

## **Hiring for Sales Success: The Emerging Importance of Salesperson Analytical Skills**

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### **Abstract**

Several studies suggest that accelerating technology, increasing product complexity, and an expanding volume of information in the marketplace are changing sales roles, necessitating a review of the current sales skills required for success. Using mixed methods, we examine the skills required of contemporary B2B salespeople. First, we draw on unique data from 3.8 million LinkedIn job postings to examine which skills sales recruiters are seeking in new hires. Whilst confirming the importance of previously researched sales skills, this identified a sales skill largely disregarded by the extant literature: salesperson analytical skills. We triangulated these findings through interviews with 20 sales executives and developed a scale to measure this new analytical skills construct. Then, to test the scale's predictive and nomological validity, we used survey data from 251 business-to-business salespeople. Results reveal that salesperson analytical skills have both a direct and a moderating effect on sales performance across varying selling situations.

Keywords: analytical skills, mixed methods, sales skills, salesperson performance, scale development

# 1 Introduction

The professional selling context is undergoing substantial and rapid change, with persistent market turbulence (Mangus et al., 2020), increasingly diverse stakeholders to be managed (Plouffe et al., 2016), and a growing awareness of the importance of an entire ecosystem in determining sales outcomes (Hartmann et al., 2018). Although recent research has recognized these changes, the skills required to support continued sales success in this new environment have not been fully explored from the perspective of hirers and practitioners. Of course, making a hire with the right sales skills is a matter of substantial importance for organizations, which can spend up to \$200,000 recruiting a single sales professional (Cooper, 2012). We will now discuss each of these key changes in more detail to motivate the present research.

First, there has been a dramatic increase in information available to customers due to technological advances (Hochstein et al., 2019). In the past, salespeople added value to customer interactions through their ability to broker product information to their customers (Verbeke et al., 2011). However, the rapid innovation in mobile and internet technologies has equipped customers with a vast amount of product knowledge not previously available to them (Hochstein et al., 2021). Salespeople may now find their first interaction with customers is at a different and later stage of the sales cycle, where customers are far more educated on their options. With increased access to knowledge and the changing role of technology in sales, the role of the B2B salesperson has become more complicated and requires salespeople to work with more information than ever before (Moncrief, Marshall, & Lassk, 2006).

Second, growing customer demands have increased product complexity and the need for customized solutions (Marcos Cuevas, 2018) or combinations of various goods and services needed to fulfill customer problems (Tuli et al., 2007). To operate successfully in this

environment, B2B salespeople act as a quarterback initiating action and coordinating the firm's sales team to develop bespoke solutions to a customer's unique needs (Davies & Ryals, 2014; Plouffe et al., 2016). Salespeople must leverage both customer and technical knowledge, collaborating with internal experts and, at times, external partners who must deliver part of the solution in this new interconnected sales ecosystem (Böhm et al., 2020; Peesker et al., 2020). Whereas in the past a salesperson could thrive just by moving large numbers of standardized products into the hands of customers, they must now co-create novel solutions for each customer.

It seems likely then that the selling skills sought by hiring firms may differ somewhat from those identified two decades ago by Marshall et al. (2003) – such as listening and follow-up skills. Specifically, given the increased need to synthesize information and leverage fluid teams to develop and sell complex solutions, we wonder what role salesperson analytical skills (i.e., the ability to break down and manipulate selling-related information into smaller data elements to solve day-to-day sales problems) may play in the modern selling environment? What are practitioners saying about the need for analytic skill? What elements make up analytical skill and how can it be measured by survey researchers? And, finally, what relationship does analytical skill have on sales performance – both directly and interactively with salesperson effort?

Despite identifying important environmental shifts in selling and the resulting changes in role responsibilities (Marshall et al., 1999; Moncrief et al., 2006), investigations into the skills needed for a successful sales career have not kept pace. For example, from 1918-2008, only 15% of the factors investigated as possible determinants of sales performance were skills-related compared to 46% related to salesperson traits and personal factors (e.g., IQ, age) (Churchill Jr. et al., 1985; Verbeke et al., 2011). In addition, this literature frequently treated discrete selling skills as a composite construct – aggregating many different skills into a single measure,

potentially eliminating valuable variation across skills and reducing the ability to detect useful relationships between these skills and performance (Johlke, 2006; Rentz et al., 2002).

Collectively, these issues may be one reason why selling skills have not been consistently identified as strong predictors of performance in the extant literature (see meta-analysis; Verbeke et al., 2011), making our work a timely contribution to the field.

Using mixed methods that allow us to transition from exploratory research on desirable sales skills into more precise tests of the new construct of salesperson analytical skill, this paper contributes to our understanding of contemporary, in-demand B2B selling skills *from the perspectives of recruiters, sales executives, and salespeople themselves*. In Study 1, we utilize two different approaches to understand what skills are deemed important in today's selling environment. We first identify those skills attractive to recruiters by analyzing an entire year of current job-postings data provided by a partnership with the world's leading professional networking and career development platform, LinkedIn. As suspected, we uncover one emerging skill not previously considered in the literature, salesperson analytical skills. Next, we conduct in-depth interviews with 20 sales executives to how they conceptualize this skill, identifying two-dimensional manifestations: 1) analytics for enhanced pipeline and territory management and 2) analytics for deeper customer insight.

In Study 2, we develop a scale to measure the salesperson analytical skills construct using an initial item pool developed from our qualitative investigation. We then test the efficacy of our new analytic skills scale in driving salesperson performance above and beyond salesperson effort. Specifically, we assess the direct effect of analytic skills on performance and assess its moderating effect on the effort—performance relationship.

Our research triangulates insights from sales recruiters, sales executives, and salespeople to

conduct a review of the skills currently needed for success in sales. We contribute to the literature by 1) identifying salesperson analytical skills as a critical new sales competency previously not considered by the literature; 2) developing a psychometrically valid scale with which to measure it; and 3) demonstrating the performance efficacy and therefore the importance of this newly identified skill, along with the nomological validity of its corresponding measurement. In so doing, we are updating our understanding of the contemporary B2B selling skills necessary for sales success.

The remainder of this paper is organized as follows. First, we review how selling skills have been defined and investigated to date, paying particular attention to skills research over the most recent decade. Second, we describe the methods and results of two related studies, which (1) investigate the sales skills required in the modern sales environment, identifying one emerging skill - salesperson analytical skills - largely missing from extant literature, and (2) develop a scale to measure salesperson analytical skills following steps recommended by Churchill Jr. (1979) and test its efficacy in predicting salesperson performance. Finally, we discuss the implications of our findings for the sales literature and industry hiring practices and summarize study limitations and future research.

## **2 Previous selling skills research**

Johnston & Marshall (2016, p. 197) define selling skills as a "learned proficiency at performing the necessary [job] tasks." This definition delineates skills from other salesperson competencies used in effective selling, such as personal attributes (e.g., age, experience; Bolander et al., 2020) or traits (e.g., extroversion, conscientiousness; Yang et al., 2011). Within the literature, selling skills have been conceptualized at both a foundational (or micro) skill level, including *listening* (Drollinger et al., 2006), *prospecting*, and *closing* skills (Johlke, 2006) or at a

higher level of abstraction, requiring the presence of multiple foundational skills, such as *consultative selling* (DeCormier & Jobber, 1993). Skills have been further categorized into "vocational skills," or those specific to ones' role or company, and "selling skills," or those central to selling and "relatively common across organizations" (Johlke, 2006, p. 312). The literature has been further complicated by a lack of definitional precision used in describing the skills under investigation. For example, both Walker, Churchill Jr., & Ford (1977) and Johlke (2006, p. 312) define and operationalize *sales presentation skills* as "skills related to effectively conducting the personal selling process" even though the selling process arguably encompasses multiple skills, such as prospecting, presentation, and closing, among others.

