

# Complementary effects of CRM and social media on customer co-creation and sales performance in B2B firms: The role of salesperson self-determination needs

Omar S. Itani<sup>a,\*</sup>, Ashish Kalra<sup>b</sup>, Jen Riley<sup>c</sup>

<sup>a</sup> Department of Marketing, Adnan Kassab School of Business, Lebanese American University, Beirut Lebanon

<sup>b</sup> Department of Marketing, The University of Dayton, Dayton, OH, United States

<sup>c</sup> Department of Marketing, Kansas State University, 1301 Lovers Lane, Manhattan, KS 66506, United States

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## ABSTRACT

This study examines the effects of salespeople's social media and customer relationship management (CRM) technology use on value co-creation through knowledge and the downstream impact on sales performance. Based on task-technology fit and self-determination theories, the findings reveal that social media, CRM technology, and their interaction support salespeople in their value co-creation efforts through the mediating role of knowledge enriched by these tools. The results indicate a significant moderating effect of salesperson job autonomy and sales quota ease in enhancing the relationship between knowledge and value co-creation. The study concludes by discussing important implications that stem from our analyses.

## 1. Introduction

In recent years, the sales profession has embraced knowledge generation and sharing as well as value co-creation functions as crucial elements of organizational effectiveness [1–4]. This shift has encouraged salespeople to function as knowledge brokers and to co-create value by sharing information with their customers to achieve sales performance outcomes [5,6]. To co-create value, salespeople must display a mastery-level understanding of the product, service, or idea they sell and of the market, competitors, and customers. Analogously, the business-to-business (B2B) market has experienced disruption with new tools that dramatically alter the sales profession. For example, social media tools (e.g., LinkedIn) have forced salespeople to focus on new methods (e.g., social selling) to gain customer information and understand customer needs. Social media is defined as “the technological component of the communication, transaction and relationship building functions of a business which leverages the network of customers and prospects to promote value co-creation” (p. 308) [7], and it is critical for an organization's value co-creation functions. In accord, recent research has explored the role of social media in driving employees' work behaviors. For instance, a recent article shows that social media use is related to employee stress appraisals [8]. Similarly, other studies have shown that social media use in the workplace is related to employee

satisfaction, turnover intention, and performance [9,10]. These studies have focused on the role of social media in aiding salespeople to co-create value with the customers [10–12]. This line of research also parallels research that focuses on assessing the role of information technology systems in enhancing organizational performance [12–17].

While social media offers several advantages such as enhanced sales performance, organizations must rely heavily on other technologies as well, such as customer relationship management (CRM) technology, due to the complex nature of sales transactions (e.g., Salesforce), to aid salespeople in the development of customer relationships [e.g., 18,19]. Khodakarami and Chan [20] define CRM technology as a “group of information systems that enable organizations to contact customers and collect, store, and analyze customer data to provide a comprehensive view of their customers” (27). CRM technologies are systems built to capitalize on a firm's ability to serve customers and build stronger relationships between sellers and buyers, leading to enhanced profitability [21–23].

Besides using these two “types” of technologies independently to achieve success, many firms also rely on using both social media and CRM technology to enhance relational and sales outcomes and help to offer unique value propositions [24,25]. Social media and CRM combine traditional CRM functions appropriate to marketing, customer support, and selling and outspread them with social media communication tools,

\* Corresponding author.

E-mail address: [omar.itani@lau.edu](mailto:omar.itani@lau.edu) (O.S. Itani).

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thereby allowing a richer exchange of information [26]. Companies are using social media and CRM tools and are establishing interactions between both instruments, a practice hereinafter known as “social CRM.” For example, salespeople can use the Salesforce CRM tool in conjunction with LinkedIn. The use of social media with existing CRM technologies is an elevated form of traditional CRM systems [27]. The morphing of these two technologies has disrupted workflows enough to create additional capabilities [27,28] that can be applied to achieve the desired sales outcomes [29].

While organizations are shifting toward technology-driven selling, the functions of social media, CRM technology, and their interaction (social CRM) are mostly unexplored [27], especially within the literature on new sales functions, technologies, knowledge exchange, and value co-creation. Past scholarly research has significantly contributed to understanding the role of social media and CRM technologies in driving value outcomes. Sales scholars have assessed the role of social media [9,30,31] and CRM technology [21,23,24] as well as the role of social CRM [18,25,32] in driving performance-based outcomes (see Table A1 for a detailed list of selected empirical research on social media, CRM, and social CRM as well as this study’s findings and contributions to the literature). While existing research studies have significantly advanced our understanding of outcomes from emerging technologies in sales, much remains unknown. Indeed, scholars have argued that CRM technology, social media, and social CRM are domains ripe for future research [18,24]. With this background, our study aims to fill three critical research gaps as follows:

- 1) While social media and CRM technology have positive workplace outcomes, the effect of these technologies on knowledge and value co-creation measures remains unexplored. The importance of this exploration is even more important in a sales context as salespeople work as knowledge brokers [6] who are often required to know the technical know-how of the product they sell in order to create co-creation opportunities. While past research has explored the impact of social media on the firm’s knowledge generation and dissemination [33], the analysis at the individual employee level remains unknown. Hence, our study seeks to answer whether social media and CRM technology contribute to salesperson knowledge and value co-creation.
- 2) Although the concept of social CRM is present within the existing literature, the value derived for salespeople from the interaction between social media and CRM technology, or social CRM, is overlooked and hence forms the focus of our study.
- 3) Value co-creation is a concept of growing importance within the literature. Yet, it remains unknown how salesperson knowledge leads to value co-creation opportunities that ultimately drive salesperson performance. Though recent scholars [34] have explored the role of information technology in the generation of co-creation opportunities and inter-organizational relationships, an understanding of the role of salesperson’s social media use, CRM technology use, and social CRM on co-creation opportunities will help expand on the importance of digital initiatives. This is critical to add to our knowledge as salespeople are at the forefront of implementing an organization’s digital strategies and hence critical to firm’s success. Our study is a step in addressing this critical research gap.

Overall, our study that is grounded in task-technology fit (TTF) theory, self-determination theory (SDT), and service-dominant (S-D) logic proposes a new framework, wherein social media and CRM technology help enrich salesperson knowledge. This manuscript presents a holistic framework that explicates the connections between the inherent constructs and capabilities [27]. With the overarching goal of ultimately increasing performance [35], we also analyze the factors that can enhance salesperson knowledge and the value co-creation relationship. Value co-creation is a type of value that firms can offer both through salespeople and also as a process that evolves through customer and

salesperson relationships working together to create value [36–38]. For instance, a salesperson can co-create value with customers by involving them in the production and customization of the product/service, a capability approach to co-creating value. There are also instances where a salesperson can offer customized products/services initially as a value-add by gathering customers’ information via social media tools and then offering products/services that provide the highest value, based on individual needs. While previous studies have examined the influence of value co-creation on performance at the firm level [39,40], this research focuses on testing the link between salesperson’s value co-creation and performance at the individual level. By examining the value co-creation and sales performance relationship, we seek to understand the value co-creation process itself. This is critical for information systems researchers, as it provides a crucial linkage between technology use and value co-creation opportunities that significantly affect performance.

According to TTF theory, sales technology usage improves salesperson performance by enhancing critical strategic activities and capabilities (e.g., salesperson knowledge) and, in turn, prominent sales outcomes [24]. This research argues that social media and CRM technology enhance salesperson knowledge creation [e.g., 20], which transcends higher firm value co-creation offerings. Furthermore, based on SDT, we propose that salespeople’s self-determination needs (i.e., job autonomy, sales quota ease, and inclusion of the customer in the self) will moderate the relationship between salesperson knowledge and value co-creation [41]. Based on SDT, we explore the role of three potential moderators (autonomy, sales quota ease, and inclusion of the customer in the self) in our framework. These moderators are sales job-related factors that we argue each belong to one of the three different categories of self-determination needs: autonomy, competence, and relatedness [41,42]. Job autonomy is the level of discretion, independence, and freedom a salesperson perceives to complete their sales tasks. Sales quota ease refers to a salesperson’s perceived ability level in achieving their assigned sales quota targets. Lastly, the inclusion of the customer in the self refers to the salesperson’s perception of psychological closeness and belongingness with respect to customers. It describes the psychological closeness a salesperson feels toward customers, leading the person to take additional accountability for the well-being of customers. We argue that salespeople’s ability to apply their knowledge in co-creating value with their customers is affected by the salesperson’s levels of job autonomy, their perceptions of sales quota ease, and the customer inclusion in the self.

The current study offers numerous contributions. First, as discussed above, it incorporates the emerging focus on knowledge-centric and value co-creation selling with the disruptive technological changes in the market, specifically social media and CRM technology. We show that social media, CRM technology, and their interaction enrich an organization’s knowledge and co-creation value process. Second, the study answers multiple research calls for more investigation into the understanding of the influences of social media, CRM technology, and social CRM in sales [24,25,43] as well as the role of a salesperson as a knowledge broker [6,44] and value co-creator [1,3,45]. Lastly, this study supports the linkage between knowledge and value co-creation, proposed in the S-D logic framework [46], by examining the contingent effect of salesperson job autonomy, sales quota ease, and inclusion of the customer in the self in driving value co-creation among buyers and sellers.

## 2. Theoretical background and conceptual framework

We base our conceptual model, which links social media, CRM technologies, and social CRM to knowledge, value co-creation, and performance outcomes, by utilizing TTF theory. Before explaining the theoretical underpinnings of the model, we first define our key constructs. As presented earlier, social media is defined as “the technological component of the communication, transaction and relationship

building functions of a business which leverages the network of customers and prospects to promote value co-creation" (p. 308) [7]. According to Go and You, social media includes "a set of internet and mobile tools and applications that stimulate interpersonal communication and opinion sharing, and the production and circulation of user-generated content" (p. 177) [47]. Further, we adopt the definition of CRM technology from Khodakarami and Chan, who argue that CRM technology is a "group of information systems that enable organizations to contact customers and collect, store, and analyze customer data to provide a comprehensive view of their customers" [20]. CRMs function as an aid in helping organizations effectively manage their relationships with customers [48]. CRM systems store data (e.g., customer buying history), they track interactions and transactions, and they analyze the data available to create knowledge for effective decision-making. Lastly, we define social CRM as the interaction between social media and CRM technology [18,24].

We build our overall theoretical framework on S-D logic, which argues that organizations should consistently adopt capabilities that can support the co-creation of value with the customers. We propose that sales technologies such as social media, CRM, and social CRM allow firms to deliver unique value offerings. Next, we rely on TTF theory to explain the relationship between technologies and value-based outcomes. TTF theory suggests that technology leads to higher results when it "fits" the applied task. Sales tasks are complex and require salespeople to maneuver challenging customer demands through information searches. TTF theory supports the idea that technology will maximize the outcomes of knowledge, value creation, and performance within the sales context. Further, we adopt SDT theory by assessing the effects of a salesperson's self-determination needs in accentuating knowledge and value co-creation relationships.

