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The Promise of Artificial Intelligence and Potential Impact on the Sales Function

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ABSTRACT

After a great deal of press and promise, artificial intelligence is beginning to make inroads in the sales function. In this paper, we follow one United Kingdom-based company called CloudApps and the firm's development of an artificial intelligence solution to address the issues inherent in the management of the sales pipeline. We then outline some of the other potential applications using artificial intelligence within an organizations' sales function.

INTRODUCTION

Plank and Steinberg (1987) were among those who wrote about the use of expert systems in sales and marketing. An expert system, as addressed in this paper was a computer program that used input from an expert to make some decision. Most of the systems were rule-based and contained rules which, when followed in an application, came to the same conclusion as would an expert in the area. In effect, one could say an expert system was an example of best practices. However, similar to best practices, the program was static, and if expertise dictated a change in some way, the program had to be changed. At the time, artificial intelligence was primarily discussed as a theoretical concept. However, applications of and thinking toward the relatively near future was taking place. (Holloway 1983). While many of the various prognostications today seem optimistic, the promise of artificial intelligence is starting to become a reality.

The purpose of this paper is to outline, in some detail, a current and specific effort to assist organizations in more effectively managing their sales process by using AI and to improve selling performance and in their pipeline outcomes. The sales pipeline is a description of the process a sales organization progresses through from an unqualified lead to qualified marketing lead to a closed deal and the post-sales service as well as long-term customer development. It is a process that takes a lot of organizational resources; hence, it needs to be managed both effectively and efficiently if an organization can compete and drive sustainable, profitable long-term growth. Following that, we will briefly outline a selected set of potential applications that artificial intelligence, specifically machine learning, often characterized as deep learning that is amenable to the technology. This will be addressed within a proposed model that may tie the notion of the sales pipeline with higher specificity and linkage to inputs commonly referred to as

soft skills. The paper provides more specificity compared to the recent work of Singh et al. (2019).

MANAGING THE SALES PIPELINE

The term sales pipeline is not used in academic research. However, the term is commonly used in the practice of sales management, with dozens of consulting organizations using the word in their service offerings. Also, numerous sales organizations use the term in their day-to-day operations. It refers to the process an organization goes through from the identification of a prospective buyer lead to closing an opportunity which converts to a closed deal, as well as through the development of a long-term relationship with a buyer with the attendant services when appropriate. This process, usually in smaller chunks of the whole, has been the subject of much academic research.

In practice, organizations have always attended to the management of the sales pipeline; however, over time, with the development of experience and the development of numerous tools, the process has evolved. Most recently, we have seen the development of CRM software, which has replaced earlier forms of sales activity reporting and has led to the ability to collect and analyze data, not only easier but has dramatically increased the ability to apply different analytical methods to the data. Again, the academic literature is filled with work examining this, e.g., (Tanner et al. 2005). A primary issue with the use of CRM, however, has been how the salesforce responds and uses the tool (Bush, Moore, and Rich 2005).

Early CRM systems were mostly individual in character and useful to the individual salesperson. Salesforce.com Inc. changed that by taking the system to the cloud and then, over time, adding analytical capabilities. While all ERP systems have a CRM component, and there are dozens of other organizations that provide CRM software, much of it specialized by industry, markets, and or application. Salesforce has grown to be the leader in that software segment (Gartner 2018, www.salesforce.com/blog/2018/05/gartner-salesforce-application-platform.html).

CloudApps (www.cloudapps.com) is a United Kingdom (UK) based company nascent, however, with early growth in the development of software used to manage sales pipeline activity using artificial intelligence (AI) and behavioral science to track and promote the right sales behaviors at the right time. Their current product offering is called SuMo Motivate which is a Salesforce native app and is an add-on to Salesforce and thus only works with that specific
SuMo was developed to support organizations in the management of the sales pipeline steps and important milestones. SuMo uses data reported by salespeople and others and provides a platform for data analysis. However, research noted previously, and many other supporting research projects have documented the difficulty of motiving salespeople to report accurate data in a useful and timely manner. The product was designed to be flexible so that organizations may adjust what specific information is reported in Salesforce and what data is analyzed.
The SuMo product and its core capability are designed for observing behaviors. This capability may be supplemented with a means of understanding those behaviors and then focusing on mechanisms for changing those behaviors performed within the user interface. Sumo offers three

capability areas that may be used separately or in combination with each other. The purpose of these capabilities is to surface the observations in such a way that generates a clearer understanding of the requisite activities and uses that information to take action to change the behaviors of individuals and or groups of sales professionals.