Despite these conceptual and operational challenges, sales skills research has progressed. In reviewing relevant research from the recent decade (Table 1), we make four observations. First, even while selling migrates to virtual platforms, interest in communication skills remains widely studied at an overall macro-level (Plouffe et al., 2009) and a more micro-level through inquiries into specific skills like rapport building (Bolander, Bonney, & Saturnino, 2014), listening (Anaza et al., 2018), non-verbal cue detection (Agnihotri et al. 2016), and improvisation (Banin et al., 2016). Second, given the role salespeople play as boundary spanners (Böhm et al., 2020), it is not surprising to see numerous studies addressing the political skills required to draw the people, knowledge, and resources necessary to move customer solutions forward (Bolander et al., 2015; Guidice & Mero, 2012; Macintosh & Krush, 2017). Third, as sales roles continue to expand (Moncrief et al., 2006), we see an increased interest in time management-related skills, such as the ability to "fail fast" - to recognize low probability opportunities quickly and exit the sales process (Friend, Ranjan, & Johnson, 2019, p. 266) or one's ability to manage multiple activities simultaneously (Fournier et al., 2013). Lastly, some recent studies focus on the adoption and use

of sales technology (Dugan, 2014; Guenzi & Nijssen, 2020; Park et al., 2010) rather than the effectiveness with which these applications are utilized.

**<Insert Table 1 about Here>**

Overall, our review of past sales performance literature indicates a continued emphasis on situational and personal factors rather than skills as predictors of performance. More specifically, sales skills research represents only 15% of the variables investigated from 1918-2008 as possible determinants of salesperson performance (Churchill Jr. et al., 1985; Verbeke et al., 2011). This fact is rather surprising given that skills are usually associated with role performance and, moreover, are a focus of recruitment, coaching, and training activities. Given the ongoing transformation of professional selling, further catalyzed by the pandemic, which is changing the nature and medium of buyer-seller conversations, the volume of information accessible to both buyer and seller regarding these exchanges, and the resulting selling strategies implemented (Flaherty *et al.*, 2018; Marcos Cuevas, 2018), we believe addressing this gap would provide useful, skills-related research direction for sales scholars and practitioners.

### **3 Study 1: Exploring what sales skills are in demand**

Study 1 comprised two phases, just before and during the Covid pandemic of 2020-21. This study focused on identifying selling skills currently in demand in the marketplace through two perspectives – by examining the current skills being actively recruited for in sales job ads and by in-depth interviews with sales executives to explore their perceptions of sales skills required in the modern sales environment. Phase one was exploratory, using data from LinkedIn job postings to identify the skills desired by those hiring salespeople and led to the discovery that analytical skills are being solicited. Phase two further explored sales skills in the modern environment, and became more directed, turning to sales executives to understand their

perceptions of salesperson analytic skill in a deeper way that will inform the dimensionality of this construct and some items that may be useful in its measurement (which allows for the work performed in our subsequent Study 2).

### **3.1 Study 1 Phase 1: LinkedIn Job Post Analysis**

The dataset used to identify actively recruited selling skills came from the social media company LinkedIn. LinkedIn currently has over 675 million members in more than 200 countries. As a business-oriented social media site, LinkedIn collects the supply of selling competencies on the market through individual member profiles and the demand for these competencies, based on job recruiting ads placed by companies looking to hire LinkedIn members. An algorithm, developed by LinkedIn, extracted all competency-related text phrases (e.g., *prospecting*) from 3.8 million LinkedIn job postings in the United States and Canada from May 2018 - April 2019 while maintaining the anonymity of the recruiting organizations. Captured phrases were sorted in ascending order and assigned a ranking based on a frequency count of each phrase's occurrence.

The analysis results of this dataset produced a list of frequently used competency phrases actively recruited for in the market (Table 2). Following a similar procedure to Bottger et al. (2017), the top 100 ranked phrases were judged by an expert panel of 10 sales leaders paired with 10 human resource leaders from the same global organizations to confirm their legitimacy as a selling skill versus other potential competencies or personal attributes. All phrases receiving a 90% consensus by our panel were kept for further analysis, with duplicate phrases eliminated.

**<Insert Table 2 About Here>**

The data collected identified five selling skills frequently used in LinkedIn job recruiting ads. These were: *Qualifying Skills*; *Analytical Skills*; *Prospecting Skills*; *Presentation Skills* and



*Consultative selling*. Not surprisingly, the selling skills identified align with key steps in the sales process, such as *prospecting* and *qualifying*. Of particular interest to our research, however, is the identification of *salesperson analytical skills*. This skill was ranked #2 in recruiting frequency, highlighting its importance in practice, yet the sales literature remains largely silent regarding its conceptualization and performance efficacy.

With the onset of COVID-19, it became evident that salespeople needed to adjust their selling approaches. As the original data from LinkedIn did not include the COVID-19 timeframe, we re-ran the algorithm at LinkedIn. We re-extracted all competency-related text phrases from salesperson job ads posted in the United States and Canada from August 2020 to July 2021 while maintaining the anonymity of the recruiting organizations. This dataset produced a similar result to the original report, not surprisingly with a slightly greater emphasis on the importance of technology skills. The new data confirmed that analytical skills are still in the top skills required by sales recruiters.

Using the insights gained with the LinkedIn data, we moved into Phase 2 of Study 1 to investigate sales executive perspectives of key sales skills required in the modern sales environment to enable sales performance.

### **3.2 Study 1 Phase 2 – How do Sales Executives Perceive Salespeople's Skills?**

The objective of the sales executive interviews was twofold. First, we wanted to explore sales executives' perceptions regarding current sales skills which enable sales performance – allowing them to validate, or challenge, our observations from the LinkedIn data. Second, we wanted to explore the conceptualization of analytic skills, allowing sales executives to paint a more detailed picture of this construct to begin to generate an item pool for use in our scale development in Study 2.

### **3.2.1 Data collection and analysis**

In-depth semi-structured interviews were used to collect data as they allowed the sales executives to share lived experiences leading to a deeper understanding of the topic (Peesker et al., 2019). Demographic information was captured, and the interviews were recorded and transcribed verbatim, with each lasting between 50 and 70 minutes, generating over 21 hours of interview data. An interview guide (see Web Appendix A) used open-ended questions assessing respondents' understanding of salesperson performance, sales skills required for success, and exploring analytical skills in sales. Probing was used to encourage respondents to discuss why each skill enabled a high level of sales performance. During the interview, summary checks occurred to clarify points of discussion. NVivo software was leveraged to organize data and assist with coding and analysis (Bazeley & Lyn, 2000).

A purposive approach to sampling (Guarte & Barrios, 2006) was taken to select the study participants. The sample consisted of 20 sales executives across ten industries (Table 3). All respondents had a postgraduate degree and were between the ages of 36 and 58, with 85% being over 40 years old. 75% of the respondents had 10-20 years of sales experience (25% over 20 years), reflecting the seniority of the sample. All had experience directly managing teams of salespeople. The sample was 50% male and 50% female to capture an inclusive and diverse perspective, as the sales profession - male-dominated in the past - is now evolving to include more women in leadership and executive roles (Peesker & Lister, 2020).

It has been noted that qualitative studies generally require a minimum sample size of at least 12 to reach data saturation (Fugard & Potts, 2015). In this research, the analysis indicated that data saturation had been reached within the sample of 20 participants and was sufficiently robust to proceed to the qualitative analysis.

**<Insert Table 3 Here>**

### **3.2.2 Method of Analysis**

Coding of the qualitative data followed King (1998), interrogating then sorting and organizing the data into categories of sales skills using a priori codes. The interviews were coded against the initial template with six themes in line with the research protocol. This coding round (refining the template) involved broad participant-driven initial coding of the interview transcripts into initial emergent top-level themes derived from the thematic template. The five themes identified in this study were 1. Definition of exceptional sales performance, 2. Skills for sales performance, 3. Analytical skills, 4. Construct development 5. Covid changes in sales. 398 references exemplifying skills for sales performance were analyzed and grouped into two categories: key sales skills and key sales qualities. This process helped generate sales skills codes, including analytical skills, communication skills, and collaboration skills, and we also explored new sales skills discussed by the participants. In total, following validation and synthesis, these codes were deemed to represent a saturation of codes and themes describing sales skills that enable sales performance. Further elaboration on the results of the analysis is outlined in the Findings section.