### 2.1. Service-Dominant logic and value co-creation

S-D logic propounds the idea that service is the center of all exchanges and that intangible resources, such as knowledge, value co-creation, and relationships, are vital to these exchanges [46,49]. The S-D logic is "based on the premise that broad sets of actors dynamically integrate and apply resources through service-for-service exchanges (i. e., the application of knowledge for the benefit of another) to co-create value" (p.1) [50]. S-D logic suggests that the value co-creation process in which multiple actors, including salespeople, customers, and other stakeholders, are engaged in service exchange and resource integration is nested in an interconnected service ecosystem [51]. For organizations to maintain value co-creation exchanges with customers, there should also be a consistent application of operant resources, including knowledge and skills [52,53], to create value. For value co-creation to work, salespeople must learn about customers' needs, and market dynamics is a prerequisite [46,54].

Researchers have relied on S-D logic precepts to explain value-creating and co-creating processes and the complex role of boundary-spanning employees [50]. S-D logic requires organizations and their personnel to engage in service exchanges to co-create value with customers [46]. The modern customer's overall experience with the seller requires continuous value co-creation, not periodic fixed exchange points. For that, the placing of a greater weight on boundary-spanning employees, including salespeople, has been advanced in past research. These employees are critical in developing touchpoints for value co-creation with the customers [e.g., 55]. For example, salespeople co-create value by cooperatively developing with customers solutions intended to help solve unique customer problems, reduce costs, and improve productivity or do all three [56]. As customers are deemed co-creators of value [46], salespeople have altered their job to enable the value co-creation progression by ensuring ongoing interaction and customer participation within the value co-creation process.

In line with S-D logic, Sheth and Sharma argue that a salesperson's boundary-spanning role supports value co-creation through relational

and consultant-based selling, leading to better customer outcomes [2]. Therefore, selling firms can benefit from value co-creation through salesperson interactions with their customers. In general, information and communication technology systems support selling firms in locating more operant resources, such as knowledge. The acquisition of knowledge is a significant prerequisite to value co-creation. Knowledge acquired includes the information that salespeople gain when using social media, CRM technology, and social CRM, ultimately enhancing value co-creation.

### 2.2. Task-Technology fit theory

The TTF theory supports a positive link between technology and performance [35]. In particular, research has argued that this link is more robust when the technology "fits" with the task of the person using this technology [24]. However, technological assets do not directly affect performance [27] but, rather, are the means through which salespeople achieve their tasks that ultimately can enhance performance. With an ever-growing focus on enhancing knowledge and higher-value offerings, the application of sales technology, specifically social media, CRM, and social CRM, can yield significantly favorable results.

Extending the prior literature, we argue that based on TTF theory, the effects of social media and CRM technology applications are most pronounced in a B2B sales context, where salespeople must gather knowledge to ensure effective sales encounters. Salesperson knowledge is a resource that offers value co-creation opportunities to customers. The relational and interactive features of social media make it ideal for CRM [27,57,58]. Due to its interactivity [59], social media is driving "a revolutionary change in the way contemporary selling is conducted" (p.357) [60]. As a result, selling firms seek tools to access the social media realm to meet customers and collect vital insights [61].

Salespeople can utilize social media in their daily work routine to benefit from the capabilities it can provide, such as effective communication, network development, understanding of customers, competitive intelligence collection, customer and market observation, and CRM [31,62–64]. Hence, social media supports salespeople in their initiatives in meeting customers' increasing knowledge demands [59]. Social media also facilitates a multidirectional communication flow between customers and salespeople, which in part contributes to S-D logic's notion of value co-creation [27].

In B2B market contexts, CRM technology is required for salespeople responsible for the boundary-spanning function between selling and buying [65]. CRM technology helps salespeople collect, organize, and share information with their customers in a very effective and efficient way [66]. CRM technology helps organizations in their regular collection and generation of customer insights, knowledge, and business intelligence [20,21].

Social media and CRM technologies enable the salesperson to regularly connect with customers, and these technologies also provide innumerable opportunities to learn new information about the market, the industry, and customers and to help salespeople offer stronger value propositions. Hence, sales technologies help salespeople perform the required job tasks that can yield significant positive results, especially in knowledge-driven sales encounters. Lastly, both technologies are customer-centric; they allow customer knowledge creation and generate customer-oriented responses [67]. In this study, we refer to the interaction between social media and CRM technology as social CRM. Social media and CRM technologies can enhance customer-facing activities in engaging customers in better collaborative dialogues and in building quality relationships with them [25]. Social media strategy can work with established CRM systems to enable learning about customers and tracking their needs and behaviors [61].

Social media and CRM systems provide additional capabilities for firms [68,69]. For example, a salesperson can use the Salesforce CRM with LinkedIn to create a seamless sale prospecting process and enhance

personalized outreach. Other salespeople can benefit from CRM tools utilized by sales organizations in incorporating social insights with company intelligence and specific customer data available in internal databases. Some of these tools include Insightly and Zoho CRM, to name a few. Social media and CRM technologies offer salespeople many opportunities and improve the quality and number of interactions between salespeople and customers. They support customer dialog that enhances the response and feedback loops with those customers. Furthermore, we also study the role of salesperson knowledge and value co-creation in the framework. In line with the notion that knowledge can include information about both internal and external environment of an organization [70], we define knowledge as the extent to which the salesperson is knowledgeable about the company's products and the competitor's products. Research has shown that knowledgeable salespeople are a valuable resource to the organization and help in developing better customer relationships [71,72]. Value co-creation is defined as salespeople's collaborative behaviors with customers in co-creating value with them [3,36]. O'Casey and Ngo argue that the value that salespeople create helps firms in achieving positional advantage and hence superior performance. Salespeople co-create products and services with their customers that can create value for customers even outside the sales interaction. Knowledge and value co-creation are adopted from the S-D logic [46] framework that assumes that knowledge is an operant resource critical to co-create value for the customers. Overall, this study extends the TTF theory by integrating S-D logic and SDT to explain the theoretical underpinnings of the framework.

### 2.3. Self-Determination theory

Within our framework, we adopt self-determination theory (SDT) [41,42] to propose the moderating role of salespersons' job autonomy, sales quota ease, and inclusion of the customer in the self. According to SDT, intrinsic motivation sustains the basic needs of autonomy, competence, and relatedness. SDT postulates that the satisfaction of these needs leads to individuals' optimal functioning in different life domains, including work [73]. The SDT perspective explains how individuals tend to pursue domains, goals, and connections that support the satisfaction of autonomy, relatedness, and competence needs [41]. People who find opportunities to satisfy these needs will experience positive psychological consequences [42]. The consideration of factors affecting motivation is critical in the salesperson's role as a knowledge broker, value co-creator, and driver of organizational effectiveness. Sales management accomplishes salespeople's task of operating as knowledge brokers through the maintenance of a knowledgeable sales force. Past researchers have argued that motivation is an essential driver of performance [e.g., 74]. Understanding the interaction of motivation-related variables and knowledge is vital for organizations in developing effective sales strategies.

Researchers have also argued that SDT provides a framework to study the process through which employees' work environment influences job outcomes. SDT suggests that creating workplace conditions where employees feel supported is an appropriate advantage, and this offers other collateral benefits to organizations at large [75]. Further, SDT provides an understanding of how various types of motivations affect an individual's on-the-job behaviors. While research has linked autonomous environments to a higher quality of motivation, SDT also argues that some external motivation factors can also induce similar effects. Still, the perception is that these factors do not directly control employees' behavior [76]. However, SDT explains employees' different knowledge systems and is therefore directly related to the overall job context of any knowledge-driven sales task.

Consistent with SDT, we explore the role of three potential moderators in our framework, including job autonomy, competence, and relatedness. Job autonomy represents the discretion, independence, and freedom provided to salespeople at work to complete their tasks. Our conceptualization of competence is sales quota ease, which refers to the

perceived ability of salespeople to achieve their sales targets successfully. The final moderator, relatedness, is the salesperson's inclusion of customers in themselves and is conceptualized as the perceived level of closeness a salesperson has with customers. SDT supports these three factors as necessary conditions for maintaining intrinsic motivation in knowledge-driven sales tasks. We suggest that the salesperson knowledge-value co-creation link is contingent on these three factors Fig. 1. shows the model and relationships hypothesized.

## 3. Hypotheses development

### 3.1. Social media, CRM technology, social CRM, and salesperson knowledge

Social media is a valuable search, interactive, and learning tool [77]. It supports an "always-on" learning style [60,78,79] and facilitates a collective learning process for salespeople [7]. Social media grants access to a wide range of information networks [59], allowing salespeople to gain extensive knowledge about customers, markets, and competitors. This study focuses on salesperson knowledge regarding firm offerings, customers' needs, markets, and competitors.

Social media creates openness for its users and allows access to communities, making it a broad channel for different types of content and information sharing between networks and groups. Social media sites, such as LinkedIn, are also equipped with varying types of learning (e.g., online courses and webinars) and insight-gathering opportunities. Moreover, salespeople's communication with customers (e.g., through social media) allows them to gain extensive knowledge from customers (e.g., information about market trends, competitors' offerings, customer problems, and emerging needs) [18].

Social media provides real-time, extensive information about and from customers, which is used by sales representatives through the sales process. Social media offers social linkage capabilities that enhance the effectiveness of knowledge transfer between organizations and customers [12]. It enables the collection of data about customers and competitors [27] and enhances knowledge transfer effectiveness [12]. The information collected from customers is a source of real and actionable information that can be beneficial for those who collect it [80]. Salespeople also use social media tools like Twitter as helpful learning mechanisms that support their sales goals [64]. Rollins and colleagues show that social media provides salespeople with a social learning process by enabling continuous feedback and opportunities to observe customers, competitors, peers, and experts while also listening to the decision-makers and companies they target. Moreover, salespeople can use social media to search and gain knowledge and intelligence about competitors in the market [31] and allow the sharing of this knowledge with others. Based on the above discussion, we hypothesize the following relationship:

H1a: Social media has a positive effect on salesperson knowledge.

CRM technology is a knowledge-based system that helps integrate business processes, including sales and services, to understand customers' demands and build better relationships with them [81]. CRM systems can accumulate adequate customer and market information needed to serve customers better and allow agile and reliable responses to their needs [82,83]. Prior studies have shown that CRM technology supports both knowledge-creation [20] and knowledge-management processes [21], leading to better customer relationships. Such technology can also facilitate communication and information exchange between organizations [84].