Opportunity Insight and Predict is the first capability. SuMo uses a rules-based algorithm to generate predictions based on the activities performed versus the defined selling practices and the time taken to complete an action in each pipeline step. The second capability is known as People Insight and Coaching. The frontline sales manager may use the data for purposes such as coaching the desired activities. The third of the capabilities targeted at changing behavior is gamification, which SuMo calls the "Motivate" module. This module allows sales managers to gamify behavior change using various game mechanics. The CloudApps website has several examples of different types of non-financial remuneration that may be used to construct contests regarding multiple aspects of the process including reporting relevant data on Salesforce. The CloudApps website has several case studies of organizations that have used the SuMo software program and have documented successful outcomes (CloudApps 2019). Case studies written with several clients provide examples of how the various aspects of the program were used. Successful results were identified, however, varied by the organization. According to CloudApps, the use of SuMo led to increases in revenue and margin, market, share, process improvement, improvements in the overall effectiveness and efficiency of the sales teams, and improvement in related functions such as forecasting.

The next product iteration of CloudApps product offerings is a deep learning application called Sensai, which is built on the SuMo platform. CloudApps are developing Sensai as an open-source application so it can be linked to any CRM program. Sensai is scheduled to enter the beta testing stage. The product integrates three different algorithms that combine to provide on-going and continual analysis of data that is inputted by the salespeople and those individuals supporting the sales function. The three deep learning algorithms are the intellectual property of CloudApps. Deep learning is one of the foundations of artificial intelligence, and the systems can classify, recognize, detect, and describe – in one word, understand. Deep learning is a class of machine learning which may be applied within artificial neural nets to develop an understanding of sequences and to be able to analyze the order of behaviors that have been performed. On a more practical level, SAS, the provider of statistical programs, provides a useful introduction as well as how the firm supports deep learning (SAS 2019). In the abstract deep learning uses multiple layers of data to identify other layers and construct some reality.

One of the three algorithms deal with the issue of time. We all know that timing may often be an essential consideration. So, while a specific selling activity may be critical, performing the necessary action at the right time is also vital. The program uses time in its analytics. Using time is a crucial differentiator from traditional shallow learning algorithms that have no notion of the order in time. Also, according to CloudApps, the ability to analyze the specific detailed attributes of each past opportunity allows for the ability to uncover the sequencing of behaviors that positively impacted the desired outcome, such as a successfully closed opportunity. In essence, Sensi can analyze every single attribute of an opportunity and combine that with every possible behavior and behavior combination, to determine the optimal sequence of

behaviors to perform next from any given point in time and sequence for each pipeline opportunity.

The result is that Sensi may be able to effectively predict which specific behaviors may have the most positive impact if performed in sequence. The activity sequence may be different for each opportunity due to various circumstances and may have had behaviors performed in a differing sequence. So, while the pipeline steps that an opportunity goes through may still be similar or even the same, the specific behaviors and especially the sequence and timing of those behaviors may be quite different due to the differing circumstances of each seller, prospective buyer, industry, and or market. According to CloudApps, the result is a dynamically created and continuously evaluated sales process. This data is then is presented to the salesperson with a recommendation of the top three behaviors to perform next.

The second algorithm in Sensei CloudApps is developing is the ability to present a prediction percentage of how likely an opportunity may successfully close using an AI Machine Learning approach, one which does not require or expect a pre-defined selling process. Instead, Sensai is designed to calculate prediction by learning from all past opportunities and assessing the specific attributes of the current opportunity, plus the behaviors performed and as such may be more accurate This prediction may then be presented to whoever is reviewing the traditional forecast, and it may provide a different perspective on the information being provided by the salespeople and sales managers.