One researcher completed the study coding to eliminate intercoder differences. A second researcher blind-coded two initial sales leader transcripts to validate the robustness of the initial coding schema and to test for interrater reliability. Cohen's kappa coefficient was used to measure the degree of coder agreement. A positive kappa indicates that observers agree more than they would by chance. The kappa for this research was recorded at 0.65, meeting substantial interrater agreement reliability standards and demonstrating robustness in the coding process.

### **3.2.3 Findings**

In total, 398 references to sales skills were made by respondents. When the sales executives spoke about key sales skills, they mentioned 16 skills, including communication skills, listening,

collaboration, prospecting, and presentation skills (Table 4). We note here that emotional intelligence, may be considered by researchers as a trait rather than a skill; however, we have treated it as a sales skill since that was how our interviewees identified it.

There was one specific new skill the sales executives discussed repeatedly and at great length as key to enabling sales performance today: analytical skills. We probed for more detail on this finding and, as a result, were able to explore 'analytical skills' in sales and establish that analytical skills were a distinctive and specific category separate from discussions of previously explored sales skills, including listening, communication, and collaboration. We identified three further themes, which we coded as sales skills: growing in importance today, required during COVID19, and previously explored. We will next discuss the interview data in relation to new and previously explored selling skills.

<Insert Table 4 Here>

### **3.2.3.1 Sales executives' perceptions of analytical sales skills**

In line with the findings from the LinkedIn data, the sales executives discussed how, as a result of advances in technology and increases in information availability, salesperson analytical skills - the ability to acquire, assimilate, evaluate, and apply data, especially customer data - are now key to enabling sales performance. This performance-enhancing opportunity manifests itself in two ways: 1) enabling a deep understanding of the customer and the ability to generate customer insights; 2) helping with the sales process by improving pipeline and territory management as highlighted in the sales executive quotation below:

*"I think more and more that sales are analytically minded. So much of what we're doing is providing a better understanding to our customers' business objectives, but it's also really truly understanding and analyzing their (salesperson's) own book of business and the opportunities that are there and being able to understand and see those opportunities is really important. So an analytical mindset is really important." (Sales Executive 8, Technology Industry)*

Analytical skills are identified as helping salespeople gain a deeper understanding of the customer base, taking into consideration the client's specific needs and industry-specific challenges and dynamics. The executives suggested that research and industry analysis enable salespeople to stay "one step ahead" of the client. Respondents overwhelmingly felt that this was key to delivering value and solutions in an era where the client has access to the same level of information. The sales executives discussed that analyzing data with finance and business acumen allows salespeople to understand the customer's business model and unique challenges. This provides the basis for developing a solid solution recommendation for the client. It was identified that the use of analytical skills often results in better customer solutions. The sales executives spoke about how salespeople who use analytical skills to understand the product and the financial business case can identify the right solution to the customer's problems.

*"Access to information has changed so much, and as a salesperson, we have unlimited access to our prospects, our prospects' competitors, our competitors, and vice versa. Our prospects have endless access to those solutions as well, so I would say the biggest thing is being able to harness the information and contextualize it." (Sales Executive 4, Technology Industry)*

*"You'll need to understand your customer's business so that you can talk to them in their language, understand how you bring a return on investment, and understand how this makes them better. Because if you can't show them how you're going to make them better, you're going to have a hard time selling." (Sales Executive 6, Technology Industry)*

The sales executives argued that analytical skills help make salespeople more effective. Effective salespeople were identified as using analytical skills when engaging in dialogue with the customer by asking specific questions to gather more insights. They use cognitive analytical skills to take that knowledge and uncover an even more effective solution with the products and services the salesperson represents. Some of the strongest salespeople were identified as those who could conduct various analyses onsite during a customer meeting to develop a business case

and get immediate buy-in from the customer. For example, this sales executive spoke at length about the importance of a sales representative in being able to use analytical skills to develop a point of view using data:

*"I would also flip that into the analysis of the research, of the understanding of one's customer, one's customer industry, and ultimately how one becomes a better challenger seller because if they can do that analysis of the opportunity, they can analyze their customer's business, their customer's business financials, all of that analysis, ultimately goes into a place where you're a more effective challenger because you're bringing data to the table and a point of view to the table that makes you a more effective seller." (Sales Executive 2, Technology Industry)*

While analytical skills were perceived to be essential for a salesperson to create the business case for the client to provide the right solution, they were also perceived as essential for a salesperson to create the business case for their own internal organization to enable them to get sign off on the deal and internal resources to provide the desired solution. The difference in customer understanding between a salesperson high (versus low) in analytic skills could manifest in higher sales performance because of the ability to use these skills to identify and secure the right solution for the client internally.

In addition to supporting deeper customer insights, analytical skills help salespeople improve their pipeline and territory management and ultimately optimize their use of limited selling time. Analytical skills help salespeople identify what activities within their pipeline would be most advantageous to focus on and what customers in their territory will likely produce the best results. Analytics or the "science of sales" was discussed as aiding with account planning and forecasting through analyzing sales quotas, territory mapping, and time management, enabling salespeople to allocate more time to more valuable deals or prospects. With the evolution of CRM tools, the need for salespeople who can analyze and interpret the data has risen exponentially. It was frequently discussed that salespeople who gained a strong

understanding of the tools necessary for analysis in programs such as Salesforce and Microsoft Dynamics could then use these tools to analyze performance, allowing them to proactively manage their pipeline and seek out coaching from sales leaders on specific aspects of their territory. In addition, another interesting aspect of salesperson analytical skills in pipeline management identified by the sales executives appears to be self-monitoring and benchmarking. Respondents indicated that their most successful salespeople review their own performance, including tracking the number of phone calls, emails, and meeting invitations made to identify patterns of success which they can use for territory planning and pipeline management:

*"Analytical skills help salespeople identify the A customers, the B customers, the C customers... In sales one of the more fundamental decisions is ultimately where you are spending your time to get the best results... knowing what your effective close rates are and opportunities and being able to backtrack those back to the 1x, 2x, 3x coverage that you need at the top of your funnel in order to ultimately end up with enough opportunity to reach and exceed your target. Understanding the data set behind those close rates that you have, being able to set for yourself the pipeline generation targets you need analytical skills" (Sales Executive 2, Technology Industry)*

### **3.2.3.2 Sales executives' perceptions of skills growing in importance today**

In the context of rapid technological advancements over the last decade, the sales executives highlighted the importance of technological knowledge in sales and the need to utilize and interpret data and outputs from various technological tools. One specific area identified by the sales executives was conducting business through social media channels. Social media sites like LinkedIn allow the sales rep to establish credibility and create a personal brand to differentiate themselves from competitors. This can be an additional touchpoint to reach and engage with potential customers rapidly and instantly, eventually leading to building trusted customer relationships. The ability to utilize tools such as LinkedIn Navigator and CRM tools was identified as key in today's sales environment. In general, with the advancement of Google and other search engines, sales reps in today's environment have the advantage of having access to

prospects, competitors, and the entire industry at their fingertips. However, it should be noted that the same applies to their prospects and existing clients, and thus it is imperative for sales reps to leverage any information to add value to their own business and differentiate themselves from their competitors. A sales executive described how social media and sales have become increasingly important in the following quotation:

*"I'm stunned, I'm still blown away by the amount of conversation sales representatives are having with their prospects ... over different kinds of social media ... I see our reps using it consistently and very successfully, and their buyers are expecting them to use it because that is where they are comfortable (Sales Executive 6, Technology Industry)*

In the modern sales environment, the role of the salesperson has shifted to a more consultative role. Clients often already have a vast amount of knowledge, and the salesperson's ability to reframe the prospect's way of thinking about a potential solution is critical. Therefore, the salesperson needs to be educated and informed about their product offerings, the client's business, and the industry dynamics, including the competitors' product offerings. It is at this stage where an effective salesperson can differentiate themselves from the competition and give the client a valid reason to work with them:

*"And to actually retain them (customers) so that they're not hooked by something else, you have to constantly engage them and engage them in ways that make them ultimately feel like they have the most trusted relationship with you as a company, but you're constantly giving them more knowledge and ideas to make them feel like they don't have to go anywhere else." (Sales Executive 16, Food and Beverage Industry)*

### **3.2.3.3 Sales executives' perceptions of sales skills required during COVID-19**

As these interviews occurred during the first year of COVID-19, we also coded data about the sales skills required during the pandemic. The sales executives discussed how salespeople had to make modifications to their day-to-day activities during this time. Often, these shifts were tactical: most sales leaders agreed that, particularly during the early stages of COVID, the focus shifted from prospecting and acquiring new clients to either closing existing deals already in the



pipeline or connecting with and potentially upselling to already existing clients. Some sales leaders emphasized that simply reaching out to existing clients to show genuine, empathetic care and concern for any challenges the client might experience positively impacted already existing relationships between clients and salespeople. These touchpoints did not immediately lead to successful sales conversions, but they ultimately strengthened the client's trust in the salespeople.

