-analysis conducted by Churchill et al. (1985), salespeople's selling capability has the second greatest influence on salesperson's sales performance after salesperson's individual role perception.

According to Rentz et al. (2002), selling capability consists of: 1) interpersonal capability (e.g., maintaining good business relationships by listening or being aware of the customer), 2) salesmanship capability (e.g., knowing the sales profession and its responsibilities, such as presenting the sales message to the customer or closing the deal), and 3) technical knowledge (e.g., knowledge about the offered product as well as knowledge about products available on the market). Consistent with Wachner et al. (2009) and Koponen et al. (2019), most of the literature discussed here can be classified into one or more of these selling capability categories.

At first glance, it seems that most of the research shows a positive influence of salespeople's selling capability on sales performance (Plouffe et al., 2014; Singh et al., 2017; Singh & Venugopal, 2015; Verbeke et al., 2011). However, there is also evidence that customers do not always have a positive perception of salespeople's selling capability. For example, Alavi et al. (2018) demonstrate that inspirational appeals by salespeople, which aim to get the customer excited about a product (Yukl & Tracey, 1992), are more likely to lead the customer to reject a new product. This is because the customer often perceives these inspirational appeals as persuasive attempts, which leads the customer to reject the new product. Bonney et al. (2022) showed in a virtual sales presentation setting for existing cloud service solutions that inspirational appeals only positively influence the customer's basic learning. Furthermore, Ahearne et al. (2019) showed that the salesperson's selling capability only positively influences the customer's purchase decision when the customer is uncertain about his or her preference. Thus, it is currently unclear when the use, and especially the degree, of salespeople's selling capability is beneficial for customers' knowledge adoption when selling a new product.

Table 1
Comparison of prior research with this study.

	Previous Research relevant to this study			This Study Contributions		
	Product adoption process	Influences on product adoption	Selling capability	Research gaps filled by this study	Theoretical Contributions	Practical Implications
Key Studies	López and Sicilia (2013), Anand, Agarwal, Aggrawal, & Singh (2018), Wisdom et al. (2014), Rogers (2003), (Daghfous et al., 2018)	Arts et al. (2011), Jansson (2011), Siamagka, Christodoulides, Michaelidou, & Valvi, 2015, (Calantone et al., 2006), (Lee & Colarelli O'Connor, 2003) (Araujo et al., 2016)	Singh et al. (2017), Rentz et al. (2002), Friestad and Wright (1994), Alavi et al. (2018), (Alavi et al., 2019; Kimura et al., 2019; Limbu et al., 2016; Wachner et al., 2009)			
Research Topic	Customers' product adoption process.	Influence factors on customers' product adoption in general.	Influence of selling capability on sales performance.	<p>Either customers' product adoption process or influence factors on customers' product adoption have been studied so far</p> <p>Salespeople's selling capability only examined as an important factor for selling performance in general.</p> <ul style="list-style-type: none"> ➤ Did not focus explicitly on customers' knowledge adoption ➤ Did not see selling capabilities as a valuable opportunity to do so 	<p>Contribution 1: Customers' knowledge adoption as mediator for the relationship between selling capability and innovation purchase</p> <p>Contribution 2a&2b: Salespeople's selling capability as valuable opportunity to initiate customers' knowledge adoption. But there is an optimum level</p>	<p>Implication 1 Importance of directing customer's knowledge adoption through salespeople</p> <p>Implication 2 No "the more the better" mentality in using salespeople's selling capabilities</p> <p>Implication 3 Make salespeople aware of the inverted u-shaped effect. Providing them with other additional skills (e.g., attentive listening)</p>
Key Findings	Crucial for customers new product adoption process: Customer's knowledge adoption; consists of: Customers' awareness of the innovation, giving information, and reducing uncertainties.	Customers: more likely to adopt innovations with low complexity and high relative advantages. Customers' characteristics, (e.g., innovativeness) as influence factor on customer's product adoption.	Positive link between selling capability and selling performance Risk of giving the customer the feeling of being persuaded	<p>Previous studies focused on: The influence of selling capability on selling performance.</p> <ul style="list-style-type: none"> ➤ The interaction between selling capability with product- and customer characteristics has not been considered. 	<p>Contribution 3 Considering both, product, and customers' characteristics when using salespeople's selling capability to initiate customer's knowledge adoption.</p>	<p>Implication 4 & 5 Tailor the use of salespeople's selling capabilities</p> <ul style="list-style-type: none"> ➤ Use CRM-Tools to store information about customers' innovativeness ➤ Be sure your salespeople assess the degree of product innovation properly

The second research category investigates literature concerning customers' innovation adoption based on customers' innovation decision process (López & Sicilia, 2013; Wisdom et al., 2014). Thereby it becomes apparent that customers' knowledge adoption is a key factor in customers' final innovation adoption (Daghfous et al., 2018; Helm et al., 2020; Talke & Heidenreich, 2014).

Customer knowledge adoption, based on Rogers (2003), refers to the acquisition of knowledge about new products, or more specifically, the information about new products that is transformed into knowledge and is given meaning by customers (Chou et al., 2015; Endres et al., 2020). The essential role of customer's knowledge adoption is also emphasized by a current study of Daghfous et al. (2018). This study shows that a successful knowledge transfer between companies and customers increases the probability of customers' final new product adoption. The authors note that personal contacts, such as sales contacts, are often necessary for the transfer of new product knowledge (Daghfous et al., 2013; Daghfous et al., 2018). Bonney et al. (2022) focus on the role of salespeople as knowledge brokers. In doing so, they showed how salespeople can stimulate customers' learning about an innovation, i.e., how salespeople can facilitate customers' knowledge adoption. However, it remains unclear how knowledge can be transferred optimally between companies and customers in general (Daghfous et al., 2013) and how salespeople can be enablers for this knowledge transfer (Bonney et al., 2022).

The third research category examines which innovation-specific and customer-specific factors influence customers' product adoption process. The literature reviewed shows that the degree of innovation influences customers' new product adoption. The degree of innovation is defined, as the extent of perceived innovativeness of the new product compared to the existing available alternatives at a given point in time (Kuester et al., 2017; Rogers, 2003). For example, a meta-analysis of Arts et al. (2011) shows that customers are more likely to adopt innovations with low complexity. Calantone et al. (2006) explain this by noting that a high level of product innovativeness, which is often accompanied by high product complexity (Slater et al., 2014), reduces customers' product familiarity, which may be detrimental to new product success. Lee and Colarelli O'Connor (2003) consider the degree of innovation of a product as an innovation specific external factor influencing the relationship between firm's communication strategy and customers' new product adoption. The study also shows that if products are considered new and unknown, it has a negative impact on the relationship between firm's communication strategy and customers' final product adoption. Thus, the literature indicates that the degree of product innovation is an important external factor that must also be considered when attempting to increase customer knowledge adoption via salespeople's selling capability.