The third algorithm in development will be used to predict the date that an opportunity may close and the dollar amount to dramatically improve the sales forecasting process and accuracy. The CloudApps software is designed to provide a continually updated analysis of the input. As a relationship, it has identified changes as are reflected in the output. The output can be seen, certainly by sales managers, as well as by the salespeople who input the data into CRM. In that instance, it, in effect, provides a best practice related to the sales pipeline and may provide The third algorithm in development will be used to predict the date that an opportunity may close advice as to what the next course of action should be. And as opposed to expert systems, it changes as the definition of an expert changes as defined by the data. There are several issues related to the program that can be discussed and could be critical to understanding the overall significance of the technology.

 Holistic Sales Compensation Systems

Comprehensive sales compensation systems, for the most part, have not been developed to allow compensation for specific selling activities by pipeline steps; that is, the compensation plan typically does not have extrinsic financial rewards built-in for achieving goals and assumptions related to reporting data to the system or any other step in the sales process. Payments to the salesperson are paid at some endpoint, usually when the order might be shipped, or the invoice is paid. While there some exceptions, the norm is a single payment post-sale. Given that gamification is built into both SuMo and Sensi, designing compensation systems that consider specific activities and the requisite milestones that need to be completed by the defined pipeline

steps it may be worth investigating the feasibility of compensation by pipeline activity completion. The programs provide much flexibility.

Learning by Doing

Another way to grasp the significance of the CloudApps application is from the perspective of how a salesperson and others engaged in the process gain experience that improves performance. Sales organizations expend numerous resources, including training, coaching, and mentoring to the salesperson to enhance their knowledge, skills, and capabilities. Experience in and of itself is not the end goal, and it is gaining experience that that leads to improved sensemaking on the part of the sales professional that is going to have an impact (Disdar and Esen 2016). This application will not replace training, coaching, or mentoring, however, will support and enhance the desired behaviors.

CAVEATS

There are many caveats, as could be expected, as an innovation enters the marketplace and then must adapt and evolve over time, while often changing the process or activities the innovation is involved with. We note several.

Competencies

Both CloudApps products have some caveats. We know that the quality of the behavior rather than just the behavior is a much better predictor of success (Plank, Reid, and Newell 2006). Also, there is some thought that more complex and abstract concepts such as competencies may be a better predictor of performance than just behaviors (Lambert, Ohai, Kirkhoff 2009). The competency movement, usually defined as being started by McClelland (1973), is a quite broad application in organizations (Schiffman et al. 2000) but is much less evident in the sales function. While there is no agreement among many, in general, a competency is a more complex construct and includes knowledge, skills, abilities in a sophisticated measure to ascertain what, from a mostly normative perspective, is necessary to do a job. How to collect and measure these types of attributes as opposed to just behaviors is an issue for CRM programs and will require more investigation and modeling to achieve.

Dyadic Perspective

Neither of the CloudApps products is a panacea because an effort is required on the part of the user. Much like the installation of an ERP program or a CRM system, the application requires ongoing investigation and analysis to determine what specific data needs to be collected and how it will be recorded.   If we think about the selling process, we realize that the dyad is critical; that is, much of what will drive performance is outcomes of dyadic interaction. However, models that are sales-centric such as the above modeling, have a difficult time addressing the dyadic factors; however, the models may do so if such is factored into what data is collected, how, and from whom. While a simple sales-centric model may provide benefits to the user and often substantial gains, the most benefit will likely be derived by the organization that incorporates a dyadic perspective. There are several applications in the sales function that are amenable to use

of artificial intelligence systems and technology. We can begin by linking the various aspects of the selling process to the basic program and building from that.

Non-Cognitive Competencies

Walker Churchill and Ford (1977), Churchill, Ford, Hartley, and Walker (1985) developed a useful model which was augmented by Plank and Reid (1994) and has since undergone further thinking with the development of a profile of soft skills by the Intrinsic Institute (www.intrinsicinstitute.com/). These can be coupled with the development of the more complex construct of competencies as opposed to behaviors that lead to outcomes.
Figure 1 provides a diagram of what is being suggested as an overall model that is AI-driven and may provide many forms of improvement for a variety of facets of the selling process. Non-cognitive competencies or "soft skills" refers to a set of attitudes, behaviors, and strategies that are thought to underpin success in work tasks, such as motivation, perseverance, and self-control.