Some analytical and pipeline management skills did come through as key in this period. Two important factors contributing to sales reps' success during this period were proposing clearly defined deadlines and following up consistently. Additionally, salespeople who could quickly adapt to the circumstances and be open-minded towards exploring different sales approaches in the virtual environment were identified as having an advantage over those who are resisting those necessary changes, for instance, to providing as on adjusting a clients' business to the work-from-home environment or introducing new strategies by using analytical skills provided new opportunities for salespeople to step into the role of being the client's trusted advisor. A level of comfort with technology and virtual communication through video chat and social media was identified as important to moving existing sales opportunities and prospecting forward. Due to the convenience of virtual work, in-person meetings and demonstrations may be more difficult to book with new prospects, and the ability to successfully prospect virtually will become increasingly important.

#### **3.2.3.4 Sales executives' perceptions of previously explored sales skills**

For completeness, we record that sales executives also discussed some established sales skills, confirming, for example, communication, active listening, and collaboration skills as key to sales success (Table 4). Sales executives indicated that to be effective, salespeople need to establish rapport and build trust for customers to be willing to share their business challenges.

Listening skills demonstrate empathy to the customer (Comer & Drollinger, 1999) and, when coupled with analytical skills, allow salespeople to gain a superior understanding of customer challenges. This allows them to propose solutions that resonate with clients:

*"Empathy, combined with a genuine interest in the customer's business, aid in developing a long-lasting relationship based on mutual trust. Being able to authentically relate to a customer, their intrinsic needs and challenges typically lead to a more tailored solution." (Sales Executive 2, Technology Industry)*

Consistent with previous collaboration research (Claro & Ramos, 2018), our findings indicate that internal relationships allow salespeople to partner within their organization to obtain the resources necessary to advance and close a sale. In addition to internal collaboration, the ability to collaborate with the customer was identified as equally important:

*"The people who can communicate, collaborate, and get people on side to help retire his or her number, it's magic to watch...leveraging different resources within your own organization, leveraging resources within your customer's organization, leveraging partners, and leveraging vendors". (Sales Executive 7, Telecom Industry)*

As expected, presentation skills were also discussed. The ability to break down complex and overwhelming information and communicate this information in the form of a compelling, insightful story was described as an exceptionally effective way to catch a customer's attention and enable sales performance:

*"... just tell a quick, punchy story to communicate that complex idea that you're trying to propose to the customer." (Sales Executive 20, Business Supplies and Equipment Industry)*

In summary, Study 1 reveals several important and familiar established sales skills, and for the first time, analytical skills are identified as key to sales success. Because the established skills identified are the subject of past research and associated with existing measurement scales, in Study 2 we focus our attention on salesperson analytical skills, establishing and testing the internal and predictive validity of this emerging competency.

## **4 Study 2: Measuring and modeling salespeople's analytical skill**

Our LinkedIn data supplemented by qualitative interviews with sales executives demonstrated that salesperson analytical skills are now considered one of the key attributes of a sales professional. This is a novel finding as, to date, salesperson analytical skills have received only peripheral attention within the sales literature. In Study 2, we examine the relationship between analytical skills and sales success, proposing the following hypothesis:

H<sub>1</sub>: There is a positive relationship between salesperson analytical skills and salesperson performance.

Sales executives also indicated that salespeople are successful partly because they utilize analytical skills to *focus selling effort* on the right pipeline activities and on the right customers in their territory. Moreover, several scholars have observed a direct relationship between salesperson effort and sales performance (Brown & Peterson, 1994; Roberts et al., 1994). Thus, we test the moderating effect analytical skill has on the effort-performance relationship. Stated more formally:

H<sub>2</sub>: Analytical skills will strengthen the positive relationship between salesperson effort and salesperson performance.

Figure 1 summarizes the proposed relationships to be tested in our conceptual model and identifies the three situational variables we examine as part of a post-hoc analysis to assess model stability under different selling conditions.

**<Insert Figure 1 Here>**

### **4.1 Data collection**

The sample for this study came from the Canadian Professional Sales Association (CPSA) membership list, which sponsored the study. An email invitation was sent to 8,674 CPSA

members eligible to participate in the research (i.e., they had not been surveyed recently, and their profile indicated they were a salesperson). The email explained the purpose of the study, detailed the CPSA's involvement, and requested the individual's participation, provided they met pre-qualification criteria. A pre-qualification question was embedded in the invitation to screen out CPSA members whose role responsibilities did not include direct selling. A reminder email was sent two weeks after the initial invitation with the same pre-qualification requirement.

From the invitations sent, 5,369 members (61.8%) passed pre-qualification. In total, 485 (9.0%) of the pre-qualified CPSA members chose to participate in the questionnaire. This response rate was consistent with previous CPSA surveys. Non-response bias was assessed by comparing early responses to late responses (Armstrong & Overton, 1977), with no significant differences identified across any study variable. From those survey responses received, 231 responses were excluded as they did not complete survey questions related to the study's focal dependent variable. In addition, three respondents were excluded as they failed to properly answer a question designed to test the attention-level of respondents at the mid-point of the questionnaire. Table 5 summarizes the profile of our final sample of 251 responders all of whom work within B2B markets.

**<Insert Table 5 Here>**

## **4.2 Measures**

*Salesperson performance.* Given the data source for this study (i.e., not a focal firm from which secondary performance data could be drawn; see Bolander *et al.*, 2021), salesperson performance was measured using a self-reported, 5-item scale adapted from Sujana *et al.* (1994). Each item asked respondents to evaluate their level of selling effectiveness relative to other salespeople in their organization from 1 (much worse) to 7 (much better).

*Selling effort.* Consistent with Brown and Peterson (1994), we measure selling effort using a 3-item scale which asks respondents to compare the number of hours they put into their role, communicate with customers, and their overall selling effort relative to other salespeople in their organization, on a 7-point scale, from 1 (much lower) to 7 (much higher).

*Salesperson analytical skills.* Our review of the sales, marketing, human resources, and education literature was unable to uncover an analytical skills scale within a general employee or selling-specific context. To date, salesperson analytical skill has only been considered indirectly through salesperson cognitive traits, such as *intellectual ability*, where it is measured using IQ or GPA (Mani et al., 2016; Walker et al., 1977) or through latent constructs, such as *cognitive aptitude* (Soscia et al., 2018), and *street smarts* where it is entangled with adaptive and creative ability (Sujan, 1999).

To address this gap, we followed the scale development procedure recommended by Churchill Jr. (1979). Interview transcripts from Study 1 were used to build an initial item pool of 16 statements conceptualizing salesperson analytical skills. These 16-items were then pre-tested for content understanding with 6 business-to-business salespeople. To avoid overfitting our testing sample to our analytical skills scale, we used a separate sample for scale development purposes (DeVellis, 2017). To capture data for scale development across a wide selection of B2B organizations, we leveraged our unique access to LinkedIn data to target specific sample profiles from across LinkedIn's entire membership base, using sample criteria, such as industry sector and the number of employees. This procedure is in line with King et al. (2014), who recommend using social media platforms such as LinkedIn to access hard-to-reach sample groups.

Using stratified sampling (Black, 1999), we sent 4,770 invitations to LinkedIn members working in B2B sectors meeting our sample frame requirements and working in jobs with sales

titles, including *sales representative*, *sales associate*, *account manager*, and *account executive*. From the 299 invitations (6.3%) verified as received, 154 (51.5%) questionnaires were actioned. Of the remaining 154, 73 were incomplete and excluded from further analysis, leaving 81 usable responses. Non-response bias was assessed by comparing early to late responses (Armstrong & Overton, 1977) with no significant differences identified across any study variable. A breakdown of the sample used for scale development is included in Web Appendix B.

