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Skilling up for CRM: qualifications for CRM professionals in the Fourth Industrial Revolution

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SKILLING UP FOR CRM:

QUALIFICATIONS FOR CRM PROFESSIONALS

IN THE FOURTH INDUSTRIAL REVOLUTION

BY

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SKILLING UP FOR CRM:

QUALIFICATIONS FOR CRM PROFESSIONALS IN THE FOURTH

INDUSTRIAL REVOLUTION

ABSTRACT

The 4th industrial revolution (4IR) describes a series of innovations in artificial intelligence, ubiquitous internet connectivity, and robotics, along with the subsequent disruption to the means of production. The impact of 4IR on industry reveals a construct called *Industry 4.0*. Higher education, too, is called to transform to respond to the disruption of 4IR, to meet the needs of industry, and to maximize human flourishing. *Education 4.0* describes 4IR's impact or predicted impact or intended impact on higher education, including prescriptions for HE's transformation to realize these challenges. *Industry 4.0* requires a highly skilled workforce, and a 4IR world raises questions about skills portability, durability, and lifespan. Every vertical within industry will be impacted by 4IR and such impact will manifest in needs for diverse employees possessing distinct competencies.

Customer relationship management (CRM) describes the use of information systems to implement a customer-centric strategy and to practice relationship marketing (RM). Salesforce, a market leading CRM vendor, proposes its products alone will generate 9 million new jobs and $1.6 trillion in new revenues for Salesforce customers by 2024. Despite the strong market for CRM

skills, a recent paper in a prominent IS journal claims higher education is not preparing students for CRM careers. In order to supply the CRM domain with skilled workers, it is imperative that higher education develop curricula oriented toward the CRM professional. Assessing skills needed for specific industry roles has long been an important task in IS pedagogy, but we did not find a paper in our literature review that explored the Salesforce administrator role.

In this paper, we report the background, methodology, and results of a content analysis of Salesforce Administrator job postings retrieved from popular job sites. We further report the results of semi-structured interviews with industry experts, which served to validate, revise, and extend the content analysis framework. Our resulting skills framework serves as a foundation for CRM curriculum development and our resulting analysis incorporates elements of Education 4.0 to provide a roadmap for educating students to be successful with CRM in a 4IR world.

DEDICATION

For my parents.

ACKNOWLEDGEMENTS

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Skill is the essence of the Scholar Warrior. Such a person strives to develop a wide variety of talents to a degree greater than even a specialist in a particular field. Poet and boxer. Doctor and swordsman. Musician and knight.

Deng Ming-Dao

Scholar Warrior

CHAPTER 1. INTRODUCTION

Overview

This study examines the skills necessary to produce successful customer relationship management (CRM) professionals in the emerging fourth industrial revolution (4IR). Specifically, the study examines the skills valued by industry employers seeking CRM professionals. This dissertation addresses a call for research in the Information Systems (IS) literature, which suggests existing *IS* curriculum does not adequately prepare students for careers in the CRM domain. By developing two skills frameworks, we have addressed this call and provided the foundation for further curriculum development. In the emerging 4th industrial revolution, skill obsolescence and skill agility are of particular interest, and our findings enrich existing applications of Education 4.0: the emergent paradigm describing how higher education ought to respond to the challenges of 4IR.

Background & Research Problem Introduction

The fourth industrial revolution (4IR) is the latest transformation of the production of goods and the delivery of services throughout human history. The implications of 4IR impact many domains, resulting in paradigms such as Industry 4.0, Work 4.0, Employability 4.0, and Globalization 4.0. Higher Education (HE), too, is impacted by 4IR. *Education 4.0* is a construct, which represents the 4IR paradigm in Higher Education (World Economic Forum, 2020a). The role of higher education within 4IR is evolving, and the university as

we know it may change dramaticallly in coming decades. Higher Education faces challenges similar to those faced by for-profit industry, such as competitive pressures, market forces, and the need to respond to increasingly rapid technology innovation. The socioeconomic model of HE suggests HE is oriented toward a model of producing graduates ready for employment in industry. This socioeconomic model, coupled with the permeation of neoliberalism in HE, suggests that, in order to remain relevant, HE must understand the best mechanisms to ensure its own survival while simultaneously meeting the needs of industry and generating a productive and empowered workforce. The future of higher education rests in no small part on its ability to adjust to exterior and internal forces to recruit, educate, and graduate students with reliable qualifications to ensure employment, enhance the university reputation, and generate a virtuous recruitment to graduate cycle.

Although the basic challenge of ensuring curricula and learning experiences align with the needs of the marketplace is not new, the rapid evolution brought about by 4IR suggests a more disruptive paradigm shift is needed to ensure students graduate with relevant skills and with relevant experiences. Any examination of knowledge, skills, or abilities for industry professionals is implicitly grounded in the Resource-based View (RBV) of the Firm, an important, well-defended theory in the *Information Systems* and *Management* literature. RBV posits that firms possess a variety of resources (Penrose, 1959), which are combined to form capabilities. The quality of these

capabilities relative to competitors' realization of comparable capabilities can lead

capabilities to become a source of competitive advantage According to RBV,

firms' resources can be classified as human, physical, or organizational (Barney,

1991).

Of all the resources firms can acquire, knowledge has been postulated to

be the most strategically significant resource (Conner & Prahalad, 1996). Indeed,

"in the new knowledge economy, human capital of a firm – its workforce—

represents its most important strategic asset" (Bassellier & Benbasat, 2004) p.

674. The IS & computing literature have responded with several studies in top

journals exploring optimal employee knowledge, particularly the various

dimensions of knowledge required by *IS* employees (e.g., (Ashenhurst, 1972; D.

M. S. Lee et al., 1995; Todd et al., 1995)). These studies tend to focus on higher-

level IS roles such as programmer, analyst, or IS manager. In some cases, these

papers even connect the knowledge needs to an imperative that universities teach

the correct skills to IS students. Several seminal papers in this area appear in top

Information Systems journals. Subsequent studies tend to appear in IS Education

journals but continue the exploration of IS skills needs, in some cases focusing

more narrowly on specific *IS* roles.

As an indispensable resource of the firm, knowledge can be tacit or

explicit; tacit knowledge is largely difficult to articulate compared to explicit

knowledge, which can be more readily codified and expressed language (Polanyi

& Sen, 2009). The relationship between various units of tacit and explicit

knowledge is ever-changing. Indeed, tacit knowledge may lead to other tacit knowledge via a process called socialization or converted to explicit knowledge via a process known as externalization. Similarly, explicit knowledge can generate new explicit knowledge via the process of combination or explicit knowledge can facilitate the generation of new tacit knowledge: a process known as internalization (Nonaka, 1994). Viewing knowledge within the firm in these two categories is a rough extension of a prior dichotomy proposed in the literature: those two elements being information – knowing *what* something means—and know-how, which entails knowing how something works (Kogut & Zander, 1992). The recognition of knowledge as a distinct and indispensable resource for the firm has given way to the knowledge-based theory of the firm, also known as the knowledge-based view of the firm (KBV), which is considered an extension of RBV (Curado & Bontis, 2006). Writing of the former, firms can be conceptualized as "institutions for producing goods and services because they can create conditions under which multiple individuals to integrate their specialist knowledge" (Grant, 1996) p. 112.

Our paper explores the *IS* sub-domain of CRM. Although all enterprise systems contribute to various organizational capabilities, CRM remains distinct and uniquely important, primarily because of its enablement of the sales function. For example, CRM capability has been shown to have a positive relationship to both firm marketing performance and financial performance (Al-Duwailah et al., 2015). Without a strong CRM capability, organizations are less able to capitalize

on their customer relationships, less able to close new deals, less able to understand buying patterns, and ill-equipped to keep their doors open due to potential revenue loss. Furthermore, the known talent shortage in the CRM domain makes this area especially timely and important for examination. Under RBV, firms may combine any number of resources to generate capabilities, which they believe will be of commercial benefit. Customer relationship management capabilities remain one example, and sourcing the human capital, a critical resource influencing the quality of CRM capability, remains a major challenge for organizations. The dire needs of industry to source competent CRM employees is a natural consequence of the continued, meteoric growth of the CRM market, which grew 13% from 2019-2020 to $69.3 billion, making it the largest market of the major enterprise systems at 29% of all enterprise system sales; the top 5 CRM vendors account for 35.6% of the total CRM market share, and Salesforce holds the largest individual share of the CRM market (Poulter et al., 2021).

CRM is a boundary-spanning domain, integrating many aspects of technology, information systems, sales, and marketing, not to mention other business domain knowledge necessary to understand the broader goals of CRM activities. In the academic context, our two primary areas of interest include Information Systems and Marketing. Mapping the curriculum of Information Systems and Marketing has been a challenge and has been explored in the academic literature. Sales and marketing curricula have been shown to be deficient in the integration of enabling technologies such as sales force

automation (SFA) and customer relationship management (CRM) systems, with only seven relevant publications appearing in marketing education journals in the past 15 years (Cummins et al., 2020). The successful implementation of CRM technology within Marketing education curriculum has been shown to be especially useful for salespeople, and a need exists to increase exposure to advanced CRM technology and related skills (Harrison & Ajjan, 2019).

CRM curricula, when it exists, has been criticized as deficient in several areas. In particular, CRM curriculum ought to include aspects of business acumen, marketing acumen, and technical acumen, but addressing all of these areas in a single course offering can be a challenge (Lokuge et al., 2020). Previous studies surrounding knowledge, skill, and ability matching have tended to focus on the broad IS or Marketing curricula, but after performing a literature review, we did not identify studies examining specific CRM practitioner roles and the corresponding curriculum necessary to generate university graduates with the appropriate skill mix to be successful in these roles. In addition to the clear practical contribution our research offers in helping address CRM skills needs, this research also recognizes the vital theoretical role that knowledge resources play in generating capabilities for firms as viewed through the RBV or KBV paradigms and seeks to guide organizations in their quest for competitive advantage.

Problem Statement

A recent paper (Lokuge et al., 2020) suggests CRM curriculum ought to span business acumen, marketing acumen, and information systems acumen (see Figure 1), but that CRM education is often deficient in one or more of these areas. These insights and conclusions resulted from a panel discussion among academics. The panelists focused on the requisite curriculum to produce 'CRM analysts.' Although these conclusions are compelling, the conclusions are limited by the homogeneous composition of the panelists (i.e., mostly academics along with one industry practitioner), the absence of methodological rigor underlying the proposed curriculum constructs and validation of these constructs, and the isolated focus on the CRM analyst role. On one hand, this general, platform-agnostic role is a useful foundation from which to examine CRM roles with greater specificity. On the other hand, its vagueness and hyper-generality – particularly when combined with the absence of empirical methods to validate the related constructs – suggest that additional research is needed to validate the panelists' framework and to apply the framework, or a derivation, to other roles in the CRM domain.

Figure 1: CRM's Transcending Nature

(Lokuge et al., 2020) pg. 574
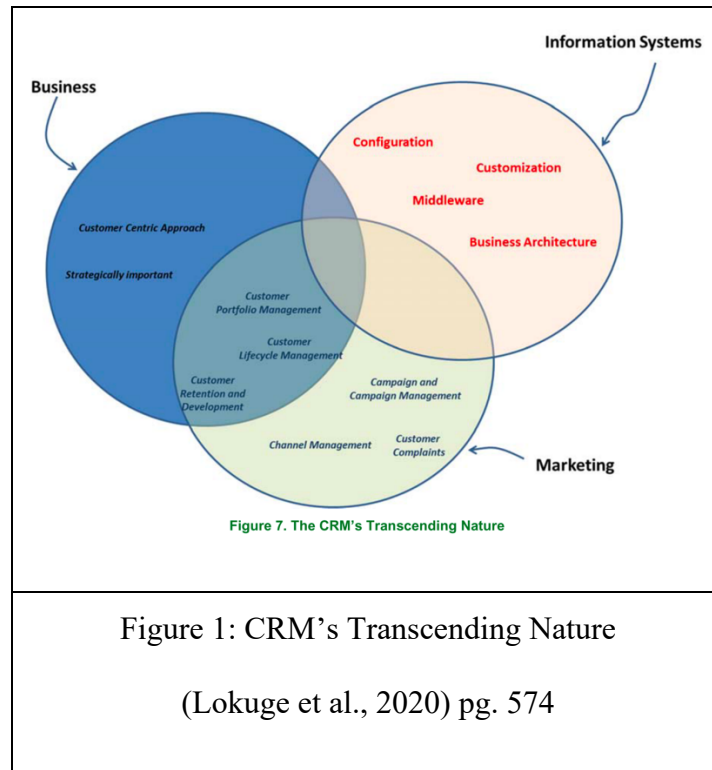
To those ends, this research seeks to validate the constructs in the Lokuge framework by examining the presence or absence of these dimensions in actual job postings and discussions with CRM hiring managers. We also seek to identify any constructs which may be absent from the Lokuge framework. We consider the Lokuge framework to be a useful generalization of potential domain constructs, but also that specialized instances of the framework for specific roles need to be generated in order to provide a more comprehensive picture of the phenomena in action. CRM is a vast domain; participants in this domain span end-users in multiple organizational departments as well as the Information Technology personnel who architect, implement, and support these systems. With such a heterogeneous collection of actors engaging in the CRM work system, it is

unlikely that all dimensions in Lokuge's framework would be equally applicable to all. Instead, a CRM Administrator, for example, may require far greater depth in the IS dimension of Lokuge's framework, but could still be effective in the position despite comparatively diminutive knowledge of the generalized business or targeted marketing dimensions. In this paper, we examine the role of CRM system administrator, specifically administrators of the market-leading enterprise CRM platform, *Salesforce.*

Clarification & Reconstitution of the Lokuge Framework

Before formalizing research questions, it is useful to explore exactly what the Lokuge framework proposes. Initially, the model appears to be a Venn diagram, but in fact, the diagram does not necessarily seek to demonstrate overlap of these dimensions -- as there is no area that actually overlaps all three domains. Instead, the framework conceptualizes the nature of CRM as a boundary spanning domain encompassing business, marketing, and information systems dimensions. Within those dimensions, specific topics or aspects emerge (e.g., customer centric business strategy). Lokuge and the panelists argue that university curricula for CRM is typically marked by an omission of one or more of these dimensions. For example, IS departments teach CRM without sufficient exploration of the general business and marketing dimensions, whereas business schools often under-emphasize the role of information systems and the particulars of system architecture, implementation, and maintenance.

Because the purpose of the diagram is not necessarily to show aspects where two out of three dimensions overlap compared to aspects that are isolated to only one dimension, but rather simply to show a generalized interrelationship between dimensions and aspects of those dimensions, the diagram could be redrawn as a hierarchy. In essence, an examination of the constructs in the diagram shows that CRM is guided by an understanding of CRM's strategic business importance and an understanding of customer centric strategy; these are both high-level, driving-force, strategic elements and could be viewed as CRM's guiding principles. CRM is the use of technology to enable the practice of Relationship Marketing. As such, the aspects characterized by the Marketing dimension (e.g., campaign management), actually represent tactics that facilitate and embody customer-centric strategy. Finally, information systems are the underpinning to the operational execution of the marketing tactics outlined in the Marketing dimension. As such, the particulars of information systems are the foundational, operational aspects – the enabling technologies – for the CRM domain. The strategic-tactical-operational trichotomy, originally proposed by (Anthony, 1965), has been used elsewhere in the CRM domain, defining the high-level dimensions of a CRM benefits framework (Shanks et al., 2009), shown in Figure 2.

Benefits for Operational Level of Management
1. Improved customer data management
2. Improved process management
3. Improved customer service
4. Empowerment of staff
5. Improved productivity
6. Enables real-time responsiveness to trends
Benefits for Tactical Level of Management
1. Facilitates market segmentation
2. Facilitates key account management
3. Improved channel management
4. Improved analysis, reporting and forecasting
Benefits for Strategic Level of Management
1. Improved customer satisfaction
2. Improved business performance
3. Improved value-added partnerships
4. Improved innovative use of CRM systems

Figure 2: CRM Benefits Framework

(Shanks et al., 2009) pg. 268

Thus, the Lokuge framework might be reconstituted as a pyramid hierarchy, which shows that high-level, strategic business aspects give way to Marketing practices (tactics), which are ultimately operationalized by Information systems: the foundation for CRM. Figure 3 depicts these realities.

| Figure 3: Reconstitution of the Lokuge Framework |

Pyramid diagram with three levels (top to bottom): Business • Strategic; Marketing • Tactical; Information Systems • Operational
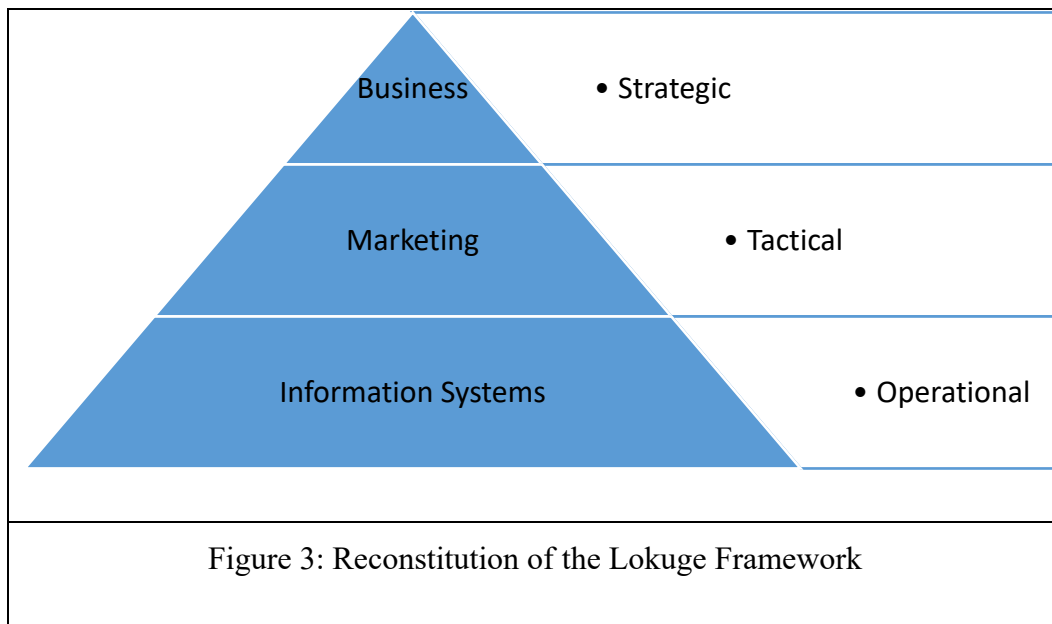
Having thus clarified the structure and relationships between these proposed CRM dimensions, we next turn to our research questions.

Statement of Purpose/Research Goals

The specific objectives of the research are to:

a) Identify the collection of skills required of Salesforce CRM Administrators

b) Evaluate the nature of these skills in the context of Lokuge's framework

c) Identify the differential between Salesforce Administrator skills and the existing Lokuge framework aspects

d) Develop a specialized conceptualization of Lokuge's framework, which would describe the dimensions most applicable to Salesforce Administrators

Research Question(s)

We seek to create an instance of Lokuge's framework, examining the aspects in each dimension. Whereas Lokuge's framework conceptualizes the knowledge and skills requisite for a 'CRM Analyst', there exists any number of particular roles within the CRM domain, and the skills composition for these roles could vary broadly from one role to another. The generalization of Lokuge's framework is a strength, and it also provides an opportunity for us to examine an instance of the framework applied to a specific, popular CRM role: the CRM Administrator. We chose to focus on the Salesforce administrator role. In order to address each of the curriculum aspects in the reconstituted Lokuge framework, we developed three research questions, as follows:

RQ1: How do Salesforce Administrator job postings correspond thematically to the reconstituted Lokuge framework (Figure 3)?

RQ2: Do Salesforce Administrator hiring managers express similar themes as the reconstituted Lokuge framework?

RQ3: How do the results of the content analysis compare with the findings of the hiring manger interviews?

Chapter 1 Summary

In this chapter, we presented an overview of the fourth industrial revolution and examined the broad goals of this research project, which were twofold. These goals include identifying the skills mix required by those in industry seeking CRM professionals and identifying relevant aspects of Education 4.0, which will best prepare students for the CRM ecosystem within industry. In the next chapter, we will review the literature surrounding the fourth industrial revolution, the corresponding transformation of higher education, and the landscape of customer relationship management (CRM) literature.

CHAPTER 2. LITERATURE REVIEW

In this chapter, we provide a literature review of three relevant domains underlying our research questions. First, we examine the four industrial revolutions with attention upon understanding the technical innovations precipitating evolution in digital computing culminating in the advent of the fourth industrial revolution (4IR). Next, we explore the emerging transformation of the higher education (HE) domain, which has been brought about by 4IR, such as the construct of *Education 4.0.* After that, we examine the academic and industry literature surrounding customer relationship management (CRM) technology. Finally, we provide a synthesis of how each of these domains is interrelated with the other, along with an analysis of the landscape and precipitating conditions, which contribute to our research questions.

The Four Industrial Revolutions

The four industrial revolutions represent transformations in the means of production throughout human history. The 4th Industrial Revolution (4IR), also known as the 'Second IT Revolution' (M. H. Lee et al., 2018), represents the most recent transformation. Whereas the prior revolutions were characterized by the advent of the steam engine, mass production, and the transistor, respectively, the 4th Industrial Revolution was enabled by a confluence of technological innovations sometimes known as Web 4.0.
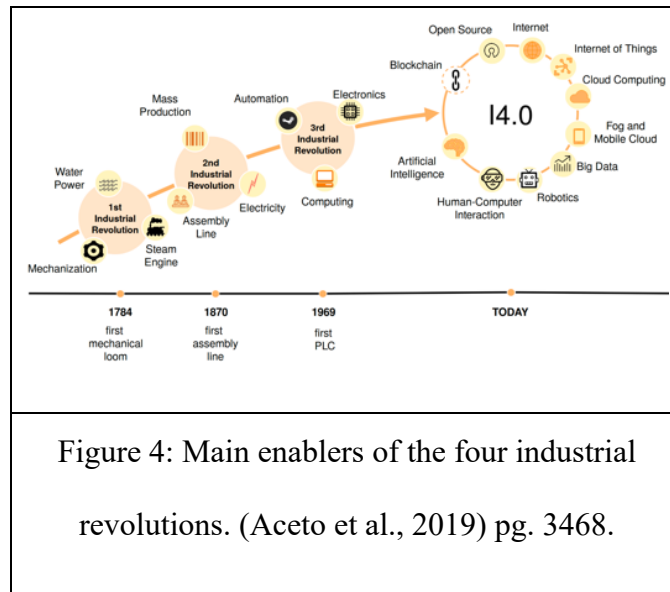
Figure 4: Main enablers of the four industrial revolutions. (Aceto et al., 2019) pg. 3468.

4IR is unprecedented in the way it has manifested compared to the prior industrial revolutions in terms of "velocity, scope, and systems impact" (Schwab, 2016) p. 1-2, but all of the specific impacts of 4IR on industry, higher education, and humanity itself, are not yet fully understood, despite ample postulating from academia and industry. For example, the construct known as *Industry 4.0* seeks to conceptualize 4IR's transformational impact on industry, represented primarily by the transformation of manufacturing from machine-dominant to digital dominant – i.e., the creation of the smart factory (Oztemel & Gursev, 2020). 4IR's impact on industry is not limited simply to production, but also the structure and praxis of work itself. The German government addresses this phenomenon in a report outlining a proposed construct *Work 4.0* (German Federal Ministry of Labour Affairs, 2015). This construct recognizes that 4IR is not simply about the changing mechanics of production, but also that 4IR will be disruptive to the

structure of society and organization of human existence. A dearth of related constructs such as *Globalization 4.0* (Samans, 2019), *Employability 4.0* (Salmon, 2017), all seek to describe some impact of 4IR on specific domains. These constructs extend to other classifications of domains, such as *CRM 4.0*, which posits a 4IR paradigm for customer relationship management (Kinnett & Steinbach, 2021d). In order to fully understand 4IR, it is necessary first to understand the evolution of digital computing.

The Digital Revolution

The history of computing begins within the 3rd industrial revolution (3IR), also known as the Digital Revolution. The development and evolution of computing innovations has been examined from several perspectives. Hevner & Berndt's 2000 study (Figure 5) on business architectures outlined proposed 'eras' of computing: Era of Calculation, Era of Automation, Era of Integration and Innovation, Era of Decentralization, Era of Reengineering and Alignment, and the Era of the Internet and Ubiquitous Computing (Hevner & Berndt, 2000).
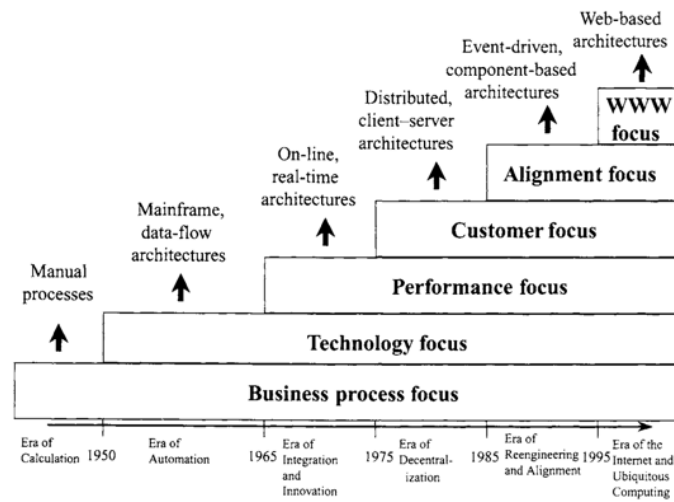
FIG. 5. Business system architectures.