In B2B settings, CRM technology may contribute to salesperson knowledge [65,85]. As knowledge brokers, salespeople utilize information collected through the company's CRM system to create understanding and share information with buyers to enable the value co-creation process. At the same time, CRM technology allows

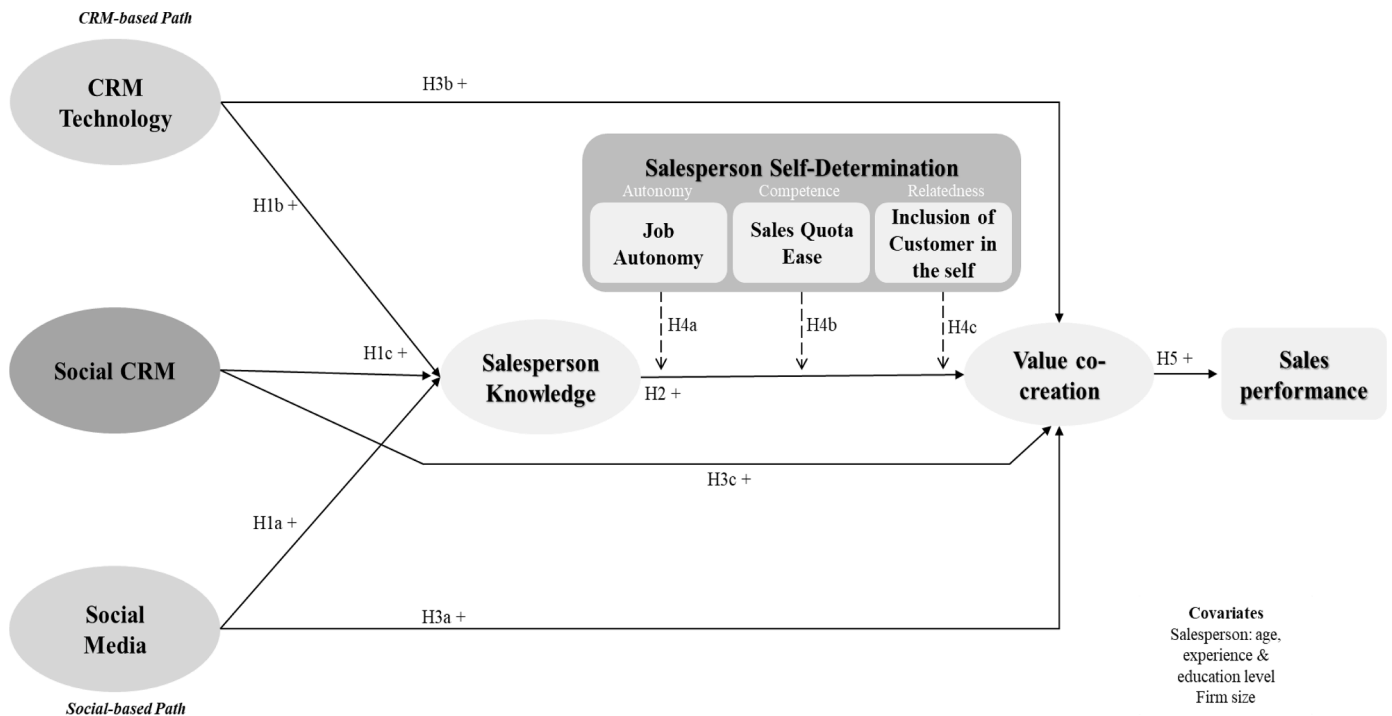


Fig. 1. Model.

salespeople to communicate with other peers and employees collaboratively and integrate multiple sources of knowledge. Thus, it is hypothesized the following:

H1b: CRM technology has a positive effect on salesperson knowledge.

Organizations need to collect and combine information from different sources for effective knowledge creation [20] to achieve organizational outcomes. One of the advantages of using social media and CRM technologies is in combining social and organizational knowledge about customers and the market. Social CRM enables a comprehensive collection of knowledge for better business performance. Social information collected through social media tools and insights gathered from CRM technologies help salespeople to understand customers' needs and keep abreast of technical expertise and competitors' tactics [26]. Social CRM allows salespeople to use social information (e.g., social posts and social contacts) with CRM information (e.g., customer transaction histories) to understand customers' needs. Salespeople can check what customers have been saying and doing by referring to social information. At the same time, CRM systems enable them to incorporate multiple knowledge sources and create new knowledge as a means of enhancing customer value [20,86]. According to Harrigan et al., social CRM provides new social capabilities that selling organizations can use to support their sales force in the field with customer information, and it leads to additional cross-/up-selling opportunities [27].

Salespeople can gain abundant knowledge when using CRM technology and social media simultaneously. Trainor et al. showed that B2B salespeople benefit from social CRM, leading to enriched information generation and dissemination [25]. This capability is derived from social CRM's ability to help process miscellaneous and informal content, detect relevant and useful posts, determine the significance of posts, and deal with bootstrapping difficulties [87]. For example, through social posts on LinkedIn and Twitter, salespeople listen to and monitor customers' social updates, such as job role changes, and they assess specific buying signals to determine opportunities based on their job expansion. Hence,

social CRM can support salespeople with their work operations, especially those required to function as knowledge brokers. Sales research suggests that social media and CRM technology can meaningfully improve the seller-buyer communication process and, thus, the customer experience [63,88]. Based on the above discussion, we postulate the following:

H1c: Social CRM has a positive effect on salesperson knowledge.

### 3.2. Social media, CRM technology, social CRM, and salesperson value co-creation

For salespeople to interact and work with customers to co-create value, they must know their companies' offerings, their customers' needs, and market volatility details. Knowledge of customers' needs facilitates customers' involvement in the selling process to provide supporting offerings to maximize the value co-creation process. Salespeople rely on their own research and customer knowledge to promptly respond to customers' needs, solve their problems, and supply solutions to counteract challenges they face [50]; hence, the salespeople choose to co-produce their offerings with their customers. For example, they can work with customers to facilitate product delivery service at the buyers' convenience. This approach creates additional value within the sales process, outside of the actual transaction and solution, by delivering a better customer experience.

Knowledge is one of the optimal resources that S-D logic argues facilitates the value co-creation process [46]. Salespeople can use their knowledge to tailor and co-design the service provided to fit customers' needs. Furthermore, salespeople apply their knowledge to co-develop new ideas with customers. This rationale suggests that the more knowledgeable salespeople are, the more they are likely to promote and encourage active collaboration with and involvement of customers. Knowledge about customers and the market allows salespeople to explore the ever-changing problems customers face and understand the best solutions for these problems and maximize the value co-created with customers. Based on this argument, we put forward the next hypothesis:

H2: Salesperson knowledge has a positive effect on salesperson value co-creation.

The promotion of interactive dialog on social media holds many opportunities for salespeople [7,63]. Social media is a two-way communication channel used for customer service, selling, and marketing [89,90]. Zhang et al. demonstrate that social media enables value co-creation between customers and organizations [12]. Sales researchers have suggested that social media can improve value co-creation processes and help build stronger relationships with customers [7,88,91,92]. Social media supports sales-related behaviors (e.g., value co-creation) by providing salespeople with capabilities and resources. Salespeople can use social media to boost their different job tasks, such as preparing sales presentations, handling customers' objections and following up with them, and after-sales service [32]. According to the above discussion, social media use can facilitate the value to be co-created among salespeople and customers. Thus, we hypothesize the following relationship:

H3a: Social media has a positive effect on value co-creation.

CRM technology empowers salespeople to respond effectively and promptly to customers, even in irregular situations [65,93]. In a survey of sales managers, Rodriguez and Honeycutt found evidence that CRM technology increases sales effectiveness and allows salespeople to collaborate with customers to drive better performance [66]. Ahearne et al. propose that CRM technology positively affects service behaviors and the adaptability of salespeople [85]. Moreover, CRM technology helps salespeople better serve their customers by improving the salespeople's understanding of customers' needs and by facilitating information communication with customers [24], which are essential antecedents of value co-creation. Through sales technology, salespeople can have access to more relevant information, which, in turn, improves the speed and accuracy of their responses to customers [85]. Like social media, CRM technology can support salespeople in co-creating value with customers. According to this discussion, we put forward the following hypothesis:

H3b: CRM technology has a positive effect on value co-creation.

The simultaneous use of social media and CRM allows salespeople to collaborate with customers to enhance customer engagement and participation [94,95], which is conducive to maximizing the value co-creation process. In general, social media and CRM capabilities can mediate the link between technology and performance [27,96,97]. Salespeople can benefit from the complementary effect of social media and CRM technology to build collaborative relations with customers, leading to increased value co-creation. Thus, we suggest that social media and CRM technology interaction drives greater value co-creation among salespeople and their customers. Hence, we argue that:

H3c: Social CRM has a positive effect on value co-creation.

### 3.3. The moderating role of self-determination needs

SDT suggests that three innate psychological needs, including autonomy, competence, and relatedness, are essential for understanding the content (i.e., what) and the process (i.e., why) of intrinsic motivation and goal pursuits [41]. SDT postulates that the satisfaction of these innate needs leads to individuals' optimal functioning in different life domains, including work [73]. According to SDT, autonomous forms of motivation result from three innate needs [98]. In other words, the experiences of autonomy, competence, and relatedness are crucial for intrinsic motivation [41]. In SDT, the focus is turned to people's social context and developmental environments to examine the degree to which the people's needs for autonomy, competence, and relatedness

are being satisfied or thwarted [42]. This study postulates three sales job-related moderators to embody the three primary needs of salespeople highlighted in SDT. Namely, we use job autonomy to represent autonomy, sales quota ease to represent competence, and customer inclusion in the self as a measure of relatedness.

In general, individuals will look to and engage in activities they experience to satisfy their needs [42]. The need for competence is well known in the tendency to examine and manipulate the environment and participate in challenging tasks to test and expand one's skills [73]. According to SDT, individuals are intrinsically motivated to be "involved in an ongoing, cyclical process of seeking out (or creating) optimally challenging situations and then attempting to conquer those challenges" [99]. For example, employees can satisfy the need for competence by meeting a deadline to complete a specific task [98]. Further, autonomy refers to the need to act with a sense of choice and the experience of behaviors as reflectively self-endorsed [100]. Additionally, the need for relatedness is satisfied when people develop relationships, experience a sense of communion, and recognize themselves as group members [98]. According to Ryan and Deci, the sense of belonging, communion, and the development of intimate relationships can satisfy the need for relatedness [42].