The literature identifies the customer's innovativeness as a customer-specific factor that influences the adoption of a new product. Customers' innovativeness represents the willingness of a decision maker to adopt an innovation earlier than others (Heidenreich et al., 2017; Rogers, 2003; Shih & Venkatesh, 2004; Wichmann et al., 2019). Araujo et al. (2016) showed via a meta-analysis that customers' innovativeness positively affects the adoption of products with more innovative features. Moreover, the meta-analysis of Araujo et al. (2016) indicates that customers with a more innovative profile have a lower risk perception concerning new products. In line with these findings, Zhang and Hou (2017) showed that customers with low innovativeness are more likely to perceive risks associated with the innovation purchase and thus perceive more uncertainties concerning an innovation. Thus, the literature review indicates that customers' innovativeness is an important external factor that must be considered as well when attempting to increase customer knowledge adoption via salespeople's selling capability.

3. Theoretical framework

Similar to Chase and Murtha (2019), we base our study on three premises: 1) Information asymmetries can lead to customer

uncertainties (Hochstein et al., 2019), 2) The company can send strategic signals or cues that reduce information asymmetries and thus customer uncertainties (Panagopoulos et al., 2018) and 3) Customers only use cues if they assume that they will provide them with opportunities to infer the actual quality of the new product (Helm & Mark, 2007; Wang et al., 2016). Therefore, the following section explains to what extent the salespeople's selling capability can be perceived by customers as a cue for product quality.

The first premise of information asymmetries between customer and companies may seem surprising, as technological advances have made a large amount of information available to customers online (Endres et al., 2022; Hochstein et al., 2019; Hunger et al., 2023). Consequently, customers have much more product information at their disposal than ever before (Hochstein et al., 2021). However, more information does not automatically mean that a customer actually has more knowledge about a new product (Ahearne et al., 2022). Rather, there is a risk that the amount of information available online can quickly lead to information overload for customers (Wilson & Abel, 2002). This overload can increase the perceived uncertainties when evaluating an innovation. Thus, the seller-buyer expertise gap, where the seller knows more about the innovation than the buyer (Dunn & Thomas, 1986), persists despite the ability of customers to obtain information online. Consequently, these uncertainties still represent serious obstacles to the acceptance and adoption of an innovation (Bearden & Shimp, 1982; Castaño et al., 2008; Gatignon & Robertson, 1993).

According to cue utilization theory, in order to reduce perceived uncertainties concerning a new product, customers prefer certain signals, which they assume allow them to draw conclusions about the actual quality of an innovation (Olson & Jacoby, 1972). These are referred to as "cues" in the literature (Helm & Mark, 2007). Therefore, companies need to make sure that salespeople are perceived by customers as an indication of the quality of the product, for example by making sure that salespeople provide information that is tailored to the customer's needs (Hochstein et al., 2021).

Cues can be divided into intrinsic and extrinsic cues (Olson & Jacoby, 1972). Intrinsic cues are features of the product themselves. Extrinsic cues are properties that are related to the products (Yan et al., 2019), for example, price, packaging, and personnel (Acebrón & Dopico, 2000). Consequently, we consider salespeople's selling capability as an extrinsic cue to product quality (De Brentani & Kleinschmidt, 2004; Sharma et al., 1999) and thus salespeople as signalers who can actively facilitate customers' knowledge adoption.

Language based information (e.g., rhetorical cues) used by salespeople in direct customer contact are often overlooked in their signaling effect (McFarland & Dixon, 2019; Steigenberger & Wilhelm, 2018). They provide an opportunity to draw customers' attention to information as well as to emphasize and highlight relevant features of an innovation (Steigenberger & Wilhelm, 2018). Consequently, salespeople's selling capability can be seen as rhetorical cues that help in demonstrating the quality of an innovation to the customer. For example, the salesperson can draw the customers' attention to the innovation by using salesmanship capability and presenting the innovation in a professional manner. In addition, salespeople can use their technical knowledge to highlight the technical aspects of an innovation that are not immediately obvious, thus emphasizing the quality of the innovation. Furthermore, the salesperson can draw the customers' attention to the innovation by using interpersonal capability i.e., listening to the customer and showing that the innovation fits the customers' needs.

4. Hypotheses development

Our conceptual model is based on the above describe theoretical framework. The conceptual model and the hypotheses that we derive in the following are shown in Fig. 1.

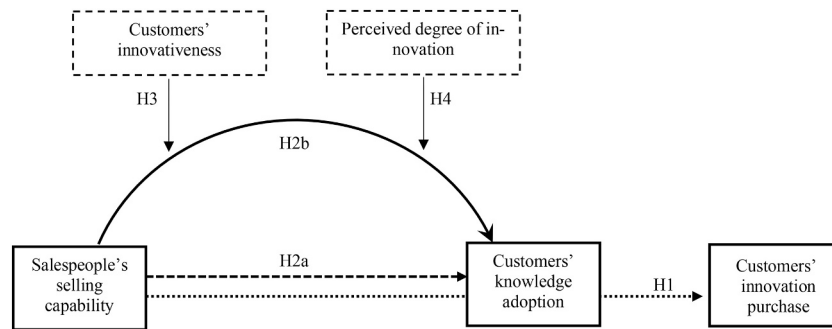


Fig. 1. Conceptual Model.

First, we assume that salespeople's selling capability is a market-information cue i.e., a signal that influences customers' knowledge adoption. Second, we identify innovation-specific and customer-specific factors that influence the efficiency of salespeople's selling capability as a signal: 1) customers' own innovativeness and 2) the degree of product innovation. Therefore, we expect that customers' innovativeness and the degree of innovation moderate the relationship between salespeople's selling capability and customers' knowledge adoption. In the following, we derive the specific hypotheses in our conceptual framework.

4.1. Customers' knowledge adoption as mediator for customers final purchase decision

Our literature review shows that most studies only examine customers' final product adoption, neglecting customer adoption of knowledge (see Table 1), even though it plays an important intermediary role in final product adoption (Rogers, 2003). For example, Lin and Chen (2006) show that customers' product knowledge has a positive impact on customers' final purchase decision.

Companies today are faced with much more informed customers (Ahearne et al., 2022; Hochstein et al., 2021). According to recent figures from Siemens, for example, 57% of B2B customers research the new product online before contacting sales representatives (Greis et al., 2021). This raises the question of whether it still makes sense to foster customer's knowledge adoption via salespeople, since customers can easily acquire knowledge online. Thus, it might be the case that the customer does not perceive salespeople as a cue for product quality anymore, instead relying on online information. However, the increase in online information carries the risk of an information overload on the customer side, which reduces customers' actual buying behavior. For example, Soto-Acosta et al. (2014) showed that information overload online has a negative impact on customers' purchase intentions due to the increase in perceived risks that might be associated with the purchase.