Figure 5. Business system architectures.

(Hevner & Berndt, 2000) pg. 74.

In another paper, Rico, et al., postulated that the history of computing progressed through the mainframe era(1960s), the midrange era (1970s), the microcomputer era (1980s), the internet era (1990s), and the personalized era (2000s), and computing evolved through a number of dimensions including database design, software development methods, and project management techniques (Rico et al., 2008). Representing an additional perspective, Gill, et al., (Figure 6), chronicled the evolution of computing paradigms and technologies throughout the past forty years with particular attention to the variance between the years when topics were examined in the academic literature compared to when they were adopted more broadly.

18

Talked Year | Adopted Year

Talked Year				Adopted Year
2011	Reduce transmission costs and improving QoS	Geographic distribution of computing nodes	Edge Computing	2013
2009	Easy Data access and Time Saving	Things to connect, interact and exchange data	Internet of Things	2012
2011	Reduce Latency and Response Time	Closer proximity to end-users and IoT devices	Fog Computing	2012
1939	Resource Sharing	Virtualization, Cost Reduction, Energy Management	Cloud Computing	2007
2000	On-demand network access	Resource Provisioning and Scheduling	IaaS, PaaS and SaaS	2005
1990	High Availability and Scalability	Increased Processing Speed	HPC System	2001
1994	High availability of servers	VM communicated using Network	Virtualized Clusters	2000
1989	Communication b/w Systems	Integrating web-based Apps	Web Services	1995
1969		Partitions tasks among peers	High Processing Capability	Peer to Peer	1995
1965		Massive Computing Resources	Fast Computation at low cost	Commodity Clusters	1995
1973		To solve a single task using distributed systems	High Execution Speed	Grid Computing	1990
1952		Parallel Processing	File Sharing using Network	Open MPP and SMP	1980
1967		Integrated Computing Resources	High Availability	Cluster Computing	1977
1960		To execute many Operating Systems	Transaction Processing	Proprietary Mainframe	1965
1962		Computationally Intensive Tasks	Parallel Execution	Super-computer	1964
1958		Resource Sharing	Load Balancing	Client Server	1960

Technology / Focus of Study / Objective

Fig. 1. Evolution of computing paradigms and technologies.

Figure 6: Evolution of computing paradigms

and technologies (Gill et al., 2019) pg. 3.

By overlaying each of these papers, we see that the 1950s and 1960s (eras of Automation and Integration & Innovation or, from Rico's perspective, the Mainframe Era) align with the development of client-server, super-computer, and proprietary mainframe technology. These technologies enabled Hevner's Era of Automation and portions of integration and innovation, allowing firms to expand focus beyond business process and the automation of business processes and focus on specific technologies, but also to begin a posture of performance focus.

The Era of Centralization, beginning in 1975, is contextualized by the addition of customer focus (Hevner & Berndt, 2000) and complimented by academic studies on integrated computing resources and correlated with the innovation of cluster computing (Gill et al., 2019), which underscore the

characterization of the 1970s as the Midrange era (Rico et al., 2008). The period from 1985-1995 marks a shift in business architectures away from simply centralizing functions, but toward reengineering and alignment. This change can almost certainly be correlated with the advent of Web services. First discussed in the late 1980s in the academic literature but adopted more broadly in 1995 (Gill et al., 2019), Web services facilitate the potential for Web-based architectures. It is logical that companies would harness these advancements. This shift resulted in a view of Web as a platform, the foundation for the disruptive business models: Infrastructure as a Service, Platform as a Service, and Software as a Service models by the mid-2000s (Gill et al., 2019).

Overby et al.'s model (Figure 7) allows us to punctuate our existing understanding of the existing models with specific innovation examples, as well as to enrich our understanding of the advent of the Web itself. To those ends, they suggest that the development of telecommunications technology occurred to some degree in parallel with computing technology until 1993, when these domains merged to form 'Information and Communications Technology (ICT)', marked by the first version of the modern internet and the development of the Mosaic web browser. Prior to this merger, the evolution of computing was characterized by innovations in technology such as the microprocessor in 1971, ethernet and the TCP/IP protocol in 1974, the popularization of the personal computer in 1977, the breakthrough operating system MS-DOS in 1981, and the

developments of SMTP in 1982 and the laptop in 1985 (Overby & Audestad, 2018).

Optical Fiber (1965) GSM (1991) Notation

Hardware (bold)
Mobile/wireless (underlined)
Software/services (italic)

Transistor radio (1954) Nordic Mobile Telephone (1981)

World Wide Web (1993)
Mosaic (1993)

Telecommunications

Information and Communication Technology (ICT)

Information Technology

WiFi (1997) 3G (2003) iPhone (2007) 4G (2009) 5G (2018)
Bluetooth (1997) Android (2007)

Ethernet (1974) MS-DOS (1981) Laptop (1985) Google (1998) Twitter (2006) Uber (2009) Snapchat (2011)
TCP/IP (1974) Netflix (1998) YouTube (2005) Airbnb (2008) Bitcoin (2009)
Facebook (2004) Spotify (2008)
Microprocessor PC (1977) SMTP (1982) Skype (2003) Dropbox (2007)
(1971) Wikipedia (2001)

Figure 7. Evolution & Merger of ICT (Overby & Audestad, 2018) pg. 21.

Beyond the previous example, Overby's analysis allows us to ground computing paradigms and their business architectures in specific innovations manifesting from within each era. Consider the development of the TCP/IP protocol in 1974. Viewed against the landscape presented by Hevner & Brendt (2000), we observe TCP/IP precipitated the shift from real-time business architectures to distributed, to client-server architectures, ushering in the *Era of Decentralization* and a shift from a focus on technical performance to a focus on customers. The personal computer followed shortly thereafter in 1977, further underscoring the capability for client-server models and the ability of distinct users on distinct machines to connect to other machines. Software development methods, too, evolved through this period, marked by seminal papers on modular

programming in 1972, object oriented programming in 1974, object oriented

design in 1981, and object oriented analysis in 1988 (Rico et al., 2008).

Hevner & Bernt (2000) characterize business architectures from 1985-

1995 as oriented to alignment and reengineering. This characterization seems to

be underscored by a shift to a more mobile paradigm. We suggest that the laptop

in 1985 and, mostly, the origins of the Web in 1993, represent what Bower &

Christensen (1995) describe as disruptive innovations (Bower & Christensen,

1995) to existing ways of thinking and working. We can also see that with the

advent of technology like MS-DOS just a few years earlier, and the PC not much

earlier than that, that a lag would naturally occur between the inception of an

innovation and its corresponding adoption by industry. This observation is

consistent with Gill's mapping, which juxtaposes years in which topics were

discussed in academic literature compared to when they were adopted by industry.

The creation of the combined domain of Information & Communications

Technology (ICT) marks a critical milestone occurring late in the digital

revolution: the creation of the World Wide Web (Web). The technological

underpinnings of the 4th Industrial Revolution are represented in the evolution of

the Web, which represents a fusion of innovations in both computing and

telecommunications. Futurist Nova Spivak proposed a taxonomy of Web 1.0-Web

4.0 to classify the eras of innovation enabled by the Web since its creation in the

1990s (Spivack, 2007).
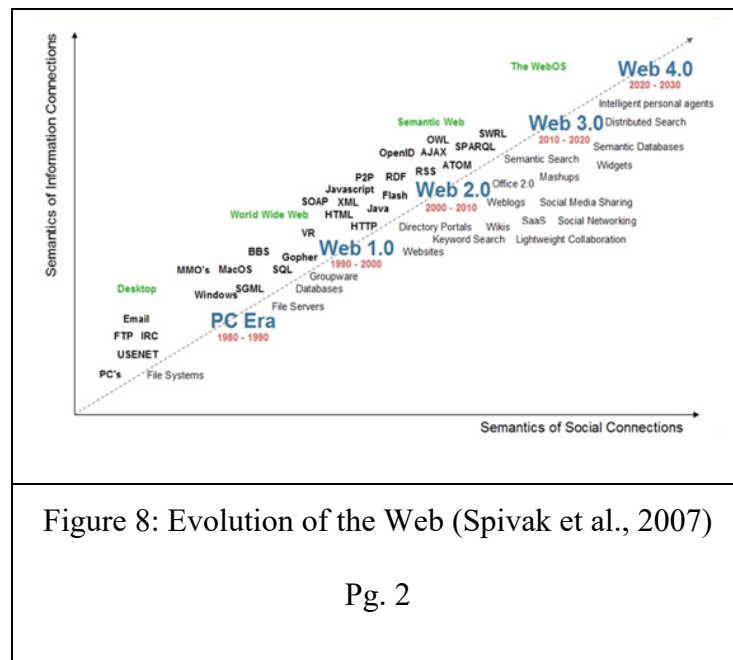
Figure 8: Evolution of the Web (Spivak et al., 2007)

Pg. 2

Web 1.0, the first iteration of the Web, skewed heavily toward content consumers, as there was scarce knowledge of HTML, a language that defined a structure which browsers could leverage to interpret and present content on the Web. This knowledge imbalance and the static nature of the technology ensured most participants within Web 1.0 were able to view content and perhaps interact to a small degree. HTML's simplicity was a characteristic that allowed the original Web to grow quickly, but this same simplicity presented limitations for just how complicated Web functions could be (Fensel et al., 2001). As arguably 'easy' as HTML was, it was not simply a critical mass of users acquiring HTML knowledge throughout the 1990s that enabled the Web to evolve from a static to dynamic Web, but rather the development of technology that enabled rapid content creation with minimal computing skills and no requisite knowledge of

HTML. The result of these consumer-facing innovations has shifted the previous Web 1.0 paradigm by introducing means for consumers to become content producers.

The next iteration of the Web is known as Web 2.0, the social Web, or the co-created Web (Kambil, 2008). The original conceptualization of Web 2.0 was developed during a brainstorming session between Tim O'Reilly and Dale Dougherty near the end of the dot-com era, and the term "Web 2.0" was first published on the Web in September 2005 (O'reilly, 2007). The terms attempt to explain a shift in Web technologies and applications that began to take shape near the end of the 1990s. Blogs are arguably the seminal and most popular user-facing manifestations of Web 2.0 (Chau & Xu, 2012). Other examples of Web 2.0 innovations that have transformed consumers' relationship with information include podcasts, polling, shared spaces (Chui et al., 2009; García-Crespo et al., 2010), and application portals. The emergence of these Web 2.0 applications was made possible by underlying Web 2.0 technologies such as RSS, SOA, Web services, and AJAX, which have also facilitated the manifestation of Web as A Platform (Mohan et al., 2008; O'reilly, 2007). Mohan et al. (2008)'s proposed Web 2.0 architecture articulates Web 2.0 client-side technology including Flash, XML, Ajax, SOAP, and RSS, along with server-side infrastructure such as web & application servers and databases (Mohan et al., 2008). Comparing these examples of Web 2.0 technologies to Gill et al.'s paradigms, we find further support for the composition of Web 2.0-oriented innovations: cloud computing,

IaaS, PaaS, SaaS (Gill et al., 2019), which arose out of the critical innovations of cloud computing. We can also see that the shift of business architectures to web platforms suggested by Hevner & Berndt (2000) is enabled by these innovations.

The Second IT Revolution

The Information Age, also known as the Second IT Revolution, began as a critical mass of the existing Web became enriched with semantic data via technologies like XML. The result of this evolution is called Web 3.0, the Semantic Web, or the Web of Meaning, and represents an evolution of Web technologies and implementations to support the ability for computers to extract meaning from data. In contrast to the collection of user-facing elements comprising Web 2.0, Web 3.0 represents an evolution of the very constructs that compose the Web itself. Achieving the vision of Web 3.0 is realized through the development and use of taxonomies, ontologies and XML-based data constructs for querying and modification (Tekli et al., 2013). The multiple components and their relationships to one another have led the Semantic Web to be best understood as an architecture. Web 3.0 is subtle compared to its siblings, yet it is only through the expansion of the Semantic Web that the technologies we now associate with Web 4.0 could thrive. Web 3.0, The Semantic Web, The Web of Meaning, all represent the same construct: an evolution of Web technologies and implementation to support the ability for computers to extract meaning from data. Noted Web paragon Tim Berners-Lee speculated as early as 2001 on the idea of a Semantic Web, though not labeled Web 3.0 initially (Berners-lee et al., 2001). At

that time, Web 2.0 remained in its infancy. We will see that these Webs, these collections of functionalities, did not evolve serially. Rather, even as Web 2.0 functionality was coming online more and more, additional limitations, behind the scenes, had been identified and a plan for improvement developed. In contrast to the collection of user-facing elements comprising Web 2.0, Web 3.0 represents an evolution of the very constructs that compose the Web itself.

Specifically, the backbone of the Web as originally conceived was HTML, essentially a tool to display information in a browser. HTML's benefits as a rendering tool did not extend to its ability to store complicated information, particularly in a way that could be understood by other computers. XML is "a defined way to provide a serialized syntax for tree structures" (Fensel et al., 2001) pg. 3, and represents an initial attempt to structure data in a way in which a computer, loaded with the appropriate interpreter, could read and extract meaning. Achieving the vision of the Semantic Web is achieved through the development and use of taxonomies, ontologies and XML-based data constructs for querying and modification (Tekli et al., 2013). The multiple components and their relationships to one another have led the Semantic Web to be best understood as an architecture, as outlined in Figure 9.

Figure 1. Latest Semantic Web Layered Architecture
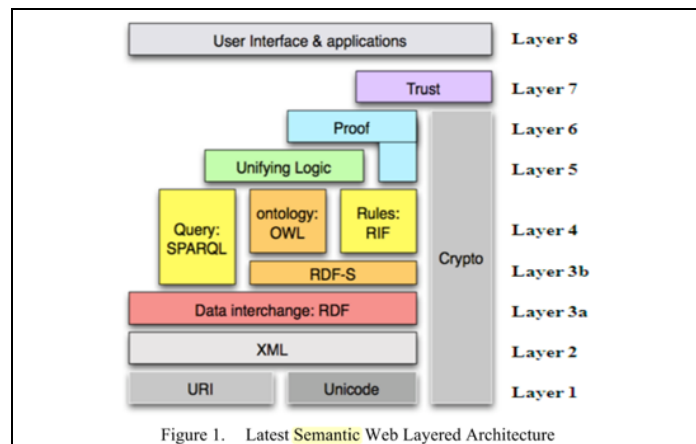
Figure 9. Semantic Web Architecture, (El-Seoud et

al., 2015), pg. 30.

Naeve (2005) posits that Web 3.0 can be viewed as a disruption in existing

knowledge flow paradigms. In particular, they suggest that, as a result of

emerging abilities for automatic information integration, knowledge can now be

conceptualized as 'knowledge pull' instead of the legacy paradigm: 'knowledge

push' (Naeve, 2005). We might visualize this in the idea of a machine searching

the Web for information to solve a problem asked of it by a human user, as one

might observe when engaging with Apple's *Siri* digital assistant.

Web 4.0 represents an evolution of Web 3.0 such that the Web has been so

infused with semantic meaning that capabilities for human and machine

autonomous information retrieval and processing that Digital Web Ecosystems

emerge. Within these digital ecosystems, humans and computers may engage in

cooperative or competitive problem-solving endeavors (Tekli et al., 2013). Web

4.0 is also known as the Intelligent Web, the Web of Things, or the Internet of Things (IoT) (Aceto et al., 2019). The integration of humans and objects, along with ubiquitous access to the Web, provides the ability to increase immersion in virtual worlds and to increase such worlds' complexity through the use of phenomena such as haptics. These virtual worlds are becoming increasingly prevalent (Kambil, 2008). A model proposed by Almeida, 2017, resulting from a literature review, showed that Web 4.0 has been characterized as entailing concepts such as big data, cloud computing, IoT, artificial intelligence, ubiquitous computing, and augmented reality, among others (F. L. Almeida, 2017). This pinnacle of Web innovation serves as the most direct underpinning of 4IR.

In summary, the four industrial revolutions represent distinct transformations in the means of production throughout human history. Each revolution was precipiated by specific innovations. The history of digital computing begins in the 3rd industrial revolution (Digital Revolution) and steadily evolves through a number of paradigms with a general trend of decentralization. The advent and evolution of the Web, which occurred late in the Digital Revolution, represent partiularly disruptive innovations, which caused the rapid changes bringing about the 4th, and current, industrial revolution. 4IR is especially transformative compared to the previous industrial revolutions and, as such, it requires particular contemplation and analysis in order to best harness the benefits and mitigate the risks brought about by these innovations. The diffusion of 4IR innovations will impact virtually every aspect of the human experience.

Higher Education Transformation

Higher Education (HE) plays a significant role in society, not least of which as a source of industry human capital (Jackson, 2019). As discussed in Chapter 1 and like other domains, HE is keen to adapt to 4IR in order to preserve its own existence and to effectively realize its value proposition in the midst of disruptive changes. Higher Education Institutions (HEIs) are, in today's climate, brands, which compete with one another to secure preferable rankings, funding sources, as well as student enrollment (Khalid et al., 2018). Indeed, higher education institutions are "part of a market economy" (Williams et al., 2020) pg. 8. Despite these realities, higher education has been slow to respond to the revolutionary changes brought about by the 4th industrial revolution (Menon & Castrillon, 2019), which has led to the emergence of a shadow education sector to address perceived gaps in HE (Morgan & Thayer, 2019). The permeation of neoliberalism into higher education, along with the alignment of HE as an entity whose primary purpose of preparing employees for specific roles in the workforce represent two trends, which may require unwinding for higher education to reach its full actualization (Stromquist, 2019). The World Economic Forum's *Future of jobs and skills report* suggests the top 10 skills in 2020 are complex problem solving, critical thinking, creativity, people management, coordinating with others, emotional intelligence, judgement & decision making, service orientation, negotiation, and cognitive flexibility (Hussin Aziz, 2018; World Economic Forum, 2020b). Presumably, a successful evolution of higher education would

include curricula and learning experiences, which would enable students to acquire these skills prior to graduation.

Gartner, Inc., forecasts that the future of higher education over the next ten years will be driven by two major driving forces: the severity of artificial intelligence's impact on work (from sustaining to disruptive), and the type of credentials valued by industry and society (from informal to formal). AI's disruptive impact on work is manifested most significantly by rapid, substantial worker displacement. By placing AI disruption on the y-axis and credential type on the x-axis, we are left with four quadrants of potential university constructs: Scholar U (formal credentials & disruptive AI impact), Your Own U (informal credentials, disruptive AI work impact), Classic U (formal credentials and sustaining AI work impact), and Jobs U (informal credentials, sustaining AI impact on work). Despite these distinct constructs, commonalities exist across each model, including an increased need for institutional marketing in both business to consumer (B2C) and business to business (B2B) contexts, personalized and agile curriculum, and an increased dependence on data to justify outcomes to stakeholders (T. Thayer et al., 2019). These constructs provide useful grounding against which to examine the various analyses and proposals in the literature. We choose to interpret AI's disruption as the 'primary' axis and the formality of credential typology to be a quasi-dependent variable, which will emerge as a function of the particulars of AI's manifestation in the workplace, along with other global variables. Figure 10 provides a visual representation of

the four future university constructs, which represent extreme, non-mutually exclusive, paradigms.

Figure 10: Potential Future Models of Higher Education (T. Thayer et al., 2019) Pg. 2.
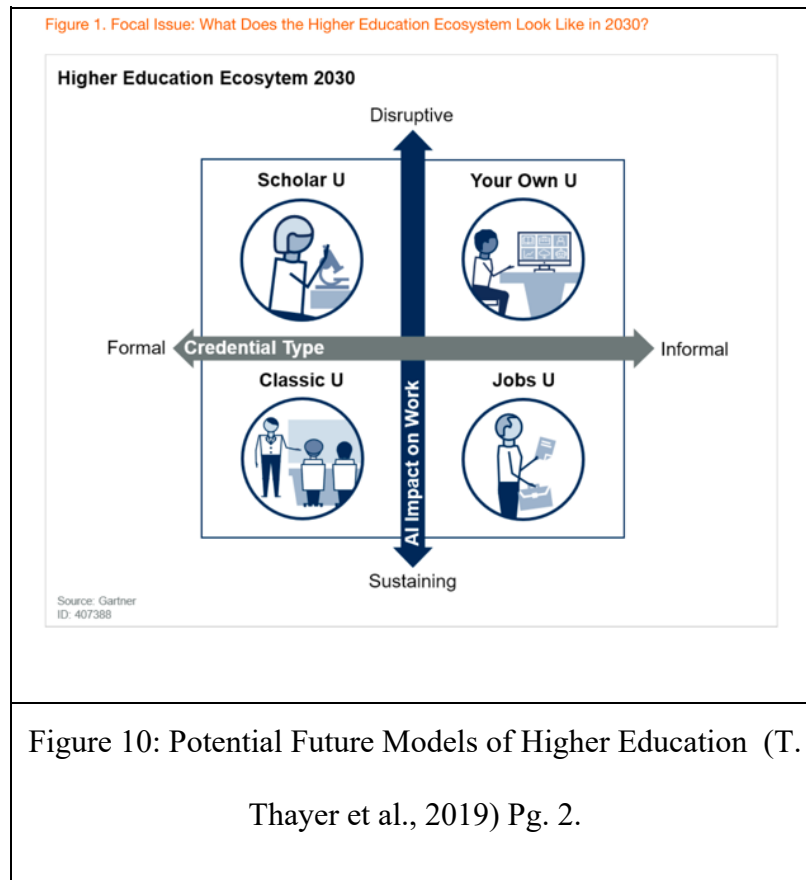
We first examine the two paradigms resulting from extreme disruption of the workplace by artificial intelligence: *Scholar U* and *Your Own U*. *Scholar U* is characterized by exclusivity of admission, a unified approach to breadth and depth, and a highly personalized, multidisciplinary, research-focused education, which is capable of producing doctoral-capable scholars: experts and knowledge creators. *Scholar U* emerges from a society characterized by a drastically altered workforce, where the majority of jobs have been displaced by disruptive AI

presence, leaving reduced needs for mass education of the populace, which had been necessary to address the realities brought about by the 2nd and 3rd industrial revolutions. As a result, education becomes a privilege available only to the wealthy, and admission to higher education programs will be hyper-competitive. Students admitted to these programs will be on a path toward life as one of three prestigious roles: sagacious scientist, conscientious business leader, or responsible philosopher-king. Admission to universities in a *Scholar U* paradigm are essentially being tapped as the future leaders of society. Less prestigious universities will disappear or consolidate, resulting in fewer higher education institutions, increasing the prestige of admission, and opening the potential for the wealthy to use their influence in the admission process. At the same time, *Scholar U* likely manifests in an environment where government takes a high interest in education and may regulate higher education accordingly. Although only intellectual or financial elites will be admitted to universities in the *Scholar U* paradigm, some lesser forms of educational opportunities will still be available. For example, because of a heavily displaced workforce, there is some need to occupy unemployed citizens with distraction and the potential for some sort of self-actualization, which can be accomplished from education, but such 'lower-priority' learning will be driven by robots and AI rather than elite human faculty (Lowendahl et al., 2021).

The *Your Own U* model represents an extreme in which AI has a highly disruptive impact on work, and informalized credentials are preferred over formal

degrees. In this model, career-focused learning is pursued in a just-in-time manner, sourced largely from nonaccredited providers. Neoliberal paradigms are pervasive, workplace needs prevail, and individuals scramble to obtain credentials needed to gain employment, which may often come in the form of short-term engagements, i.e., the *gig economy*. A social safety net is unlikely to exist in this scenario, and substantial inequality exists between highly skilled workers able to engage in sustained employment in lucrative careers and the remainder of the populace, who will be a class of low-skill workers known as the *precariat*. Knowledge is largely considered a private good and capital source. One perhaps counterintuitive characteristic of the *Your Own U* paradigm is that soft skills are expected to be some of the most sought and taught, as the near-ubiquitous presence of advanced AI reduces the need for human knowledge. An *ask Siri* paradigm means human soft skills, such as the ability to collaborate effectively with humans and robots, will become even more important. The low-skilled jobs, which are available to the uneducated and under-educated, will be filled – in many cases – by workers, who may seek higher education subsequent to entry into the workforce, rather than prior to entering the workforce. Learning agility and learning how to learn will be key differentiators and ought to be points of instruction for HEIs in the *Your Own U* paradigm (Morgan et al., 2021).