Salespeople are inclined to act in a way that matches their environment, engage in activities they are interested in, and move toward interpersonal and personal coherence [41]. When they are intrinsically motivated and their self-determination needs are satisfied, salespeople tend to put their knowledge into practice, particularly in behaviors related to value co-creation. We argue that salespeople experiencing job autonomy, achieving assigned sales quotas, and including customers in their views of self will be more motivated to apply their know-how to co-create value with customers.

#### 3.3.1. Moderating role of job autonomy

Job autonomy is "the degree to which the job provides substantial freedom, independence, and discretion to the individual in scheduling the work and in determining the procedures to be used in carrying it out" (p. 79) [101]. Salespeople with the freedom to choose their procedures, schedule their work, and perform other job tasks are more likely to experience a culture of autonomy within their organizations. In sales, autonomy is related to value creation and appropriation [102]. Since value co-creation heavily depends on salespeople [2], the higher the levels of value co-creation expected by the customer, the greater the need to provide an autonomous environment for salespeople to gather and disseminate knowledge.

Salespeople depend on their knowledge to provide customers with real-time solutions to their problems, respond to their complaints, and extend the value co-created with them [50]. According to the contingent framework by Weitz, certain micro-environmental factors within the organizations, such as job autonomy, can affect the relationship between salespeople's proficiencies and outcomes [103]. Knowledgeable salespeople will find it easier to carry out value co-creating tasks by providing prompt solutions to customers' problems and by co-producing offerings that mobilize them in the presence of an autonomous environment.

Salespeople who experience higher job autonomy are more likely to control their job-related tasks and feel more responsible as individuals for their performance outcomes [104]. The role of job autonomy is more pronounced for customer contact employees, since it allows them a certain degree of personal discretion and control over their work [105]. This control over their work, in turn, allows them to execute personal initiative and judgment to decide on the best ways to complete a given task [106].

Job autonomy helps salespeople manage long-term and relational exchanges with customers, which is more relevant for industrial buyers, because of the focus on long-term relationships and high-value individual exchanges [105]. According to Parker et al., for successful and long-term use of new initiatives deployed by companies, employees must be given more job autonomy [107]. In sales, job autonomy

provides knowledgeable salespeople with real-time opportunities to benefit from their expertise to work together with customers to co-create value. Job autonomy allows salespeople to choose on-the-spot solutions and provides optimal responses that fit customers' needs, based on the salespeople's sales expertise and knowledge. Based on the above discussion, we hypothesize the following:

H4a: Job autonomy moderates the relationship between salesperson knowledge and value co-creation.

### 3.3.2. Moderating role of sales quota ease

A sales quota is one of the most frequently used outcome-based control systems [108,109]. Perceived sales quota ease portrays the interaction between the salesperson and the quota level assigned [109]. From a sales organization perspective, the objective of setting a specific sales quota is for directing "salespeople's efforts according to management's priorities and/or for providing convenient benchmarks against which actual sales performance can be assessed and controlled" (p. 1) [110]. This foundation leverages the logic that a sales quota may provide salespeople with motivation [110] that supports their job efforts [111].

While prior studies have focused on sales quota difficulty, we explore a different perspective of sales quota ease, representing the level of perceived competence salespeople have in achieving their sales targets. Schwepker and Good found that sales quota difficulty (or conversely, low levels of sales quota ease) is positively related to the probability of sales managers letting their salespeople act in an unethical way, which, in turn, decreases customer-oriented selling [112]. While research indicates that challenging sales objectives can deteriorate a salesperson's performance, some studies have shown that stringent sales quota levels could positively affect salespeople's efforts [111,113,114].

The sales force's decision-making and behaviors are profoundly affected by the sales quota level assigned to them [115] and the difficulty or ease of achieving it [116]. Sales quota ease is subject to each salesperson's perceptions of how competent they feel to reach the assigned sales quota. The challenge of achieving the set sales quota level is more important than meeting the actual quota because salespeople consider the quota in the context of other surrounding variables and act accordingly [116]. Therefore, we argue that sales quota ease must also play a role in salesperson knowledge.

Sales quotas direct selling behaviors [117] and affect how salespeople work with customers. When salespeople perceive that their sales quota is not easy to achieve, the effectiveness of their sales-based knowledge is likely to be drained, limiting their ability to co-create value with customers. To reach their sales quota, salespeople persuade customers by using "hard selling" techniques instead of using actions and behaviors that maximize customer value [118]. However, this might not be the same for all salespeople. Hence, sales quota ease is likely to have a contingent effect on value co-creation with varying levels of knowledge. For that, we hypothesize the following:

H4b: Sales quota ease moderates the relationship between salesperson knowledge and value co-creation.

### 3.3.3. Moderating role of inclusion of customer in the self

The concept of "inclusion of the other in the self" refers to people's perceptions of interpersonal closeness [119]. This concept is related to the psychological distance between people's views of themselves and their views of others [120,121]. Cardador and Pratt describe this phenomenon as one person's self-concept adding additional considerations and inclusivity for those in one's sphere of influence, i.e., a salesperson's inclusion of customers [122]. This inclusion is associated with a sense of relatedness and feelings of attachment to others plus responsibility for others' welfare through including the other in the self [119,123–125]. We argue that this concept can also be relevant in sales, as a salesperson may include customers in herself.

Salespersons' inclusion of customer in the self resembles the urge in feelings of relatedness and intimacy that the salesperson perceives toward customers. It portrays the presence of others (e.g., customers) in a salesperson's self [122]. According to SDT, the customer's inclusion in the self satisfies salespeople's need for relatedness, which results in optimal performance when it comes to salespeople applying their knowledge to co-create value with customers. The inclusion of the customer in the self drives salespeople to hold a sense of unity and belongingness with respect to their customers. In turn, this inclusion motivates them to work cooperatively toward achieving the goals of customers. Accordingly, the more "customers" salespeople comprise as a component of their self-concept, the more self-sacrificing and altruistic attitudes they enact toward the customers, including learning about their different needs and satisfying them [e.g., 126,127]. Therefore, a salesperson who includes customers in him- or herself is highly attached to customers and values the relationships and closeness with them; hence, the salesperson is more likely to use their knowledge to co-create value.

SDT posits that the development of intimate relationships satisfies the need for relatedness [42] and hence motivates salespeople to work effectively to achieve desired outcomes. We expect that salespeople's level of customer inclusion will affect their intrinsic motivation, leading salespeople to play an enhanced role as knowledge brokers in favor of co-creating value with customers. The more "others" the self includes, the fewer selfish behaviors an individual will perform toward those others [127,128]. Based on the underpinnings of SDT, we propose that salespeople will better apply their knowledge and expertise in co-creating value with customers because of their intrinsic motivation caused by the satisfaction of the relatedness need through the inclusion of customers in the self. As the salesperson's inclusion of the customer increases, the degree of relatedness to customers increases, leading the salesperson to care more about customers. This experience will encourage a salesperson to increase their efforts to share operant resources (such as knowledge) with customers in favor of co-creating value. Thus, the inclusion of customers in the self will moderate the relationships between salesperson knowledge and value co-creation. For that, we hypothesize the following relationship:

H4c: Inclusion of the customer in the self moderates the relationship between salesperson knowledge and value co-creation.

As boundary-spanners, salespeople have an advantage in capturing the returns of value co-creation. More so, value co-creation is more likely to simplify the closing of more sales with customers and the building of profitable relationships in the long term for salespeople. In their efforts to co-create value with customers, salespeople work together with customers to provide them with the best service, find optimal solutions, and maximize their value. Sullivan et al. have demonstrated a positive impact of value creation on various sales outcomes including new accounts acquisition, conversion rate, closing rates retention, and sales returns [129]. Many studies have tested the effect of value co-creation on performance at the firm level [39,40], despite the knowledge that the relationship at the individual level (e.g., salespeople and frontline employees) could help better explain the value co-creation process.

Past researchers have explored relationships that can support a positive influence of value co-creation on sales outcomes. For instance, Terho et al. examined a large sample of B2B salespeople to understand the impact of value-based selling [3]. They found a positive effect of value-based selling on salesperson selling performance. Similarly, value-based selling behaviors, such as proactively supporting customers' business performance and identifying customers' exact needs, can enhance sales revenues [56]. Lastly, Schwepker and Schultz show the positive effect of B2B salespeople's value-enhancing behavior on outcome sales performance [130]. Hence, in accordance with this discussion, we argue that the increase in value co-creation behaviors will

help salespeople improve their sales performance. Therefore, we posit the following relationship:

H5: Salesperson value co-creation has a positive effect on sales performance.

## 4. Methodology

### 4.1. Sample and data collection

To test the hypothesized relationships in our study, we collected responses from a sample of 850 B2B sales representatives employed in the USA. The researchers compiled a list of potential respondents from an online database. Potential respondents were randomly selected while it was ensured that they worked in B2B sales. Potential respondents were sent survey invitations via email. Participants were assured complete anonymity and the confidentiality of their responses; therefore, identifying data were not collected. Salespeople were briefed about the purpose of the research and its objectives in examining the role of social media and CRM technology in the process of value co-creation. Hence, we ensured that respondents used social media and CRM technology for work.

Survey communications were distributed to the potential respondents initially via email, with reminders over the following two weeks to inspire participation. A three-week period was in place to collect the data. We received 163 responses, of which five were incomplete, leaving 158 responses for analysis (18.5% response rate). Respondents represented various industries, such as basic materials, manufacturing, healthcare, hospitality, financial, and information technology. Early responses were compared to the last responses using t-tests across all the latent variables and demographics within the data set to assess any nonresponse bias [131]. The tests conducted demonstrated that nonresponse bias was not a concern in this study. On average, respondents had 10.63 years of experience (STD = 7.39). The average age was 32.65 (STD = 8.79). Males represented the majority of the respondents, at 70.9% of the total. Among the respondents, 57% had a college degree. The respondents worked for companies of different sizes, ranging between 7 and 100,000 employees.

### 4.2. Measures

To ensure the validity and reliability of the measures and tests conducted in the study, we used multi-item measures from existing published studies. A Likert agreement scale (“1 = strongly disagree; 7 = strongly agree”) was used to capture participants’ responses on all measures except for the sales performance measure. The measurements with their individual scale items and loadings are available in Table A2.

To capture salesperson social media utilization in a daily work routine, we adopted the social media use measurement scale from Agnihotri et al [62]. We asked salespeople, when answering the survey, to mentally reference how they used common social media applications like LinkedIn, Twitter, and Facebook. An exemplar item states: “*I am using social media to its fullest potential for supporting my own work.*” The CRM technology measurement scale adopted from Sundaram et al [132]. captures salespeople’s use of CRM technology to support their different job tasks. An exemplar item from this scale: “*My use of CRM technology has been incorporated into my regular work schedule.*” The interaction between social media and CRM technology was assessed in the model as the social CRM factor.