Alavi and Habel (2021) still attribute great importance to salespeople in B2B environments for customers' knowledge adoption. They note that direct customer interactions about a particular product can usually only be replaced to a limited extent by online channels. For example, trust, which is important for reducing customer uncertainty about a new product, is more easily achieved via face-to-face interactions (Paese et al., 2003) than through digital channels. Furthermore, Bonney et al. (2022) showed that salespeople can actively influence customer learning, which precedes customer knowledge adoption, and thereby affect purchase decisions (Hibbert et al., 2012). Therefore, B2B companies still need salespeople (Alavi & Habel, 2021) who can actively promote customers' knowledge adoption by using their selling capabilities, which in turn favors the customers' final purchase decision. This leads to the following hypothesis.

H1: The relationship between salespeople's selling capability and customers' purchase decision is mediated through customers' knowledge adoption.

4.2. Salespeople's selling capability and customers' knowledge adoption

Companies' use of salespeople's selling capability as a cue that positively affects customers' knowledge adoption has not been examined explicitly, but rather in the context of measuring sales performance (Table 1). For customers to perceive salesperson selling capability as a cue to product quality, it must be observable and credible (Connelly et al., 2011; Helm & Mark, 2007).

Observability indicates how easily the used cue can be perceived by the customer in order to assess the quality of the innovation. This is possible during the direct contact between the customer and the salesperson (Bonney et al., 2022; Rouziès & Hulland, 2014). During this, the customer can observe all three facets of selling capability and therefore infer the quality of the innovation through them. The interpersonal capability can be perceived when the salesperson is talking to the customer and takes time to listen to the customers needs. The technical knowledge, for example, explaining the innovation to the customer in detail, and the salesmanship capability, when the customer can perceive that the salesperson behaves professionally and follows the formal procedures of a sales process. The observability of the signal is a necessary but not sufficient condition for a signal to be interpreted as a useful cue (Connelly et al., 2011).

Moreover, for a cue to be effective, it must also be perceived as credible by the customer (Helm & Mark, 2007). Salespeople can demonstrate their credibility through their expertise, such as the salesperson's technical knowledge capability (Liu & Leach, 2001; Newell et al., 2011; Swan & Nolan, 1985). Moreover, salespeople can strengthen their credibility via their interpersonal capability. For example, Aggarwal et al. (2005) show that the salesperson's ability to respond to the customer's needs leads the customer to trust the salesperson. This trust reduces customer uncertainty and makes customers more likely to purchase an innovation (Belonax et al., 2007).

Therefore, we propose:

H2a: Salespeople's selling capability is related to customers' knowledge adoption.

4.3. Inverted U-shape: salespeople's selling capability and customers' knowledge adoption

As we have shown, there are good reasons to assume that the use of the salespeople's selling capability is a cue to the quality of the innovation and leads the customer to adopt knowledge about the innovation. The receiver's interpretation of the signal is of great importance because of the risk that the customer may interpret signals differently than intended (Perkins & Hendry, 2005; Srivastava, 2001). Namely, as an attempt to persuade rather than as a signal of quality.

Kirmani and Campbell (2009) report that during the sales process, customers think about the salesperson's motives and look for cues to detect a possible persuasion attempt. If customers perceive that the salesperson is trying to persuade them, e.g., through his or her selling capabilities, the likelihood of an actual purchase decreases (Friestad &

Wright, 1994). Lampel and Shamsie (2000) draw a line between signaling and persuasion, defining signaling as the company's investment in design or in superior personal service. Persuasion, on the other hand, is more focused on pure advertising purposes. In line with these definitions, the salespeople's selling capability could be seen as both a signal of superior personal service and an attempt to use selling capabilities to persuade.

Linking this finding to knowledge adoption, it can be inferred that to a certain extent, the customer interprets the salespeople's selling capability as a signal of quality and adopts knowledge about an innovation; however, at a certain point, the customer may become suspicious, feel persuaded, and end the adoption process. Thus, too little, or too much selling capability, as perceived by the customer, will lead to suboptimal knowledge adoption, because the customer will feel poorly advised or manipulated. Hence, there may be an optimal level of salespeople's selling capability to stimulate customer knowledge adoption. This describes an "inverted U" relationship between selling capability and customer knowledge adoption, where low and high levels have a negative effect. Therefore, we propose:

H2b: There is an inverted U-shaped relationship between salespeople's selling capability and customer knowledge adoption, such that customer knowledge adoption is higher when salespeople use their selling capability at a medium level than when they use it at a low or high level.

4.4. Moderating contingencies

Customers' innovativeness. The literature shows that not only the signal itself is important, but also the person, the receiver, who should use the cues to evaluate the product's quality. Consequently, the effectiveness of a cue depends to a certain degree on the characteristics of the customer (Connelly et al., 2011; Taj, 2016).

One characteristic that distinguishes customers from each other is their own innovativeness (Heidenreich et al., 2017; Rogers, 2003; Shih & Venkatesh, 2004). Therefore, we investigate the influence of customers' innovativeness on the relationship between salespeople's selling capability and customers' knowledge adoption. In particular, customers with low innovativeness feel that they face many uncertainties and are therefore not open to innovations. For example perceived financial risks have a negative effect on the propensity to acquire information about a new product (Hirunyawipada & Paswan, 2006). Thus, customers with low innovativeness do not actively seek out new information (Steenkamp & Baumgartner, 1992) and therefore pay less attention to cues that companies send out to demonstrate the quality of an innovation. Thus, salespeople's selling capability is a particularly important cue for showing customers with low innovativeness the quality of an innovation. Therefore, more support is required to start their knowledge adoption (Agarwal & Prasad, 1998b; Leonard-Barton & Deschamps, 1988). Zhang and Hou (2017) showed that customers with low innovativeness are more likely to perceive risks associated with the innovation purchase. These perceived risks can be reduced if the customer trusts the salesperson (Young & Albaum, 2003). Consequently, for customers with low innovativeness, salespeople should use their selling capability more strongly to gain the customers' trust to reduce perceived risks and signal the quality of the innovation.