Table 1. Higher Education 2030 Scenarios at a Glance				
Scenario	Focus	Students	Value Proposition	Funding Model
Classic U	• Development of the whole person by accredited institutions • Shadow education sector provides the majority of career ed	• First-time students • Professional degree-seeking students	• Multiyear degrees, proxy for conceptual thinker • Episodic learning	• Predominantly tuition-dependent, relying on parent and student funding; some government and alumni funding sources
Jobs U	• Development of workforce by nontraditional, unaccredited players • Employers are dominant force in ecosystem	• Continuous learning model • All ages and skill levels, but lower-skilled adult workers in large numbers	• Small credentials with short half-life	• Significant employer and government funding
Scholar U	• Intensely personalized education • Research focus • Multidisciplinary, including STEM, as well as arts and humanities	• Doctoral-capable students • Wealthy, seeking enrichment	• Deep and long education that develops experts and knowledge creators.	• Research funding mostly from government sources • Tuition and endowment funding
Your Own U	• Just-in-time education by nonaccredited pop-up providers • Strong career focus with reputational metrics	• Spans spectrum of ages and abilities	• Self-directed, on-demand continuous learning • Mostly career-focused	• Combination of self-funded and employer-sponsored

Source: Gartner

Figure 11: Characteristics of the future university (T. Thayer et al., 2019)

The next two paradigms, *Classic U* and *Jobs U*, represent instances in which AI's disruption has been more incremental and sustained, which does not drastically displace large numbers of workers, but which results instead in a need for consistent upskilling to keep 'one step ahead' of AI capabilities or to possess the knowledge, skills, and abilities to best coexist with and harness AI capabilities. *Classic U* represents a model, which has not radically changed in structure from today's typical university model, but which focuses on development of the 'whole person' and leaves career-based training largely up to

the shadow education sector. In this model, formalized degrees issued by accredited higher education institutions represent proxies to employers that demonstrate the quality of student cognitive ability. This model would represent a deviation for some universities today, which have focused more on vocational training, causing them to shift toward the liberal arts, as suggested by other authors, ceding some space to shadow education to fill specific industry skill gaps. *Classic U* emerges from a sustained desire on the part of industry and government for whole, formal credentials within a work environment that sustains measured, ongoing AI presence. Students will often enter higher education prior to entering the workforce, and individuals with accredited degrees will generally obtain higher salaries and life outcomes compared to those without such credentials (Yanckello et al., 2019).

Jobs U describes a future potential reality in which AI has incremental, sustaining impact on work, but informal credentials are preferred. Most of the population will still be employed, but a commitment to lifelong learning will be essential to ensuring that AI advances do not outpace human workers' competencies. The socioeconomic educational model will have reached an extreme in which industry has outsized influence and monetizable work-skill driven education is demanded. Private companies may purchase education or provide it directly to workers, including robot workers. Workforce talent is largely developed by nontraditional, unaccredited providers, and employers are the primary agents of knowledge delivery. This model is characterized by heavy

employer and government funding, microcredentials, and a continuous learning model. The liberal arts are devalued, but HEIs do retain relevance in this model, provided they can develop strong industry partnerships (T.-L. Thayer et al., 2021). Since these constructs represent extremes, the actual manifestation of higher education over the next ten years may traverse aspects of each of these models, and the landscape may not clearly resolve itself cleanly to a model. Regardless of the precise structure of the future university, there are more generalized themes in HE that have been identified as critical for a society entering 4IR, encapsulated in a paradigm known as *Education 4.0.*

Education 4.0

Education 4.0 is a framework proposed by the World Economic Forum (WEF), which seeks to outline a necessary shift in learning content and learning experiences in order to prepare graduates for personal and collective success as they lead lives in the 4th industrial revolution. The dimensions of WEF's Education 4.0 framework are "global citizenship skills, innovation & creativity skills, technology skills, interpersonal skills, personalized & self-paced learning, accessible & inclusive learning, problem-based & collaborative learning (PBL), and lifelong & student-driven learning" (World Economic Forum, 2020a) pg. 4. Beyond these dimensions, defining Education 4.0 becomes more nebulous throughout the literature, and – similarly to the other 4.0 constructs (e.g., Industry 4.0, Globalization 4.0, Employability 4.0), definitive consensus has yet to be reached. It is clear from the WEF's original conceptualization, however, that

Education 4.0 encompasses both student's learning environment & experiences as well as curriculum content. We suggest a recent proposed working definition to describe the emerging phenomenon is appropriate. Namely, "Education 4.0 encompasses the different ways and approaches that Higher Education institutions can, and are, aligning their services and curricula to prepare graduates for work" (Bonfield et al., 2020) p. 224. Figure 12 presents a historical perspective of Education 4.0 in the contexts of the 4IR and Web innovations.

Figure 1: Moving towards the 4th Era

Figure 12: The Evolution of Education

(Salmon, 2017) p. 97.
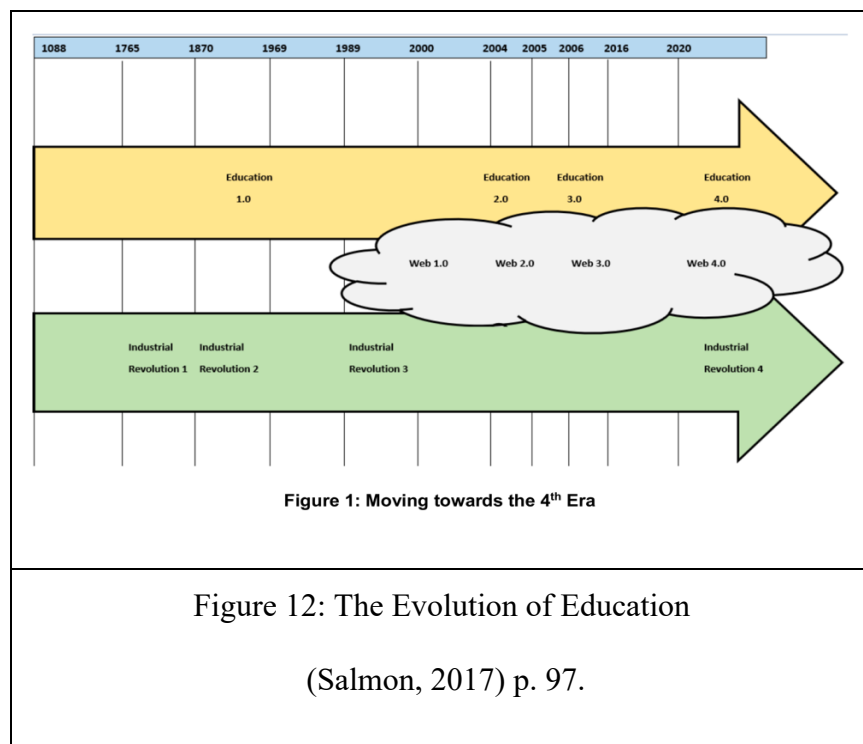
Aspects of Education 4.0 in practice include the use of serious games and gamification (F. Almeida & Simoes, 2019), smart campuses, digital assistants, online learning, and Massive Open Online Courses (MOOCs) (Bonfield et al., 2020). Education 4.0 is not concerned so much in the precise structural

manifestations of HEIs, but rather encompasses a collection of themes that prescribe, recommend, and advocate for aspects of student learning experiences and the curriculum believed to have the best chance of facilitating positive student outcomes in a 4IR workplace and society.

Learning Experiences

Higher Education has, historically, when viewed through either the gilded or socioeconomic education models, been a linear undertaking, which the rapid changes brought about by 4IR now calls into question (Jackson, 2019; Menon & Castrillon, 2019). The anticipated need for near-constant re-skilling and adaptation in the workplace suggests the four year degree may no longer be best aligned to the challenges of a 4IR world, and student engagement with higher education ought to occur across longer timeframes. An emergent HE landscape characterized by increased and deepened partnerships with industry, along with a need to provide experiental learning may cause the traditional classroom to dissolve and instead be replaced by a revolving-door model, where students become professionals, who become instructors, who become students, who become enhanced professionals, and so on (Li, 2020). One manifestation of this concept is the 'open loop university' model, pioneered with the Stanford2025 project, where students participate in higher education for a total of six years, partially nonconsecutive, interspersing educational engagement with industry experience, allowing them to participate as experts and share their lived industry

experiences with students within the higher education setting (Penprase, 2018). These examples speak to the evolution of the structural aspect of HE.

An additional dimension within the theme of learning experiences is pedagogical and instructor considerations. Instructors will need a particular set of, for example, digital skills, which will enable the instructors to best implement aspects of Education 4.0. One paper suggests instructors ought to acquire or enhance nine fundamental digital skills, including recording & editing audio clips, creating annotated and interactive video content, create generally visually engaging content, make effective use of social media, blogs, wikis & social bookmarking, creating digital portfolios and non-traditional quizzes. Effective use of these digital tools is critical to engaging a Gen Z student audience, who are digitally minded and possess high expectations surrouding the usability, usefulness, and accessibilty of digital tools (Hussin Aziz, 2018). Because the impact of 4IR disruptive technologies has disruptive impacts on the human condition, "pedagogical system improvement should improve teacher training programs about ways to prevent negative social consequences of the new technological revolution" (Grinshkun & Osipovskaya, 2020).

The flipped classroom represents yet another dimension of learning experiences, which has been explored in the context of higher education. The flipped classroom is a pedagogical paradigm, wherein students' first exposure to material occurs prior to engagement with an instructor in the classroom. Students are responsible for engaging with reference material and developing questions

prior to class. When students are in class, instructors can explore topics in greater depth, answer specific student questions, expand upon points of confusion and facilitate discussions and other collaborative learning activities. The flipped classroom has, arguably, always been practiced in some domains. For example, in humanities courses, it is common to read a text before class and be prepared to discuss it in class; law students represent a similar population accustomed to this model (Berrett, 2012; Bishnoi, 2020). The flipped classroom is becoming more ubiquitious across other disciplines partly because of the evolution and diffusion of digital learning tools. Rather than simply assigning a text, instructors now have a wide variety of options available to provide students' first, pre-class exposure to a collection of material.

An additional body of literature has also emerged surrounding the use of gamification in HE. Gamification is the use of aspects of game design, such as points, ranks, and achievements in non-gaming contexts (Deterding et al., 2011). Academic settings represent one example of a non-gaming context, so it is a natural candidate for the incorporation of these techniques. Existing studies of gamification in academia display mixed results. For example, a 2015 longitudinal study comparing the teaching of a gamified course compared to a non-gamified version of the same course revealed gamification resulted in less motivation and lower final exam scores compared to the control (non-gamified) class (Hanus & Fox, 2015). Similarly, a 2020 study found that the use of badges during introductory computer programming courses resulted in decreased intrinsic

motivation, despite qualitative feedback revealing positive perceptions of the introduction of badges (Facey-Shaw et al., 2020). In another paper, a gamified e-learning system was reported as effective at improving system adoption (Bouchrika et al., 2019). Quantitative survey feedback from a recent case study on the use of a gamified learning platform to teach a course in CRM implementation revealed that students believed the gamified elements increased their motivation to learn (Kinnett & Steinbach, 2021a).

Curriculum

The extreme emphasis on STEM education (Penprase, 2018) and hyper-contextualized degrees (e.g., BA in Human Resource Management) (Menon & Castrillon, 2019) have led to ultra-specialization at individual domain levels but at the cost of human competencies and skill diversity. Inevitably, the future of higher education requires a significant shift toward the importance of distinctly human capabilities, given that "the most valuable skills of all in the future will be those intrinsically blatantly human: creativity, critical thinking, responsive communication[,] and out-and-out human collaboration" (Salmon, 2017) p. 109. "Soft skills like teamwork, communication, and resilience have progressively gained greater importance in the context of the expected qualifications of a recent graduate" (F. Almeida & Simoes, 2019) pg. 120.

Hyper-contextualized degrees may have, in some cases, disseminated considerable specialized domain knowledge, presumably preparing students for

careers in a specific field. At the same time, industry domains change and transform rapidly, placing domain knowledge at risk of obsolescence – a risk across all domains but one that remains particularly uncontrolled in the context of hyper-specialized degrees. Hyper-specialization, of course, also comes at the cost of curriculum diversity, suggesting that graduates, who are unable to find a job in their field of specialization, may be less equipped to pivot to available opportunities. One proposed resolution to this challenge is encapsulated in the so-called 'axis flip', which represents a paradigm wherein skills and comptency development are prioritized over deeper knowledge of specific disciplines (Li, 2020).

A shift to interdisciplinary skills over domain knowledge will necessitate changes to assessment and credentialing. One theme that emerges from the literature is the importance of skills-based credentialing. Universities have the dual-challenge of developing curriculum that is skills rather than domain-focused as well as providing a means to capture skill-based credentials at a granular level (e.g., 'micro-credentials'), which will allow students to both obtain and track these skills over time (Penprase, 2018). Skills-based digital credentials will provide this verification (Morgan & Thayer, 2019), and potential partnerships may be formed between universities and, for example, LinkedIn, which has already implemented functionality for skills tracking (Waghid et al., 2019). Blockchain has been proposed as a useful technology upon which to construct lifelong learning profiles (Trailhead, 2021).

The Rebirth of the Liberal Arts Education

Despite the importance of, for example, exposing students to the specific software they might use in the work force, the classic aspects of a liberal arts education remain of primary importance (Morgan & Thayer, 2019; Penprase, 2018; Tierney, 2016; Williams et al., 2020). One classic hallmark of liberal arts curriculum is the maxim that such education teaches one 'how to think', which may be exactly what becomes most useful in a 4IR world. Adaptability, a thirst for learning for its own sake, and an ability to learn independently will be critical aspects of thriving in 4IR (Jackson, 2019), which the liberal arts paradigm supports. The complexities, such as the interconnectivity between people and machines, of a world undergoing a 4IR also support a liberal arts paradigm (Menon & Castrillon, 2019). The ethical implications of biological advances alone, not to mention those surrounding artificial intelligence or a mixture of the two, suggest a great need for "an interdisciplinary and global curriculum in a residential context, such as is found in many liberal arts institutions" (Penprase, 2018). This residency requirement may be useful in helping students to develop the 'people skills' necessary to navigate the rapidly changing world.

Residential requirements provide unique opportunities for students to learn social and political structures and skills, not least of which because they have a vested interest in the immediate outcomes, which creates parallels to citizenship in broader society since students understand that they must be active participants in the world around them in order to effect change (e.g., by voting). Residental

requirements place students in the position of, say, resolving disputes in the dorms or in fraternity or sorority houses. Greek institions, such as fraternities and sororities, increase exposure to political structures via the form of internal house politics, elections, officers and positions of authority, potential personal health risks (in the form of decisions about smoking, alcohol, and drug use) coupled with a hyper-shared residency increase the pressure of Greek members to influence outcomes for personal benefit. Such organizations may vote on what food to purchase, how clean a house is to be kept, when to schedule parties and other house activities, so students are incentivized to learn more about these realities and to build skills to influence their outcomes.

Summary

Higher Education has, since its modern emergence, largely oriented itself to a socioeconomic model wherein universities seek to prepare students for gainful employment in industry. HE has progressed through a series of paradigms to respond to the labor and intellectual needs brought on by the second, third, and fourth industrial revolutions. The particularly disruptive nature of 4IR brings unique challenges for HE, which will require innovations in both curriculum and learning experiences in order to best prepare students for a rapidly changing world and to ensure academia's very survival. The structural future of higher education has been postulated to depend on two driving forces: the extent of AI's disruption on existing work structures and the nature of credentialing; that is, granular compared to holistic credentials. Education 4.0 represents a paradigm to guide HE

toward effective alignment with 4IR needs while also employing 4IR technologies to improve student and organizational outcomes. Examples of Education 4.0 tactics include the open loop university, the flipped classroom, and the incorporation of gamification into learning content. Some authors have suggested that 4IR demands skills and competencies – primarily so-called 'soft skills' – rather than domain knowledge, and evolving curricula to encompass these aspects remains a significant challenge.

Customer Relationship Management

Overview & Dimensions

Customer relationship management (CRM) is the process of managing customer relationships using information systems in order to generate repeat sales. CRM can be considered an application of relationship marketing (RM) (Peppers et al., 1999; Ryals & Payne, 2001). Thus, CRM is a technology-enabled business philosophy, which cultivates customer relationships to generate various forms of organizational value. In particular, organizations undertake CRM to achieve myriad benefits spanning the operational, tactical, and strategic organizational levels including improved customer data, process, & service management; improved productivity; improved market segmentation; key account management; channel management; and customer satisfaction, among others (Shanks et al., 2009). Although early academic literature often seeks to address noted failures to achieve positive results from CRM implementations (e.g., (Rigby

& Ledingham, 2004)), a recent study confirmed that implementing CRM has demonstrable benefits including improvement in operational performance, operational efficiency, accounts receivable collectability and earnings predictability (Haislip & Richardson, 2017).

Much of the corpus on CRM academic literature derived from the direct marketing literature, with the advent of the relational database representing a disruptive innovation. The simplicity and flexibility of relational databases allowed organizations to advance their existing direct marketing initiatives by utilizing relational databases as repositories for contact demographic information and augmented with any number of additional attributes to aid organizations in segmentation and understanding customer buying propensity. These activities enabled organizations to practice the emergent concept of *relationship marketing*, which entails personalizing marketing efforts and seeing customers as individuals (Petrison et al., 1997). The term *database marketing* thus entails the use of databases to practice relationship marketing. The goal of database marketing is "the discovery of inhomogeneous information of the customer's personal and demographic background as well as the products the customer already uses" (Lopes et al., 1970) pg. 340.

As these marketing developments progressed, parallel infusions of technology into sales activities also occurred. Thus, the history of CRM is rich with contributions from the sales literature. Early studies in this research stream evaluated applications of various emergent technologies on salespeople and sales

processes. To those ends, early academic papers focus on sharing the technical details of various emerging technologies from the computer itself (Comer, 1975) to databases (Kennedy, 1984) to lead management systems (Collins, 1985; Taylor, 1983), laptop computers (Collins, 1984), electronic bulletin board systems (Caywood & Bauer, 1986), cellular phones (Swenson & Parrella, 1992), along with how these technologies provide benefits for sales teams and sales management. The term 'sales force automation' or 'SFA' emerged to represent any of a suite of tools leveraging technology in the sales process. "Sales force automation involves converting manual sales activities to electronic processes through the use of various combinations of hardware and software applications" (Rivers & Dart, 1999) pg. 59. The industry research firm, Gartner, describes SFA as "systems that support the automation of sales activities, processes and administrative responsibilities for organizations' sales professionals" (Travis et al., 2020b). A 1987 paper assessing the then-state of the art for SFA described the prototypical SFA program as a combination of technical tools such as real-time access to price, order status, and inventory information, email, word processing and spreadsheet capabilities, time management software, customer databases, and cellular telephones, along with a supportive human infrastructure represented by sufficient training and management advocacy (Wedell & Hempeck, 1987).

Figure 1
Sales Force Automation

Figure 13: Sales Force Automation (Wedell &

Hempeck, 1987) pg. 12.
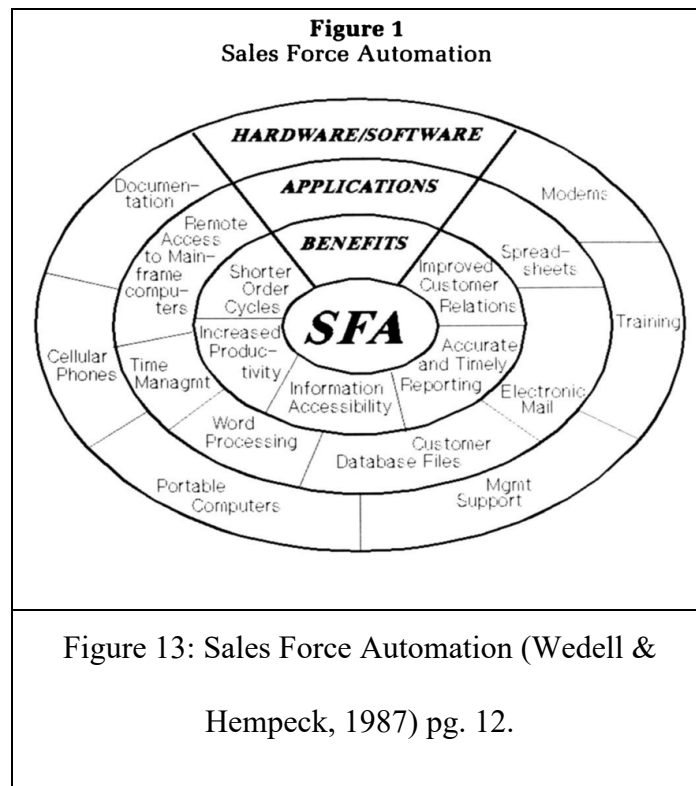
Despite the many purported benefits of sales force automation, numerous

examples of SFA failure have been evaluated in the literature (Rivers & Dart,

1999). In addition to papers examining adoption, other papers have explored why

adoption of SFA alone is not enough to realize the potential benefits of SFA

(Jelinek, 2013). To that end, authors have proposed a need to identify mediating

variables that may intervene in the purported causal relationship between system

adoption and performance. A 2013 paper sought to illuminate the mediating

constructs between SFA usage and salesperson performance via analysis of

potential mediators including market learning, customer orientation, and

relationship quality. (Holloway et al., 2013).

Sales technology (ST) represents a dimension interrelated to CRM and SFA, with sales technology described as the entire spectrum of IT resources a salesperson could use, suggesting that sales-oriented CRM is a subdomain of sales technology (Hunter & Perreault, 2007). Sales technology has been studied in the context of the IT workarounds literature. A 2009 paper revealed that sales desk personnel were able to manipulate CRM data to satisfy management prerogatives; that is: employees did not actually have to follow the CRM-prescribed processes and procedures but rather could simply create data to make it appear as if such adherence had been achieved (Vieira Da Cunha & Carugati, 2009). A Harvard Business Review Article in 1989 bridges the sales/marketing gap by characterizing a suite of technological tools as 'marketing and sales productivity (MSP) systems" (Moriarty & Swartz, 1989). Regardless of the precise term applied, these domains supply the historical backbone of CRM literature.

Subsequent analysis of CRM characterizes the advent of the transactional task automation systems able to digitalize aspects of the sales process as CRM 1.0 (Greco & White, 2009). CRM 1.0 has arguably little to do with customers but rather manifested in process automations and sales reporting and has an internal focus. This focus on organizational rather than customer aspects is one example of several important distinctions between CRM 1.0 and its successors. In CRM 1.0, software applications automated sales, marketing, and service processes with the aim of creating operational efficiency, improving transparency, and facilitating the practice of relationship marketing. CRM 2.0, also known as Social

CRM (Greenberg, 2010; Leary, 2008), represents a new technical paradigm that manifests as an amalgamation of legacy CRM processes with Web 2.0 functionalities, such as user communities, wikis, and content sharing tools, along with customer-centric strategies, which results in a marked improvement in organizational capabilities to interact with customers. These new capabilities enabled CRM platforms to serve as conduits for customer engagement. Instead of simply capturing information about customers, customer relationships are now nurtured within collaborative spaces where customers freely provide information (Niţu et al., 2014). Thus, Social CRM is a technology-supported philosophy and business strategy, which seeks to engage customers collaboratively to create mutual benefits (Greenberg, 2010). This advancement in CRM technology enabled sales organizations to practice a more advanced form of relational selling sometimes known as Sales 2.0 (Rocco & Bush, 2016). The advent of CRM 2.0 roughly corresponds to the introduction of the *Collaborative CRM* dimension into the strategic-operational-analytical taxonomy explored in the academic literature (Reinhold & Alt, 2009).

A particular avenue of customer engagement in the Social CRM paradigm centers upon the use of social media platforms (Soltani & Navimipour, 2016). CRM 2.0 is, thus, truly customer-focused and represents the direct use of technical innovations to facilitate direct information sharing between organizations and their current and prospective customers. CRM 2.0, characterized by the advent of Software as a Service (SaaS), the creation of the

platform CRM system, and the implementation of Web 2.0 innovations such as blogs, wikis, and customer portals, represented an evolution of the domain, wherein the focus shifts from operational efficiencies to customer relationships and organizations are enabled to practice the bi-directional discipline of Sales 2.0 (Kinnett & Steinbach, 2021d; Rocco & Bush, 2016).

Various dimensions for CRM have been proposed, such as the strategic-operational-analytical taxonomy (see Figure 14). Subsequent technology-oriented paradigms also emerged, such as the operational-analytical-collaborative taxonomy (see Figure 15), which suggests CRM systems are oriented toward automation and efficiency, data analysis, and interactions, respectively (Jelonek, 2015; Soltani & Navimipour, 2016). A recent framework (see Figure 16) incorporates strategic CRM along with the three technical dimensions (Yaduvanshi & Rai, 2019).