To measure salesperson knowledge, we adopted a measure from Homburg and Jensen [70]. This measurement scale catches different dimensions of knowledge a salesperson can have. It also includes the erudition of the organization’s services/products, customers, market,

and competitors. For that, we considered salesperson knowledge as a composite construct with three first-order level dimensions: company’s offerings knowledge, market and competitor knowledge, and customer knowledge.<sup>1</sup> We followed a two-stage approach to model the construct of salesperson knowledge. First, we obtained latent variable scores for each of the dimensions. Second, the company’s offerings knowledge, market and competitor knowledge, and customer knowledge were three dimensions of salesperson knowledge and were specified as composite at the first-order level. The measurement scale developed by O’Cass and Ngo [36] was used to capture salesperson value co-creation. The measure captures salespeople’s collaborative behaviors with customers in co-creating value with them. The following is an exemplar item: “*I work together with customers to co-create additional value.*”

We used existing scales from previous studies to capture the respondents’ job autonomy through a 5-item measure [104,133]. The scale measures the perceived job independence, empowerment, and freedom salespeople have when deciding on their work schedule and procedures to carry out their job tasks. For example, one of the items states, “*This job allows me to use personal initiative or judgment in carrying out the work.*” Sales quota ease was measured using a three-item measure created by Schwepker and Good [117]. We reverse coded the items to accurately capture our intended variable, as the existing scale was developed to measure sales quota difficulty. An exemplar item states, “*The chance of me achieving my assigned quota is low.*”

Aron et al. developed a single-item pictorial measure of “inclusion of other in the self” [119]. The scale encompasses a set of Venn-like diagrams (seven pairs of circles – see Table A2), each signifying a unique degree of intersection between the pairs of circles; the first circle representing the salesperson self and the second circle representing customers [119]. In the original measure, the first circle represents the *self*, while the second represents the *other*. To fit our study’s purpose, we changed the *other* to *customers* to capture the salesperson’s inclusion of the customer in the self. We instructed respondents to choose one of the pairs that represented their relationship with customers. The higher the score, the more the chosen pair of circles overlapped, representing a greater degree of closeness between salesperson and customers.

We collected the percentage of assigned quota achieved by each salesperson during their latest evaluation to measure sales performance, as set by precedent in past research [80,134-136]. The percent-to-quota measure allows accurate performance evaluation while controlling for contaminating factors [137]. Only the salesperson knowledge construct is a composite construct, unlike other multi-item constructs, which were reflective. Sales performance and inclusion of the customer in the self were single-indicator variables.

We included control variables to reduce the variability in the endogenous variables: salesperson knowledge, value co-creation, and performance. To address the covariate variables examined, we controlled for the effects of salesperson sales experience, age, education level, and firm size on all three endogenous factors. These variables may have a learning impact on salesperson performance [e.g., 62,138]. We also controlled for the impacts of social media, CRM technology, and social CRM on sales performance. The experience measure calculated the number of years the respondent had been working as a salesperson. The education measure was based on five education levels with 1 for “less than high school” and 5 for “college work beyond degree.” We also controlled for the firm size’s effect on value co-creation [e.g., 36]. The total count of employees within the firm was used as a substitute for firm size. Table (1) includes the descriptive statistics, correlation matrix, reliability tests, average variance extracted (AVE), and square root AVE.

### 4.3. Measurement model

We employed partial least squares path modeling (PLS-PM) to garner

<sup>1</sup> We would like to thank one of the anonymous reviewers for the suggestion.



support for our conceptual framework. PLS-PM is a method that has been applied across information systems research [e.g., 139,140]. We performed PLS-PM using consistent PLS (PLSc) to test the relationships hypothesized in our study. PLS-PM is suitable for testing complex models with many constructs, items, and interaction effects [141,142]. In our study, we benefited from the latest PLS-PM improvements, including PLSc, a bootstrapping algorithm for overall model fit, and a “heterotrait–monotrait ratio” test (HTMT) to judge the discriminant validity [139].

First, the results of the confirmatory composite analysis were examined (Table 2). The results of this analysis show evidence in support of the structure of the measures used with all discrepancy values being lower than the 95% quantile of the bootstrap discrepancies (HI95 values). Second, the outer model was examined to check for the reliability and validity of the utilized measures. The bootstrapping technique was conducted with 5000 subsamples to assess the significance level of the path coefficients and the weights and loadings for every item [140]. The first model tested revealed one low-loading item in the CRM technology measure (< .6). Thus, the item was dropped. We evaluated the reliability of the measures by computing Cronbach’s alpha ( $\alpha$ ) and composite reliability (CR). All measures achieved evidence of reliability with ( $\alpha > .7$ ) and ( $CR > .8$ ). Moreover, all items loaded significantly on their assigned constructs with loadings  $> .7$  [143], with no high cross-loadings. All AVEs met the minimum threshold ( $> .5$ ), and none of the intervariable correlations were more than the square root AVE, showing evidence of discriminant validity. Finally, we analyzed the HTMT ratio, and none of the HTMT ratios between the different pairs of the latent variables in the model were higher than 0.85. This test provides further proof of discriminant validity [144].

4.4. Results

Two models were tested to examine the relationships hypothesized; details are included in Table 3. Findings demonstrated a positive impact of social media ( $\beta = .202, p < .01$ ), CRM technology ( $\beta = .507, p < .01$ ), and social CRM ( $\beta = .157, p < .05$ ) on salesperson knowledge in support of H1a, H1b, and H1c. The effect of social CRM on knowledge shows that social media and CRM technology interact to drive additional

**Table 2**  
Confirmatory composite analysis results.

Discrepancy	First-order constructs			Second-order constructs		
	Value	HI <sub>95</sub>	Conclusion	Value	HI <sub>95</sub>	Conclusion
SRMR	0.053	0.064	Supported	0.048	0.055	Supported
d <sub>ULS</sub>	1.001	1.333	Supported	0.060	0.086	Supported
d <sub>G</sub>	0.655	0.987	Supported	0.153	0.166	Supported

knowledge needed by the sales force (See Fig. 2). Further, findings show a positive relationship between salesperson knowledge and value co-creation ( $\beta = .588, p < .01$ ), supporting H2. Further, the findings show that social media ( $\beta = .1, p > .1$ ) and social CRM ( $\beta = -.005, p > .1$ ) have nonsignificant effects on salesperson value co-creation. Only CRM technology ( $\beta = .263, p < .01$ ) has a positive influence on value co-creation. Thus, H3b is supported. To better understand the nonsignificant effects (H3a and H3c), a post-hoc mediation analysis was conducted to check for the possible mediating effect of salesperson knowledge. The results also show salesperson value co-creation to positively influence sales performance ( $\beta = .213, p < .05$ ), in support of H5.

Moreover, as hypothesized, job autonomy was found to moderate the relationship between salesperson knowledge and value co-creation ( $\beta = .134, p < .05$ ). Hence, the relationship between knowledge and value co-creation is stronger for salespeople with higher job autonomy than for those working within less autonomous environments (see Fig. 3). These findings align with our proposed rationale that job autonomy provides real-time opportunities that enable salespeople to translate knowledge into value co-creation.

The relationship between salesperson knowledge and value co-creation is moderated by sales quota ease ( $\beta = -.188, p < .05$ ). As hypothesized, the perceptions of sales quota ease induced higher competence on the part of the salesperson, as they provide a key source of intrinsic motivation. Hence, they affect the relationship between salesperson knowledge and value co-creation at different levels of sales quota ease Fig. 4. shows that salespeople with less knowledge are affected by the level of sales quota ease, such that they are less likely to engage in value co-creation when the sales quota ease is low. On the other hand, knowledgeable salespeople are highly successful in co-creating value when with customers, with sales quota ease (low vs. high) having a

**Table 1**  
Correlation matrix, descriptive statistics, reliability, and average variance extracted.

	SM	CRM	SK	VCC	SP	JA	ICS	SE	SQE	AGE	EL
Social media	0.864										
CRM	0.350**	0.828									
Salesperson knowledge	0.470**	0.575**	—								
Value co-creation	0.451**	0.607**	0.617**	0.801							
Sales performance	-0.068	0.041	0.286**	0.273**	—						
Job autonomy	0.380**	0.337**	0.589**	0.442**	0.144	0.768					
Inclusion of customer in the self	0.474**	0.272**	0.231**	0.204*	-0.031	0.183*	—				
Sales experience	0.020	-0.084	-0.066	0.049	0.096	0.051	0.056	—			
Sales quota ease	-0.039	-0.163*	0.052	0.097	0.577**	-0.137	0.014	-0.081	0.843		
Age	0.041	-0.138	0.143	0.149	0.221*	0.272**	-0.123	0.154	0.071	—	
Education level	0.162*	0.237**	0.163*	0.262**	0.268**	0.185*	0.141	0.064	0.136	0.101	—
Firm size	-0.287**	-0.050	-0.051	0.054	0.087	0.045	0.041	-0.120	-0.021	-0.088	0.178*
Average	4.829	4.857	5.158	5.206	96.524	4.916	4.847	10.634	3.752	32.654	—
Standard deviation	1.367	1.211	1.05	1.101	33.812	1.083	1.353	7.387	1.381	8.788	—
Composite reliability	0.922	0.916	—	0.915	—	0.878	—	—	0.881	—	—
Cronbach’s alpha	0.887	0.885	—	0.886	—	0.829	—	—	0.797	—	—
Average variance extracted	0.746	0.686	—	0.642	—	0.590	—	—	0.711	—	—
VIF	1.437	2.233	2.728	1.474	—	1.846	1.389	1.165	2.387	1.351	1.221

Notes: Significance level: \* $p < .05$

, \*\* $p < .01$

— Not applicable.

Square root AVE is on the diagonal.

VIF = Variance information factor.

SM = Social media; CRM = Customer relationship management technology; SK = Salesperson knowledge; VCC = Value co-creation; SP = Sales performance; JA = Job autonomy; ICS = Inclusion of customer in the self; SE = Sales experience; SQE = Sales quota ease; ED = Education level; FS = Firms size.

Firm size was measured using employee count at the firm.