For each scale item, respondents were asked to evaluate their level of effectiveness relative to other salespeople in their organization, from 1 (much worse) to 7 (much better). Exploratory factor analysis resulted in a two-factor solution with 4-items loading onto each factor. The two factors generated were consistent with our Study 1 findings, with factor 1 describing analytical driven pipeline and territory management and factor 2 describing analytical driven customer insight. Both sub-scales met recommended Cronbach alpha thresholds supporting initial scale reliability (Nunnally, 1978). Thus, for model testing purposes, we operationalized salesperson analytical skills as high-order construct with two lower-order sub-scale dimensions: 1) analytics for pipeline and territory management; 2) analytics for deeper customer insight. Table 6 summarizes the load factors for each item within our two-dimensional construct, along with those items discarded. We discuss the confirmatory aspects of scale development in the next section of this paper.

**<Insert Table 6 About Here>**

*Additional study measures.* To evaluate the stability of our model under varying selling conditions, several categorical variables were also collected. *Job scope* identified whether respondents had additional responsibilities in addition to their direct selling function, such as supervising junior salespeople, and was operationalized as 1=direct selling responsibilities only;

2=direct selling plus supervision responsibilities; 3= direct selling plus sales operations responsibilities; 4= direct selling plus supervision and operations responsibilities. *Industry focus* identified whether respondents operated primarily within a B2B product-based industry or service-based industry. In contrast, *contributor type* identified whether each respondent was primarily an individual sales contributor or operated within a team-selling contributor model. Both were operationalized with a binary measure. In addition, we included *sales tenure* as a control variable within our model. Previously, sales tenure has been associated with increased levels of sales-related knowledge and role perceptions which may influence sales performance (Walker et al., 1975). Sales tenure was operationalized as a single item representing the number of years that the respondent worked in their current or similar role.

#### **4.3 Measurement and structural model validation**

Measurement and structural model validity and hypothesis testing were carried out by means of partial least squares structural equation modeling (PLS-SEM) using SmartPLS 3.3.2 (Ringle et al., 2015). PLS-SEM appeared well suited for this study given the relatively small sample size, the minimal assumptions regarding data distribution and, of particular importance, the ease with which it handles higher-order variables, such as our analytical skills scale (Hair et al., 2019).

Table 7 summarizes the psychometric properties of all latent variables. All scale items loaded onto their respective scales with load factors above 0.7, as recommended by Nunnally (1978). One scale-item from the sales performance scale was eliminated as it was causing the scale's alpha and composite reliability to be above the recommended threshold of 0.95 (Hair Jr. et al., 2017, p.112). Cronbach alpha, composite reliability, and average variance extracted (AVE) scores for all constructs met recommended thresholds for PLS-SEM (Hair et al., 2019), supporting internal reliability and convergent validity. Discriminant validity was established by

assessing each measure's Heterotrait-Monotrait ratio (HTMT), considered superior to a Fornell-Larcker test (Hair et al., 2017). Table 8 summarizes the correlation matrix of model variables.

**<Insert Table 7 and 8 About Here>**

Our study was susceptible to common methods variance (CMV) given the use of a single-source survey. One CMV issue common in performance-related research is social desirability bias (Podsakoff et al., 2003). To address this problem, respondents were 1) assured of the anonymity of our study, and 2) data collection did not involve the participation of the respondents' organization and supervisor. We used two approaches to assess the presence of CMV post-data collection. First, Harman's one-factor test procedure was employed (Podsakoff et al., 2003), where the un-rotated factor structure of all combined construct items was assessed. The first factor accounted for 47% of the explained variance, while the remaining three factors, together, accounted for 53% of the variance, indicating that CMV was unlikely a major concern. Second, we employed a more robust procedure developed for PLS-SEM and recommended by Kock (2015), who demonstrated that CMV is unlikely to exist between constructs if the factor-weighted, inner variance inflationary factor (VIF) between constructs is less than 3.3. Using this method, we ran several iterations of our model. With each iteration, we changed which construct all other variables pointed to until all variables had been assessed. All inner VIF values were well below the 3.3 threshold, suggesting that CMV is unlikely to influence study findings. Lastly, we note the presence of a significant moderation effect discussed later in our paper, which indicates the absence of serious CMV as interaction effects cannot be caused by CMV (Terho & Jalkala, 2017). The low inner VIF values also indicated a lack of collinearity issues.

We then assessed the coefficient of determination ( $R^2$ ) of our dependent variable, with and without the control variable (sales tenure) present. Unlike covariance-based structural equation



modeling, PLS-SEM attempts to maximize the explained variance of constructs; as such, the  $R^2$  value of endogenous variables is used to evaluate the structural model rather than goodness-of-fit indices (Hair et al. 2019). The  $R^2$  value and all path coefficients are summarized in Table 9.

**<Insert Table 9 About Here>**

#### **4.4 Results**

PLS-SEM produces path coefficients for each relationship in the model similar to ordinary least-squares regression. Bootstrapping (5,000 samples with replacement) is used to generate t-statistics and p-values for statistical significance testing. Results indicate a positive relationship (unhypothesized) between effort and salesperson performance, confirming prior research findings (Brown & Peterson, 1994; Roberts et al., 1994). Additionally, we find support for  $H_1$ , regarding the relationship between salesperson analytical skills and sales performance ( $\beta=.395$ ,  $p<.001$ ), and for  $H_2$ , regarding the enhancing effect of analytic skills on the relationship between selling effort and sales performance ( $\beta=.103$ ,  $p<.10$ ). A simple slope analysis (figure 2) of the relationship between sales effort and sales performance at higher (+1 standard deviation) and lower (-1 standard deviation) levels of analytical skills indicates that the moderating effect of analytical skills continues to strengthen at increasingly higher levels of salesperson effort while at low levels of analytical skills, the effort-performance relationship is negatively impacted.

As anticipated, our findings also identified a positive relationship between the control variable, sales tenure, and sales performance ( $\beta=.114$ ,  $p<.05$ ). However, an analysis of the  $R^2$  value of sales performance with and without the control variable present indicates that sales tenure has only a small effect on our model findings ( $f^2=.021$ ).

##### **4.4.1 Post-hoc Analysis**

To evaluate the stability of our model under different selling conditions, we conducted

multi-group analysis (MGA) with three situational variables: job scope, industry focus, and sales contribution. MGA allowed us to evaluate the significance of any changes to path coefficients and  $R^2$  values under high and low levels of the situational variable (Hair Jr. et al., 2017, p. 293). Specifically, we calculated the change in our model under the following selling conditions: wide job-scope vs. narrow-job scope, product-focused vs. service-focused industry, and team selling vs. individual sales contribution. Our findings indicate that there are no significant differences in  $R^2$  values across the three selling conditions  $R^2_{\text{Diff-job-scope}}$  (-.054,  $p > .10$ );  $R^2_{\text{Diff-Industry}}$  (.016,  $p > .10$ );  $R^2_{\text{Diff-contribution}}$  (-.064,  $p > .10$ ), supporting the stability of the model.

In addition, we found no significant differences in path relationships under different sales contribution types or industry settings. However, results did indicate a significant difference in our model's direct path relationships under changing job-scope conditions. Specifically, as a salesperson's job-scope increases beyond direct selling responsibilities, the relationship between salesperson analytical skills and sales performance appears to strengthen ( $\beta_{\text{Diff-Job-Scope}} = .232$ ,  $p < .05$ ). Conversely, as job-scope increases, the relationship between selling effort and sales performance declines ( $\beta_{\text{Diff-Job-Scope}} = -.280$ ,  $p < .05$ ).

## 5 Discussion

A growing number of scholars have discussed the ongoing changes taking place within the selling environment and its impact on B2B selling (Hartmann et al., 2018; Marcos Cuevas, 2018; Plouffe et al., 2016). Thus, a review of sales skills that updates and builds on Marshall et al. (2003) is overdue. Our approach is unusual in drawing on practitioner perspectives from recruiters, sales executives, and salespeople themselves. Through these perspectives, we identify and explore the emergence of salesperson analytical skills as a key construct.