FIGURE 1. Strategic, Operational, and Analytical CRM
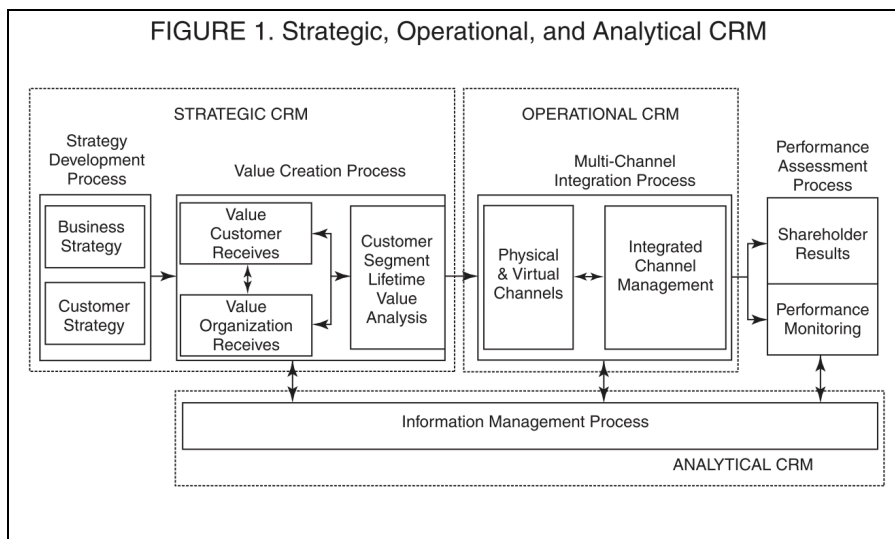
Figure 14: Strategic, Operational, and Analytical CRM (Iriana & Buttle, 2006) pg. 25.

Strategic CRM is a "top-down perspective on CRM, which views CRM as a core customer centric business strategy that aims at winning and keeping profitable customers" (Buttle, 2004) pg. 3.The intended outcomes of strategic CRM have been summarized as facilitating a "more customer-centric way of doing business and optimizing [customer lifetime value]" (Yaduvanshi & Rai, 2019) pg. 67. Such a paradigm provides opportunities to monetize customer knowledge and facilitate value creation (Lin & Su, 2003; Yaduvanshi & Rai, 2019). The ability to segment customers has been proposed as the foundation from which organizations can execute additional relational marketing strategies (Turnbull & Zolkiewski, 1997). CRM strategy can be conceptualized in four components: customer management orientation, organizational process integration & alignment, information capture, and technology-strategy alignment (Kumar & Reinartz, 2012). The strategic dimension underscores the guidance of authors who have cautioned against viewing CRM as a technology and emphasized the importance of CRM as a business driven initiative (Paas & Kuijlen, 2001).

Figure 15: Operational-Analytical-Collaborative CRM (Jelonek, 2015)

pg. 29.
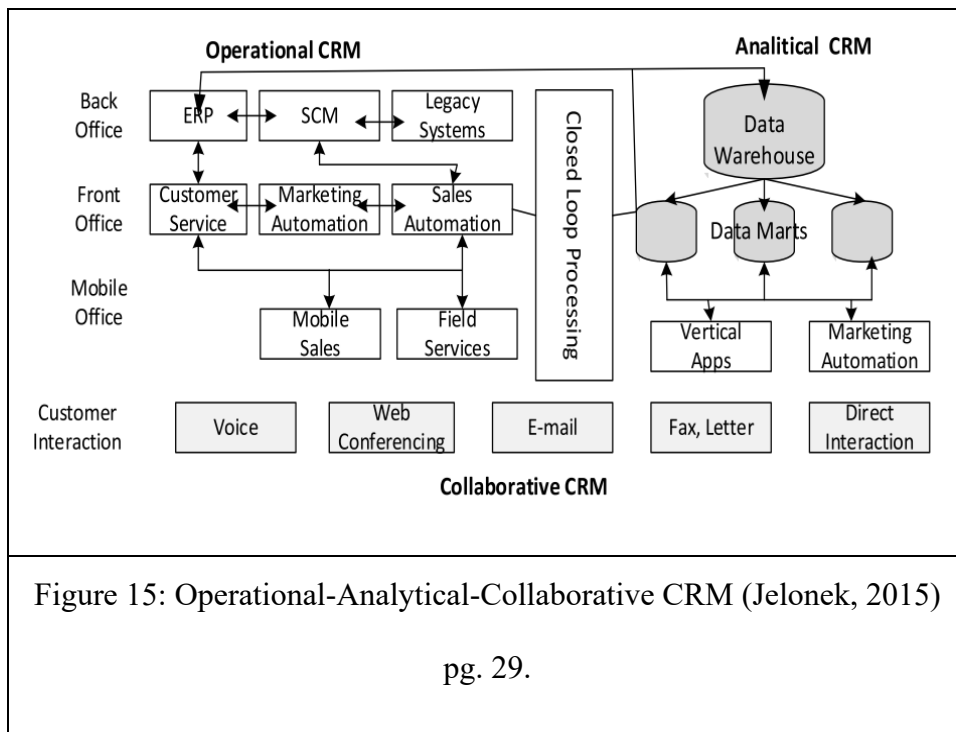
Operational CRM (o-CRM) entails the automation of sales, marketing, and service functions (METAGroup, 2001) and has been described as *front-office CRM* (Gefen & Ridings, 2002). Operational CRM initiatives intend to reduce "cost-to-serve in customer facing operations and [improve] efficiency, consistency[,] and quality in customer interactions" (Yaduvanshi & Rai, 2019) pg. 67. Personalizing customer relationships and increasing organizational responsiveness facilitates improved efficiency and effectiveness of customer-related processes (Xu & Walton, 2005) and improved information quality and dissemination speed both among internal employees and external partners (Speier & Venkatesh, 2002). Although the primary data captured from Operational CRM activities include customer inquiries, sales data, surveys (Chan, 2005), and contact management data (Xu & Walton, 2005), it has been proposed that back-office

data should be integrated into o-CRM data to gain maximal value (Fayerman, 2002).

    Analytical CRM (a-CRM) has been described as a suite of capabilities including analysis, modeling, communication, personalization, optimization and interaction management, which can be leveraged, for example, to understand customer behavior, analyze transactions, identify profitability drivers and illuminate the spatial dimensions of a business (Doyle, 2001). Analytical CRM enables personalization, real-time event monitoring and triggering, and *what-if* analyses (Herschel, 2002; Iriana & Buttle, 2006). Data mining tools and data warehousing systems are the primary applications in the a-CRM paradigm (Gebert et al., 2003). Analytical CRM seeks to improve front-office functions by helping align customers to the appropriate sales channels and products while enhancing cross-selling and up-selling (Yaduvanshi & Rai, 2019).

CONCEPTUAL FRAMEWORK: CRM TYPOLOGY
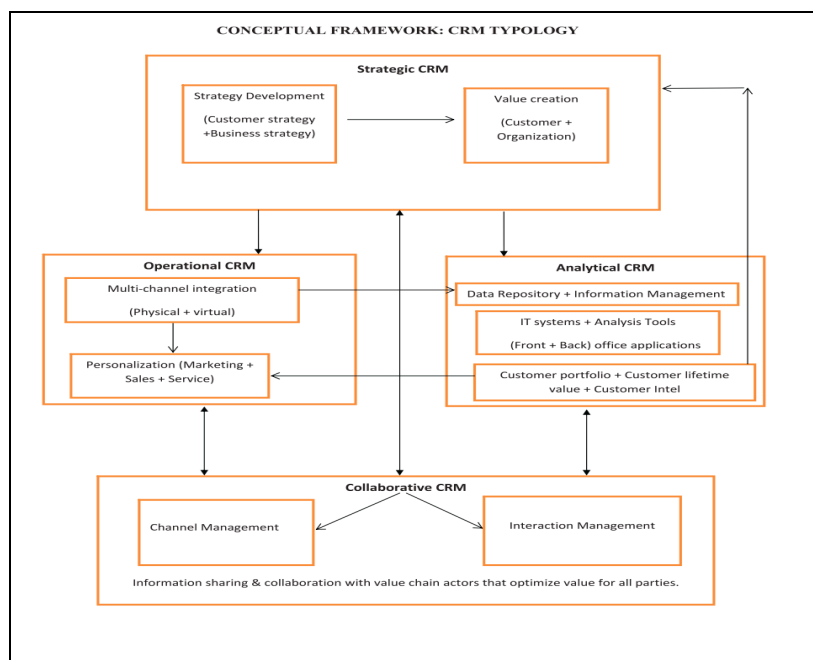
Figure 16: Conceptual Framework: CRM Typology

(Yaduvanshi & Rai, 2019)

Collaborative CRM (c-CRM), sometimes called *interactive CRM*, originally described "the components and processes that allow an enterprise to interact and collaborate with their customers" (METAGroup, 2001) pg. 5. This definition has been extended to encompass intra-organizational collaboration and Collaborative CRM thus encompasses any value chain actor including partners and suppliers (Reinhold & Alt, 2009). The purpose of c-CRM is to maximize value creation through the optimization and enablement of communication among a company and itself, its partners, and its customers (Yaduvanshi & Rai, 2019). The literature surrounding collaborative CRM spans "CRM business processes, application architectures, joint use of customer data(bases) and exchange as well as the integration of customer orientated application systems at a network level." (Reinhold & Alt, 2008) pg. 539. Extending the c-CRM dimension to encompass mobile CRM (m-CRM) was a later addition to the c-CRM literature (e.g., (Alolayan, 2020; Awasthi & Sangle, 2013; Negahban et al., 2016; Reinhold & Alt, 2009; Sangle & Awasthi, 2011)).

Gartner's Eight Building Blocks Taxonomy

It can be instructive to view CRM as it is practiced by businesses. Gartner, Inc., proposes CRM success is predicated upon eight *building blocks*: vision,

strategy, customer experience, organizational collaboration, processes, information & insight, technology, and metrics (Thompson, 2019a). *Vision*, the first of these building blocks, is driven by senior leaders and the executive team but must include contributions from broader roles within the organization and ultimately achieve alignment with all employees. Defining an organization's CRM vision is critical to orienting CRM processes and initiatives to the necessary alignment to fulfill an organization's value proposition, which should itself be intricately linked to the organization CRM vision. The purpose of company's CRM vision is to establish a positive perception, which leads to customer loyalty, acquisition, and advocacy. Vision articulates an organization's personality and provides grounding for the implementation of a customer centric culture. Successful implementation of organizational vision includes a company-wide understanding of what CRM is and can achieve, CRM's importance and benefits, customer definition, well-articulated plan for customer experience, and the scope of CRM initiatives in the organization. Because of the importance of organization-wide employee alignment to the CRM vision, it is critical that vision must incorporate rewards systems for employees who deliver superior customer experiences, along with those who identify and report pain points and gaps in customer experience so that organizations may improve those areas. Defining an organization's CRM vision requires, in part, and understanding of how the company's personality is currently being perceived by existing customers and prospects, which can aid organizations in determining how to, if necessary,

modify its proposed vision in order to address any concerns or deficiencies in customer perception. Vision defines and reinforces organizational branding. Ongoing intra-organizational communication of vision to ensure continued employee alignment is critical to ensuring vision is continually front-of-mind and pervasive throughout the organization (Shen, 2001). Vision, then, is roughly analagous to a mission statement, a succinct description of who the organization is and how it wants to be viewed by customers. Once a vision is established, organizations can move toward a plan for executing that vision, also known as a strategy.

Figure 17: 8 Building Blocks of CRM (Thompson, 2019a)
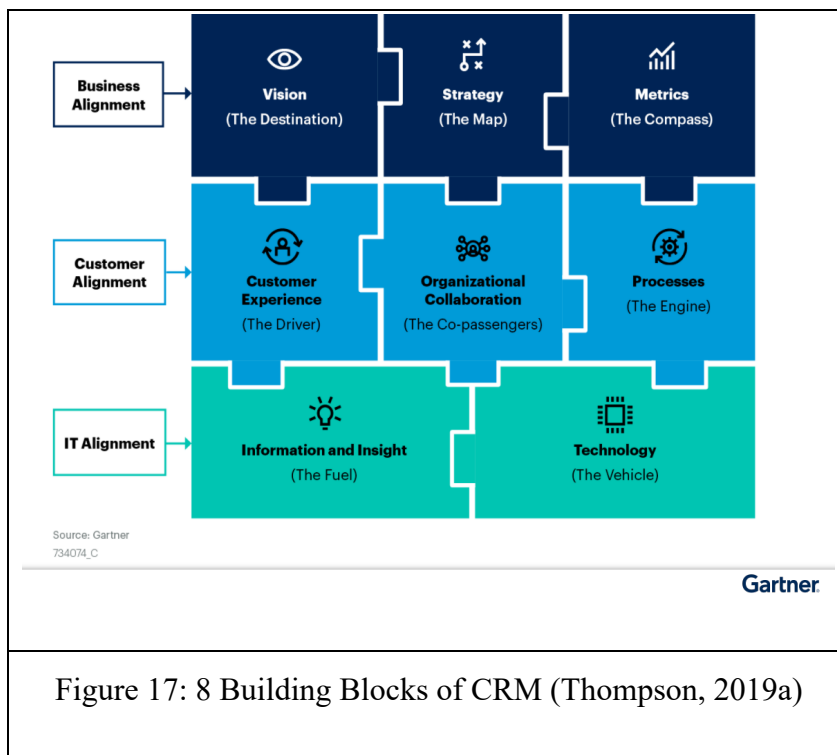
The second building block, *CRM strategy*, describes what an organization plans to realize from its CRM vision. Distinct from strategic plans, which describe

how a strategy will be realized, CRM strategy remains relatively high-level (Rosenstein & Cox, 2019). CRM strategy should guide decision-making and allow organizations to identify target customers and appropriate segmentation, determine which products and services will serve as focal points in the execution, and identifying how business units will be involved in the strategy's planning and execution. Strategy determines the metrics and their priority against which execution will be measured. Strategy also entails an examination and understanding of the human, capital, and time required, as well as the knowledge, skills, and abilities that will be needed to succeed. Customer segmentation plays an important role of strategy construction, as segmentation is the first step toward personalization of products and services, which represent key elements of customer-centricity. High-level strategic goals often include some combination of increased customer acquisition, reducing sales cycle times, improving the conversion of marketing campaigns, expanding cross-selling or upselling opportunities, and increasing customer satisfaction. Organizations with fewer than six major goals have been shown to generate improved financial results as a result of less internal friction, improved communication, and increased understanding throughout the organization. As organizations continue to pursue digital transformation and tailor employees' work experiences, it remains important to evaluate CRM strategy in the context of the organization's digital transformation strategy and attain alignment. Successful strategic planning and execution involves taking a cross-functional view of the organizations and an aim to look

beyond silos when considering customer-interfacing processes. Organizations benefit from taking an 'outside-in' view of themselves by putting themselves in customers' shoes to understand the true customer experience. The establishment of metrics occurs within the strategic planning process, though metrics are, in thesmselves, a distinct building block of CRM success. Frequent organization-wide communication of the CRM strategy, how it aligns with broader business objectives, along with elicitation of employee needs and concerns are all important aspects of ensuring strategy adoption. Communication should include frequent checkpoints to assess employee understanding of the strategy, and managers should be equipped with talking points to share with their teams to further improve employee understanding and retention of strategic elements. Allowing employees to contribute ideas for the CRM strategy, both during initial planning and ongoing execution will improve their engagement and encourage communication, always ensuring employees are cognizant of the strategy's benefits, individual, department, and organization-wide (Hansen, 2021).

Customer experience, the third building block of CRM, is increasingly a source of competitive advantage. A customer's perception of an organization may be influenced via every engagement, via any channel. As organizations increase the channels through which they engage with customers, responsibilities to provide a consistent experience increase. Regardless of whether a channel entails an in-person or digital engagement, customers expect high quality, unified experiences that leave them with positive perceptions of an organization's brand.

Three projects especially relevant for IT departments include unifying cross-channel experiences and providing consistent engagement, capturing and interpreting the voice of the customer (VoC), and personalizing digital customer experiences. Mastering cross-channel customer experience requires an understanding that customers expect a 'whole' experience when interacting with an organization regardless of whether engagements occur on a web page, a phone call, an in-store conversation, a smart phone app, or otherwise. Achieving alignment between channels is essentially an exercise in silo identification and mitigation. The adverse impacts of silos are reduced when user experience is unified, processes are standardized or integrated, knowledge-sharing is robust, and customer data is viewable within each silo from a single source. Customer feedback, via the voice of the customer, provides the necessary knowledge to identify aspects of the customer experience that customers enjoy and those that customers don't enjoy. Customer surveys are ubiquitous, yet surveys may be department-focused and thus contribute to silo mentality unless they are shared, consolidated, and interpreted. To those ends, if customers take time to respond to feedback requests, it is important that customer feedback data is shared broadly, customer-identified problems are solved, and customers receive responses from the organization where appropriate. Customer feedback can feed initiatives to personalize customer experience. Although not all customer personalization is digital, many companies have opted to pursue technology initiatives to improve the personalization of digital channels. Channel personalization initiatives require

that organizations identify the information sources from which they will draw data to guide decision making in addition to setting the threshold of how much knowledge will be needed to gain confidence to modify aspects of a customer experience (MacComascaigh, 2016).

The next building block of CRM success is *organizational collaboration*. Organizational collaboration may be seen as an outcome of successfully implementing CRM, but organizational collaboration is also a prerequisite. CRM is an information system, which entails not only the technology product(s) but also people, processes, and data. Ensuring a successful CRM initiative requires users to willingly make process changes. Employees must commit to contributing feedback to support ongoing process improvement. Technology integration must be sufficiently comprehensive to serve as a reliable, unified source of customer data. Achieving organizational collaboration surrounding CRM requires a continuous management of expectations across the various actors in the entire organization. Each employee must understand and regularly be reminded of how CRM can benefit daily work practices. Executive support and communication of that support for CRM are important parts of the communication necessary to facilitate collaboration and adoption. Organizations benefit from selecting impacted users or candidate advocates to participate in various stages of the project life cycle, from design to user acceptance testing (UAT), thereby capturing valuable input and increasing odds of user advocacy. To those ends, organizations should gauge employee support and oposition, elevating supporters

to advocacy positions and understanding the mechanisms driving opposition. Change management and change leadership ought to be permenant, persistent aspects of any CRM initiative, and mechanisms should be put in place to monitor and improve employee engagement. Employee satisfaction with workplace applications and customer loyalty & retention have been shown to be correlated, and employees, who are satisfied with their workplace applications are less likely to leave an organization and more likely to pursue internal growth. The voice of the employee (VoE) is an important aspect of a CRM program and can be used to identify and resolve points of friction. At the same time, the voice of the customer (VoC) must be considered when evaluating employee feedback. To those ends, customer centricity must be adopted throughout the organization, including by those functional areas that have little to no customer contact. Customer journey mapping and VoC knowledge sharing are useful exercises to inculcate customer centricity. Obtaining cross-channel customer insights may be possible via the application of social media mining and sentiment analysis, which helps employees broaden their customer centric viewpoints (Hilbert, 2021).

CRM processes, the next building block, describes those business processes that relate to the customer. Of all the business processes in an organization, only a subset will be customer-engaging. Many CRM process improvement projects occur within a single department, and cross-functional CRM processes may suffer, as these processes are more difficult to conceptualize. Customer journey is the grounding for improving CRM processes. Customer

journeys will reveal the processes relevant to the customer and, ideally, feedback

for fixing the process. At a minimum, customer journeys seek to understand what

is working and what isn't when it comes to the customer's perceptions. Mastering

CRM processes requires a deep understanding of customer journeys via customer

journey mapping, as well as a candid, comprehensive, cross-functional anaylysis

of internal CRM processes. These perspectives allow organizations to identify

horizontal processes across departments, which are of interest to the customer.

Considering which candidate processes to be reconstituted can be done by

determining whether the process is aligned to the value proposition and whether

the process improves the customer relationship. Prioritization is driven by

congruence with CRM strategy, and a long-term view toward process re-

engineering ensures maximum value benefit. Assigning CRM processes to a

process owner facilitates oversight and visibility into a process, and can provide a

single, accountable employee to the process's effectiveness or deficiency. As

processes are identified, prioritized, selected, and slated for re-engineering,

organizational change management needs to be involved continuously to assess

employee and customer impact and mitigate resistance. Setting service level

agreements (SLAs) with customers is another important component of process re-

engineering, which demonstrates a professionalism and openness to

accountability that might resonate with customers. Deficiencies in initial

requirements gathering as well as changing customer expectations are risks to the

success of a re-engineered process. Understanding customer intention in the

context of each cross-functional stage of the customer journey by making full use of insights from customer journey analyses improves organizational capability to correct the CRM process of concern. Voice of the customer initiatives provide a necessary input to this undertaking (Bharaj, 2019).

Information & insights represent Gartner's sixth building block of CRM. Maximizing value from customer data becomes increasingly difficult as customer engagement channels increase, data mining capabilities improve, and organizations acquire increasingly high volumes of data from multiple sources, including customer master data, social media posts, call center recordings, customer support ticket and chat messages, external data enrichment vendors, voice of the customer data, and the subsequent,resultant data created from applying analytics, machine learning, and data science solutions to various data sources. A single view of the customer, in the form of a single set of data, has long been a goal of CRM initiatives. As information sources increase, information ownership and governance emerge as critical capabilities. The impact of poor customer data manifests in virtually all aspects of the customer engagement process. Customer personalization efforts suffer when organizations lack sufficient insight into customer behavior, and sending customers duplicate or inconsistent marketing communication will undermine customer confidence in the organization and introduce negative perceptions. Understanding that robust information about customers is critical to successful CRM intiatiives leads organizations toward a posture of capturing as much data is possible from every

possible point of customer engagement. Successfully leveraging identified customer insights requires diligence surrounding when and how such insights are shared with the customers or prospects themselves; customers can become spooked when they feel an organization knows more about them than the organization 'ought to' at a given point in the customer buying cycle. To those ends, certain types of data may only become available at periodic points in the buying cycle, which suggests building customer profiles is an iterative, ongoing process. Customer privacy exists as an ever-present consideration as organizations attempt to synthesize the multitude of data sources now available (Daigler, 2018).

Technology represents the seventh building block of CRM and remains a significant challenge as IT organizations struggle to achieve the agility needed to respond to rapidly-changing business environments. Several interventions in a CRM IT strategy may improve an organization's CRM technology landscape, such as defining a framework for CRM system management, investing in the necessary tools and talent to build composable applications from vendor applications, which have composable architectures, and increasing the rigor with which organizations evaluate candidate CRM technologies. Composable architectures, in particular, promise massive results for organizations, with some evidence suggesting capitalizing on such architectures could implment new features 80% faster than competitor organizations without composable architectures and capabilities. Given this collection of challenges and opportunities, it is critical that organizations eliminate CRM IT technical debt by

retiring and replacing legacy CRM products with SaaS solutions rich with API

integration capabilities and strong potential for composability with other systems.

The impacts of composable applications are so significant that these capabiltiies

must be pervasive across the entire stack of CRM technologies, including data

and analytics tools. Even as composability remains imparative, such agile

solutions do not preclude the importance of adopting a customer engagement

platform framework. Such a framework allows organizations to organize CRM

technologies into 'classic' categories, such as operational CRM, analytical CRM,

or collaborative CRM, as well as process execution functionality and

collaborative aspects. These frameworks provide the transparency to, among other

things, determine whether the technology landscape supports customer journey

maps. Finally, harnessing the democritization of technology is relevant to CRM

technologies. Empowering employees to contribute to CRM technology as

'citizen developers' can improve system agility to respond to business changes

and unburden IT departments, so that technologists may focus on other needs for

CRM systems (Alvarez, 2021).

Metrics comprise Gartner's eighth building block of CRM. Sometimes

known as key performance indicators (KPIs), metrics – when properly conceived

– represent measurable intelligence surrounding aspects of CRM usage,

capitalization, or performance. Establishing metrics requires a balance of

simplification and comprehensiveness. Important details must not be obfuscated,

yet dashboards and other metrics must be consumable to the relevant audiences

without becoming arduous or inducing paralysis, which can leave organizations unable to engage in a critical component of metrics: taking action based on identified insights. Of note, even if ill-suited metrics do not result in actionable intelligence, the act of collecting metrics at all can change employee behavior, yet this does not imply organizations ought to shirk responsibilities to be thoughtful when tailoring metrics. CRM metrics could address areas including sales, marketing, customer service, commerce, and customer experience. Four possible models of metrics include tactical levers & optimization, operational levers & diagnostics, strategic levers & macro performance, and business outcomes. Business outcome metrics could include total ROI on CRM initiatives, time to market, and adoption. Strategic levers & macro performance could include cost of effectiveness of cost reduction projects, leads generated and conversion rate, effectiveness of cross-selling and upselling measures, and product adoption rates. Some examples of operational levers & diagnostics include sales cycle duration, revenue per campaign, adoption of loyalty programs, average time to support ticket resolution, consultant utilization, and cross-sell ratios. Tactical levers & optimization identify indicators of proficiency in customer interaction management throughout the life cycle and could include click-through rates for marketing emails or web promotions, event registrations, site traffic, sales activities, and data quality indicators (e.g., duplicate contact reports & dashboards). This layered, hierarchial model underscores the important consideration that dashboards should provide drill-down ability to view metrics at

multiple hierarchial levels. Similar to the establishment of customer-facing SLAs and renumeration policies, exposing a selection of CRM metrics externally has the potential to improve customer perceptions of the organization (Lowndes, 2018).