**Table 3**  
Results.

Relationship	Coefficient	f <sup>2</sup>
Social media → Salesperson knowledge (H1a)	0.202**	0.074
CRM technology → Salesperson knowledge (H1b)	0.507**	0.547
Social CRM → Salesperson knowledge (H1c)	0.157*	0.064
Salesperson knowledge → Salesperson value co-creation (H2)	0.588**	0.417
Social media → Salesperson value co-creation (H3a)	0.100	0.021
CRM technology → Salesperson value co-creation (H3b)	0.263**	0.129
Social CRM → Salesperson value co-creation (H3c)	-0.005	0.001
Job autonomy → Salesperson value co-creation	-0.022	0.004
Job autonomy * Salesperson knowledge → Salesperson value co-creation (H4a)	0.134*	0.068
Job autonomy → Salesperson knowledge	0.273**	0.140
Job autonomy → Sales performance	0.106	0.021
Sales quota ease → Salesperson value co-creation	0.147*	0.071
Sales quota ease * Salesperson knowledge → Salesperson value co-creation (H4b)	-0.188*	0.098
Sales quota ease → Salesperson knowledge	0.133*	0.054
Sales quota ease → Sales performance	0.517**	0.454
Inclusion of customer in the self → Salesperson value co-creation	0.084	0.021
Inclusion of customer in the self * Salesperson knowledge → Salesperson value co-creation (H4c)	-0.051	0.009
Inclusion of customer in the self → Salesperson knowledge	-0.033	0.003
Inclusion of customer in the self → Sales performance	-0.034	0.003
Salesperson value co-creation → Sales performance (H5)	0.213*	0.133
<i>Controlled links</i>		
Experience → Salesperson knowledge	0.008	0.001
Education level → Salesperson knowledge	0.072	0.014
Age → Salesperson knowledge	0.159*	0.061
Firm size → Salesperson knowledge	-0.077	0.031
Experience → Salesperson value co-creation	0.114*	0.064
Education level → Salesperson value co-creation	0.028	0.002
Age → Salesperson value co-creation	0.034	0.008
Firm size → Salesperson value co-creation	0.091	0.025
Social media → Sales performance	-0.071	0.031
CRM technology → Sales performance	0.063	0.023
Social CRM → Sales performance	-0.062	0.006
Experience → Sales performance	0.111*	0.032
Education level → Sales performance	0.166*	0.046
Age → Sales performance	0.124*	0.023
Firm size → Sales performance	0.010	0.001
<b>R<sup>2</sup> (Adjusted R<sup>2</sup>)</b>		
Salesperson knowledge	0.677 (0.651)	
Salesperson value co-creation	0.748 (0.723)	
Sales performance	0.482 (0.443)	
<b>Goodness of fit measures</b>		
SRMR	0.046 (H <sub>95</sub> 0.055)	
d <sub>ULS</sub>	1.207 (H <sub>95</sub> 1.624)	
d <sub>G</sub>	0.886 (H <sub>95</sub> 1.327)	

Note: Significance level \*  $p < .05$ .  
\*\*  $p < .01$ .

nonsignificant effect on their efforts to co-create value with customers.

Inclusion of the customer in the self does not moderate the relationship between salesperson knowledge and value co-creation. Thus, only H4a and H4b were supported. To further examine the significant interaction effects found, we followed the procedures recommended by Aiken et al [145]. and plotted these interactions in Figs. 2, 3, and 4 Table 4. includes a summary of the hypotheses and their corresponding results.

#### 4.5. Post-hoc analysis – the mediating role of salesperson knowledge

The service ecosystem perspective of sales offered by Hartmann et al. indicates that knowledge is essential to co-creating value with customers and forming beneficial relationships [50]. This perspective suggests that value creation and selling are entrenched aspects within comprehensive social systems [146]. As knowledge brokers, salespeople participate in value-based selling by sharing and exchanging their knowledge and competencies with customers. Thus, salespeople must act as knowledge brokers to contribute in the value-creation process with customers [6].

Social media and CRM capabilities can mediate the link between technology and performance [27,96,97]. The nonsignificant effects of social media and social CRM on value co-creation may be due to a mediating role of salesperson knowledge. Accordingly, a post-hoc analysis was conducted by first checking the direct effects of social media ( $\beta = 0.247$ ,  $p < 0.01$ ), CRM technology ( $\beta = 0.550$ ,  $p < 0.01$ ), and social CRM ( $\beta = 0.166$ ,  $p < 0.01$ ) on value co-creation before accounting for the direct effect of salesperson knowledge on value co-creation. The effects were all significant. Then, we tested the indirect effects after accounting for the effect of salesperson knowledge on value co-creation. The indirect effect of social media on value co-creation through salesperson knowledge was significant ( $\beta = 0.119$ ,  $p < 0.01$ ; *CI*: 0.046–0.196). Similarly, the indirect effect of social CRM on value co-creation through salesperson knowledge was significant ( $\beta = 0.092$ ,  $p < 0.05$ ; *CI*: 0.019–0.158). A significant indirect effect of CRM technology on value co-creation salesperson knowledge was also evidenced ( $\beta = 0.298$ ,  $p < 0.01$ ; *CI*: 0.180–0.393). In addition, we present the total effect of social media ( $\beta = 0.219$ ,  $p < 0.01$ ; *CI*: 0.110–0.361), CRM technology ( $\beta = 0.561$ ,  $p < 0.01$ ; *CI*: 0.413–0.698), and social CRM ( $\beta = 0.087$ ,  $p < 0.05$ ; *CI*: 0.021–0.154) on value co-creation.

We replicated the approach established by Zhao et al [147]. to examine the nature of the mediated effects found. The indirect effect of social media on value co-creation is significant with an indirect-only mediation. The mediation between social CRM and value co-creation is also indirect-only. Finally, the relationship between CRM and value co-creation is a complimentary mediation with significant indirect and direct effects.

## 5. Discussion, implications, and directions for future research

### 5.1. Discussion

The market’s progression toward knowledge-based sales exchanges [6] has resulted in a knowledge-centric sales approach, but it has also created a need for efficient ways for salespeople to collect information and practice their knowledge with their customers. Simultaneously, the advancement in social media and CRM technologies supports the need to integrate both systems to provide additional sources for salespeople to enhance their knowledge about products and customers’ needs and to increase sales performance. An exploration of the role of knowledge in the framework is important in the sales context because, as argued before, salespeople are expected to work as knowledge brokers [6] and hence are required to display their knowledge when interacting with the customers. Past research has also highlighted the importance of salesperson’s technical know-how of not only the products they sell but also the competitors [55,148]. Moreover, scholars have also posited that knowledgeable salespeople have strong customer-serving abilities [71] that have direct implications for the firm’s financial performance. Because of the importance of salesperson’s knowledge, we extend the notion that social media can lead to knowledge generation and dissemination [33] by applying the framework at the individual salesperson level. While knowledge can be gained with prior experience, it is also essential to underscore that the salesperson’s knowledge can also be enriched most by a high use of CRM and social media. In other words, sales knowledge also depends on using different information and communication systems available for salespeople, including social media and CRM technology. It is also vital to highlight the importance of using social media as an add-on with CRM technology. The two channels can complement each other to provide the salesperson with better opportunities to learn more about customers’ needs and market conditions, leading them to co-create value with customers and increase their own sales performance. Recent scholars have analyzed the importance of social media in driving work outcomes [12,15]. This research extends these findings and shows that information technology is directly related to value co-creation offerings that a firm can build for the customers to enhance its own performance and effectiveness. Additionally, our study

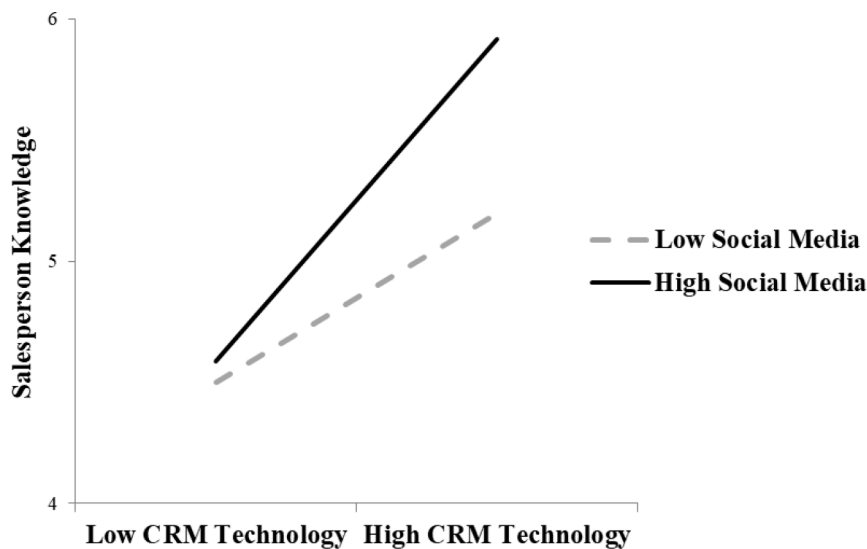


Fig. 2. Interaction effect of social media and CRM technology (social CRM) on salesperson knowledge.

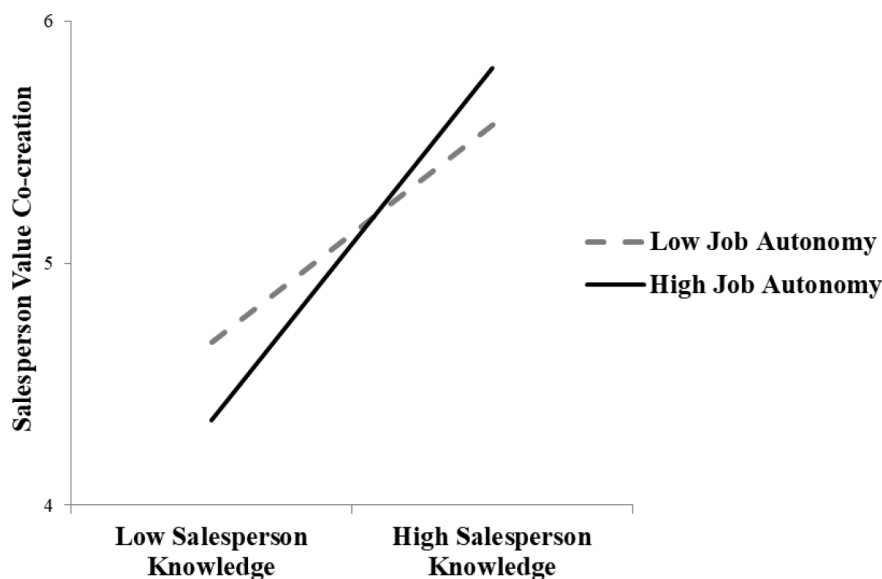


Fig. 3. Interaction effect of job autonomy and salesperson knowledge on value co-creation.

extends the findings of Yang et al [149]., who argue that future researchers should explore outcomes of social media and behavioral dynamics that could be in play. We extend Yang and colleagues' work by showing that social media is related to salesperson knowledge sharing and knowledge- and value-creation opportunities. These are, then, ultimately related to superior sales performance.