Customers with high innovativeness react more positively to new developments and pay more attention to signals about an innovation as they want to own innovations as early as possible (Heidenreich et al., 2017). Therefore, they collect information — perhaps via internet-based communication channels (Ahearne et al., 2019) — in their own interests, are more inclined to take risks, and accept innovations faster than others (Agarwal & Prasad, 1998a, 1998b; Ram & Jung, 1994). Moreover, customers with high innovativeness often have an existing high level of knowledge about their used products and can thus understand features and applications more easily (Goldsmith et al., 2003; Schreier & Prügler, 2008). Consequently, customers with high levels of innovation initiate knowledge adoption themselves, making the salesperson's ability to sell

less necessary as a signal. Thus, customers with high innovativeness will need less support from salespeople's selling capability to adopt knowledge about the existence and functioning of an innovation. Sharot and Sunstein (2020) show how individuals assess the value of new information, i.e., when they decide to seek or reject new information. They demonstrate that people do not absorb new knowledge if they assume that it is more likely to lead to (financial) losses. For customers with high innovativeness, it is very likely that the sales representative will present information that the customer already knows. Thus, the sales meeting for customers with high innovativeness is associated with higher (financial) losses, as this ties up time and personnel, which leads to the customer being more likely to reject the provided information about the innovation. This explanation results in the assumption of a moderation effect through customers' innovativeness, as follows:

H3: The effectiveness of salespeople's selling capability on the customer knowledge adoption is inversely related to customer innovativeness.

Perceived degree of innovation. The environment in which signaling takes place is called the signaling environment (Connelly et al., 2011). The environment can amplify or attenuate the information asymmetry that exists between the signaler and the receiver (Lester et al., 2006) (Lester et al., 2006). Environmental distortion occurs whenever the environment reduces the visibility of the actual signal (Connelly et al., 2011). In the relationship between salespeople's selling capability and customers' knowledge adoption, the degree of innovation is an innovation-specific factor that can strengthen or weaken this relationship externally and can thus be assigned to the signaling environment (Kuester et al., 2017; Rogers, 2003). Sandberg and Aarikka-Stenroos (2014) emphasize that customers have different challenges and needs when newly introduced products are considered as high or low innovative. For example, new products with a high (perceived) degree of innovation may be considered difficult for customers to understand due to the perceived novelty of the product in terms of technology and benefits (Reinders et al., 2010). Therefore, customers must first develop new knowledge structures to understand the usefulness of the new product (Ma et al., 2014). Thus, for new products with a high perceived level of innovation, selling capabilities can help to explain the new product and reduce the perceived risks to the customer. Consequently, the higher the perceived degree of innovation, the higher the customer's need for explanation and the greater the use of salespeople's selling capability to initiate customer knowledge adoption before the customer feels persuaded to buy the new product.

For less innovative perceived new products, a certain amount of prior knowledge already exists, and customers need a smaller amount of information to fully understand the innovation. Therefore, understanding and absorbing knowledge about the new features and functionalities is easier than for higher perceived innovation levels. Thus, a strong use of salespeople's selling capability is not necessary and may even be harmful because strongly promoting a minor perceived change in the innovation may lead the customer to view the salesperson as less credible and thus interpret the used selling capabilities as an attempt to persuade rather than a cue for the quality of the innovation. Thus, the salesperson's selling capability is less necessary when selling products with a low perceived degree of innovation and more relevant when selling products that are perceived as highly innovative. Therefore, we propose:

H4: The effectiveness of salespeople's selling capability on the customer knowledge adoption is positively related to the perceived degree of innovation.

5. Method

5.1. Sample and data collection

We collected data from business customers of a German supplier of professional power tools; as an incentive to participate, respondents could take part in a wine raffle. The supplier agreed to allow us to survey its business customers about an innovation. This can be a delicate issue in B2B or industrial settings because firms often prefer to leave their

customers in peace (Rindfleisch & Antia, 2012; Soellner, Helm, Klee, & Endres, 2024). In addition, the company provided us with objective sales data. We surveyed all business customers that had been offered a new professional cordless screwdriver, a common more incremental industrial innovation, for their company prior to the survey. Thus, the sample includes both business customers that bought a certain amount of this innovation for their company and those that did not, which helps us avoid the pro-innovation bias that affects many studies of innovation adoption and diffusion (Rogers, 2003; Talke & Heidenreich, 2014).

The new professional cordless screwdriver in our study has new innovative features, such as the powerful torque wrench with innovative control technology and the control of direction and speed by the corresponding hand movement in each direction. Customers often exhibit relatively low exploratory tendencies and are reluctant to adopt even incrementally innovative products, such as the new professional cordless screwdriver in our study (Helm & Conrad, 2015; Kaufmann et al., 2021; Rogers, 2003), making the salesperson's task more challenging than selling existing offerings. Furthermore, incremental innovation seems to be more important even for B2B companies, which have a higher number of incremental innovations compared to radical innovations (Ringberg et al., 2019).

The questionnaire, which was sent to 206 business customers, yielded a response rate of 55.34% (114 responses), and 91 usable questionnaires. This response rate compares favorably with other studies (Chakravarty et al., 2014), and the sample size is sufficient for the advanced statistical regression analyses of our model (Maxwell, 2000). On average, the business customer respondents had been buying from the seller company for six years, had earned revenues of EUR 360,000, and had an average of six employees. In addition, the customers surveyed were the key respondents, i.e., the people who were actually responsible for the decision to buy or not to buy the innovation. 71% of the business customers were craft firms, 16% were large-scale manufacturing customers, 7% represented the public sector, and 6% were major installation companies. The test for non-response bias (Armstrong & Overton, 1977) did not show significant differences between early and late respondents ($p < .10$), thus non-response bias does not appear to be a concern.

We reduced the probability of common method bias by applying the procedure from Podsakoff et al. (2003). We formulated the questions in our survey precisely and separated questions about the dependent variables from those pertaining to the independent variables. We guaranteed the respondents anonymity. With a pretest, we ensured the comprehensibility of the questions, before conducting the survey. Further, because our analysis includes moderating effects, the potential bias due to respondents' implicit theories is naturally lower (Siemsen et al., 2010).

5.2. Measures

Measure development. We reviewed the literature intensively and used items on a 6-point Likert scale ranging from 1 (disagree strongly) to 6 (agree strongly). Wherever possible, we measured the constructs with scales that have already been used in the extant literature. However, we adapted the items used to our context if necessary. We conducted exploratory interviews with managers and customers of industrial suppliers. We then pretested all scales carefully with academic experts and executives. We later adapted all scales and the questionnaire to their comments and then tested it again with selected customers of our partner company.

Perceived selling capability. Customers cannot directly assess salespeople's selling capability as it is not observable to the customer; however, the customer can deduce the level of salespeople's selling capability from salespeople's demonstrated behavior (Ramsey & Sohi, 1997; Sharma et al., 2007). For selling capability, we use the commonly used definition of Rentz et al. (2002), which consists of interpersonal capability, salesmanship capability, and technical knowledge. This

definition is widely used in leading marketing journals (e.g., Singh & Venugopal, 2015; Koponen et al., 2019). To measure the independent variable of perceived selling capability, we used the Behavioral Performance Scale (Miao et al., 2007), which allows customers to rate salespeople's behaviors and strategies during the sales process. The scale covers the three described dimensions of selling capability—interpersonal capability, salesmanship capability, and technical knowledge.