Gartner's CRM Propeller Taxonomy

A recent taxonomy proposed to classify CRM systems is Gartner's CRM functionality taxonomy, the "CRM Propeller" (Thompson, 2021). This taxonomy is focused on CRM software solutions, which are classified according to the functional areas these systems support, resulting in five categories: Sales, Marketing, Customer Service & Support, Digital Commerce, and Cross-CRM (see Figure 18). Gartner defines critical capabilities for each of the four *blades* in the taxonomy propeller. Gartner notes that over 2/3 of its inquiries and 60% of organizational spending are devoted to Multichannel marketing hubs (Marketing), Sales force automation (Sales), Customer engagement center (Customer Service & Support) and digital commerce platform (Digital Commerce) (Thompson, 2021).

High-Level CRM Application Functionality Groups

Customer Service and Support

Marketing

Cross-CRM

Digital Commerce

Sales

Source: Gartner
740615_C

Figure 18: High-Level CRM Application

Functionality Groups (Thompson, 2021)
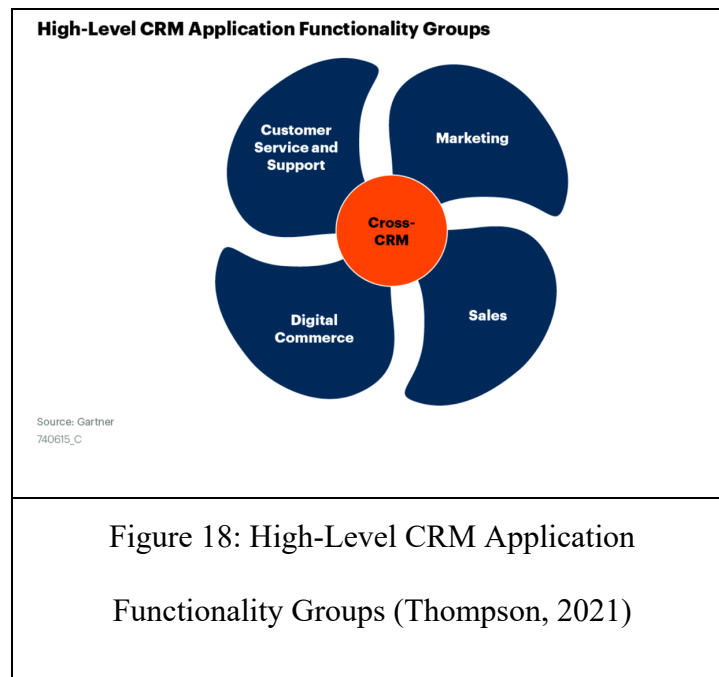
Critical capabilities for multichannel marketing hubs (MMH) include

customer profile management, campaign workflow, event triggering,

personalization, marketing channel support, real-time decisions/recommendations,

ad management, marketing analytics, and integration with other applications

(Bloom et al., 2021). The top vendors are *Salesforce*, *Adobe*, *Oracle*, *SAS*,

Acoustic, and *SAP*. Critical capabilities Gartner uses to evaluate vendors offering

customer experience center software include digital engagement, case

management, knowledge management, engagement automation, workflow & bpm

support, real-time continuous intelligence, workforce engagement management,

intelligent voice support, platform ecosystem & integration, and usability

(LeBlanc et al., 2018). Salesforce's *Service Cloud* is the market leader, and other

leaders include Microsoft, Pegasystems, ServiceNow, Zendesk, and Oracle

(Manusama et al., 2021). Digital commerce capabilities include agility, platform

ecosystem, B2B support, complex environment support, globalization, unified commerce, composability, core commerce (Lowndes et al., 2022). There is no clear market leader in this area, with the vendors *Adobe*, *SAP*, *commercetools,* and *Salesforce* all being categorized as leaders in Gartner's Magic Quadrant (Lowndes et al., 2020). SFA systems contain a number of core capabilities including account & contact management, activity management, activity management, opportunity management, guided selling, forecasting management, reports & dashboards, mobile capabilities, partner relationship management (PRM), platform integration capabilities, and lead management functionality (Travis et al., 2020a). Salesforce's *Sales Cloud* is the leader in Gartner's SFA analyses; other market leaders include Microsoft, Oracle, SAP, and Creatio (Travis et al., 2020b). SFA is joined in the *Sales* portion of the taxonomy propeller by features underlying sales enablement, effectiveness, performance, and analytics (see Figure 19).

Detailed Low-Level CRM Application Functionality Categories
Part 3, Sales

- **Sales Execution**
  - **Core:** Sales Force Automation
  - **Optional:** Lead Management, Sales Acceleration, Partner Relationship Management, Customer Success Management
- **Sales Enablement**
  Sales Content, Training, Coaching, Onboarding, Appraisals, Guided Selling, Data Intelligence Solutions for Sales, Strategic Account Management/Account Planning, Mobile Sales Productivity, Sales Engagement Platforms
- **Sales Effectiveness**
  Configure, Price & Quote, Visual Configuration, Contracts, Proposals, Price Optimization and Management, Subscription and Recurring Revenue Management
- **Sales Performance**
  Incentive Compensation, Quotas, Territory Management, Gamification, Business Graph
- **Sales Analytics**
  Sales Analytics Suites, Predictive Forecasting, Conversational Engagement Analytics for Sales, Knowledge Graph for Sales

Source: Gartner
740615_C

Gartner.

Figure 19: Low-Level CRM Application Functionality

Categories – Sales (Thompson, 2021)

We expand on Gartner's core capabilities framework for SFA by supplementing each functional category with high-level affordances and relevant actors. Affordances are potentials for which some actor could take a given action on an object (Gibson, 1979). Although originating in ecological psychology, affordances have become a critical lens through which to examine phenomena in the *IS* domain, (e.g., (Balci et al., 2014; Du et al., 2019; Karahanna et al., 2018)). Keeping with the guidance of (Volkoff & Strong, 2017), we focus on isolating affordance from actualization of the affordance, consider actor-artifact relations, and deliberately define affordances at the same level of granularity.

Table 1: Sales force Automation: Affordances, Actors, and Functions

Core Capabilities of SFA Systems (Travis et al., 2020a)		Author Contributions	
Functional Category	Functions	Actors	Affordances
Account & Contact Management	• Create and maintain account and contact records (by end users) and hierarchies.	FLS, SA	Data inputting, knowledge enriching, data quality enhancing

	• Create and maintain account and contact status values as part of a comprehensive customer life cycle process. • Manage account and contact duplicates. • Integrate with commercial data services (such as Dun & Bradstreet or Hoover's) or with a vendor's own data service product. • Create and maintain householding relationships across consumers. • Use the SFA product as a customer data master source.		

	• Provide strategic account management functions. • Integrate with third-party social channels such as Twitter and LinkedIn. • Provide relationship intelligence functions for accounts and contacts. • Provide contact and account health scores.		
Activity Management	• Manage overall activity. • Assign activities to more than one record (for example, associating an event to more than one contact). • Create and maintain team calendars.	FLS, SA	Interaction tracking

	• Integrate with popular email and calendar applications • Optimize daily sales activities with automated functions, such as precall planning functions or call/meeting location and routing. • Provide AI-based conversational analytics. • Provide salesbots for automating interactions with contacts.		
Opportunity Management	• Create and maintain custom opportunity process steps that match a company's selling process (such as stages,	FLS, SA, SM	Workflow visualizing, decision enabling

	process steps and next best actions).		
	• Maintain opportunity record visibility/data security (for example, maintaining private access or adding automated record sharing within specific teams).		
	• Manage anticipated revenue and close dates.		
	• Create and maintain selling teams for specific opportunities.		
	• Create and maintain opportunity splits and revenue schedules.		
	• Create and view opportunity pipeline reports or views.		

	• Create and maintain price books and product hierarchies that match a product master data source. • Apply AI-based predictive analytic models to opportunities. • Measure the level of buyer engagement on a specific opportunity, or propensity to buy.		
Guided Selling	• Manage opportunity playbooks using workflows, playbook management modules, low-code UI designers or business-process-modeling tools. • Provide native functions for presenting next best action	FLS, SA, SM	Workflow visualizing, decision enabling

	recommendations to sellers for deals. • Use external and internal data systems to drive process recommendations		
Forecasting Management	• Create/maintain pipelines and forecasts (by sales representatives) & maintain pipeline inspection functions. • Create/maintain forecasts for sales teams, using functions such as manual forecast categories or manual close date overrides (by managers). • Create forecasts by territory.	SM	Revenue predicting, Compensation estimating

	• Split forecast opportunities by representative, territory, or product category. • Create/maintain quotas. • Provide prescriptive analytics for identifying which deals need to be modified to close any pipeline-to-quota or forecast-to-quota gaps		
Reports & Dashboards	• Offer overall usability of standard reporting and dashboard capabilities. • Create custom reports and dashboards. • Conduct advanced analysis with standard reporting capabilities (such as trend analysis or custom calculations)	FLS, SM, SA	Data segmenting, data grouping, data sorting, data visualizing, presentation manipulating

Mobile	• Native mobile apps that support core SFA functions & the ability to develop custom apps. • Offline functionality. • The ability to use dedicated mobile apps to optimize daily sales activities	FLS	Interaction tracking, workflow visualizing,
Partner Relationship Management	• Create and maintain partner selling models via web portals • Manage master data for partners and maintain partner life cycle processes. • Maintain a channel marketing system. • Provide sales execution functions for deal registration &	P, FLS, SA	Prospect routing, prospect scoring, collaboration enabling

	opportunity/lead management • Manage channel partner services (including pricing approval management, order management integration, returns management and warranty management). • Create, distribute, and maintain reports and dashboards for partners.		
Platform Integration	• Includes functions for connecting SFA solutions with master data sources, or with other sales applications via APIs. Also includes functions for customizing the standard SFA solutions	ADM	Data enriching, usability enhancing, functionality extending

	with custom user interfaces, data tables, process components or business logic.		
Lead Management	• Manage multichannel lead capture & routing processes. • Provide lead qualification processes, including multistep qualification playbooks and cadences. • Manage lead scoring models & conversion into qualified accounts and opportunities • Manage business contact privacy details and opt-in consent	FLS, SA, P	Prospect scoring, workflow visualizing

Table 2: Legend of Actors & Their Roles

Code	Role Name	Role Description	
FLS	Front Line Sales	Sales personnel directly engaging with customers	
SA	Sales Analyst	Supports FLS	
SM	Sales Management	Management, coaching & oversight of FLS & SA	
P	Partners	Vendors, sales collaborators, other extra-organizational actors involved in sales processes	
ADM	IT Administration	Builds & supports the CRM system	

Future Perspectives on CRM paradigms

Just as scholars aligned Web 1.0 to CRM 1.0 and Web 2.0 to CRM 2.0, we expect to see conceptualizations of CRM 3.0 and 4.0. We identified very limited academic treatment of the idea of CRM 3.0. While two papers with shared authors liken the term to crowdsourcing (Chang & Weng, 2012; Chang & Wu, 2010), a 2013 paper describes CRM 3.0 as a set of enhancements to social CRM that leverage Semantic Web capabilities and allow organizations to learn from customers on social media sites (F. Almeida et al., 2013). The latter sentiment is mostly consistent with a more detailed characterization proposed by David Taber in a 2011 article on CIO.com. Taber characterizes CRM 3.0 as an aspect of CRM wherein organizations gain the ability to learn from conversations occurring 'out in the wild' on the social internet. Whereas the essence of CRM 2.0 is to facilitate customer collaboration and relationship building, (vis. 'we know what customers

want because they tell us'), CRM 3.0, as purported by Taber, allows us to

understand what customers want because they tell *someone else*. These data-

driven insights are realizable almost wholly by Semantic Web technologies,

despite the fact that the social media venues of communication themselves are

fundamentally Social Web manifestations. Integrating the content generated via

social media channels, which is largely unstructured, with the typical relational

database models found in traditional CRM platforms, represents a challenge for

organizations and an opportunity for vendors seeking to compete the CRM 3.0

space (Taber, 2011). The challenge of making sense of heterogeneous data

suggests an even greater reliance on semantic technology capabilities.

A common application of CRM 3.0, as conceptualized by (Kinnett &

Steinbach, 2021d) is artificial intelligence (AI), a key underpinning innovation of

the Fourth Industrial Revolution(4IR). AI has the potential to address a number of

questions long-pursued by sales teams, such as identifying client propensity to

purchase, identification of internal sales training strategies, understanding of

drivers underlying sales cycles, and predictions surrounding forecasting (Travis,

Zijadic, et al., 2019). Kinnett & Steinbach (2021)'s postualization of CRM 4.0

describes aspects such as smart offices, biometrics, wearables, extensive

integration of the Internet of Things (IoT) throughout every aspect of the

customer value chain (Kinnett & Steinbach, 2021d). In summary, CRM has

evolved as a domain and has been characterized as a progression of paradigms

(see Figure 20) from CRM 1.0: focused on automation and reporting, to CRM 2.0:

a customer-centric collaborative platform, to CRM 3.0: social-semantic artificial intelligence tool, to CRM 4:0: a stage not yet been actualized wherein CRM incorporates comprehensive AI and the full suite of Web 4.0 technologies (Kinnett & Steinbach, 2021d). CRM 4.0 can thus be thought of as the CRM domain's actualization of 4IR innovations.

Figure 20: Framework for Evolution of CRM (Kinnett & Steinbach, 2021d) p. 7
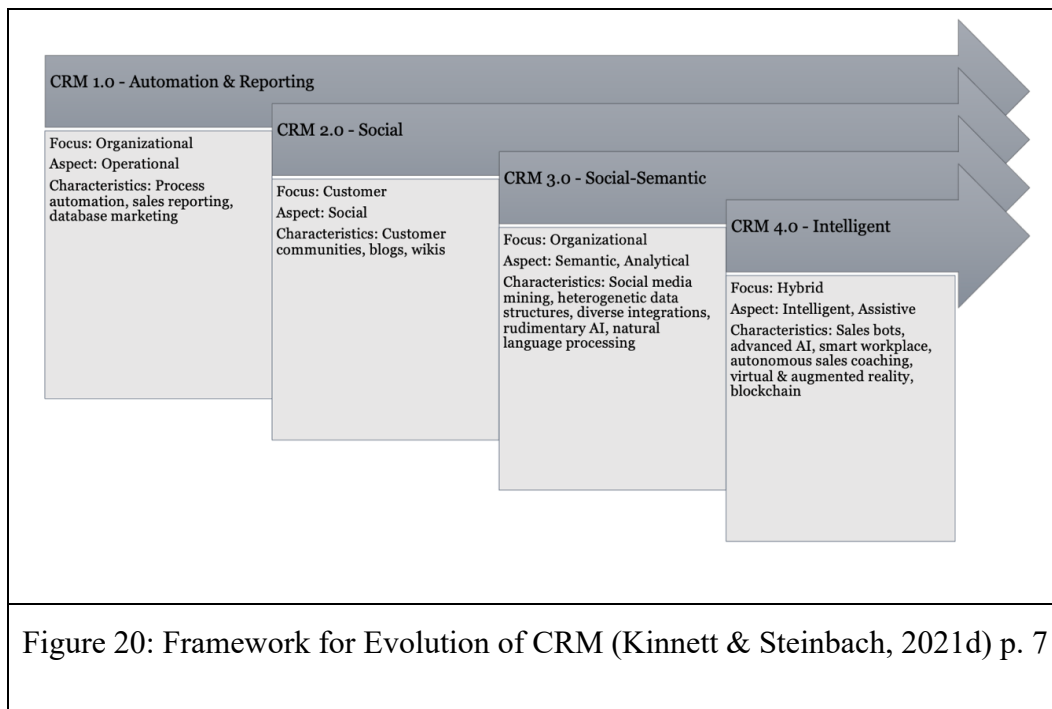
CRM in Higher Education

CRM has been impacted by the emergence of AI, a seminal Web 4.0 innovation and the main catalyst underlying 4IR, and industry research has revealed that use cases for AI in the CRM domain have already been identified. Even just one CRM dimension, marketing, has the opportunity to harness AI to automate customer interactions, personalize users' intra-channel experience, improve customer segmentation, and enhance decision support to identify

appropriate offers to propose to customers (SalesForce Research, 2021). In order for organizations to integrate AI successfully, employees with requisite skills are necessary. Clearly, the potential employability for CRM experts is high, yet 82% of IT teams surveyed by Salesforce Research teams report experiencing a skills gap in data science – a critical skill to harness AI – or anticipate a skills gap within two years (SalesForce Research, 2019). In order to supply industry with top talent, there is a clear need to improve and expand Higher Education's offerings for CRM-related skills.

Despite the employability potential of knowledgeable CRM students, a recent paper (Lokuge et al., 2020), as discussed in Chapter 1, suggested CRM courses are not adequately preparing students for employment as CRM professionals. On one hand, existing IS curriculum is proposed as deficient in business context and theory. On the other hand, business school curriculum often neglects to include sufficient technical detail, which is critical to any user's maximal understanding of CRM. Marketing curriculum, while critical for the theoretical underpinnings of CRM, may leave students unprepared for the actual technological manifestations of CRM in industry, thus presenting a deficiency in understanding about the technological limitations, benefits, and capabilities of modern CRM systems. The ideal CRM curriculum is proposed as a fusion of general business theories, marketing concepts, and information systems considerations (Lokuge et al., 2020) presented as a Venn diagram as dicussed and depicted in Chapter 1.

Despite these purported deficiencies, some academic literature has explored dimensions of CRM education. Jelinek (2018) introduced conceptual material and quiz questions surrounding SFA technology in a Marketing course (Jelinek, 2018). Ke (2018), examined the use of the flipped classroom pedagogical paradigm in a course on CRM (Ke, 2018). A 2016 paper presented a proposed technical architecture to facilitate the teaching of the Microsoft Dynamics AX ERP & CRM platforms and noted that Microsoft is keen to continue enabling the teaching of the Dynamics AX platform in higher education (Wimmer & Hall, 2016). A 2014 study argued for the importance of teaching CRM technology in sales courses and presented guidance on selecting and utilizing a CRM system for classroom experiential learning, ultimately opting to procure Microsoft Dynamics CRM Online (Smucker, 2014). A 2010 study on the teaching of SFA technology in the classroom compared teaching technology utilizing realistic sales scenarios compared to task-based SFA technology learning, revealing student preference for learning the technology in the context of realistic sales scenarios (Mallin et al., 2010). A 2019 paper proposed the use of the e-learning platform, *Trailhead*, as a useful tool to educate marketing students on CRM technology (Harrison & Ajjan, 2019), and a 2021 teaching case study on the use of Trailhead to teach a course on CRM implementation found that students considered the platform useful, easy to use, effective at increasing their motivation to learn (Kinnett & Steinbach, 2021a). A 2017 paper emphasizes that organizations' continued investment in CRM technology and CRM's wide remit

results in higher wages for CRM employees. As such, students pursuing CRM knowledge benefit from learning CRM's cutting edge features along with analytical skills (Schlee & Karns, 2017). A 2020 literature review examining, primarily, five prominent sales education journals, found that "the use or discussion of sales technology in the classroom continues to be an understudied area with only seven articles (5.9%) in the past 15 years" (Cummins et al., 2020) p. 204.

Summary

CRM technology has evolved throughout the past forty years to encompass a vast array of business practices and technological innovations, and CRM increasingly pervades organizations' technical enterprise architectures. CRM has been studied extensively from multiple perspectives throughout the information systems, sales, and marketing domains. CRM represents the embodiment of relationship marketing (RM), and it originally manifested in the form of databases of contacts or sales leads and expanded via the composition of applications incorporating these databases with sales automation functionality. These early systems, characteristic of the early 1990s, represent the paradigm of CRM 1.0, a paradigm through which CRM mostly focused on improving internal operational processes but had no direct value proposition for customers. With the advent of web technologies emerging around the year 2000, CRM began to evolve to incorporate a bi-directional paradigm, which is now characterized as CRM 2.0, or *Social CRM*. CRM 2.0 shifted the focus of CRM toward customers

through the enablement provided by collaborative technologies such as customer portals, wikis, and other collaboration tools. The integration or use of social media platforms represent important components of CRM 2.0, as do the advent of the software as a service (SaaS) as a vehicle through which to deliver CRM solutions.

CRM systems have since been classified as operational, analytical, or collaborative, and the dimension of strategic CRM has been proposed to conceptualize the aspect of CRM concerned with non-technical, process-oriented considerations. Operational CRM is described as front-office CRM and encompasses the sales, marketing, and customer service systems used by organizational personnel. Analytical CRM refers to capabilities developed to analyze operational data alone or in addition to additional data sources, which could be overlaid against operational data in order to reveal customer insights. Collaborative CRM systems represent CRM-based communication channels, and collaborative CRM proposes to maximize value creation through the optimization and enablement of intra-organizational and inter-organizational channels.

The process of implementing CRM capabilities has been distilled into a taxonomy, Gartner's 8 Building Blocks of CRM, which has shown that achieving the benefits of CRM can be a challenging process requiring the mastery of business alignment, customer alignment, and IT alignment through the dimensions of vision, strategy, metrics, customer experience, organizational collaboration, processes, information & insights, and technology. Gartner also

conceptualizes CRM technology into categories marked by the functionality each technical architecture embodies. For example, Gartner's CRM Application Functionality Taxonomy defines categories of sales, marketing, customer service & support, digital commerce, and cross-CRM. An examination of the *sales* blade of the functionality propeller reveals that sales force automation (SFA) systems remain the backbone of sales-based CRM functionality of modern SFA systems.

An inventory of sales force automation functionality allows for extension via the mapping of actors and affordances – opportunities for action – onto existing descriptions. The core capabilities of SFA are account & contact management, activity management, opportunity management, guided selling, forecasting management, reports & dashboards, mobile capabilities, partner relationship management, platform integration, and lead management. Common actors involved with one or more of these capabilities include front line sales personnel, sales analysts, sales management, partners, and – of course – the IT personnel building, configuring, and supporting these capabilities.

The future of CRM is embodied in the proposed paradigms of CRM 3.0 and CRM 4.0. Although examples of CRM 4.0 are sparse in the academic literature, CRM 3.0 has been described as a largely analytical endeavor, which seeks to capture, interpret, and integrate large volumes of customer sentiment data from social media sites. Customer insights are, as those who have written about CRM 3.0 espouse, unearthed by the intelligent interpretation of this data. Artificial intelligence may be necessary to process these large data sets

effectively, and the integration of AI into the CRM landscape is another hallmark of CRM 3.0. Our proposed construct of CRM 4.0 incorporates a range of Web 4.0 innovations, including smart offices, biometrics, and integration of Internet of Things (IOT) devices into CRM systems and processes.

Maximizing CRM's potential is predicated on an abundant and able labor force skilled in areas relevant to CRM. Certainly, CRM's popularity and consistent market demand make it a lucrative opportunity for students entering the workforce. Survey data reveal IT teams are grossly deficient in data science expertise, which represents only one example of the skills gap occurring within the CRM domain, particularly as organizations rely more and more on AI and data analytics capabilities in order to generate the insights needed to drive competitive advantage. The expansive skills gaps reported by industry suggests higher education has not produced ample graduates with the skills valued by the CRM domain. Although important exceptions exist, academic literature surrounding CRM pedagogy is not abundant. A recent literature review of prominent sales education journals reveals that sales technology is an understudied area.

Chapter 2 Summary

In this chapter, we provided a literature surrounding the fourth industrial revolution, the transformation of higher education, and CRM technology. We examined the impact of 4IR on both higher education and CRM, including the

relationship between industry CRM needs and academia's readiness to provide

programs to educate students in skills, which would address those needs. We

discussed Education 4.0, a construct representing curricula and learning

experiences, which can, in a general sense, prepare students for a life in 4IR. We

discussed the landscape of pedagogical literture relating to CRM and the

limitations identified in some existing CRM curriculum, which suggests

opportunities exist to develop university courses better suited to prepare students

to be successful with CRM in a 4IR world. In the next chapter, we will define our

research questions and describe our research methdology.

CHAPTER 3: METHODOLOGY

In this chapter, we outline our research methodology and present results from a pilot study. In order to develop effective interview questions for the grounded theory study comprising the heart of this research, we performed a pilot study in the form of a content analysis of CRM job postings. The resultant framework provides both a foundation for semi-structured interviews with CRM hiring managers and CRM personnel recruiters and a research contribution in its own right. The notion of combining a content analysis with confirmatory semi-structured interviews aligns with much of the extant literature. To that end, we note that many studies have examined competencies, skills, and skills gaps, including within the IS and MIS domains. Dillon & Kruck (2005) used a survey methodology to evaluate employer needs from accounting information systems graduates (Dillon & Kruck, 2005). Aasheim, Williams, & Butler (2009) also used surveys, comparing views on the relative importance of IT skills of employers across multiple industries, including education, engineering, insurance, manufacturing, and others (Aasheim et al., 2009). A 2006 study explored employer expectations from university graduates of Enterprise Resource Planning (ERP) programs (Boyle & Strong, 2006). ERP has been compared to CRM, and many similarities exist, though these systems remain markedly distinct despite their collective maturation. More recently, Cummings & Janicki, (2020), surveyed IT/IS professionals with the aim of understanding the technologies currently in use or projected to be used in organizations, the IT knowledge, and skills, which

would be required by IT graduates, and the demand for graduates across various IT/IS categories (Cummings & Janicki, 2020).