Although there have been significant theoretical advancements in understanding the value co-creation process, there is still much to be done regarding how salespeople influence such a process. As the salesperson role has changed and has become more dynamic, the opportunity and the potential for influence on behaviors apart from direct transactions (e.g., knowledge brokering and value co-creation) have become increasingly evident. While past research has studied the role of CRM technology, social media, and social CRM in driving salesperson performance [24,25], our study addresses their relationship in knowledge and the value co-creation process by examining the influences of social media and CRM technologies on salesperson knowledge in helping customers satisfy their needs and in co-creating more value with them. This study empirically demonstrates how sales technology, including

social media and CRM, as well as their interaction, i.e., social CRM, are critical in driving value co-creation through a powerful mechanism, sales knowledge. Both social media and CRM technology support sales reps in co-creating value with customers through knowledge brokering.

The effects of both tools on value co-creation are also enhanced when the salesperson uses both types of technologies. The results support the need for sales firms to get their sales force to use social media and CRM simultaneously. Our results also align with Harrigan et al.'s proposition that social CRM is associated with value co-creation and customer engagement initiatives [27]. The collective power of social media and CRM technology is evident in our study, providing evidence of the need for organizations to leverage different information technology tools and the technology itself [96].

While we showed that knowledge is a significant driver of value co-creation in line with S-D logic, we also found other factors affecting this relationship, specifically job autonomy and the ease of the sales quota assigned to a salesperson. These findings allow a better understanding of the linkage between operant resources such as knowledge and value co-creation. This link is contingent on specific work-related needs



Fig. 4. Interaction effect of sales quota ease and salesperson knowledge on value co-creation.

Table 4  
Hypotheses summary.

Hypothesis	Support at $p < .05$
H1a Social media has a positive effect on salesperson knowledge.	✓
H1b CRM technology has a positive effect on salesperson knowledge.	✓
H1c Social CRM has a positive effect on salesperson knowledge.	✓
H2 Salesperson knowledge has a positive effect on salesperson co-creation value.	✓
H3a Social media has a positive effect on salesperson value co-creation. °	×
H3b CRM technology has a positive effect on salesperson value co-creation.	✓
H3c Social CRM has a positive effect on salesperson value co-creation. °	×
H4a Job autonomy moderates the relationship between salesperson knowledge and value co-creation.	✓
H4b Sales quota ease moderates the relationship between salesperson knowledge and value co-creation.	✓
H4c Inclusion of the customer in the self moderates the relationship between salesperson knowledge and value co-creation.	×
H5 Salesperson value co-creation has a positive effect on sales performance.	✓

° Note: The effects of social media and social CRM on value co-creation are mediated by salesperson knowledge.

salespeople have. Knowledgeable salespeople can drive their value co-creation efforts best when management provides more job autonomy to complete their work. Thus, allowing knowledgeable salespeople to use their intuition and determine how to do their jobs is beneficial to sales firms, as their salespeople will increase their own value co-creation efforts.

Moreover, knowledgeable salespeople are less likely to be affected by their sales quota's difficulty level than those who are less knowledgeable. Increasing sales quota levels is associated with the increased need for sales organizations to enhance the overall sales targets the firms try to achieve. For that, salespeople consistently face an increase in sales quotas that they must attain. When faced with decreased sales quota ease and less perception of competence, salespeople's sales performance will deteriorate. To overcome this problem, knowing that sales firms always increase sales targets with their sales forces, firms need to shift

focus to enhance employee knowledge. One way to execute this shift is by supporting the use of social media and CRM technology. Additionally, firms should make sure salespeople can access the appropriate social media and CRM technology. Sales quota ease negatively impacts less knowledgeable salespeople. Less knowledgeable salespeople are less likely to co-create value with their customers, because they perceive themselves as less competent in achieving their sales targets, thus ultimately negatively influencing their sales performance.

Since the complementary use of social media and CRM technologies leads to higher salesperson knowledge, the interaction between social media and CRM technology is vital within sales firms, and its importance is prominent in sales enablement. This interaction supports salespeople in finding the knowledge needed and improving value co-creation with customers. It is important to highlight that for salespeople to exchange their expertise for value co-creation with customers, they will need high autonomy levels at work. When given enough freedom and independence to do the job, knowledgeable salespeople will be more effective in co-creating value with customers. Our study also shows how knowledge buffers the effect of the difficulty that salespeople face at work. Whether encountered with high or low sales quota levels, the value co-creation of high-knowledge salespeople will not be affected. On the other hand, salespeople are negatively affected when they do not perceive themselves as competent in achieving the assigned sales quota levels, leading to a lower ability to co-create value with customers. For that, sales firms are encouraged to support their sales force to learn and accumulate knowledge by providing them with the needed social media and CRM technology and allowing the two systems to integrate.

This study also demonstrates how value co-creation is vital for salespeople to drive increased sales performance. This conclusion aligns with the S-D logic that describes value co-creation as a relevant antecedent to sales performance. Based on this, we conclude that salespeople can benefit from using social media, CRM technology, and social CRM to gain the knowledge needed to co-create value with customers, leading to increased sales performance.

### 5.2. Managerial implications

For multiple reasons, this study's results are applicable and highly relevant to sales management and the sales force. First, management must understand how to support their salespeople from a resources perspective when incorporating technology and must also understand how the technology affects the sales staff's daily job responsibilities.

**Table A1**  
Selected empirical research on social media, CRM, and social CRM in B2B sales context.

Article	Technology			Outcome variable		Key findings
	Social media	CRM	Social CRM	Value-based outcome	Performance-based outcome	
<i>Current study</i>	✓	✓	✓	Value co-creation	Salesperson performance	Social media, CRM technology, and social CRM support salespeople in their value co-creation efforts through the mediating role of sales knowledge enriched by the use of these tools. Findings also show salesperson job autonomy and sales quota ease to moderate the relationship between knowledge and value co-creation.
Castillo et al. (2021)	✓				Knowledge exploration and knowledge exploitation	Social media capability increases firm's proficiency in exploring and exploiting knowledge. The effect of social media on knowledge exploration is stronger than that on knowledge exploitation and moderated by business analytics talent.
Bill et al. (2020)	✓				Customer loyalty	Salesperson's social media use is driven by perceived usefulness, perceived ease of use, sales manager social media use, and perceived training and support. Social media use is positively related to customer loyalty. This relationship is moderated by the size of the buying center, customer perception of status, and salesperson's relationship investment.
[150]	✓				Strength of customer–firm relationship	Salesperson's social media use do not moderate the relationship between social media agility and strength of customer–firm relationship.
[151]	✓				Sales performance	Perceived usefulness and capability to incorporate social media in sales enhance social media use, which in turn increases sales performance.
Itani et al. (2020)	✓	✓	✓		Competitive information collection, information communication, buyer sharing intentions	Salesperson's social media use is positively related to competitor information collection and buyer information sharing intentions. Similarly, salesperson's CRM technology use is positively related to information communication and buyer information sharing intentions. Social CRM increases competitive information collection.
[152]		✓			Trust, information value, information use	Advanced CRM analytics leads to proper valuing of competitive intelligence information, which maximizes the effectiveness use of competitive intelligence.
Ancillai et al. (2019)	✓				Soft salesperson outcomes, salesperson selling performance, relationship and customer performance, organizational performance.	Social selling is used to connect with and engage influencers, prospects, and customers at different customer purchasing journey touchpoints to build valuable business relationships. Social selling is also related to other close selling approaches and performance outcomes.
[153]	✓				Firm performance	Social media enhances firm CRM capabilities. Social media interaction with CRM capabilities has no effect on firm performance (e.g., sales growth).
[154]	✓				Implantation of sales strategy, customer relationship performance, sales performance	Salesperson's social media use is positively related to salesperson implantation of sales strategy, which in turn leads to higher customer relationship performance and sales performance.
Li et al.2019		✓			Employee revenue, customer satisfaction, firm performance	CRM increases operational benefits (revenue of employee) and strategic benefits (customer satisfaction, which both increase firm profitability and market valuation.
Ogilvie et al. (2018)	✓				Diligence, information communication, knowledge, adaptability, customer relationship & sales performance	Salesperson's social media use is positively related to information communication, diligence, knowledge, and adaptability, all of which are related to performance. These relationships are moderated by user training.
[155]		✓			Opportunities creation, opportunities management, relationship performance	CRM technology leads to significant differences in sales processes by creating opportunities, managing opportunities, and managing relationships.
Agnihotri et al. (2017)	✓	✓	✓		Diligence, information communication, inducements, empathy, sportsmanship	CRM use is positively related to diligence, information communication, inducements, empathy, and sportsmanship. Social media use, as a form of social CRM, moderates these relationships.
Guesalaga (2016)	✓					Salesperson's social media use is positively affected by customer engagement in social media, organizational/ individual competence & commitment to social media.
[156]	✓			Value creation		Extrinsic motivation, intrinsic motivation, apathetic motivation, and behavioral intentions positively lead to salesperson's social media use.
[157]	✓				Guanxi	Salespeople use social media to enhance guanxi elements with their customers, which in turn results in better operational and economic performance.
[158]	✓				Relationship performance, sales performance	Salesperson's general capability and upper management overall provision increase social media use and in turn enhance relationship and sales outcomes.