The non-cognitive competencies are associated with an individual's personality, traits, temperament, and attitudes. Non-cognitive competencies may also involve intellect, however, more indirectly and less consciously than cognitive skills.
Soft skills are usually defined concretely as communication skills, working in teams, the ability to learn quickly, and similar. However, research has, over time, identified many types of soft skills not as explicit such as having grit, (Duckworth and Quinn 2009), self-awareness (Levasseur 1991), resiliency (Luthans, Vogelgesang and Lester 2006), and adaptability (Goolsby, LaGace and Boroom 1992). Most of this research examined impacts one or a few constructs at a time. The Intrinsic Institute noted above has developed a comprehensive inventory of soft skills or what they refer to as non-cognitive competencies. The term non-cognitive competencies have a long history of academic research (Humphries and Kosse, 2017) and are often used in the literature. The Intrinsic Institute uses twelve sets of measures, which are apportioned into three strands called Fire, Discipline, and Control aligned around Ethics. The individual constructs are malleable; that is, they are not fixed or difficult to change traits and may be augmented and improved with some intervention, usually training. These soft skills, in part, drive the development and execution by the salespeople, which may be defined simply as the behavior they do or more complexly in terms of competencies. The notion of competencies derives from early work by McClelland (1973) and has developed over time with a wide variety of organizations having competency models that drive much of their personnel decisions.

In the sales area, impact has been minimal with the essential development shown in Lambert, Ohai, and Kirkhoff (2009) with minimal empirical testing, e.g., Busch (2013); Lambert et al. (2014). The pioneering work by Lambert, Ohai, and Kirkhoff (2009) developed a total of 29 core competencies that related to all facets of the sales function. Not all competencies will be relevant to the selling situation of an organization, so organizations must, through experience, trial and error, and other means identify those that are relevant and have an impact in their situation and measure them accordingly.