Knowledge adoption. To assess the dependent variable customers' knowledge adoption, we used items that reflect customers awareness of the innovation (Jamieson & Bass, 1989; Jo et al., 2003; Josiassen et al., 2008) as well as items describing how much knowledge the customer has about the innovation and its functions (Coupey et al., 1998; Zhou & Nakamoto, 2007).

Moderators. For the moderator perceived degree of innovation, we used the Product Newness Scale for customers from Kuester et al. (2012). For the moderator customers' innovativeness, we adapted the well-established Adaption-Innovation Inventory (Bagozzi & Foxall, 1995; Xu & Tuttle, 2012) from Kirton (1976) to the context of our study.

Innovation purchase. We used objective data from the business customer database of the partner company that captures purchase or non-purchase.

Duration of business relationship. The control variable duration of business relationship was assessed based on the number of years the respective company has been a customer of our partner. We chose the duration of business relationship as a control variable because the age of the relationship could have a strong influence on customer attitudes and knowledge adoption. Customers' judgments of recent exchange outcomes are influenced by long-term experience with the supplier (Kalwani & Narayandas, 1995).

Details of the measurement items can be found in Appendix A.

6. Results

6.1. Hypotheses testing

Our measurement analysis shows composite reliability (CR) exceeds the threshold of 0.70 while convergent validity, which is given as average variance extracted (AVE), is above 0.50 for each construct. Discriminant validity can also be confirmed because the AVE of each construct exceeds the squared correlation between all pairs of constructs (Bagozzi & Yi, 2012; Falke et al., 2020; Fornell & Larcker, 1981). The descriptive statistics, AVE, CR, and intercorrelations appear in Table 2. The values of Alpha, AVE, and CR for the constructs are above recommended thresholds (e.g., Peterson, 2000).

To test Hypothesis 1, we used the SPSS-Plugin-In PROCESS for Model 4 with 5000 Bootstrapping Samples and a CI of 95%. The results depicted in Table 3 show that salespeople's selling capability is positively related to customers' knowledge adoption. Furthermore, customer's knowledge adoption is positively related to the final innovation purchase. In testing the mediation model, the results show that salesperson's selling capability indirectly influences the customer's final purchase through the customer's knowledge adoption: Thus, the relationship between salespeople's selling capability and customer's final purchase is fully mediated by customer's knowledge adoption, as the confidence interval of the direct effect of salespeople's selling capabilities on customer purchase contains zero (=not significant), while the indirect effect does not contain zero (Adoption indirect effect = .97, CI = 0.41 to 2.88) and is therefore significant (Hayes, 2013). This suggests that customer knowledge adoption is an important lever for influencing customer innovation adoption, and that this influence is driven by the salesperson's selling capability, supporting Hypothesis 1. This underscores the importance of direct customer interactions, which are relevant for building trust and thus can only be replaced to a limited extent by online channels in B2B environments (Alavi & Habel, 2021). For more information on the validation analysis, see Table 3.

Table 2
Means, standard deviations, and intercorrelation matrix.

Variables	1	2	3	4	5	6
1. Customers' knowledge adoption	(0.92)					
2. Salespeople's selling capability	0.34**	(0.93)				
3. Salespeople's selling capability ²	-0.33**	-0.70**				
4. Perceived degree of innovation	0.49**	0.23**	-0.15 *	(0.92)		
5. Customers' innovativeness	0.04	0.23*	0.07*	0.28**	(0.84)	
6. Duration of business relationship	0.24**	0.18*	-0.09	0.06	0.18	- ^a
Mean	3.15	-0.04	1.62	0.02	0.01	0.03
Standard deviation	1.65	1.28	2.70	1.27	1.07	6.19
Average variance extracted	0.73	0.83		0.73	0.61	
Composite reliability	0.91	0.93		0.89	0.88	- ^a

^a manifest construct

Notes: Correlations are shown below the diagonal. Cronbach's internal consistency reliability coefficients appear on the diagonal.

* $p < .05$ (two-tailed).

** $p < .01$ (two-tailed).

Table 3
Mediation Model.

Consequent	Knowledge Adoption			Purchase Decision (Y)		
	b	se	p	b	se	p
Antecedent						
Selling Capability	0.40	0.13	0.00	-0.53	0.56	0.34
Knowledge Adoption	-	-	-	2.46	0.64	0.00
Duration of business relationship (control)	0.05	0.02	0.08	-0.06	0.05	0.22
constant	3.16	0.17	0.00	-10.29	2.73	0.00
	R ² = 0.15			Nagelkrk = 0.75		
	F (2,84) = 7.19			ModelLL (3) = 65.80		
	p = .00			p = .00		

Note: Results for the binary Y for logistic regression are expressed in a log-odds metric.

We ran hierarchical regressions to test Hypotheses 2–4 with SPSS 23.0. To reduce any potential problems of multicollinearity and for easier result interpretation, we mean-centered all predictors before creating the interaction term (Aiken et al., 2003). The variance inflation factors were acceptable for all variables (Cohen, 2010; Kutner, 2005). Thus, multicollinearity should not be a concern in our analysis.

We entered the variables into the regression analysis in five hierarchical steps: 1) the control variable business duration, 2) selling capability, 3) selling capability squared, 4) the moderator variables customers' innovativeness and perceived degree of innovation, and 5) the interaction terms between selling capability squared and the moderators. Table 3 summarizes the results.

We found a linear relationship between selling capability and customers' knowledge adoption ($\beta = 0.31, p < .05$). Thus, Hypothesis 2a is supported. When entering the quadratic term, the change in ΔR^2 was statistically significant ($\Delta R^2 = 0.02, p < .01$). The correlation between the quadratic term and customers' knowledge adoption is negative, which shows the inverted u-shaped relationship between salespeople's selling capability and customers' knowledge adoption. Thus, Hypothesis 2b is supported, and it can therefore be confirmed that customers' knowledge adoption is greater when salespeople's selling capability is used on an intermediate level rather than on a lower or higher level ($\beta = -0.19, p < .10$).

To test Hypothesis 3, we entered the interaction term between salespeople's selling capability squared and customers' innovativeness, which was statistically significant ($\beta = 0.25, p < .10$). Thus, Hypothesis 3 is supported, and it can be shown that when customers' innovativeness is high, customers adopt less knowledge through the intermediate use of salespeople's selling capability than when customers' innovativeness is low.