Study 1 Phase 1 indicated that analytical skills are the number two most frequently recruited

skill in job postings. This was corroborated through sales executive interviews (Study 1 Phase 2) and then tested quantitatively in our Study 2, which demonstrated a direct relationship between salesperson analytical skills and salesperson performance. This seems to represent a real shift in the demands on salespeople; when evaluating the 60 sales competencies within the Marshall et al. (2003) paper, items related to salesperson analytical skills, such as *the ability to conduct industry research*, *database management skills*, and *spreadsheet skills*, were ranked 40th, 49th, and 52<sup>nd</sup>, even below factors such as *having patience* (27<sup>th</sup>) and *a good sense of humor* (28<sup>th</sup>).

This suggests that the importance of analytical skills is an emerging phenomenon, perhaps derived from the increasing availability of selling-related information and the tools with which to manipulate it. However, this comparison does not consider the interaction effect analytical skills can play. For example, in Study 2, we found that analytical skills enhance the relationship between salesperson effort and salesperson performance, most likely by focusing effort (on the right activities and the right customers) where it can deliver the highest performance return. Previously, Marshall et al. (2003) observed that *the ability to adapt sales styles*, *personal planning*, *time management*, and *customer empathy* are all ranked in the highest two quartiles of their research. All these factors are potentially influenced by one of the two dimensions found within our analytical skills scale, either through *enhanced pipeline and territory management* (personal planning and time management) or through *deeper customer insight*. Thus, while analytical skill appears to be an emerging competency, the underlying factors driving its importance have been in place for some time.

Our research also underscores the enduring importance of established sales skills (e.g., listening, follow-up, presentation, customer engagement, etc.). Within the current selling environment, the amount of time allotted to salespeople to build rapport, understand customers'

problems, and articulate a potential solution appears to be shrinking and moving to less personal and more virtual exchange, at an increasingly faster pace, driven by pandemic-related events.

This may be why communication-related sales skills continue to be of critical importance.

Whilst earlier studies identified technology-related skills such as internet proficiency, database management, and spreadsheet skills, these were previously ranked low as required competencies. Our research showed that technology skills have grown the most in importance (Table 4). This is not surprising given the number of tools salespeople are required to use to perform their daily role, including salesforce automation tools (Román & Rodríguez, 2015) and social media applications (Hanson & Sharpe, 2019).

Moreover, collaboration skills are now seen as central to salesperson capabilities. Modern selling strategies, such as team selling (Lai & Yang, 2017) and solution selling (Böhm et al., 2020) have significantly increased the level of interdependence within a B2B sales role. Salespeople are no longer 'lone wolves' (Jones et al., 2005). They now must collaborate with both organizational colleagues and even customers to co-create customized solutions and value (Baumann & Le Meunier-FitzHugh, 2015, Peesker et al., 2021).

In assessing the contemporary sales skills required of B2B salespeople, this research makes several contributions to the literature. First, we provide a contemporary review of sales skills in the context of the changing role of sales and the advent of new sales enablement technologies and selling strategies. We take as our starting point from the perspective of sales recruiters, using rare access to LinkedIn job postings.

Second, through the triangulation of LinkedIn job posting data, sales executive interviews, and salesperson surveys, we identify, conceptualize, and operationalize one selling skill not previously considered in the sales literature, salesperson analytical skills. We conceptualize

salesperson analytical skills as a two-dimensional construct underscoring the skill's importance to sales success in: 1) enabling a deep understanding of the customer and the ability to generate customer insights; and 2) improving pipeline and territory management, thereby increasing selling efficiency.

Given current research into key account management (KAM) capabilities (Davis and Ryals, 2014) and consultative selling (Guesalaga et al., 2018), this new construct will be a useful addition to exploring the underlying drivers of these phenomena. For example, two of the four dynamic capabilities identified as necessary for KAM include *market sensing*, "the use of analytical methodologies for predicting change," and *reconfiguration*, "the anticipation of turbulence in the business environment" (Guesalaga et al., 2018, p. 168). Both identify a need for deep customer insight – a key dimension of our analytical skills construct. Third, we demonstrate the strength of salesperson analytical skills in predicting sales performance, both directly and indirectly, through the selling effort-performance relationship. This serves to augment the list of variables evaluated as possible determinants of sales performance (Churchill Jr. et al., 1985; Verbeke et al., 2011).

Our findings also contribute to practice. First, in developing the salesperson analytical skills scale, we differentiate analytical skills from related, internalized cognitive constructs, such as cognitive aptitude and intelligence. This is important, as, unlike stable traits (cognitive aptitude) and personal factors (intelligence), analytical skills are made up of a set of observable behavioral actions which can be monitored and potentially developed through training and coaching activities controlled by management. This is a call to action for both sales leaders and educators of the importance of hiring salespeople with analytical skills and for developing an analytical skillset within a sales team and within our sales education programs.

Next, our research substantiates the enduring importance of communication skills while underscoring the emerging criticality of salesperson analytical skills. This communication-analytical skills dichotomy presents significant recruiting challenges for sales managers. Managers can focus recruiting efforts against one of the two skills or attempt 'best efforts' to recruit on both dimensions. Service and operations research would suggest that the latter option is a recipe for mediocre performance. For example, Frei (2008) argues that, in attempting to hire for both dimensions, management will be faced with a lack of affordable and retainable candidates, resulting in compromise-candidates being recruited on both dimensions. Conversely, making a conscious trade-off to hire for only one of the key dimensions allows management to proactively design the sales job around the missing skill. For example, in many industries, analytical skills may be replaceable with automated analysis, requiring the salesperson to only interpret the output. Other selling environments may require substantial ad-hoc analysis, requiring managers to make analytical skills a recruiting priority. Under these circumstances, management is encouraged to identify ways to offset the relationship burden, such as increasing the involvement of marketing or sales management in customer relationship building. In addition, knowing which skills will be deficient upfront allows the sales training curriculum to be pre-planned and focused rather than spread across multiple areas.

## **6 Limitations and opportunities for future research**

Our research is subject to a number of limitations. First, whilst our recruiter data was North American wide, our qualitative data collection was based on interviews with 20 sales executives in 10 different industries based in Canada. A study that included additional industry and international perspectives – or multiple perspectives within the same company – may have found other selling competencies not identified in our research. Second, a limitation of our study was

the use of a single-rater survey, necessitated by our use of the CPSA membership list. Future research may want to duplicate our study using an alternate source to measure sales performance, such as company records and/or management performance appraisals (Bolander et al., 2021).

Our findings raise several questions for future research. For example, in measuring analytical skills, we did not consider the frequency or amount of time spent on analytical activities. Several respondents in our study suggested that too much analysis may lead to "analysis paralysis," potentially hindering action and, ultimately, sales performance. Future research might examine the relationship between time spent on analytical activities and sales performance or other outcomes, such as customer interaction. Moreover, there might be interesting international differences in sales analytical skills and the commitment to time spent on them that would repay further investigation. In addition, our study does not consider whether some salespeople have a predisposition towards the use of analytical skills. A future investigation into the antecedents of salesperson analytical skills may shed light on this issue.

Notwithstanding these limitations, our results shed light on a large challenge facing sales management – the ability to develop both a relationship and analytical savvy sales team, similar to the challenge identified in service and operations research around hiring for *attitude* versus *aptitude* (Frei, 2008). Future research may want to leverage underlying service and operations theories when investigating these issues within a sales domain.