Figure 1. Modeling Individual Sales Performance

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┌──────────┐
│   Soft   │
│ Selling  │
│  Skills  │
└──────────┘
       ↘
        ┌──────────────┐
        │ Competencies │
        │              │
        └──────────────┘
                 ↘
                  ┌──────────────┐
                  │ Intermediate │
                  │ Performance  │
                  │  Indicators  │
                  └──────────────┘
                           ↘
                            ┌──────────────┐
                            │   Overall    │
                            │ Performance  │
                            └──────────────┘
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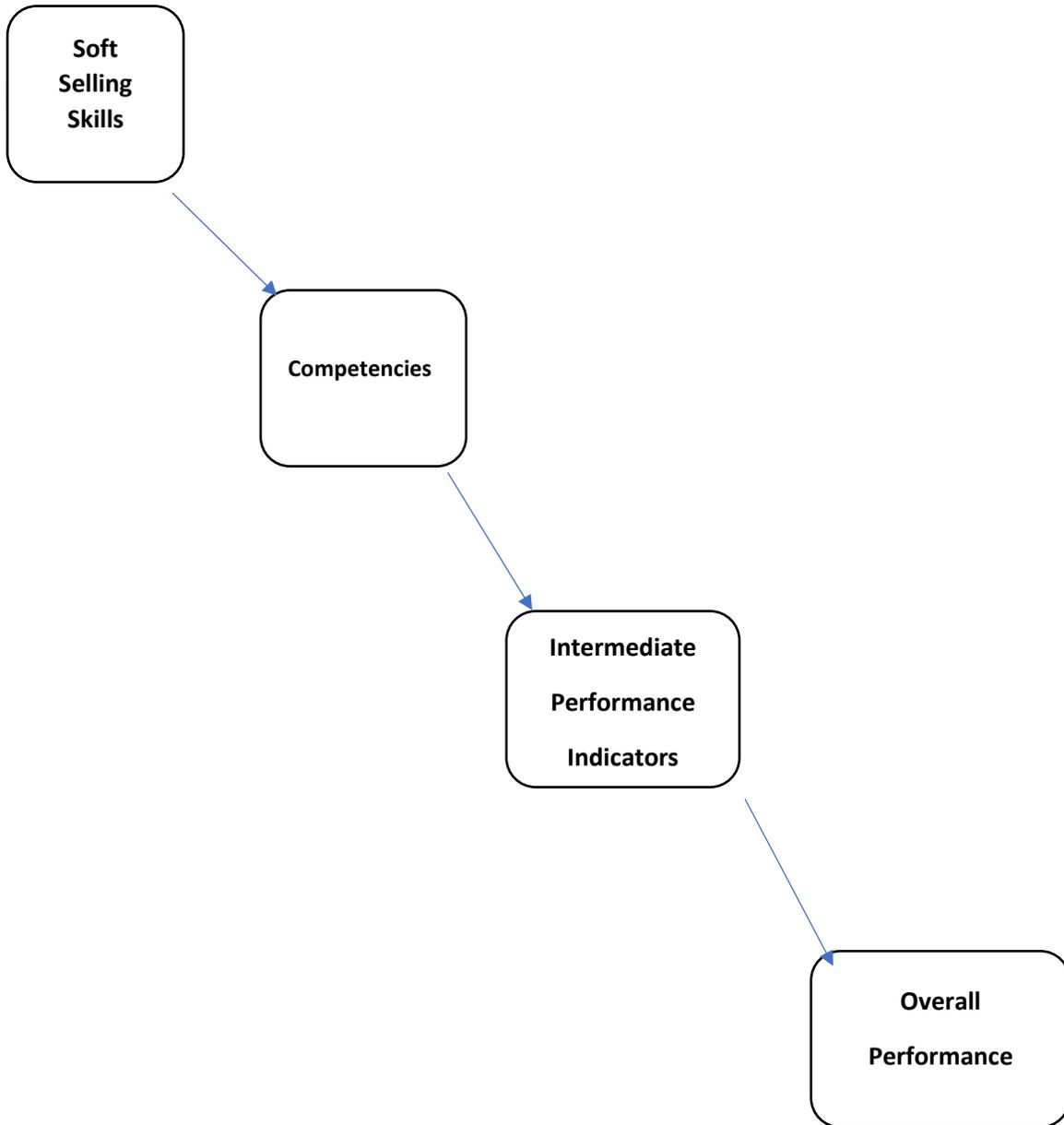
Key Performance Indicators

These measures then lead to intermediate performance outcomes measured using (KPI's) and ultimately to a defined overall performance metric. Again, the non-cognitive competencies are likely to vary significantly by the seller's organization, industry, market, and selling situation, and the organization must choose those that are relevant to their goals. Key Performance Indicators (KPI.s) provide a focus for strategic and operational improvement, create an analytical

basis for decision making and are used to focus attention on what matters most. Managing with the use of KPIs includes setting targets which define the desired level of performance and tracking progress against that target. Managing with KPIs often means working to improve leading indicators that will later drive lagging benefits. Leading indicators are precursors of future success; lagging indicators show how successful the organization was at achieving results in the past. KPI.s and overall performance are subject to the selling situation, and as evidence in applications with SuMo, many have been used and or may be used. The development of this type of model within an organization by linking several ongoing data sets in some manner may then be applied to Sensi, and the entire model may be subject to the machine learning paradigm with different parts of it informing various aspects of the sales function. Identifying which soft skills are more related to performance ultimately may inform both the hiring process, the tools used to hire, and the training process as well. The data and subsequent analysis may also inform the coaching process facilitated by frontline sales managers with their salespeople. Changes in the environment as reported as well as changes in buying motives, for example, may also provide input to various changes in the sales process.