To test Hypothesis 4, we entered the interaction term between salespeople's selling capability squared and degree of innovation, which was statistically significant ($\beta = -0.51, p < .05$). Thus, Hypothesis 4 is

supported, and it can be concluded that when innovation is high, customers adopt more knowledge through intermediate use of salespeople's selling capability than when innovation is low. However, the three-way interaction was not significant.

6.2. Post-hoc moderation analysis

The results show that the moderators influence the steepness of the bend of the inverted-u shaped relationship between salespeople's selling capability and customers' knowledge adoption. To probe the influence of the moderation further, we determined the regions of significance for the curvilinearity. We used the SPSS-Plugin PROCESS for Model 2 as we investigated the influence of two moderators (Hayes, 2013, 2015). When the perceived degree of innovation is at a low level, the

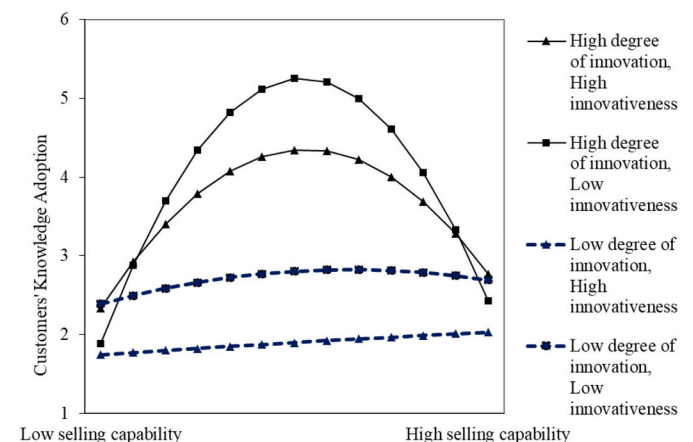


Fig. 2. Moderating effects of perceived degree of innovation and customers' innovativeness

moderators do not influence the bend of the curvilinearity significantly; however, when the degree of innovation is at a medium level and the innovativeness is at medium level, the two moderators have a significant influence on the steepness of the curve ($b = -0.29, p < .05$). To support a successful interpretation of the influence of the two moderators on the inverted u-shaped relationship, the different curves are depicted in Fig. 2. For example, when the perceived degree of innovation is high, customers adopt more knowledge when salespeople use their selling capability at an intermediate level than when they use them at a low or high level.

6.3. Robustness check of the results

To further validate our results, we calculated the model for each of the individual dimensions of selling capability, i.e., interpersonal, technical, and salesmanship selling capability. This shows that the inverted u-shaped relationship between salespeople's selling capability and customer's knowledge adoption is found for interpersonal selling capability (-0.29^{**}) and salesmanship capability (-0.19^*), but not for technical knowledge capability, where a linear relationship is found (0.38^{**}). (For more details, see Tables 5, 6 and 7 in Appendix B.)

6.4. Validating the inverted U-shaped effect with a second industrial data set

Prior research suggests that the effect of salespeople on innovation adoption might vary based on the type of product (Endres et al., 2023). Therefore, we decided to test our main finding, the inverted U-shaped effect between salespeople's selling capability and customer knowledge adoption, with a second data set in a post hoc analysis. This data set is from a survey on another actual, incremental industrial innovation, a random orbital sander, of 112 business customers of another German supplier of professional electric tools. The analysis of this second data set also indicates a significant ($p < .10$) inverted U-shaped effect between selling capability and knowledge adoption.

Table 4
Results of the moderated inverted u-shaped regression analysis.

Dependent Variable: Customers' knowledge adoption					
	Model 1 (control variable)	Model 2 (main effect)	Model 3 (main effect squared)	Model 4 (direct effects of moderators)	Model 5 (interaction terms)
Intercept	3.14	3.16	3.34	3.31	3.56
Main Effects					
salespeople's selling capability		0.31 ^{**}	0.17	0.11	0.06
salespeople's selling capability squared			-0.19 [*]	-0.18 [*]	-0.56 ^{**}
Moderators					
perceived degree of innovation				0.47 ^{**}	0.74 ^{**}
customers' innovativeness				-0.16 [*]	-0.27 ^{**}
Two-Way Interactions					
salespeople's selling capability squared x perceived degree of Innovation					-0.51 ^{**}
salespeople's selling capability squared x customers'innovativeness					0.25 [*]
Three-Way Interaction					
salespeople's selling capability squared x perceived degree of innovation x customers' innovativeness					0.13
Control Variable					
duration of business relationship	0.24 ^{**}	0.18	0.19	0.20 [*]	0.20 [*]
R ²	0.06 ^{**}	0.15 ^{**}	0.17 [*]	0.36 ^{**}	0.42 ^{**}
ΔR ²	0.06 ^{**}	0.09 ^{**}	0.02 [*]	0.20 ^{**}	0.06 ^{**}
F-change	4.96 (0.03)	8.96 (0.00)	1.86 (0.18)	12.54 (0.00)	2.88 (0.04)

Significance tests are one-tailed for hypothesized relations and two-tailed for controls.

* $p < .10$.

** $p < .05$.

7. Discussion and conclusion

Customers are often critical of an innovation and resist adoption due to uncertainty. One barrier is the initial stage of the customer's product adoption process, the acquisition of knowledge about the new offering. In B2B environments, it is primarily the salesperson who can mitigate the uncertainties perceived by the customer. Therefore, we focus on their selling capability and investigate the influence of the salesperson's selling capability on customer knowledge adoption. We collected unique data from surveys of business customers about actual, incremental industrial innovations and supplemented them with objective purchase data from company records.

First, our results provide empirical evidence that customer knowledge adoption plays a central role in customers' final purchase decisions (see Table 3). Second, our study shows that customer knowledge adoption can be actively influenced by salespeople's selling capability, which in turn influences the customer's final purchase decision. Third, our findings show that when salespeople use their selling capabilities to promote customer knowledge adoption, they must consider an inverted U-shaped effect (see Table 4). Thus, the idea of "a lot helps a lot" is not advisable when using selling capabilities to promote customer knowledge adoption; rather, there is an optimal level for the use of selling capabilities that should not be undercut or exceeded. Fifth, our results also showed that this optimal level is influenced by customer innovativeness as well as the perceived degree of product innovation (see Table 4).

7.1. Theoretical contribution

This study makes several contributions to sales management and innovation adoption research. First, this study shows that customer knowledge adoption mediates the relationship between salesperson selling capability and customer innovation adoption, i.e., the final purchase decision. Thus, customer knowledge adoption is an important lever for influencing customer innovation adoption that deserves further investigation.