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**Table 1 – Review of Skills-Based Research**

<b>Study</b>	<b>Investigation</b>	<b>Specific Skill Assessment</b>	<b>Holistic Skills Review</b>	<b>Type of Research</b>	<b>Sample</b>	<b>Sales Performance Measurement</b>
Bergeron & Laroche (2009)	Listening	✓		Survey	418 B2C salespeople; 787 consumers	2-item purchase intent & 3-item self-reported
Plouffe et al. (2009)	Interpersonal, Communications Sales presentation	✓		Survey	300 B2B/B2C salespeople from 3 firms	6-item self-reported & company records
Wilson (2009)	Time management	✓		Survey	81 B2B salespeople	31-item self-reported
Blickle et al. (2010)	Political	✓		Survey	112 B2C salespeople from 1 automotive firm	2-item self-reported
Park et al. (2010)	Salesforce automation	✓		Survey	600 B2B salespeople in semi-conductor, chemical industries	7-item self-reported
Plouffe (2010)	Exploratory navigation	✓		Survey	315 B2B salespeople from 2 firms	6-item self-reported & company records
Steward et al. (2010)	Networking	✓		Survey	17 sales managers evaluation of 60 salespeople	5-item manager reported
Downing (2011)	Communications	✓		Management Observation	18 call-center agents from 1 firm	Self-reported sales volume
Guidice and Mero (2012)	Political	✓		Survey	198 B2B salespeople and their manager from 1 firm	Company records and 7-item manager reported over 3 time periods
Ustuner & Iacobucci (2012)	Networking	✓		Interviews & Survey	44 B2B salespeople (interviews); 295 B2B salespeople (survey) from 1 firm	12-item manager reported

<b>Study</b>	<b>Investigation</b>	<b>Specific Skill Assessment</b>	<b>Holistic Skills Review</b>	<b>Type of Research</b>	<b>Sample</b>	<b>Sales Performance Measurement</b>
Ahearne et al. (2013)	Competitive intelligence gathering	✓		Survey	65 B2B sales managers; 228 B2B sales managers	Company records
Borg & Johnston (2013)	Interpersonal	✓		Conceptual	N/A	N/A
Fournier et al. (2013)	Polytonicity	✓		Survey	166 B2B salespeople	9-item self-reported
Hughes et al. (2013)	Adaptive selling	✓		Survey	48 B2B salespeople and 686 customers	Customer reported share of wallet and margin
Kara et al. (2013)	Adaptive selling	✓		Survey	328 B2B salespeople from pharmaceutical industry	Multi-item self-reported
Chakrabarty et al. (2014)	Interpersonal mentalizing	✓		Survey	324 sales agents from insurance industry	3-item self-reported
Mariadoss et al. (2014)	Competitive intelligence gathering	✓		Survey	266 B2B salespeople from 1 firm	5-item manager reported
Rocco & Whalen (2014)	Improvisation, Adaptive selling	✓		Experimental	32 business students selling sports tickets	Company records
Bolander et al. (2015)	Political, Networking	✓		Survey	286 External B2C sales agents	Company records
Roman & Rodriguez (2015)	Customer qualification	✓		Survey	265 B2B salespeople	3-item self-reported
Agnihotri et al. (2016)	Interpersonal mentalizing	✓		Survey	128 B2C salespeople; 130 B2C salespeople	6-item self-reported
Berthy (2017)	Interpersonal Sales presentation	✓		Survey	55 B2B salespeople from 1 firm	Company records;
Charoensukmongkol (2017)	Social	✓		Survey	217 SMB owners	X-items self-reported

<b>Study</b>	<b>Investigation</b>	<b>Specific Skill Assessment</b>	<b>Holistic Skills Review</b>	<b>Type of Research</b>	<b>Sample</b>	<b>Sales Performance Measurement</b>
Li et al. (2017)	Political	✓		Survey	253 B2C salespeople from 1 financial services firm	1-item self-reported
Miao et al. (2017)	Prospecting, Qualifying Closing	✓		Survey	71 sales managers and 212 salespeople	3-item manager reported
Singh (2017)	Prospecting, Qualifying Closing	✓		Survey	297 B2B salespeople in pharmaceutical industry	5-item self-reported
Anaza et al. (2018)	Listening	✓		Survey	200 B2B salespeople from 1 firm	9-item self-reported
St. Clair (2018)	Internal knowledge brokering	✓		Survey	116 B2B salespeople	10-item self-reported
Friend et al. (2019)	Failing fast (time management)	✓		Survey	297 B2B salespeople	6-item self-reported
Gabler et al. (2019)	Interpersonal mentalizing	✓		Survey	125 real estate brokers; 125 B2C salespeople in 1 firm	6-item self-reported
Itani et al (2019)	Listening	✓		Meta-analysis	26 empirical studies	Mixed
Kimura et al. (2019)	Political	✓		Survey	145 sales managers and 249 salespeople	9-item manager reported
Bohm (2020)	Value-opportunity recognition	✓		Survey	799 B2B salespeople	6-item self-reported
Charoensukmongkol (2020)	Adaptive selling	✓		Survey	365 B2B salespeople	5-item self-reported
This Study	Contemporary Skills; Analytical skills	✓	✓	Interviews & Survey	20 sales leaders; 251 B2B salespeople	7-item self-reported

**Table 2- Sample of LinkedIn Data**

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**Skills-Based Job-Posting Phrase\***

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*Qualify prospect*  
*Analytical*  
*Prospect*  
*Cold calling*  
*Presentation*  
*Consultative selling*

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\*Skills sorted (highest to lowest) based on the frequency of it use in LinkedIn job-postings

Example of Job-Posting Phrase - Analytical Skills:  
*“Develop forward thinking, data-driven **analysis**, and recommendations that align with customer goals, and quantify high-impact opportunities...”*



**Table 3 - Study 1- Phase 2 Participants**

Participant	Sales Leadership Position	Industry	Geographical Scope	Years in Sales Leadership	Gender
Sales Executive #1	Vice President	Chemicals	National	12	Female
Sales Executive #2	General Manager	Technology	National	15	Male
Sales Executive #3	Regional Manager	Technology	Regional	16	Male
Sales Executive #4	Regional Vice President	Technology	Regional	7	Female
Sales Executive #5	Senior Vice President	Technology	Global	18	Female
Sales Executive #6	Senior Vice President	Technology	Global	15	Male
Sales Executive #7	Regional Director	Telecom	Regional	21	Male
Sales Executive #8	Director	Technology	National	12	Male
Sales Executive #9	Regional Director	Building Materials	National	35	Male
Sales Executive #10	Director	Technology	National	6	Male
Sales Executive #11	Business Area Manager	Manufacturing	National	10	Male
Sales Executive #12	Regional Manager	Medical	Regional	2	Female
Sales Executive #13	Vice-President	Business Supp. & Equipment	National	22	Male
Sales Executive #14	Regional Director	Industrial Engineering	Regional	6	Female
Sales Executive #15	Vice President	Facilities Services	National	15	Female
Sales Executive #16	Vice President	Food & Beverages	National	10	Female
Sales Executive #17	Director	Telecom	Regional	25	Female
Sales Executive #18	Director	Financial Services	National	4	Female
Sales Executive #19	Vice President	Technology	National	15	Female
Sales Executive #20	Director	Business Supp. & Equipment	National	25	Male

**Table 4 – References to Sales Skills**

<b>Skills Important to Sales Success</b>	<b>References by Sales Executives (n=20)</b>	<b>Total Number of References (n=262)</b>
Analytical Skills	19 (95%)	81 (30.9%)
Communication Skills	9 (45%)	36 (13.7%)
Listening Skills	10 (50%)	26 (9.9%)
Collaboration Skills	10 (50%)	24 (9.2%)
Prospecting Skills	6 (30%)	16 (6.1%)
Presentation Skills	6 (30%)	14 (5.5%)
Questioning Skills	5 (25%)	14 (5.5%)
Technology Skills	7 (35%)	13 (5.0%)
Emotional Intelligence Skills	6 (30%)	10 (3.8%)
Adaptability Skills	6 (30%)	9 (3.4%)
Entrepreneurial Skills	4 (20%)	6 (2.3%)
Negotiation Skills	3 (15%)	4 (1.5%)
Solution Selling Skills	4 (20%)	4 (1.5%)
Closing Skills	2 (10%)	3 (1.1%)
Objection Handling Skills	1 (5%)	1 (0.4%)
Follow-up Skills	1 (5%)	1 (0.4%)