There are additional potential applications both within this model and by constructing other models where deep learning may be applied. For organizations with complex and challenging compensation plans linking the plan to the other factors may provide knowledge on the plan and where and when it works best. Experiments within an organization may be conducted, and that data inputted to the system may provide real insights on what worked best and why. Since so much of what is done is interdependent with so many other variables, the system can allow somewhen to gain insight on a variety of interdependencies.
We have just begun to scratch the surface on the use of machine learning to inform on numerous types of human behaviors. Learning by machine can at least equal that of humans and in very complex situations, may surpass human competency. In the context of the sales function, the near future will not see human replacement on analysis. However, machine learning will augment that learning and the ability of the human to think in abstract terms and develop models that may allow AI to be that much more useful.

REFERENCES

Busch, T. (2013), "Defining competencies for Front-Line Sales Managers in For-Profit Organizations," *Advances in Developing Human Resources*, 15:3, 296-313.

Bush, A.J., Moore, J..B. and R. Rich (2005), "Antecedents and Consequences of CRM Technology Acceptance in the SalesForce," *Industrial Marketing Management* 34:4, 355-358

Cloudapps (2019), www.cloudapps.com/cloudapps-resources-customers/ downloaded on November 10, 2019

Disdar, O.A., and A. Essen (2016), "Sensemaking at work: meaningful work experience for individuals and organizations,", *International Journal of Organizational Analysis,* 24:1 2-17.

Duckworth, A. L., & Quinn, P. D. (2009), "Development and Validation of the Short Grit Scale (Grit-S)," Journal of Personality Assessment, 91, 166–174.

Gartner (2018), www.salesforce.com/blog/2018/05/gartner-salesforce-application-platform.html Downloaded on November 2, 2019.

Goolsby, J. Lagace, R., and M. L Boroom (1992), "Psychological Adaptiveness and Sales Performance," *Journal of Personal Selling and Sales Management*, 12:2, 51-66.

Holloway, C. (1983), "Strategic Management and Artificial Intelligence," *Long Range Planning*, 16:5, 89-93.

Humphries, J.E. and F. Kosse (2017), "On the interpretation of non-cognitive skills – What is being measured and why it matters," *Journal of Economic Behavior and Organization*, 136: 174-185.

Lambert, B., Ohai, T., and E. Kirkhoff (2009), *World Class Selling*, Alexandria, VA: ASTD Press.

Lambert, B., Plank, R.E., Reid, D.A., and D.A. Fleming (2014), "A Competency Model for Entry Level Business-to-Business Services Salespeople," *Services Marketing Quarterly*, 35:1, 84-105.

Levasseur, R.E. (1991), "People Skills: Self-Awareness - A Critical Skill for MS/OR Professionals," *Interfaces*, 21:1, 130-133.

Luthans, F. Vogelgesand, G.R., and P.B. Lester (2006), "Developing the Psychological Capital of Resiliency," *Human Resource Development Review*, 5:1, 25-44.

McClelland, D.C. (1973), "Testing for Competence Rather than Intelligence," *American Psychologist*, 28: 1-14.

Plank, R.E., and M.S. Steinberg (1987) "Expert Systems and the Practice of Marketing," *The Business Journal*, 3:1, 42-46.

SAS (2019), "How to Do Deep Learning with SAS," SAS, white paper, downloaded November 10, 2019. file:///C:/Users/rplan/OneDrive/Documents/deep-learning-with-sas-109610.pdf

Schmidhuber, J. (2015), "Deep Learning in Neural Networks: An Overview," *Neural Networks*, 61: 81-115.

Shippman, J. S......J.I Sanchez (2000), "The Practice of Competency Modeling," *Personnel Psychology*, 53: 703-740.

Singh, J., Flarity, K., Sohi, R.S., Deeter-Schmelz, D., Habel, J., Le Meunier-Fitzhugh, K., Malshe, A., Mullens, R., and V. Onyemah (2019), "Sales Profession and Professionals in the Age of Digitization and Artificial Intelligence Technologies: Concepts, Priorities, and Questions, " *Journal of Personal Selling and Sales Management* 39:1, 2-22.

Tanner, J.F., Ahearne, M., Leigh, T.W., Mason, C., and W.C. Moncrief (2005), "CRM in Sales-Intensive Organizations: A Review and Future Directions." *Journal of Personal Selling and Sales Management* 25:2, 169-180.

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