Second, contrary to conventional wisdom, we find a significantly inverted U-shaped relationship between salesperson selling capability and customer knowledge adoption. This appears to be due to our approach of taking the customer's perspective. In this way, we capture customers' concerns that salespeople's selling capability may reflect a lack of sincerity and a desire to sell more rather than to achieve the best outcome for the customer. In such a scenario, customers may seek to avoid sales efforts/selling capability aimed at persuading them to make purchases that may not be in their best interest and reject sales proposals, ultimately leading to a reduction in the adoption and purchase of the new offering (Friestad & Wright, 1994).

Third, our analysis of the moderating effects of perceived degree of innovation shows that selling capability, together with higher perceived degree of innovation, reduces customer knowledge adoption. These findings underscore the importance of using signaling theory in sales research because perceived innovativeness represents the signaling environment and influences successful product adoption.

Fourth, when investigating selling capability, it is important to ensure that it is tailored to the specific customer. Knowledge adoption basically implies that the customer learns something new about an innovation. Customers build knowledge based on their experience and personality (Kelly, 2020; Mahoney, 2002). Therefore, when investigating external effects on customer knowledge adoption, researchers need to take customer characteristics into account. These findings extend insights from previous studies (Arts et al., 2011; Fraenkel et al., 2016) to examine how to manage employees to ensure the sale of industrial innovations.

Fifth, we show that salespeople's selling capability can be viewed as a cue in the context of cue utilization theory, and thus acts as a proxy for a firm's credibility in the eyes of customers instead of other cues such as a firm's reputation (Helm & Mark, 2007).

7.2. Practical implications

Recent empirical research underscores a pivotal finding in Business-to-Business (B2B) innovation: the decisive role of customer knowledge adoption in the purchasing process (Cooper, 2019). This emerging evidence firmly establishes that for successful product introduction, companies must not only focus on product quality and features but also prioritize effective knowledge transfer to the customer. Indeed, the process of knowledge transfer, primarily facilitated through social interactions as identified by Nonaka (1994), is integral to this endeavor.

Our study rigorously examines this phenomenon and reveals a nuanced dynamic. Specifically, direct customer engagement by salespeople, leveraging their selling skills, significantly enhances customer knowledge adoption. This approach effectively counters the information overload often encountered in online settings, which can impede knowledge adoption and lead to product rejection (Soto-Acosta et al., 2014). However, our findings caution against an indiscriminate application of this strategy. Excessive reliance on salespeople's capabilities can inadvertently trigger customer resistance, undermining the very goal of fostering knowledge adoption. This is particularly pertinent in the B2B sector, where the credibility and trustworthiness of sales personnel are paramount (Sharma, 1990). Unlike Business-to-Consumer (B2C) contexts where customers can readily seek peer opinions, B2B customers primarily depend on salespeople for information, making their credibility crucial in influencing purchase decisions (Verbeke et al., 2011).

To navigate this delicate balance, salespeople must be cognizant of the 'inverted U-shaped' relationship between their selling capabilities and customer knowledge adoption. Awareness of this effect, as shown in other contexts like personnel selection (Woehr & Huffcutt, 1994), can mitigate its impact. For instance, understanding how the use of high-pressure sales tactics, especially by those with low customer orientation, can lead to product rejection is essential (Alavi et al., 2018). Our post-hoc analysis further refines this insight. It demonstrates that this 'inverted U-shape' is particularly pronounced when considering

personal and salesmanship capabilities, as opposed to purely technical knowledge dissemination. Consequently, sales strategies should be tailored, emphasizing soft skills and customer-specific approaches to avoid skepticism and disengagement.

Additionally, our research highlights the importance of alternative strategies like active listening (Itani et al., 2019), which not only fosters better customer relationships but also enables salespeople to adapt their approach based on customer's innovation receptiveness. Such strategies can mitigate the risks associated with over-reliance on aggressive sales tactics, which, while incentivized through certain financial and target-based motivations (Hultink & Atuahene-Gima, 2000; Mallin & Ragland, 2017), can be counterproductive in innovative sales contexts.

In conclusion, our study offers vital insights for companies in the industrial innovation sector, emphasizing the critical role of salespeople and the need for nuanced selling strategies. Given the informed nature of business customers and the prevalence of incremental innovations (Ringberg et al., 2019), a strategic adjustment in selling capabilities is imperative. Firms should diligently assess customers' perceived innovation levels and integrate these insights into their Customer Relationship Management (CRM) systems to tailor their sales approaches effectively. Addressing these multifaceted factors holistically can ultimately enhance knowledge adoption and drive sales success.

7.3. Limitations and further research

Our research provides a valuable starting point for evaluating the optimal level of selling capability to increase customer knowledge adoption. However, so far, we cannot recommend a specific level of selling capability. However, we have been able to show that there is an inverted U-shaped relationship between salespeople's selling capability and customer knowledge adoption, which depends on external factors such as the perceived level of innovation and the customer's innovativeness. Thus, our research shows that salespeople need a high degree of sophistication to make the best use of their selling capability if they want to increase customer knowledge adoption. Further research could extend our findings by using a radical innovation or a different research setting, such as B2C relationships (Rosa & Spanjol, 2005; Sorescu & Spanjol, 2008). In particular, the B2C context could be interesting because the relationship between the salesperson and the customer can be weaker and more short-term than in the B2B context.

Another limitation of our approach is that the research model was tested using survey data. Although we use objective purchase data to test validity, our approach is limited to the perception and memory of business customers who must retrospectively evaluate the company's behavior. Thus, the effects of human memory and survey fatigue cannot be completely excluded. A longitudinal design could shed additional light on the relationships in our model.

For the sake of parsimony and clarity, we have limited our conceptual framework to key constructs of theoretical importance. Other variables, such as the time available to business customers or the salesperson, could add to the richness of our findings.

Because our study focuses on innovations, the findings might not be generalizable to products in later stages of the life cycle. The relevant selling capability could be different with regard to older products in the firm assortment; they may be particularly hard to sell if they no longer seem desirable to customers (Rogers, 2003). A meaningful research extension could thus apply our proposed framework to existing and older products in salespeople's portfolio.

The data collection involves the customers of two firms in Germany, and the results could arguably reflect country- or culture-specific influences, particularly with regard to the effects of the selling capability. For example, cultures that exhibit greater power distance and more respect for authority or less individualism might not reveal similar impacts of the selling capability of "simple" salespeople on customers' knowledge adoption (Hofstede & Bond, 1984; Hultink & Atuahene-Gima, 2000). Additional studies could test for these influences.

Furthermore, continued research could investigate factors that trigger (business) customers' selling capability perceptions to complement our findings. Our results offer the novel insight that customers' perceptions of salespeople's selling capability is one main route through which salespeople can influence customers' knowledge adoption and behaviors.