<b>Skills More Important Today</b>	<b>References by Sales Executives (n=20)</b>	<b>Total Number of References (n=178)</b>
Technology Skills	19 (95%)	81 (32.1%)
Analytical Skills	9 (45%)	36 (14.3%)
Customer Engagement Skills	10 (50%)	26 (10.3%)
Learning Skills	10 (50%)	24 (9.5%)
Collaboration Skills	6 (30%)	16 (6.3%)
Adaptability Skills	6 (30%)	14 (5.6%)

**Table 5 – Hypotheses Testing - Sample Profile**

	<i>N</i>	%		<i>N</i>	%
Language			Sales Contribution		
English	217	86.5	Individual	93	37.1
French	34	13.5	Team	158	62.9
Gender			Role Focus		
Male	200	79.7	Pct Farming		72.0
Female	45	17.9	Pct Hunting		28.0
Not provided	6	2.4			
Age			Region		
18 – 29	5	2.0	Atlantic	18	7.2
30 – 39	26	10.4	Quebec	52	20.7
40 – 49	64	25.5	Ontario	82	32.7
50 – 59	85	37.8	Prairies	59	23.5
60+	56	22.3	British Columbia	40	15.9
Not provided	5	2.0	Company Size		
Tenure			< 50 employees	86	34.3
< 3 years	19	7.6	50 – 99 employees	32	12.7
3.0 – 4.9 years	24	9.6	100 – 499 employees	61	24.3
5.0 – 9.9 years	32	12.7	500+ employees	72	28.7
10.0 – 19.9 years	71	28.3	Industry		
20+ years	105	41.8	Product-related	193	76.9
			Service-related	58	23.1

*N* = 251

**Table 6 - Exploratory Factor Analysis Results**

<b>Analytical Skills Scale Items</b>	<b><math>\lambda</math></b>	<b><math>\alpha</math></b>
<i>Factor 1 – Analytics for Pipeline &amp; Territory Management</i>		0.913
Using funnel data to accurately forecast results	0.964	
Using funnel data to understand variance to quota	0.888	
Using data to monitor potential customer churn	0.863	
Using funnel data to adjust sales effort	0.742	
<i>Factor 2 – Analytics for Customer Insight</i>		0.907
Using data to customize selling approach	0.895	
Using data to identify high-potential vs. low-potential customers	0.856	
Using data to understand industry sector	0.839	
Using data to identify customer pain points	0.762	
Eliminated Items (load factors < 0.6 or high cross-loading)		
Using financial data to build customer business cases		
Using data to keep customers up to date on sector trends		
Using data to help customers make decisions or solve problems		
Manipulating data to identify insights from raw information		
Knowing where to quickly locate data for prospecting and profiling		
Monitoring 3 <sup>rd</sup> party buyer intention data to anticipate future needs		
Using funnel data to understand key success factors		
Monitoring news regarding my customers and/or their industry		

$\lambda$  = load factor;  $\alpha$  = Cronbach alpha

**Table 7 – Measurement Model – Latent Variables**

Latent Variables	$\lambda$	$\alpha$	CR	AVE
Analytical Skills (HOC)		.922	.936	.648
Analytical Skills (LOC) – <i>Pipeline &amp; Customer Management</i>		.896	.928	.763
Using funnel data to accurately forecast results	.891			
Using funnel data to understand variance to quota	.909			
Using data to monitor potential customer churn	.885			
Using funnel data to adjust sales effort	.848			
Analytical Skills (LOC) – <i>Customer Insight</i>		.906	.934	.781
Using data to customize selling approach	.910			
Using data to identify high-potential vs. low-potential customers	.878			
Using data to understand industry sector	.856			
Using data to identify customer pain points	.848			
Sales Performance		.932	.947	.747
Contributing to my company's overall market share growth	.868			
Selling high profit-margin products or services	.882			
Generating a high level of sales revenue*	.915			
Quickly generating sales of new company products or services	.855			
Identifying major accounts in my territory and selling to them	.866			
Consistently exceeding my sales targets	.862			
Helping my sales manager meet his/her goals	.852			
Selling Effort		.907	.942	.844
The number of hours I put into my sales role each week	.897			
The amount of time I spend comm. with my customers each week	.923			
My overall selling effort each week	.935			

\*Removed during measurement model assessment;  $\lambda$  is Load factor;  $\alpha$  is Cronbach alpha; CR is Composite reliability; AVE is the Average variance extracted; LOC is a lower-order component of Analytical Skills; LOC is lower order measure. HOC is higher order measure

**Table 8 – Descriptive Statistics and Correlation Matrix**

	MEAN	SD	1	2	3
1. Analytical Skills	5.12	1.03			
2. Selling Effort	5.77	1.21	.321**		
3. Sales Performance	5.12	1.07	.502**	.462**	
4. Sales Tenure	16.87	10.94	.113	.029	.167*

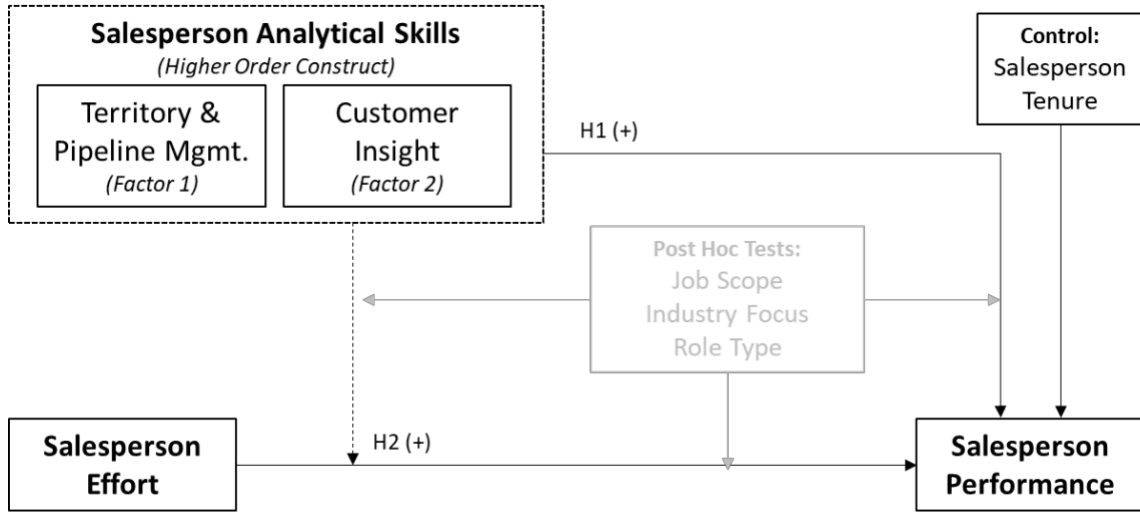
Significance based on 5000 bootstrap samples; \*p<.05; \*\*p<.01; Lower-order components of analytical skills not included in correlation analysis.

**Table 9 – R<sup>2</sup> and Path Modeling Results**

					Post-Hoc Situational Factor Analysis		
					Team	Product	Wide
					vs.	vs	vs
					Individual	Service	Narrow
					Contribution	Industry	Job-Scope
	Hypothesis	Model 1	Model 2	Model 3 w/control variable			
Direct Effects							
Analytical skills → SP	H <sub>1</sub>	.395***	.380***	.382***	.100 <sup>1</sup>	-.044 <sup>1</sup>	.232 <sup>1**</sup>
Selling effort → SP	H <sub>2</sub>	.335***	.343***	.336***	-.129 <sup>1</sup>	.079 <sup>1</sup>	-.280 <sup>1**</sup>
Sales tenure → SP				.114**			
Interaction Effect							
Analytics x Effort → SP	H <sub>3</sub>		.103*				
R <sup>2</sup> - Sales performance		.353	.361	.366	-.064 <sup>1</sup>	.016 <sup>1</sup>	-.054 <sup>1</sup>

\*p<.10; \*\*p<.05; \*\*\* p<.01; <sup>1</sup>Values represent path coefficient and R<sup>2</sup> values differences between sub-samples using multi-group analysis; SP is Sales performance; Analytics is Analytical skills; Effort is Selling effort

**Figure 1 – Conceptual Model**



**Figure 2 – Simple Slope Analysis (Analytical Skills x Selling Effort)**