(continued on next page)

Table A1 (continued)

Article	Technology			Outcome variable	Performance-based outcome	Key findings
	Social media	CRM	Social CRM			
[159]	✓				Co-innovation, brand awareness	B2B seller's social identity and social comparison facilitate seller's engagement in co-innovation practices within online communities, which in turn increases brand awareness.
Agnihotri et al. (2016)	✓				Information communication, responsiveness, customer satisfaction	Salesperson's social media use enhances salesperson's information communication behavior that is positively related to responsiveness and customer satisfaction.
Moore et al. (2015)	✓	✓	✓ <sup>6</sup>		Prospecting, initial contact, sales presentation, handling objections, closing the sales, follow-up, post-sale behaviors	The use of social CRM is predominant in B2B compared to B2C context. In both contexts, managers use social CRM more than salespeople do. The use of social media is similar in the seven stages of the sales process. B2B managers appear to use social CRM more often than other sales professionals at some stages.
[160]	✓	✓			Sales performance	Social media and CRM technology have a positive effect on customer orientation activities, which in turn lead to increase in sales performance.
Trainor et al. (2014)	✓	✓	✓ <sup>o</sup>		CRM capabilities, customer relationship performance	Salesperson's social media use is positively related to CRM capabilities, which, in turn, is related to customer relationship performance.
Rapp et al. (2013)	✓				Social media use by retailers and end customers, brand sales performance	Supplier's social media use is positively related to retailer social media use, which is positively related to customer social media use. The relationship is moderated by brand reputation & service ambidexterity.
Li and Mao (2012)		✓			Internal sales management control	CRM use supports effective formal internal sales management control by enhancing outcome measurability and process visibility. CRM use facilitates informal control.
Rodriguez et al. (2012)	✓				Creating opportunity, understanding customers, relationship management, and performance	Social media use increases opportunity creation, customer understanding, and performance.
[161]	✓				Sales performance	Age decreases social media use by B2B salespeople. Social media norms increase social media use, which positively influences sales performance. Customer-oriented selling is not related to social media use.
[162]		✓			Customer-perceived relationship investment, firm performance.	CRM interaction support tools enhance customer-perceived relationships. The effect direction of CRM prioritization tools depends on the customer account size.
Rodriguez and Honeycutt 2011		✓			Collaboration, sales effectiveness & performance	CRM technology use is positively related to collaboration, sales effectiveness & performance.
Rapp et al. (2010)		✓			Customer-linking capabilities, customer relationship, and performance	CRM technology has a positive effect on customer-linking capability, relationship performance, and organizational performance. CRM technology interacts with customer orientation to enhance customer-linking capability.
Agnihotri et al. (2009)		✓			Information communication, customer satisfaction.	Information technology including CRM and sales force automation has a positive effect on information communication between salesperson & customers.
Ahearne et al. (2008)		✓			Customer service, attention to personal details, salesperson performance	CRM and sales force automation systems have an indirect positive effect on sales performance through the positive effect on customer service, knowledge, and adaptability.
Ahearne et al. (2007)		✓			Targeting, sales presentation, call productivity, job performance	CRM-based IT increases salesperson knowledge, which leads to better targeting, sales presentation, & call productivity resulting in higher performance.
[163]		✓			Salesperson performance	CRM technology perceived usefulness is positively associated with salesperson performance. CRM technology acceptance has nonsignificant relationships with sales performance.

Notes: <sup>6</sup> = social CRM was operationalized as integration; <sup>o</sup> = social CRM was operationalized as interaction between social media and CRM.

Sales organizations that look for value co-creation as a competitive advantage should consider their sales force's vital role in driving value co-creation and thus in reaching the aimed-for competitive advantage. To this end, sales organizations need to know that salespeople currently use CRM technologies and social media as tools to gain more knowledge about customers and products they sell, and they act as knowledge brokers to co-create value and increase sales performance. The study shows that social media and CRM technologies complement different information sources and data that salespeople use to gain knowledge.

In practice, social media and CRM technology are required today more than before, with the importance of sales enablement. While most salespeople are still using social media and CRM systems separately, it is now possible to integrate these tools with ready-to-use tools supported

by social media platforms, such as LinkedIn, in integrating Salesforce's CRM. Working in such a way will optimize the power of social media and CRM technologies and will enable sales teams to find leads, understand prospects' needs through social information provided, and engage customers with customized information. Other applications that allow integrating social media and CRM are powered by artificial intelligence and are available for public use. These applications are recommended for sales organizations to support their sales force in harnessing social media and CRM technologies' combined power. Using both capabilities in one system to gain additional knowledge and take part in value co-creation leads to increased sales revenue.

Further, in managing their sales force, organizations that recognize salespeople as assets in co-creating value should focus on creating an

**Table A2**  
Measures.

Measure and items	Loading	VIF	Weight
<b>Social media</b>			
My use of social media is pretty much integrated as part of my normal work routine	.854	2.238	.313*
I am using all capabilities of social media in the best fashion to help me on the job	.849	2.263	.282*
I am using social media to its fullest potential for supporting my own work	.900	3.174	.331*
Social media is useful for job	.852	2.760	.254*
<b>CRM technology</b>			
CRM technology is important for job	.853	2.385	.267*
I am using CRM technology to its fullest potential for supporting my own work	.887	2.744	.279*
My use of CRM technology has been incorporated into my regular work schedule	.796	1.889	.234*
I doubt that there are any better ways for me to use CRM technology to support my work <sup>D</sup>			
My use of CRM technology on the job has been integrated and incorporated at the highest potential	.723	1.711	.153*
My use of CRM technology is pretty much integrated as part of my normal work routine	.872	2.741	.252*
<b>Salesperson knowledge</b>			
<i>Company's offerings knowledge</i>			
I am knowledgeable about my company's offerings, their usage, and outcomes	.844	3.278	.215*
I am very knowledgeable about our products, their indications, knowledge usage, and adverse reactions	.848	1.946	.494*
<i>Market and competitor knowledge</i>			
I know the competitors' offerings as well as my own	.912	1.920	.554*
I keep abreast of technical developments	.919	2.136	.502*
<i>Customer knowledge</i>			
I understand what customers using my products/services are going through	.869	2.410	.638*
I am considered by customers as an excellent source of knowledge	.859	1.547	.480*
	.929	3.101	.475*
	.922	2.255	.619*
	.834	1.468	.637*
<b>Salesperson value co-creation</b>			
I interact with customers to serve them better	.772	1.984	.198*
I provide offerings for and in conjunction with customers	.867	2.740	.236*
I co-opt customer involvement in providing offerings for them	.821	2.242	.238*
I provide customers with supporting offerings to help them maximize their value	.746	1.903	.184*
I work together with customers to co-produce offerings that mobilize them	.796	2.509	.193*
I work together with customers to co-create additional value	.800	2.591	.211*
<b>Job autonomy</b>			
I have a lot of say about what happens on my job	.759	1.483	.332*
I have significant autonomy in determining how I do my job	.744	1.819	.198*
It is basically my own responsibility to decide how my job gets done	.763	1.788	.207*
This job allows me to use personal initiative or judgment in carrying out the work	.826	2.081	.322*
I have considerable opportunity for independence and freedom in how I do my job	.748	1.722	.235*
<b>Sales quota ease</b>			
I believe my assigned quota is very difficult <sup>R</sup>	.809	1.950	.353*
It is hard for me to achieve my assigned quota <sup>R</sup>	.823	1.634	.449*
The chance of me achieving my assigned quota is low <sup>R</sup>	.895	1.983	.376*
<b>Inclusion of customer in the self</b>			
The below pairs of circles represent the different levels of closeness you have with customers. Please circle the picture below which best describes your relationship with customers.			

Notes: Significance level: \* $p < .05$ .

<sup>R</sup> = Reverse coded item.

<sup>D</sup> = Item dropped from the analysis.

organizational culture of autonomy. Job autonomy allows salespeople to effectively share and implement their knowledge or know-how to co-create value with customers. The lack of autonomy provided to salespeople will hinder their ability to use personal knowledge and expertise in carrying out their work of co-creating value with customers and increasing sales revenue. An organizational culture of autonomy supported by upper-level management and sales managers directly relates to salespeople. Second, sales quotas are commonplace within many sales functions. As the modern salesperson's role continues to morph, management must be aware of the implications of intentionally out-of-reach sales quotas on the sales team, specifically high-knowledge salespeople. Unlike those with low knowledge, high-knowledge salespeople can

manage an optimal value co-creation process with customers simultaneously with difficulties at work. The results of this study call for organizations to be far more cognizant of the autonomy they provide salespeople and of the sales quotas assigned. Answering this call will ensure that sales staff have the opportunity to deploy the knowledge they gain from social media and CRM technology to co-create value with customers.

While organizations need to invest more in social media and CRM tools, they should also conduct relevant training for salespeople to optimize their use of these technologies. Organizations should also look for the tools that provide full technical support for salespeople to improve these technologies' effects on sales. Taking these measures will

support the advancement of sales enablement processes. Organizations need to look for knowledgeable and learning-oriented salespeople from the recruitment side, people striving to build their knowledge and co-create value with customers. Training and professional programs also support the organizations in having a knowledgeable sales force that can create a competitive advantage. Our study's findings support sales organizations' need to move toward knowledge-based and value-based selling to increase sales performance. For that, organizations need to design additional training and development programs as well. Additionally, the evaluation of salespeople should consider the salesperson's monetary outcomes and the knowledge of the salesperson as well as the value co-created in the salesperson-buyer relationship.

### 5.3. Limitations and future research

While our findings offer interesting contributions, several limitations exist and provide potential avenues for future research. First, our sample was limited to salespeople from only one geographic location (USA). This study does not address how technological advances within this context could influence B2B sales organizations in other countries. This research can take several directions relevant to different literature streams. Second, additional research regarding salespersons' comfort with technology and aspects of human and technology interactions would add immense value to this area. Third, our manuscript addresses social CRM as a holistic strategic approach but does not concentrate on specific CRM and social media tools. The impacts and effects on sales outcomes could vary based on the platform used by the salesperson. Fourth, it would be interesting to analyze the impact of social CRM on other employees' behaviors and outcomes in the organization, employees such as brand or marketing representatives. Lastly, while we focus on the social media and CRM technology interaction, future studies need to explore further the integration between them, trying to find a measure that captures such a concept.

Further, while exploring the moderating effects of job autonomy, sales quota ease, and inclusion of the customer in the self offers interesting insights, future researchers should explore other variables related to the framework presented. Other job-related variables could be linked to the three broad categories of self-determination needs (autonomy, competence, and relatedness). Moreover, researchers can examine the moderating role of self-determination needs on how sales technologies affect salesperson knowledge. There is also an opportunity for future research to address the implications of this topic outside the B2B context.

### Author contribution

Equal contribution.

### Declaration of competing interest

None.

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Omar S. Itani earned his Ph.D. from the University of Texas, Arlington. He is an Assistant Professor of Marketing at the Lebanese American University. His-research studies the cross-section of professional sales, technology, and performance. His-research interests also include relationship and strategic marketing. His-research has appeared in multiple journals including the *Organizational Behavior and Human Decision Processes*, the *Journal of Business Research*, the *Journal of Personal Selling & Sales Management*, *Industrial Marketing Management*, the *Journal of Business Ethics*, *Tourism Management*, *International Journal of Hospitality Management*, the *Journal of Services Marketing*, and the *Journal of Business & Industrial Marketing*.

Ashish Kalra (Ph.D., University of Texas at Arlington) is an Assistant Professor of Marketing at the University of Dayton. His-research interests include sales and service marketing with a specific focus on exploring the role of salespeople and frontline employees in driving organizational outcomes. His-work has appeared in the *Journal of Service Research*, *Journal of Personal Selling and Sales Management* among others.

Jen Riley is a Sales Professor at Kansas State University and a recent graduate from Kansas State University. Before entering academia, she was a corporate marketer primarily focusing on B2B markets and responsible for implementing digital strategies and collaborating with sales teams to leverage technology. She is an award-winning entrepreneur, a competitive speaker, and an international-selling author. Her research studies the cross-section of professional sales and technology adoption.