Phase 1: Salesforce Administrator Job Posting Content Analysis

In order to facilitate the refinement of research questions and to inform the development of interview questions for our phase 2 grounded theory study, we performed a content analysis of job postings for Salesforce Administrator positions with the aim of answering the following research question.

RQ1: How do Salesforce Administrator job postings correspond thematically to the Lokuge framework?

We next provide context surrounding the decision to choose Salesforce (NASDAQ: CRM) as the specific CRM platform for our study. Salesforce is a customer relationship management (CRM) vendor offering a suite of cloud-based products to a variety of industry verticals. The company is sometimes referred to as *Salesforce.com*, its original name. The noted industry research firm, Gartner, Inc., lists Salesforce consistently as a market leader for various aspects of CRM, including sales force automation (SFA) solutions (Travis, Hilbert, et al., 2019), lead management (Hansen et al., 2020), customer engagement centers (Manusama & LeBlanc, 2019), digital commerce (Lowndes et al., 2020), multi-channel marketing hubs (Elkin et al., 2020) and configure-price-quote (CPQ) solutions (Lewis & Ford, 2020). Salesforce is one of the top eight vendors consistently featured in Gartner's CRM analyses (Thompson, 2019b). A Salesforce-sponsored

white paper reported that the Salesforce ecosystem would create 9 million new jobs by 2026 (Gantz & Webber, 2021). Analyzing, configuring, deploying, supporting, and administering Salesforce requires a number of roles with distinct responsibilities. In order to provide a simplified sample for this pilot study, we focused on the role of "Salesforce Administrator."

Content analysis is a method used regularly in the extant literature surrounding curriculum alignment and skills mapping. A 2014 paper likens content analysis to grounded theory methodology, underscoring the nature of content analysis to provide explanations via extracted themes and codes (Burns et al., 2014). Content analysis is a textual analysis or text mining method, which has been used extensively by IS and Marketing educators as a means to identify themes in industry job requirements in order to inform the development of curricula. Elhajjar (2021) performed a content analysis on digital marketing job descriptions from LinkedIn and other recruiting sites throughout the UK, Lebanon, France, and the United States (Elhajjar, 2021). Gellweiler (2020) similarly used content analysis of job postings to clarify the role of the IT architect (Gellweiler, 2020). Schlee & Harich (2010) used content analysis on marketing job postings extracted from Monster.com (Schlee & Harich, 2010). Lee & Han (2008) used content analysis to explore skills requirements for entry-level IT programmers and analysts (C. Lee & Han, 2008). Leveraging, particularly, the conceptual approach outlined in a content analysis by (Föll et al., 2018), we depict

our own conceptual approach to content analysis in the same four steps: data

collection, data preparation, topic modeling, and analysis. See Figure 21.

Figure 21: Pilot Study Conceptual Approach
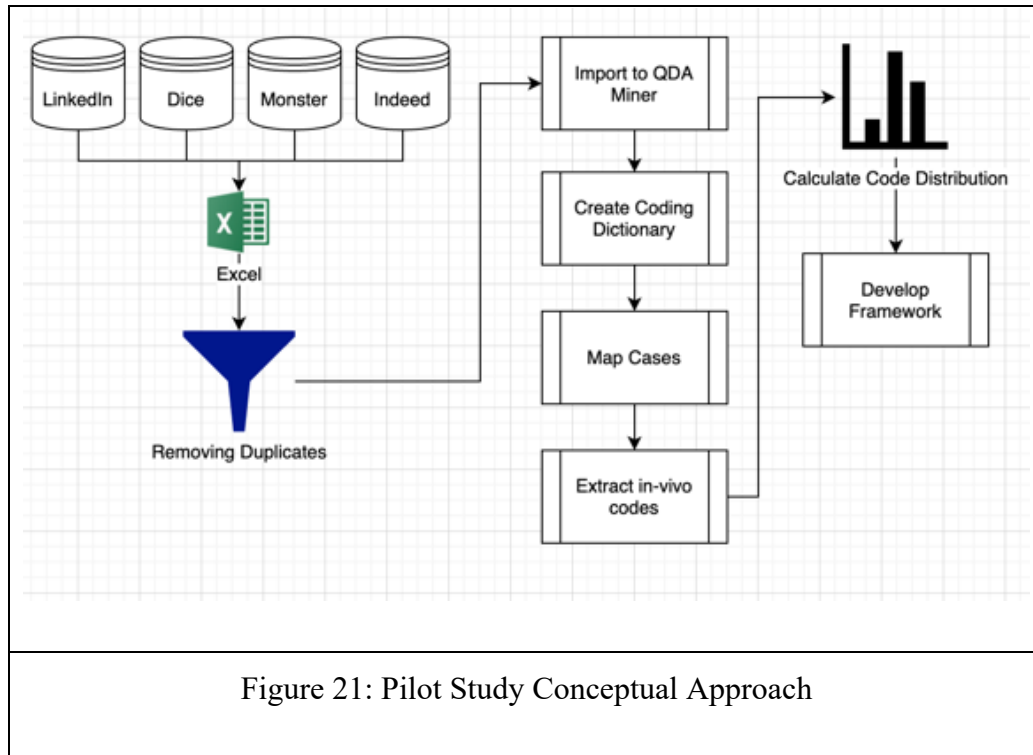
Data Collection & Preparation

Based on guidance provided by a Salesforce talent recruiter, we searched

LinkedIn, Monster, Dice, and Indeed job sites in May 2021, using the search term

"Salesforce Administrator". We limited our search to the Chicago, Illinois area.

We included any job listing that included the initial search term, regardless of

other qualifiers (e.g., "junior", "senior"). After capturing the skills and

qualifications details from the resulting postings in a spreadsheet, the data was de-

duplicated. Next, we loaded the raw data, along with these into the textual

analysis software, QDA miner, which allowed us to construct coding dictionaries

and assign excerpts from the job postings to each code. After our deduplication

and data quality analysis, we arrived with a sample of 61 distinct job postings,

which we refer to as *cases*, in alignment with QDA miner terminology, hereafter.

We now explain the details surrounding the creation of coding dictionaries and

the topic modeling process.

Topic Modeling

Our reconstituted Lokuge framework, similar to the original, consists of three

dimensions with multiple topics in each dimension, as follows:

- Business Acumen

    o Customer Centric Strategy

    o Strategic Importance

- Marketing Acumen

    o Customer Portfolio Management

    o Customer Lifecycle Management

    o Customer Retention & Development

    o Campaign and Campaign Management

    o Channel Management

    o Customer Complaints

- Information Systems

    o Configuration

    o Customization

o   Middleware

o   Business Architecture.

We replicated this taxonomy within QDA Miner, thereby creating a lexical dictionary, or coding dictionary. We utilized QDA Miner to map phrases from within our job advertisement data set into one of the 12 topics in the dictionary. We opted not to map phrases to the high-level dimensions (i.e., business, marketing, or information systems acumen), but rather only map phrases that could fit into specific topics from the framework. We next performed in-vivo coding; that is: extracting codes from the cases themselves. The following in-vivo codes were developed in order to capture themes not otherwise accounted for by the prior coding dictionary. The codes were:

- Certification

- Business Analysis

- Platform Specific Knowledge

- Project Management Skills

- Soft Skills

- Database Skills

- Formal Education/Degree

We explain the impetus for and definition of each of these codes during our analysis. Upon completion of the coding exercises, we utilized QDA Miner's coding frequency functions to generate a spreadsheet containing our high-level coding categories (i.e., business, marketing, information systems, and in-vivo

codes), the number of times each code has been applied, the number of cases in which each code appears, the usage of each code as a percent of total code usage, the percentage of cases containing each code, the total number of words associated with each code, and the percentage of words associated to each code as a fraction of the total number of words in the data set.

We now present the distribution of topics across our sample of 61 cases. Table 3 delineates the count of times each code from the framework was applied – often times multiple instances of a code appear within a single case – along with the raw count of cases where each code was applied at least once, a percentage calculation (i.e., the proportion of cases out of the total 61) of cases where each code was used. These metrics allow us to gain a sense of the breadth and depth of topic presence within and across job advertisements, collectively allowing us to evaluate the popularity of each dimension of the Lokuge framework. We extend these metrics in Table 4 by reporting data surrounding both the number of words associated to each code, and what percentage of words out of the total count of words across all cases. These data allow us to understand something of the *density* or *coverage* of each code.

Table 3: Counts of Code Application Across All Cases			
Categories & Codes	**Count of Code**	**Number of Cases**	**% Cases**
Business (total)	4	-	-

Customer Centric Strategy	1	1	2%
Strategic Importance	3	3	5%
Information Systems (total)	**156**	**-**	**-**
Business Architecture	13	11	18%
Configuration	79	45	74%
Customization	26	23	38%
Middleware	38	27	44%
Marketing (total)	**8**	**-**	**-**
Campaign management	2	2	3%
Channel management	1	1	2%
Customer Complaints	1	1	2%
Customer Lifecycle Management	2	2	3%
Customer Portfolio Management	1	1	2%
Customer Retention-development	1	1	2%

Grand Total	168	-	-

Interpreting the basic code counts involves a simple summation of the use of each code. Since multiple codes may appear in a single case, however, a summation of the count of cases where codes appeared does not provide a meaningful output, so we can, instead look at the maximum case coverage per category. Our interpretation of the percent of cases data works similarly. Thus, we can see that codes associated with the *Business* dimension were applied only four times. The *strategic importance* aspect appeared in 5% of cases, and the *customer centric strategy* aspect appeared in 2% of cases. Codes associated with the *Marketing* dimension were applied eight times in total, but no code appeared in more than 2 total cases, or 3% of the sample of 61. The codes associated to the Information Systems dimension were applied 156 times, and the most popular aspect of the IS dimension, *configuration*, appeared in 45 cases, or 74% of the total sample. The next most popular aspect in the IS dimension, *middleware*, appeared 38 times in 27 cases, representing 44% of the sample, followed by customization (26 appearances in 23 cases, or 38% of cases), and *business architecture*, at 13 appearances across 11 cases, or 18% of the sample. Clearly, the results skew to the IS dimension.

In order to gain a more comprehensive understanding of these results, and to understand the depth to which each of these topics are treated in the job advertisements, we present Table 4. This table depicts the number of words

assigned to each topic along with what proportion of the total number of words across all cases are encapsulating by that code. We note that 2172 words were encapsulated by *Information Systems* codes, compared to 96 words associated to the *Marketing* dimension, and 53 words coded to the *Business* dimension. Most words (1101) in the IS category were associated to the Configuration aspect, followed by Middleware (472 words), Customization (359), and Business Architecture (240 words). 40 out of the 53 total words coded to the *Business* dimension were coding as *strategic importance* compared to only 13 coded to *customer centric strategy*. Within the Marketing dimension, *campaign management* was the code encapsulating the most words (35 out of 96 total for *Marketing)*, followed closely by *customer lifecycle management* (29 words), and the remaining *Marketing* aspects receiving virtually no treatment.

Table 4: Number of Words Covered by Each Code

Categories & Codes	Words Per Code	% Of Total Word Count
Business (total)	**53**	**.5%**
Customer Centric Strategy	13	.1%
Strategic Importance	40	.4
Information Systems (total)	**2172**	**22.5%**

Business Architecture	240	2.5%
Configuration	1101	11.4%
Customization	359	3.7%
Middleware	472	4.9%
Marketing (total)	**96**	**1.1%**
Campaign management	35	.4%
Channel management	8	.1%
Customer Complaints	8	.1%
Customer Lifecycle Management	29	.3%
Customer Portfolio Management	8	.1%
Customer Retention-development	8	.1%
Grand Total	**2321**	**24.1%**

The proportion of words devoted to each of the main dimensions are consistent with data in Table 3, confirming a large skew toward elements in the IS dimension. At the same time, we see that only 22.5% of the words across all 61

cases in our sample are devoted to the IS dimension, and only 24.1% devoted to any of the constructs in our coding dictionary. This suggests the bulk of job advertisements for this role are focused on describing skills and characteristics not accounted for by the dimensions and elements within our coding dictionary, derived from the Lokuge framework. This confirms the importance of performing in vivo coding to extract insights about where the job advertisements are truly focused.

In Vivo Codes

As discussed previously, we extracted seven distinct topics from our sample of cases: Business analysis skills, Salesforce certification, data skills, formal education/college degree, platform-specific skills, project management skills, and soft skills. Table 5 shows the comprehensive frequencies of code usage, case coverage, and word density. Recalling our ultimate goal of developing a curriculum for CRM, our code generation and application was guided by a desire to understand the most frequent themes emerging from our reading of the job postings. For example, of clear pedagogical interest is the number of codes applied to words surrounding the need for various Salesforce certifications (58 cases, 84% of the total) compared to the number of codes applied to the need for a degree or college education, a code applied in 25 cases (41% of total cases). Job postings were high in reference to so-called *soft skills*, noted by (F. Almeida & Simoes, 2019) in our literature review to include, for example, teamwork and communication skills, to be important to employees in a 4IR world. Our analysis

supported this, with a code for soft skills applied 73 times, spanning 75% of cases, demonstrating a high proportion of job advertisements are outlining the need for non-technical skills even in a role otherwise dominated by technical considerations as evident by the high proportion of coding in the *IS* dimension. Data Skills, either pertaining to the general relational model or Salesforce-specific terms such as *SOQL* or *SOSL*, appeared in 43% of the cases. Knowledge of specific Salesforce products, such as *Sales Cloud, Service Cloud, Pardot, Communities,* and others, were coded as *platform specific*, noting instances when a sub-specialty of sorts is desired by employers in 31% of cases. Project management skills appeared in 30% of cases, and business analysis skills, such as requirements elicitation skills, appeared in 26% of cases.

Table 5: In Vivo Code Application & Word Coverage					
Category & Codes	**Count of Code**	**# Of Cases**	**% Of Cases**	**# Of Words**	**% Of Total Words**
In Vivo (total)	**270**	-	-		**37.1%**
Business Analysis	23	16	26%	338	3.5%
Certification	58	51	84%	467	4.8%
Data Skills	36	26	43%	326	3.4%
Edu-Degree	25	25	41%	291	3.0%
Platform Specific	24	19	31%	251	2.6%

Project Mgmt.	24	18	30%	216	2.2%
Soft Skills	73	46	75%	1,704	17.6%

Analysis

We suggest that examining a code's appearance as a % of total cases represents a useful first-order measure to prioritize codes across both the Lokuge framework and the in vivo codes. The top three codes from the Lokuge framework are Configuration (74%), Middleware (44%), and Customization (38%), after which the next code is significantly less applied. The top three codes from the in vivo coding exercise are Certification (84%), Soft Skills (75%), Data Skills (43%), and College Degree (41%). We suggest that a combination of these six topics provides the appropriate inputs for our resultant framework, which seeks to capture the most prevalent themes extracted during the content analysis. First, however, we return to our initial research question *RQ1: Do job postings reveal the same thematic elements as the reconstituted Lokuge framework?*

While all dimensions appeared in at least one case, there was virtually no presence of the strategic dimension within the job advertisements we examined. We can conclude that job postings largely focus on the Information Systems dimension of the reconstituted Lokuge framework, suggesting the Salesforce Administrator position is considered operational. The in-vivo coding revealed a strong desire for so-called soft skills in the role, and that certification is valued heavily, receiving greater coverage in the job postings than a college degree. Less

than half of the cases listed the need for a university degree. It is clear that –

whatever auxiliary benefits the university can provide aside from specific CRM

skills, curriculum ought to incorporate training in a real CRM system, such as

Salesforce, and should prepare students to take an entry-level certification exam

(e.g., Salesforce Certified Administrator). The university can facilitate the

development of student soft skills through collaborative projects and writing

assignments, as well as through the incorporation of liberal arts courses into the

broader CRM curriculum. Visualizing these results can be done via a simple

framework (see Figure 22) outlining the key topics observed across our content

analysis. The framework ought to demonstrate the interrelated nature of the

constructs and reflect that the gestalt command of these constructs creates the

optimal Salesforce Administrator, based on our content analysis.
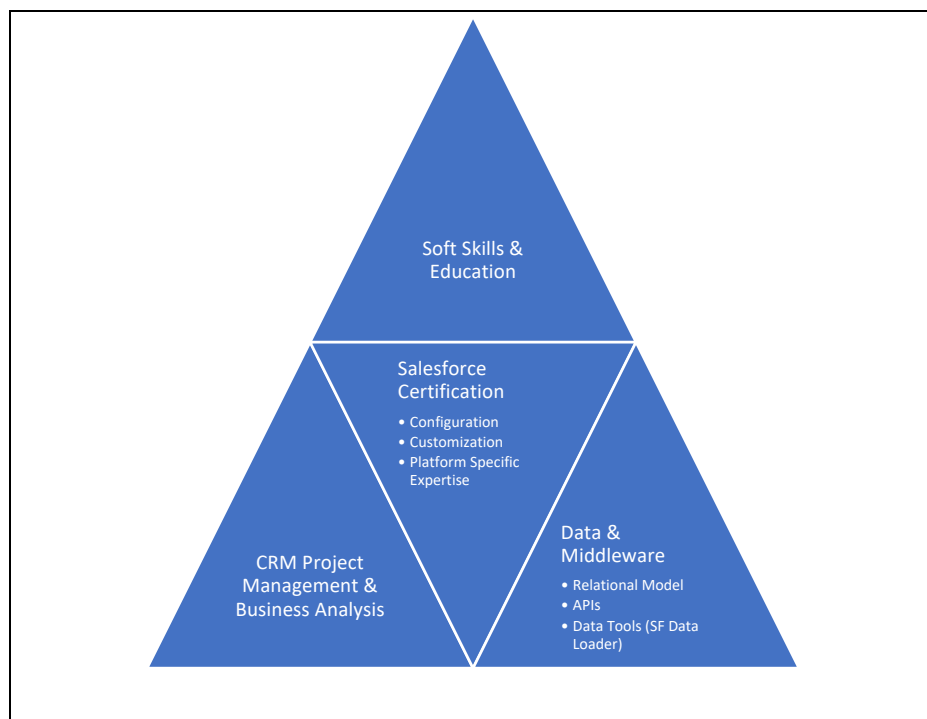
Figure 22: Framework for Salesforce Administrator Skills

Content analysis is often followed by interviews or surveys in order to confirm validity of findings and expand upon understanding (Harper, 2012). Thus, we are following a validated methodology. The results of our content analysis thereby inform postulations for our semi-structured interviews. We need to understand what is being omitted by the content analysis, either due to deficiencies in raw data or in methodology. Semi-structured interviews will also allow us the opportunity to validate our categorization method by presenting sample words/phrases to interviewees and determining how accurate the categories are and what was omitted.

Phase 2: Talent Search and Hiring Manager Interviews

We next outline the method of validating the results of our job posting content analysis via interviews with hiring managers seeking to fill Salesforce Administrator roles. In order to provide qualitative context, which is necessary in order to answer RQ 2, we will conduct a series of interviews with hiring managers and recruiters who seek to fill open Salesforce Administrator positions. Interviewees will be selected from the author's personal network from past industry experience. If additional participants are needed, a LinkedIn solicitation will be used. In addition to serving a valuable role in reinforcing the legitimacy of

the framework we derived from content analysis, the purpose of this exercise is to answer RQ2, as follows.

RQ2: Do Salesforce Administrator hiring managers express similar themes as the reconstituted Lokuge framework?

The use of semi-structured interviews requires Institutional Review Board approval. We received an *Exempt, Category 2* approval. An informed consent document also known as *information sheet* found in Appendix A will be distributed to each subject after we receive their preliminary agreement to be interviewed. The recruitment of these subjects will occur via a combination of direct email solicitations and LinkedIn request for participation as needed. The content of our recruitment email is found in Appendix C, while the content of the LinkedIn solicitation is found in Appendix D. Once subjects affirm via email their agreement with the information sheet and continued interest in participating, a videoconference will be scheduled. The interview questions included in Appendix B will guide the interview, but *ad hoc* interview questions may be asked. The videoconference will be recorded and transcribed.

We will use these transcripts to perform two independent coding exercises, including open, axial, and selective coding upon the interview transcripts, in accordance with standard grounded theory methodology. The coding will initially seek to map codes developed from the reconstituted Lokuge framework and the framework developed in content analysis. The results of these coding exercises will demonstrate to what extent constructs from the Lokuge

framework were present in interviews but not in the content analysis, as well as to reinforce or diminish support for the elements of the framework developed during the Phase One content analysis. We will report the results of our interviews, both via coded interview transcripts, but a revised, enhanced framework, along with a discussion of any observed deviations from the Phase 1 framework and the Lokuge framework, as well as additional qualitative feedback identified during the interviews.

Chapter 3 Summary

In this chapter, we described our mixed-methods research methodology comprised of content analysis and semi-structured interviews. To the former, we included the results of our pilot study using content analysis, including a skills framework. This framework is, essentially, a specialized instance of the framework developed by Lokuge, et. al., (2020). Their framework, constituted from a discussion among academics, described the ideal skills composition of a *CRM Analyst*, and we have shown the elements from their framework present in a *Salesforce Administrator* in the form of our own framework, informed by the analysis of 61 job advertisements. This new framework reveals the Salesforce Administrator role does indeed require high skills associated with the Information Systems domain from the Lokuge framework, though job advertisements did not explore any of the other components of Lokuge's framework (i.e., business and marketing skills) in much detail. Instead, job advertisements spent much of their

total word composition upon the dimensions we captured using in vivo coding, such as soft skills, data skills, certification, and platform-specific knowledge.

Our goals for the next phase of this research are twofold. First, we will pursue validation of our new framework, as well as seek to identify instances where aspects of the Lokuge framework may be important for the Salesforce Administrator role but did for some reason not demonstrate robust appearance in the job postings. Understanding whether those constructs are assumed to be of high importance but are not easily or readily conceptualized or prioritized during the composition of job advertisements, or whether these elements are simply not as important to the Salesforce Administrator role represent some of our goals for the semi-structured interviews. These interviews will also include an exploratory component as we attempt to understand important skills that may have been omitted from the job advertisements. The interviews will also provide an opportunity to understand relationships between the various skills constructs, which may lead to the development of a model to inform curriculum development. Ultimately, the mixed-methods approach of content analysis and semi-structured interviews will allow a robust understanding of industry needs for Salesforce Administrators. This understanding will be of pedagogical importance in the development of CRM curricula. To inform CRM curricula further, additional studies on specific roles both within and outside of the Salesforce ecosystem will be necessary, and these studies form the foundation of our ongoing research agenda.

CHAPTER 4: RESULTS

In this chapter, we present the results of our study utilizing grounded theory method (GTM). Grounded theory may develop theories, models, or rich descriptions (Wiesche et al., 2017). An evaluation of the grounded theory method (GTM) in *IS* research reveals that several variations of GTM and its techniques have been prominently employed, including classic or *Glaserian* GTM, evolved or *Straussian* GTM, selected GTM analytical techniques that do not necessarily build theory, and mixed methods approaches to GTM (Matavire & Brown, 2013).

Participant Description

We recruited participants for this study who worked as Salesforce Administrators, recruited Salesforce Administrators, managed Salesforce Administrators, or had other reasonable knowledge of the CRM industry domain. This purposive sampling allows us the greatest likelihood of speaking with individuals with a reasonable chance to have the knowledge to address our research questions. The primary source of recruitment candidates was the author's professional network. Recruitment occurred via email or LinkedIn direct messages; both cases make use of the email template (Appendix C), which was used to generate emails or LinkedIn messages to individuals in the PI's professional network, such as former colleagues. Those who indicated interest were sent an information sheet (Appendix A) describing the research and their rights as research participants. Upon their acceptance of the information outlined

in the sheet, outlined via a written "I agree" in an email response, we scheduled Zoom videoconferences.

We contacted 21 candidates and received incremental acceptances. We did not judge a priori the preferred number of participants. Grounded theory method requires investigators to continue sampling until theoretical saturation is reached. In practical terms, we assess this by whether additional transcripts reveal new codes or if the sentiments extracted via the coding process can be incorporated into existing codes and themes. After interviewing and coding the transcripts from eight participants, we noted that the final transcript did not result in new themes, but rather bolstered existing themes. Thus, our sample achieved saturation after eight interviews ($N = 8$). The interviews spanned 34-76 minutes long *(M = 53, SD = 14)*. Table 6 shows a breakdown of participant information including their roles, industries, and geographic locations. Of the participants, 5 were male (62.5%), 3 were female (37.5%). We attempted to obtain more balanced gender representation but had difficulty in obtaining willing participants so were not able to obtain a more balanced sample. All participants are employed in the United States. States represented include Illinois, Missouri, and Texas. Receiving eight acceptances out of twenty-one contacts reveals an acceptance rate of 38%.