Finally, because we analyze our model at the individual level, we do not capture multilevel and hierarchical effects. Thus, we cannot distinguish between the influence of the individual, the group, or the organizational culture. Further research could disentangle these effects.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

CRedit authorship contribution statement

Herbert Endres: Conceptualization, Methodology, Formal analysis,

Writing – original draft, Writing – review & editing. **Julia Auburger:** Formal analysis, Writing – review & editing. **Roland Helm:** Writing – review & editing.

Data availability

The data that has been used is confidential.

Acknowledgements

We would like to thank the editors and the reviewers for their very valuable feedback, which helped us to improve our paper significantly. We would also like to thank Christian Nowack and the participants of the Industrial Marketing Management Summit and the European Marketing Academy (EMAC) Annual Conference for their valuable contributions.

Appendix A. Measurements

	Loadings	Alpha	AVE	CR
Customer Knowledge Adoption		0.92	0.73	0.91
We know <i>product X</i> .	0.85			
We know the functions and features of <i>product X</i> very well.	0.88			
We know what we can expect from the product.	0.88			
We can compare <i>product X</i> well with other products we use for the same purpose.	0.82			
Customers' perceived salespeople's selling capability		0.93	0.83	0.93
The sales representative was very able to establish and maintain good business relationships.	0.90			
The sales representative provided us very well with the information we needed.	0.91			
The sales representative was very familiar with our needs as a customer and with a wide range of products for the industry.	0.93			
Customers' innovativeness		0.84	0.61	0.88
We actively seek information about technological innovations that may affect our business.	0.86			
We are among the first to take advantage of innovations when they come to market.	0.79			
We regularly get an overview of the possible effects of technological innovations on our business.	0.86			
We keep ourselves regularly informed as to whether new and better products come onto the market compared to those that we have in.	0.87			
As far as the use of new or other products is concerned, we are very cautious.	0.44			
Perceived Degree of Innovation		0.92	0.73	0.89
<i>Product X</i> was a substantial progress, compared to previously existing gyroscopic screwdrivers.	0.89			
We perceived <i>product X</i> as highly progressive.	0.86			
From our point of view, <i>product X</i> was a breakthrough innovation.	0.81			
Duration of Business Relationship				
We are a customer of <i>company Y</i> since: ___ (enter year); (2014-year entered)				

Appendix B. Post-Hoc Validation

Table 5

Post-Hoc Validation: interpersonal selling capability.

Dependent Variable: Customers' knowledge adoption					
	Model 1 (control variable)	Model 2 (main effect)	Model 3 (main effect squared)	Model 4 (direct effects of moderators)	Model 5 (interaction terms)
Intercept	3.14	3.15	3.44	3.40	3.48
Main Effects					
salespeople's selling capability		0.23**	0.17	-0.03	-0.03
salespeople's selling capability squared			-0.29**	-0.26*	-0.41**
Moderators					
perceived degree of innovation				0.47**	0.58**
customers' innovativeness				-0.13*	-0.24*
Two-Way Interactions					
salespeople's selling capability squared x perceived degree of Innovation					-0.21
salespeople's selling capability squared x customers' innovativeness					0.21*
Three-Way Interaction salespeople's selling capability squared x perceived degree of innovation x customers' innovativeness					0.13
Control Variable					

(continued on next page)

Table 5 (continued)

Dependent Variable: Customers' knowledge adoption					
	Model 1 (control variable)	Model 2 (main effect)	Model 3 (main effect squared)	Model 4 (direct effects of moderators)	Model 5 (interaction terms)
duration of business relationship	0.23**	0.20	0.21*	0.20*	0.20*
R ²	0.06**	0.11**	0.15*	0.35**	0.38**
ΔR ²	0.06**	0.05**	0.04*	0.20**	0.03**
F-change	4.96 (0.03)	4.75 (0.03)	4.48 (0.18)	12.38(0.00)	1.05(0.38)

Significance tests are one-tailed for hypothesized relations and two-tailed for controls.

* $p < .10$.

** $p < .05$.

Table 6

Post-Hoc Validation: technical selling capability.

Dependent Variable: Customers' knowledge adoption					
	Model 1 (control variable)	Model 2 (main effect)	Model 3 (main effect squared)	Model 4 (direct effects of moderators)	Model 5 (interaction terms)
Intercept	3.14	3.15	3.10	3.17	3.23
Main Effects					
salespeople's selling capability		0.34**	0.38	0.27*	0.23*
salespeople's selling capability squared			0.05	-0.03	-0.09
Moderators					
perceived degree of innovation				0.47**	0.58**
customers' innovativeness				-0.18*	-0.27**
Two-Way Interactions					
salespeople's selling capability squared x perceived degree of Innovation					-0.12
salespeople's selling capability squared x customers' innovativeness					0.11
Three-Way Interaction salespeople's selling capability squared x perceived degree of innovation x customers' innovativeness					0.08
Control Variable					
duration of business relationship	0.24**	0.18	0.18	0.19**	0.19*
R ²	0.06**	0.17**	0.17*	0.38**	0.40**
ΔR ²	0.06**	0.12**	0.00	0.21**	0.03
F-change	4.96 (0.03)	11.61 (0.00)	0.11 (0.74)	13.32(0.00)	1.13(0.34)

Significance tests are one-tailed for hypothesized relations and two-tailed for controls.

* $p < .10$.

** $p < .05$.

Table 7

Post-Hoc Validation: salesmanship selling capability.

Dependent Variable: Customers' knowledge adoption					
	Model 1 (control variable)	Model 2 (main effect)	Model 3 (main effect squared)	Model 4 (direct effects of moderators)	Model 5 (interaction terms)
Intercept	3.14	3.16	3.34	3.31	3.56
Main Effects					
salespeople's selling capability		0.28**	0.15	0.07	0.06
salespeople's selling capability squared			-0.19*	-0.21*	-0.43**
Moderators					
perceived degree of innovation				0.48**	0.79**
customers' innovativeness				-0.16*	-0.25**
Two-Way Interactions					
salespeople's selling capability squared x perceived degree of Innovation					-47**
salespeople's selling capability squared x customers' innovativeness					0.07*
Three-Way Interaction salespeople's selling capability squared x perceived degree of innovation x customers' innovativeness					0.07
Control Variable					
duration of business relationship	0.24**	0.18	0.18*	0.19*	0.19*
R ²	0.06**	0.13**	0.15*	0.36**	0.42**
ΔR ²	0.06**	0.08**	0.02*	0.21**	0.06**
F-change	4.96 (0.03)	7.55 (0.00)	1.89 (0.18)	13.39(0.00)	2.56(0.06)

Significance tests are one-tailed for hypothesized relations and two-tailed for controls.

* $p < .10$.** $p < .05$.

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