Participant ID	Gender	Industry	Title	Duration (mins)
1	M	Professional Services	Recruiter	76
2	M	Professional Services	Recruiter	34
3	M	Consumer Products	Director - Enterprise Salesforce Development	54
4	F	Real Estate	Author, Salesforce Architect	69
5	M	Professional Services	Recruiter	52
6	F	Waste Management	Salesforce Manager	45
7	M	Professional Services	Partner	49
8	F	Non-profit	Director of Data and Tech Operations	43

Table 6: Participants

Procedure

Each interview began with a verbal affirmation of participant receipt of informed consent information sheet and confirming that participants knew about the recording procedures and retained agreement. After obtaining that verbal consent, we proceeded with the questions noted in the interview script found in Appendix B. The interview questions guided us generally, but we were not confined by the script, as is apropos to semi-structured interviews. Thus, we obtained similar thematic insights across all participants, but each interview is nevertheless unique. In the interviews, we had several goals: we wanted to validate the framework we generated following the content analysis and to explore user perceptions of the framework that prompted our research, created by Lokuge, et. al., (2020). Additionally, we sought to understand the broader CRM ecosystem, as well as related roles in the CRM space, such as the business analyst role.

After the interviews, we updated a spreadsheet containing subjects' names and a unique identifier along with demographic information and the duration of the recording. We transcribed the interviews into text files and performed open coding. We employed a combination of descriptive coding and in vivo coding techniques as part of our first cycle methods. We first highlighted passages of text relevant to each transcript, then conducted descriptive and in vivo coding of the passages of interest. Our primary goal was to elucidate the phenomena described in the text. An example of descriptive coding occurs with the following passage,

where a recruiter describes the manner in which social skills contributes to employability: "That list of clients: the As, the Bs, and the Cs. The As are putting three or four behavioral interviews into the mix and won't consider a candidate unless they can walk, talk, chew gum, carry on, and get along with everybody." We used the descriptive code *top companies want it all* to characterize the theme emerging from the text. An example of *in vivo* coding occurs in the following passage: "when it comes to a Salesforce Admin that can be a pretty intense role especially if you are the end all, be all who's taking care of Salesforce within your company." We coded the passage "intense role," thereby capturing the user's exact words as an *in vivo* code.

In accordance with both Glaserian and Straussian Grounded Theory methods, we employed *constant comparison*, comparing transcripts and their respective codes and attempting to standardize coding where similar sentiments were coded differently. Standardizing codes is ultimately a reductive exercise, in which we seek to home in on the concepts and develop the most precise possible descriptions of them. Although we sought to validate our framework, we did not code for the specific constructs defined after we completed the content analysis. Instead, many of the interview questions themselves attempted to reveal these phenomena. By employing descriptive and in vivo coding, we were thus naturally extracting participant sentiments surrounding our preliminary framework.

The second phase of coding involved identifying the relationships between open codes. Using the qualitative analysis software, *NVIVO*, we collected related

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codes and developed higher order constructs, represented as top-level codes, into which we grouped the raw open in vivo and descriptive codes. Multi-level hierarchies resulted. Ultimately, with our research goals oriented on identifying the knowledge, skill, or ability factors that enable a successful Salesforce Administrator, we were less focused on identifying causal relationships and more focused on informing curriculum development. These factors can nevertheless all can be operationalized with participant quotes forming the inputs to research questions and these factors covarying to enable the visualization of a measurement model for subsequent factor analyses. Ultimately, we determined a four-factor framework abstracting a total of 13 sub-constructs. This framework represents a revision to our content analysis framework, incorporating the results of our semi-structured interviews.

Overview of Results

We now present the results of our semi-structured interviews and discussion of findings. First, we present relevant participant quotes surrounding the broad Salesforce talent landscape or ecosystem. Next, we explore participant constructs from the original Lokuge framework. Next, we present participant comments surrounding the components of our content analysis framework from chapter three. After that, we discuss the findings and integrate our discussion with additional participant sentiments surrounding Salesforce Administrator skills, which were not present in our content analysis framework. These additional insights, combined with participant sentiments surrounding the content analysis

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framework constructs, serve as inputs to Figure 23, our revised skills framework

for the Salesforce Administrator, which incorporates these additional participant

insights and results in a four-factor framework.

Landscape/Ecosystem Overview

Before we can focus on the specific findings related to the Lokuge and

content analysis frameworks, it is important to discuss the context of these

findings as described by the participants. Throughout the course of interviews,

participants revealed a number of insights surrounding the general hiring

environment and the landscape of Salesforce jobs and the companies offering

them, revealing important insights about the IT/IS job market. The inclusion of

talent recruiters in our participant pool at times resulted in fewer details regarding

the deep particulars of the Salesforce Administrator role, but instead revealed

macro, contextual factors, through which our remaining observations are

grounded.

Theme 1 - Talent shortage

It now seems that any discussion of the Salesforce Administrator role, or

Salesforce roles in general, is the crippling talent shortage that plagues this

ecosystem. Participants often positioned the questions we posed in the context of

the landscape of available avenues for those with expertise in Salesforce and the

paucity of human resources with knowledge, skills, and abilities related to

Salesforce. When asked about the Salesforce Administrator role, one participant

noted that *candidates seem to be in demand, so it's harder to find people to fit into specific roles because there's a lot of opportunity for them.* Another participant illuminated the details of some of these opportunities, describing the three main career avenues for Salesforce experts: in-house IT, consulting, or for the Salesforce vendor itself:

> *in the Salesforce world, we think about it either on the client side, which is you work for an organization that is a Salesforce customer, or you're on the consulting side: meaning that you are involved in working with Salesforce customers, either to implement or enhance, or of course there's the mothership itself.*

These myriad options contribute to the scarcity of candidates, particularly for the in-House IT jobs, including the Salesforce Administrator role, which seemed to be less desirable. *In my experience, the client side of the work... is the lowest rung, as far as where we get the scraps of talent.* Salesforce consulting appears to be a popular avenue, perhaps due to a preference for project-based engagements. Why work for Salesforce? One participant opined that:

> *their stock price is probably the best metric to show as well as the accolades about best place to work, innovative company and leadership all of the PR stuff that you see as well as the culture.... That's a major lure, so those kinds of forces are drawing people away from the client side in my view.*

As we discuss further in our validation of the content analysis framework, the college degree is not always considered a true requirement when hiring Salesforce Administrators. The macro landscape realities of the talent shortage emerged as a justification for omitting the college degree requirement. One participant, who worked in an in-house IT managerial role managing a team of Salesforce Administrators and Developers explained: *Yeah, it's like I need a body, we've got problems that need to be solved, and beggars can't be choosers.* Despite the talent shortage, the interviews revealed a sentiment that the skills and abilities needed to fill these roles were not all that difficult to acquire, no doubt compounding the frustrations of employers trying to fill open roles.

To this end, companies seem to frequently waive all manner of requirements in their attempts to secure talent. During a discussion with a Salesforce manager at a non-profit organization, we asked the participant to comment upon this phenomenon, since previous participants had emphasized how a programming background wasn't required, a college degree wasn't required, the skills to learn Salesforce could be easily acquired on the job, yet it's virtually impossible to staff open Salesforce jobs. The answer comes largely down to personal, individual characteristics, which are difficult to find:

> *It was so much about the person. It was very much about the soft skills and being able to relate to a lot of different personalities that we have in our organization. I feel the technical skills can be a common denominator. There's less fluctuation in style let's say. Where on the soft skill, I think it's*

hard to… you can work on them, definitely, but there's some people you

feel a connection to and are more adept at working with people.

[Technical skills are] easier to learn and easier to increase… you could

take somebody and really take them from A to B with a structured "learn

this, then do this, and then do that," but I think the soft skills are harder to

manage.

Theme 2 – Stratification of Companies and Talent

Another important contextual theme emerged, the stratification of companies and talent. Although one participant contributed most of the content that allowed for this theme to emerge via coding, it is nevertheless important. It reveals that when studying knowledge, skills, and abilities, we have to be aware of the minimum requirements to get hired compared to the knowledge, skills, and abilities to get hired at an excellent company. The code *As,Bs,Cs* was applied to these two passages from the same participant illuminating the important contextual point that all organizations are not equal and getting a job at a great company is not the same as getting one at a mediocre company:

I have a whole ecosystem of A clients, B clients, and C clients, and in the

A client department there are some that are just super selective and some

that aren't. And then in the C client category, they sometimes are just

looking for a warm body that's got some experience, and maybe they don't

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pay well enough to demand the highest caliber candidates. Maybe they

have a bad location.

In the grander scheme of getting hired in <major midwestern city>: if

there were 100 jobs that were Salesforce admins, and there were 100

candidates, it would work itself out, and the crappiest candidates would fit

in at the crappiest companies. Think like a bad commute out to <distant

suburb>, doesn't pay well, doesn't have a 401k match. They just aren't

going to be as selective but [better companies] are going to be selective,

and they're going to put the candidate through eight interviews rather

than two.

Many rounds of interviews could presumably be a means to develop a
more thorough assessment of soft skills. The stratification of jobs and labor was
also represented in participant comments about the importance of a college degree
as an enabler of the optimal CRM employee. Although most participants revealed
they would not require a college degree in a potential Salesforce Administrator,
they revealed a general belief that top companies do want to see college degrees,
but at some companies, as one participant noted, *beggars can't be choosers*.
Another participant underscored the variation in company quality and employee
compensation as a determinant of the need for a college degree:

When it comes to companies that are hiring full time that offer 401k and

all these benefits and everything, they're typically the ones that are going

to want someone with that college education, it's still important. It's still

important and it's important for companies where they're looking to bring

somebody in for the long, long term.

Keeping with the idea that variance exists among both employers and
potential employees, one participant noted that standard recruitment language
specifies the need for a college degree or equivalent work experience, noting that
if you don't have the college degree and you don't have the work experience, at
that point you're competing with a lot of other people that do have either one of
those things. Competition in the labor market is embodied in the natural
stratification of individuals and their knowledge, skills, and abilities. Cognition of
this contextual reality allows us a greater understanding of the environment in
which organizations are attempting to acquire knowledge resources (i.e., human
capital) and the dispersion in quality of that human capital. The question posed by
potential students: *do I need to graduate from college?* now prompts a natural
rejoinder that it depends on how much the student valued being hired by a top
company or the student's perceived satisfaction of working at a lower-tier
company.

Theme 3 – Variance in Salesforce *Org* Deployment Sophistication

Salesforce utilizes multi-tenant architecture to enable a software as a
service offering such that customers subscribe to licenses enabling them to license
the platform and customize base offerings to their individual needs. Some

participants revealed an additional notable contextual theme: the wide variance in the sophistication of individual instances of Salesforce, known as *orgs*.

> *some people just have Salesforce as a standalone application. They're not doing anything more than logging data, reporting on the data, and maybe have a few automations in place. But there's a lot of other companies out there that have sales and service and marketing and custom applications running on Salesforce that are the hub to many different spokes of applications that are out there. You have a hub and spoke: Salesforce being that hub and then pushing data to systems A B C D and getting information back from those systems back into Salesforce.*

This diversity of deployment sophistication complicates Salesforce Administrator hiring, considering the title *Salesforce Administrator* applies to those employees administering Salesforce no matter their company or how extensive their individual orgs are. The complexity emerges as employers struggle to gain a comprehensive understanding of, as one participant noted, *what you did* as a Salesforce Administrator. This variance in deployment sophistication is paralleled in a variance of the quality of the team supporting it. Assessing candidate expertise occurs along, according to one participant, the continuum of *support & maintenance to architect & build*. At the same time, an employee could be architecting and building solutions, but in an inefficient or otherwise undesirable way (e.g., susceptibility to easily incurring technical debt). Assessing candidate expertise is thus complicated further for organizations. The variance in

org sophistication as a driver of recruitment difficulties is articulated by one participant in the following passage:

> *one of the challenges in terms of hiring Salesforce admins is the job looks tremendously different across all different companies. It's hard to compare apples to apples when you're looking at somebody's Salesforce experience. There are Salesforce admins, who are actually deploying and designing and building very sophisticated pieces of functionality inside companies. There are Salesforce admins that -- these people might have the same title -- that are taking tickets and setting up users, and not doing much more. And every flavor in between.*

Combined with the previous two themes, we can see an emerging contextual landscape through which to investigate further knowledge, skills, and abilities valued for CRM roles. The hiring landscape is thus one with a raw talent shortage across a stratified environment, with top companies presumably easily acquiring top talent and other companies competing for the remainder. All the while, recruitment is complicated by the variance of Salesforce orgs and thus variance in what individuals actually did while sharing the same job title at different companies.

Exploring the Lokuge Framework

Our work was initially guided by the framework proposed by Lokuge, et. al., which postulated a set of skills for a CRM Analyst, and which served as the

foundation for our content analysis study. Although our content analysis framework did not have extensive incorporation of the Lokuge framework, we nevertheless wanted to understand participant perceptions of that framework's constructs in case those not represented by our content analysis were nevertheless considered important. Indeed, one of our original research questions bears restating. *RQ2: Do Salesforce Administrator hiring managers express similar themes as the reconstituted Lokuge framework?* Recall that the Lokuge framework contained three main constructs, Business, Marketing, Information Systems, with sub-constructs of CRM strategic importance, customer centric strategy; customer portfolio management, customer lifecycle management, customer complaints, customer retention & development, channel management, campaign & campaign management; configuration, customization, business architecture, and middleware, respectively (Lokuge et al., 2020). Although we did not find much support for the Business or Marketing dimensions in our content analysis, the *Information Systems* constructs of *configuration, customization,* and *middleware* received substantial treatment in the framework we developed from the content analysis, reflecting the relative strength of those aspects in job postings.

Figure 1: CRM's Transcending Nature

(Lokuge et al., 2020) pg. 574
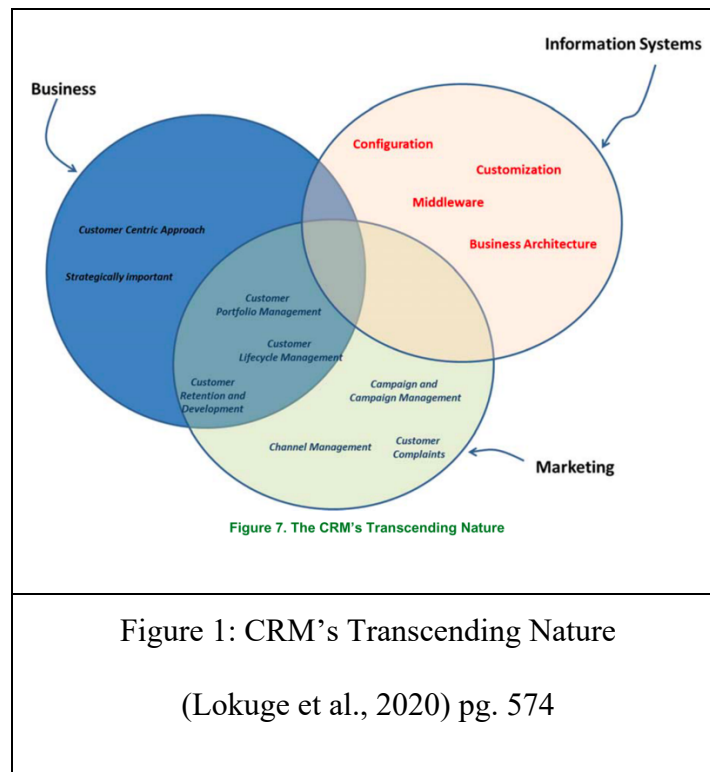
We wondered whether the CRM analyst role underlying the Lokuge framework was simply markedly different from the Salesforce Administrator role examined in our content analysis and were generally interested in participants' perceptions of the framework's dimensions. Similar to the content analysis results, most participants were excited about the *Information Systems* dimension. Middleware and business architecture received the least interest from participants, particularly as it pertains to the Salesforce Administrator role. The interviews also revealed more support for the ideas of *customer-centric strategy* and understanding *CRM's strategic importance* than we found in the content analysis. The *Marketing* dimension and its sub-constructs received the most critique. Participants generally thought the dimension had too many sub-constructs to be

realistic for one person to understand in any depth. They also tended to view the label of "Marketing" itself to be too general or myopic or overly ascribed with sub-constructs that didn't belong in the Marketing domain.

Business Construct

The business construct, comprised of *strategically important* and *customer-centric strategy* was received generally favorably, but multiple participants emphasized that such knowledge should not be considered foundational and is more an indication of an advanced level candidate, with one participant noting "*more often than not if you're hiring somebody junior at the analyst level, I don't think that's a reasonable expectation that they would have all of those things.*" JH-1. This sentiment was extended by another participant, a recruiter, who said that he would not ask candidates if they had this type of knowledge, but rather:

> *[An understanding of customer-centric strategy and CRM strategic*
> *importance] just makes them a better candidate for the more picky firms.*
> *I have a whole ecosystem of A clients, B clients, and C clients, and in the*
> *A client department there are some that are just super selective and some*
> *that aren't. And then in the C client category, they sometimes are just*
> *looking for a warm body that's got some experience....*

Focusing on the *floor* of skills, the minimum collection of skills to obtain employment, would seemingly take priority during curriculum construction, so it

may at first seem like this knowledge is nice to have but not necessary. Again, considering the stratification of talent, one participant admitted

> *the people who have that [strategic understanding] are great at their job is what I'd say. Is that required to make money or to make a good living in this industry? No. I agree that if a candidate is asking questions about [e.g., customer centric strategy] in an interview, it's certainly going to impress me.*

Some other participants considered strategic knowledge to be more integral and appeared to place it as a higher priority in the KSA mix, such as one recruiter, who said that u*nderstanding customer centric strategy or CRM's strategic importance seems pretty important.* JP-1. Another participant delivered immediate praise of the emphasis on strategic skills because of how she believed such knowledge could be operationalized by a system support employee to guide decision making, allowing them to ask questions like *"is this revenue impacting? Do I need to [escalate] this? Have I seen this issue before? Could this have a dependency on something else? I think that strategic skills are important.* MS-1

Marketing Construct

The Marketing construct received the most critique compared to the other two dimensions. Participants tended to view the Marketing construct as too narrow and neglecting other important CRM constituencies, such as Sales and Customer Service departments. At the same time, some participants felt that too

many sub-constructs were included as part of the Marketing dimension, at times suggesting certain sub-constructs belonged to Sales or Service. To that end not all participants agreed that the sub-constructs in the framework were indeed within the Marketing domain. Aside from disagreements about the categorization decision, there remained commentary affirming the importance of selected sub-constructs to CRM. One participant, for example, who managed a Salesforce support team, was drawn to the sub-constructs of *customer lifecycle management, customer retention, and customer complaints*:

> *Knowing the customer life cycle management, I think that's important, having that business knowledge to know how the system applies to your customer, because that's how we make money is we have to support our customers. And of course, seeing that big picture of customer retention and development, I think that goes with it. Customer complaints: that's definitely a big one, because someone might have a customer complaint, and then that impacts, while in my group, we're not customer facing, our end users are customer facing, though, if they're having issues, we will probably likely need to change something in the system to help solve those issues.*

Other participants commented on the choice to include only marketing but not other aspects of the front-office (i.e., Sales and Service), though arguably some of the sub-constructs could be easily reapportioned to new dimensions of Sales and Service if they were added. Despite the number of sub-constructs included in the

Marketing dimension – higher than the other two dimensions' sub-constructs combined – the choice of Marketing as the main dimension struck some participants as misguided:

> *I would say it's broader than marketing because that's one aspect of it. It's permeated the customer journey. I don't know what the right term is but it's something broader than just marketing. Marketing, sales and service, or front office. But certain aspects of the CRM are focused on marketing. Some are focused on case management; some are focused on sales.*

This reorientation of the Marketing construct to encompass more front-office functions was echoed by another participant, who noted *you may want to have Sales...in there potentially to talk about maybe sales operations and pipeline revenue forecasting things like that, that very sales specific case...I think sales obviously would be a part of the nature of the diagram here.*

Another participant considered the breadth and diversity of the sub-constructs to be too extensive and would represent more expertise than anyone could be expected to possess at a deep level. The participant suggested each sub-construct was in itself very broad and that it would be more realistic to have a CRM analyst devoted to a small number of constructs:

> *That's a lot; that's very broad. That's very general because especially if there's somebody [who knows] customer life cycle management -- that in itself covers marketing, sales, customer service. There's a lot there, so it could be CRM analyst of lifecycle management, different departments. But*

to really understand each one of these, and how CRM fits in, to have a

general idea of how it all filters through, yeah, but to get really into the

weeds and specifics of these, that person would burn out in a day.

This suggests the importance of knowing a little about a lot – breadth over depth – might well serve the CRM analyst. In general, we observed that only a small subset of the constructs in the Marketing dimension resonated with participants, and they often cited CRM's remit as broader than the Marketing function. Not every participant agreed that Marketing was the appropriate category for every sub-construct listed.

IS Construct

The IS construct was largely leveraged into our content analysis framework given the relative density of passages in job postings related to *configuration*, *customization, middleware,* or *business architecture* we observed. We note that it received the highest concentration of matches of any of the dimensions in our first round of coding during the content analysis. We found the highest support for configuration but little support for business architecture. During our interviews, we found that participants tended to deemphasize customization, middleware, and business architecture, suggesting these areas were the purviews of developers, data integration specialists, and solution architects, respectively. We will address most of the IS constructs in our upcoming analysis of participant feedback of our content analysis framework but will include some

treatment here for those instances when we asked participants to comment on the original Lokuge IS constructs. Participants generally agreed the IS construct was well-designed overall. One participant, the manager of Salesforce support team for a sanitation company, affirmed "*Configuration and customization, those are good. Business architecture, all of those three.* It is clear that middleware and business architecture were the knowledge areas that drew the most skepticism or commentary from participants. One participant suggested having expertise in those two areas would be too much to ask for a base-level role like an Admin:

> *[business architecture or middleware knowledge]... are not required for an admin. That is describing to me a great functional consultant, solution Architect, but I equate just higher titles with those skills. If an admin shows up with that... I'm probably like fighting to get them an offer as quickly as possible to them because that's you don't see that that much.*

Another participant tersely noted that *middleware knowledge is not assumed* in a Salesforce Admin, and an additional participant commented on the specialized nature of middleware, noting that "*Bigger companies are not going to expect their Salesforce admin to be the same team that's thinking about middleware and integration....*" We can imagine that an analyst could benefit from cursory understanding of what middleware is, but participants seemed to believe middleware is far too complex to add to the administrator's assumed purview.

The final sub-construct proposed in the Lokuge framework is *Business Architecture*. This construct did not factor highly into our content analysis

framework, as there existed little treatment of that sub-construct in the job postings we analyzed. When we presented questions surrounding business architecture to our interview participants, we at times received requests for clarifications: *Architecture is an interesting thing. Because again, what does that actually mean? In my experience good admins are solution architects.* Generally, the Salesforce solution architect role is considered a more advanced, senior role for experienced configurators and business analysts. Only one participant commented, unprompted, on architecture. This participant referred to the architecture underlying the Salesforce platform as an important qualification for an effective Salesforce Administrator: *an understanding of the architecture behind Salesforce and what the system can do.*

As we recall, the Lokuge framework was oriented toward purported skills of a *CRM Analyst,* and we were primarily validating our own framework, so we cannot be particularly surprised that we observed comparatively limited commentary from participants about the Lokuge constructs. The general sentiment surrounding the strategic elements is that they would demonstrate a highly competent and hirable Administrator, but they would generally not be required to do the job and would be characteristics of higher-level employees or could allow someone to get hired as an Admin at a top company. This theme interweaves well with our prior discussion of the stratification of companies and talent. Consider the sentiment expressed by the participant, who described the various pedigrees of clients for whom the participant recruits. Effectively, there

are some skills, like the ability to configure the system, that are not negotiable, but others, especially those in the *Marketing* and *Business* strategy categories, were discussed as "add-ons."

The exception was one participant, who primarily employed CRM support staff, not all of whom would be making system configuration changes. This participant placed far more priority on selected Marketing sub-constructs and an understanding of the strategic elements. At the same time, this participant also favored our content analysis framework as generally more aligned toward the relevant skills compared to the Lokuge framework.

Answering Research Question RQ2

Based on our qualitative analysis of semi-structured interviews with CRM experts, we return to our second research question, *RQ2: Do Salesforce Administrator hiring managers express similar themes as the reconstituted Lokuge framework?* By and large, we conclude that no, hiring managers rarely addressed themes explored in this framework when responding to open-ended questions about knowledge, skills, and abilities for CRM employees. When asked directly about the constructs in the framework, they typically considered the Marketing dimension to be incomplete in that it doesn't span enough functional areas, yet over-stuffed with more concepts than would be reasonable for most employees, particularly those at more junior levels, to master. We observed that the IS construct received the most support, as we found in the content analysis.

The Marketing and Business constructs received almost no treatment in the content analysis, but the interview participants were more supportive of the importance of strategic knowledge and had ample feedback about the nature of the Marketing construct. Part of the impetus for conducting interviews was to validate the findings from the content analysis and ensure those findings correctly reflected expert sentiments. Since we also wanted to validate two frameworks, our interview questions in some instances took a confirmatory approach, but the majority of each interview was exploratory, with framework constructs serving as inputs to questions. Pure grounded theory method includes no confirmatory orientation, but other aspects of our interviews, discussed elsewhere, preserve pure exploratory paradigms and thus lead to valid proposed frameworks and models. We now turn to our primary goal of the study, to explore and validate the findings of our content analysis framework.

Validation of Content Analysis Framework

Since the content analysis framework already seeks to be an evolved, specialized instance of the Lokuge framework grounded in the qualitative analysis of Salesforce Administrator job postings, we spent the majority of our interview time exploring themes we included in the content analysis framework and searching for what we might have missed. Indeed, our final research question is restated as follows. *RQ3: How do the results of the content analysis compare with the findings of the hiring manger interviews?* To answer this question, we address each of the main themes in the content analysis framework and discuss participant

treatment of those themes. Then, we conclude with new concepts or skills that hadn't been addressed by the content analysis but were discussed by participants as they answered open-ended questions.

Theme 1—Business Analysis & Project Management Skills

We had included business analysis and project management skills together in our preliminary framework since overlap often exists between the skills in practice and indeed some roles are hybrid BA/PM roles. We wanted to understand the relative priority importance of BA compared to PM skills. What does it mean to understand business analysis? One of the first insights we uncovered is that admins and analysts are not all so different in some organizations. One participant marveled at the breadth of what some particular Admins he had observed were able to accomplish, noting that t*hey were really business analysts, too.* This theme is echoed by another participant, who suggests good Admins *are* BAs:

> *when we're talking about admin as the person or persons that are managing the application for an end client, I would contend that they, at least the good ones, are business analysts and functional consultants even though their title is admin.*

The idea that at some companies, an admin might be the only CRM employee underscores the notion that a diversity of skills to address all phases of the software development lifecycle will be necessary. As staffing increases, the opportunity to outsource business analysis to a committed resource becomes

possible. Nevertheless, we see again an additional participant describing business analysis skills as a hallmark of top-quality admins while providing details about how we can think about that core business analysis skill:

> *the most successful admins are acting as a BA. And you can kind of boil it down to asking "why?" Why this? Why that? The admins that set themselves apart from others are the ones that are peeling the onion, asking more questions behind the initial request.*

Another participant spoke at length about the importance of discerning real need from stated need through what amounts essentially to a Socratic disposition toward user requests: not being afraid to ask *why?* The same participant also discussed the importance of having the maturity, essentially the fortitude, not to immediately give-in and execute every request verbatim but rather being confident enough to question larger motives or context. In the following passage, this participant further explores the importance of inquisitiveness as a component of business analysis skills in admins:

> *How do I go in and assess what somebody really needs not just what they ask for? One of the most challenging things for new Salesforce Admins is understanding that what people ask for and what they need are often/usually not the same thing. So, being able to have the skill set to... probe and uncover what is it that they're really trying to accomplish. The skills themselves are really those same questioning skills that you might find in salespeople. Tell me more about what you're trying to accomplish,*

what's your outcome that you're looking for? Can you even give me some

context; what's the impetus for this ask? Really having the ability to ask

those probing questions and discern out the real need from the stated

need, I think that's one of the most important [skills]. Obviously you need

to know enough about the platform then to marry that need to the right

solution.

Since we included business analysis and project management as part of the same construct and found ample presence of both in our content analysis, we used these interviews as opportunities to determine any relative priority between these two skills and to question how important project management skills were at all. We found that project management skills were considered less critical to the Salesforce Administrator role than business analysis skills. One recruiter stated it plainly: *[A qualified candidate has] good business analysis skills.... I would probably choose the business analysis versus the project management. I don't know that I'm seeking project manager skills for an Admin.*

Certainly, employers would not be upset if Salesforce Administrator candidates had project management skills, but we need to understand the base level, what the most important skills are, so that we can prioritize their teaching via optimal curriculum development. The importance of PM skills appears to be a function of team size; that is: how many hats does the admin have to wear? As team size increases, a dedicated project manager could be hired, for example. At a one-person shop, however, we can suppose the admin would have to be at least a

competent project manager enough to deliver a base level of business requests. PM skills, nevertheless, are not foundational to the administrator's responsibilities:

> *[PM skills are] definitely a nice to have, and I think if you're if you're a solo admin or an admin with responsibilities for the system in a relatively small organization, you need to be able to manage both your own projects because you have a lot of things going on, how you communicate about those, how you identify risk, communicate risk, all that stuff. And you also need to leverage all those skills to herd cats, if you will, in any organization of any size, though if you're doing any sizeable project work, there is going to be a project manager.*

Overall, participants were much more likely to volunteer the importance of BA skills than project management skills. When asked directly, participants ranked BA skills as more important than PM skills. The relationship between maturity and the ability to resist being a people pleaser in lieu of asking why and successful BA skills suggests great BAs might also rank highly in maturity or self-confidence. We explore maturity further in our explication of soft skills. We next address the second category from our original framework, certifications.

Theme 2 – Certifications

The Salesforce Administrator certification is the most frequently discussed certification for a Salesforce admin and indeed other jobs in the ecosystem. Our

content analysis pointed heavily to the importance of certifications, but these interviews allowed us to gain a better understanding not only of what certifications are most important, but also broader themes about the certification landscape across the three major avenues of Salesforce employment: in-house IT, consulting, or Salesforce itself. Focusing first on the Salesforce Administrator role and the requisite certifications for employment, most participants pointed toward the importance of the core *Salesforce Administrator* certification. One participant, a recruiter, stated plainly:

> *I'd want them to be a Salesforce certified Administrator. That's probably the main certification that we see. I think the main one is just the Salesforce.com certified administrator, that's basically the one we've seen the most.*

Another participant had a narrow focus on certifications, targeting again only the basic administrator certification: *Most times coming off the street, 90% of the time, that Admin certification is going to be a preliminary foundational certification that you go need to have.* We see resounding consensus surrounding the importance of the baseline admin certification, but if participants do express support for additional certifications, we observe a split: some participants suggested earning the *Advanced Administrator* certification, while others recommended *Platform App Builder* as the best second certification. This passage describes a participant leaning toward the former combination:

if you're going for a Salesforce admin role, you should have a Salesforce admin certification. It's not the end all, be all, but most likely... get the certification, show that you're interested in it, and you could pass the exam. If you can get Advanced Administrator, even better.

Two other participants prioritized the Platform App Builder certification as the best choice for someone wanting to demonstrate more expertise and advance in the organization or ecosystem: [I want them to have the] *admin certification and ideally the platform certification... if they're new I would still want somebody to have that admin certification.* Participants tended to think highly of the core administrator certification. In this example, a participant expresses confidence in the core admin certification and recommends platform app builder as the next step up:

I think that Administrator certification is just a really good foundation if someone is going to be doing any configuration work, or even I would say, business analyst work. If they're going to be moving up in their career, getting the platform app builder certification is good.

Seeing such broad support for the Salesforce Administrator certification leads us to interrogate further: what actually is it about this particular certification that makes it the gold standard for the role? One participant, who also describes the admin certification as the standard as a first step for those trying to enter the ecosystem, expands upon the specific value that that certification provides:

at least [the admin certification] gives you the baseline understanding of

what CRM is, what Salesforce does, what a sales team is using the

application for, what permission sets are for, what profiles are about,

security, about reporting, about general functionality. So that admin

certification is saying if you're coming in new, this is table stakes as far as

what you need to get to be able to be considered.

Thus, a certification serves as a representation of expertise in the basic "hard skills" needed for the job: understanding of the Salesforce platform, its security model, reporting capabilities, and so on. Experience as an administrator also demonstrates those skills, though the variance in org deployment sophistication compounds the challenge of identifying good candidates based purely on the length of time they've held the *Salesforce Administrator* title, as some participants noted. As important as the admin certification is, some candidates still manage to get themselves employed without the admin certification, ostensibly because of exceptionally strong soft skills. One participant reflects the perception that the admin certification is generally considered the baseline requirement, but some exceptions exist:

to be an admin [the Salesforce certified administrator] ... feels like that's

the baseline one, so that's kind of the table stakes. We'll look past it for

juniors if they have some hands-on experience. Maybe they've been acting

as an admin for years without the certification.

Even if an organization agrees to hire a candidate, who doesn't have the admin certification, one participant described a probationary engagement, wherein the newly hired team member was required to obtain the Salesforce Administrator certification within three months of his hire date. This detail reflects once again the small degree of flexibility some employers will extend to candidates lacking the baseline certification, yet the demand that it be obtained soon after a candidate begins a position underscores its continued perceived value. As important as it is, despite limited exceptions where candidates can get hired without it, we also observed a phenomenon wherein participants expressed skepticism surrounding candidates who have received what for lack of a better phrase could be termed *too many certifications.*

With over 40 certifications in the Salesforce ecosystem, some participants were concerned about candidates who have extensive numbers of certifications in the absence of a compelling narrative about why such certifications were acquired. The idea that certifications should reflect some kind of *story* or path to specialization was important to some participants. As one participant noted, *it's not the more certifications the better. Once you cross over to a certain amount, well okay, let's focus on what area is most important to you, where you have the most experience.* With such demonstrated skepticism of high certification numbers, one might wonder why this has become so popular. Participants shared the idea that certifications are used to gain *clout* in the consulting space. That is, Salesforce consulting partners can get ranked more highly by the number of

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certifications held by their employees. Thus, some consultants might be paid directly to work on certifications. One participant described the certification collecting phenomenon as *Pokémon*, reflecting the notion of collecting for collecting's sake:

> *The reason [certifications] start being more challenging for seasoned professionals is this: consulting companies are incented [sic] by Salesforce to get as many certified consultants and as many different certs as they can. They literally pay their people; they give their people time to go out and collect certs. Somebody used the term Pokémon. I've got to get every cert! 20 times! 25 times certified!*

A candidate who has worked as a Salesforce consultant for any length of time, is likely to have a higher number of certifications than someone working in in-house IT (e.g., as a Salesforce Administrator). It might seem intuitive, then, for candidates interested in in-house IT roles to bypass certifications, beyond the baseline *Salesforce Administrator* certification, altogether. At the same time, we observed a multitude of certification requirements during our content analysis. In fact, one of the largest disconnects between our content analysis findings and the content of our semi-structured interviews was that interview participants appeared to care far less about certifications than many of the job postings. On one hand, we heard "admin is enough" as a theme from interview participants but read many examples of job postings asking for multiple certifications. We posed this disconnect to one participant, who had worked in many roles in the Salesforce ecosystem prior to

focusing on recruiting for Salesforce roles. The participant explored our perceived disconnect regarding the importance of certification quantity:

> *When you hear 'admin is enough,' I think that is correct. Unfortunately, though, companies are trying to level up their expectations for the position, cause if someone just has an admin certification and this position is paying 80, 90, 100-grand, they're like 'we want to get someone that has more than just the admin cert to be able to respond to this job posting. We need to increase what our job req is, so that's saying if everyone's an admin then no one's an admin. We're going to add some additional criteria to our certifications to level up the bar.'*

On one hand, we observe participant after participant expressing not only sentiments surrounding the lack of necessity of many certifications, but also outright skepticism of candidates with particularly high certification counts. Some participants even suggest demanding multiple certifications is foolish because it restricts the candidate pool at a time when so many companies are desperate for talent. On the other hand, other companies apparently feel the need to ask for more certifications, ostensibly to make the position appear more competitive or to justify a higher salary. The disconnect between the certifications listed in our content analysis and participant sentiments surrounding certifications as revealed during semi-structured interviews represents one of the largest disconnects that we observed across these two methods.

For example, in contrast to what we observed in the job postings, not a single participant said they required any of the Salesforce Consultant certifications, such as *Sales Cloud Consultant, Service Cloud Consultant,* or *Community Cloud Consultant.* Participants focused more on mastery of the Salesforce platform fundamentals, understanding how to model data in Salesforce, how to navigate standard system objects, and how to utilize declarative development to configure the system for use by business units. Collectively, these appear to represent the base level of *hard skills* necessary to function as a Salesforce Administrator, and the Salesforce Administrator certification appears to exist as a trusted, worthwhile credential, which signals attainment of a requisite level of knowledge of these skills.

Overall, we saw strong support for the Salesforce Administrator certification, described as *table stakes* for becoming an Administrator or even getting into the Salesforce ecosystem, though we know some candidates with other important skills can get hired without the certification already in hand. It is clear that obtaining the Salesforce Administrator certification must be considered a worthy investment for students interested in exploring a career in CRM technology, and curriculum for Information Systems CRM courses utilizing Salesforce would benefit from the incorporation of curriculum to prepare students to take the Salesforce Certified Administrator certification exam. Beyond the baseline Administrator certification, we saw support for obtaining *Advanced Administrator* and *Platform App Builder* certifications as the next layer for

candidates looking to differentiate themselves. Beyond these certifications, companies will be far more interested in demonstrable experience than any additional certifications. No doubt consultants, who are directly incentivized to rack-up certification numbers, will continue to hold the competitive edge on certifications compared to in-house IT talent, but whether these certifications are considered more important by in-house IT talent managers remains to be seen.

Theme 3 – Human Abilities (Soft Skills)

Consistent with other papers in the IS literature surrounding skills of IS professionals (e.g., (Bailey and Mitchell 2006)), we saw much support for the idea of soft skills and their importance in candidates. The phrase "soft skills" was referenced verbatim by several participants, and participants often invoked *soft skills* as if it were commonly understood vernacular. One participant described soft skills as the single *most* important skill bundle. We attempted to get a more nuanced understanding of soft skills throughout our interviews. In some instances, participants volunteered definitions or examples, and in other cases we asked directly for participant perceptions surrounding exactly what constitutes soft skills. The following passage aptly summarizes the concept of soft skills:

> *The listening, the communicating… being able to address an audience at various levels in the organization: people that are doing your direct work, your management, upper management. Understanding the industry that you're working in even if you don't necessarily have a background in it –*

doing what you can to do some research and understand the industry and

some of the issues there. Being available for people, being responsive.

While we find this to be a very informative summary, we also pursued the

definition of specific sub-constructs comprising soft skills. By utilizing in vivo

coding wherever possible, thereby preserving the participants' own words in

codes, we were able to identify four soft skill sub-categories. We labeled these

categories as *communication, initiative, negotiation,* and *maturity.* We will now

provide descriptions and justifications of each of the sub-constructs.

Communication

Communication appears to be the anchor or foundational soft skill and

was referenced by 100% of participants. One participant described

"communication skills" as the single most top skill that she sought in a candidate.

Another participant dispelled the notion that the administrator role is severely

technical, suggesting what is important is:

being able to...communicate. The most basic communication skills. People

might think Salesforce admin's technical, but for all the reasons that we

just talked about, you need to ask questions, and then very often you need

to go present something that's different than what the ask was.

The notion of communication skills is not limited to speaking effectively, but also

includes listening. Another dimension of communication skills included tailoring

messages to different audiences. As one participant described it, communication

skills encompass *being able to address an audience at various levels in the organization: people that are doing the direct work, your manager, upper management….* Embedded within that ability to tailor communication for an audience and within communication skills in general is the distinct dimension of social skills. One participant, a talent recruiter, who described the stratification of companies and talent as *As, Bs, and Cs*, described a candidate for whom he attempted to secure employment in a very good labor market. According to the participant's assessment, the candidate had excellent technical skills, but the deficiencies in communication skills severely hindered the recruiter's ability to secure employment for the candidate, even in a market when everyone was hiring and in need of those technical skills. The participant described the situation as follows:

> *He's a nice guy, but he had just absolutely zero communication skills. And I'm sure he's a good person, but he spent too much time playing video games, locked in his parents' basement, and at the better companies that's not going to get hired. They've got to get out, they've got to get social, they've got to learn to communicate.*

The intersection of social skills and general communication skills appears to have been captured by another participant, also a recruiter, who described his preferred characteristics when engaging with a candidate: *I want them to be able to communicate effectively. I want them to be able to present themselves well.*

Another related but distinct dimension of soft skills, no doubt interleaved with communication skills, emerged as what we termed *negotiation skills*.

Negotiation Skills

Negotiation skills is our label for the aggregation of codes including *the ability to negotiate*, *finding middle ground*, *how to make everyone happy*, *how do you tell people no*, *Kumbaya together.* Future research could test our belief that negotiation skills could mediate the relationship between communication skills and employee capability. One participant outlined the distinct abilities that characterize this category:

> *understanding how to negotiate through that conversation and being able to ensure that somebody feels heard. What I heard you say was you needed this; it sounds like what you're trying to accomplish is that. Did I get that? Okay, so I'm going to show you what we came up with, and it's a little bit different than exactly what you asked for. But I want to walk you through why we think this is the right solution, and how we think it's going to meet your needs.*

The idea that stakeholders, influenced by the democratization of technology, can be prone to running to admins with technical prescriptions for the system rather than solution agnostic business requests underlies this phenomenon. The paradigm of IT as order-taker rather than strategic partner has long been known and feared by IT managers. The skilled business liaison to IT understands the need to present only problems and business requirements to IT, so as to allow

the IT team to flex their skills in solution development. Embedded in this reality is the idea that the IT team, who have greater knowledge of the Salesforce architecture, functionality, security, and other aspects, are better suited to propose implementation decisions that align with the health of the platform itself than any business stakeholder.

Furthermore, a business's view of what a solution might look like might differ drastically from the solution proposed by the Salesforce administrator. As a result, Salesforce admins have to be prepared to ensure stakeholders understand they have been heard and then convince the stakeholders to accept and embrace the IT-developed solution. As technology and technical skills become increasingly democratized among the population, the means by which the technology professionals differentiate themselves comes in depth of knowledge, a rare departure from the benefits of broad utility, e.g., breadth over depth. As increasing numbers of employees are exposed to Salesforce prior to participating as a stakeholder or influencer, IT professionals must know even more about what's possible from their technology stacks.

Initiative

We grouped the codes *creativity, curiosity, forward-looking, keeping current, initiative,* and *self-motivated* under the theme of *Initiative*. The passages underlying these codes reflect participants' desire for candidates to have what might be termed to be a *spark.* Inquisitiveness, a desire to keep on top of current and emerging software developments, the ability to self-motivate and take

initiative, to complete work without being asked are all sub-constructs underlying this category. Distinct from intelligence or communication skills, this sub-construct emerges from themes pertaining to being driven and eyeing the future, possessing a long-term mindset:

> *There's an element of needing to have the initiative to go in and identify the things that need to be done. Both the maintenance of the system, the elimination of tech debt, the care and feeding, but also to identify where there is more of value that can be had in the organization that somebody doesn't know about to ask for.*

The invocation of technical debt leads us to a renewed call for research on technical debt, its antecedents, consequences, and best-practice recommendations. As it pertains to initiative, it seems that candidates able to demonstrates abilities to simplify interfaces, to identify what features are adding value and what features are distracting clutter will appeal to hiring managers. The theme of demonstrating a spark, a focused interest, a sense of initiative was echoed by another participant, who described a desire to see excitement in a candidate, a desire to make an impact on the organization. The administrator role appears to be a direct conduit between business needs and the corresponding manifestations of those needs within the IT artifact, the CRM system. Thus, the initiative to maximize the system's capability is desired by employers. To those ends, the nature of Salesforce as a SaaS solution entails three releases/upgrades a year. One participant described the sheer volume of release notes that an Admin could

review. It might be easy to become overwhelmed or even to ignore all this documentation, which leads to the desire to hire employees who are self-starters and excited by the potential Salesforce can bring to the organization. In the context of frequent releases/upgrades, a business requirement previously deployed as custom code might now have an out of the box Salesforce solution, which would be a candidate for functional migration from the custom solution to the in-house Salesforce solution. A good Salesforce Administrator would identify the upcoming functional enhancement, raise it to relevant stakeholders, look to gain support (time, resources) to investigate the migration from custom code to the out-of-the-box solution, and finally ideally build, test, and deploy the rewritten solution. In the participant's own words:

> *Are [candidates] forward looking? For example, we know that Salesforce puts out releases three times a year, seasonal releases, so is your Salesforce team looking at those release notes and determining – and the release notes are 400-500 pages long. There's a lot of changes that are happening within the application to help businesses, to help them grow to help them succeed. To help them see things they're not currently seeing. When you have a good team, you understand what those release notes are and how they can be beneficial to particular business operations. Bringing those the forefront to the stakeholders: saying 'hey by the way we've talked about this in the past we had no way to really implement that without writing custom code, I see that Salesforce in the spring release is*

putting that functionality in there out of the box for us to be able to

utilize. Let's talk about it a little bit more to figure out if it's something that

we actually want to incorporate and how can we do that so once it is

released to general availability, we can hit the ground running on it.' I

think a lot of times stakeholders need to understand about people that

we're hiring: Are they future looking or are they thinking about our best

interests? Are they thinking about you how can we continue to get a better

investment ROI out of our Salesforce because the licenses aren't cheap.

These people that are running the application need to be able to think in

the terms of financial sense and from an operational roadmap perspective

to before thinking for them.

The Salesforce Administrator's unique position means this employee largely determines how well the organization is educated about the CRM product's capabilities. The qualities described might be labeled as a desire for a candidate to exhibit *stewardship* over the platform: themes of cultivation, care, and commitment to quality and improvement underly participant commentary surrounding this category. In this, like most, SaaS environments, the core IT artifact is maintained by a global team of developers (employed by Salesforce itself). The quality of the particular instances of the artifact deployed within Salesforce customer organizations is largely reflective on the skills and abilities of the in-house IT human resources and their abilities to implement the right combinations of available features. A related aspect of the initiative factor

emerged in the context of knowledge acquisition, with one participant considering the desire to engage in self-study to be the single factor that determines whether someone can become skilled in CRM.

Maturity

During our exploration of exactly what constitutes *soft skills*, we observed a sub-construct, which we originally named *Maturity & Life Skills* and subsequently condensed. Codes describing passages describing this theme include a*dapted, flexibility, professionalism, teamwork, resilience, everybody needs to grow up, able to build relationships with people*. This theme describes the phenomenon of how an employee manages himself in the work environment or reacts to adversity, as well as the ability to build relationships. The ability to work in teams, the ability to make commitments, the ability to engage with and manage varying personalities, the ability to demonstrate empathy, and the ability to adapt to changing circumstances are all sentiments, which we aggregated into this larger theme of Maturity.

One participant, a recruiter, pointed out that the Salesforce administrator often has a large number of constituencies to keep happy and could become blamed for technical failures or other negative outcomes: *[Salesforce Admins] can be the punching bag, too. Do they have a thick skin in that sense? Are they a little resilient?* A related phenomenon emerged from a discussion about the importance of a college degree. One participant was not convinced the college degree was especially important, but also that hiring someone straight from high school

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wasn't a great idea, because the Salesforce admin role is too important and requires too much responsibility:

> *I don't know that I would want to hire somebody who's 18, with no college but that's because they also have no work experience yet, and some of those maturity and life skills that I think are really important and this is a big role to be able to have your hands in: somebody's CRM or whatever the use case is. If somebody didn't go to college and spent time in the military or spent time working, particularly if they were working in customer service or sales and has more of that life experience, I probably care less about that college degree. But I wouldn't want to hire an army of 19-year-olds, who have a Salesforce certification, but really no life experience yet, because I think this position is too important.*

One additional aspect in this category is the idea of being coachable. Although only one participant enumerated this directly, it is embedded into the broader theme of maturity – in this case the ability to be told uncomfortable truths (e.g., a bad performance review) and comport oneself affably. The participant also espoused the idea of being open to learning new things:

> *[I want someone to be] very coachable, open to feedback. If someone feels like they have it all figured out and they're closed to learning new things, it's not always the best fit. If someone wants to learn new things and ask questions, I would take that over someone who even was more technical....*

The desire for coachability as a characteristic considered to be superior to a robust set of technical skills underscores a long-running transition in the labor market whereby soft skills are prioritized above technical acumen. There appears to be an increasing comfort on the part of industry employers in teaching a larger set of technical skills as part of onboarding or on-the-job training, whereas soft skills are perceived to be more difficult to train. Professionalism, a long-sought quality perhaps less often enumerated, is embedded in the theme of maturity. It seems to represent a construct, which would not exclude patience, emotional management, the ability to override base instincts and suppress frustrations for the greater good of the team, the organization, or at least the individual's survival as an employee. Embedded in *coachability* is a long-term mindset, another aspect of maturity.

Theme 4 – Education

Our content analysis did not reveal overwhelming support for the need for a college degree to becomes a Salesforce Administrator. Rather, approximately 50% of the job postings we examined stipulated the need for a college degree. Compared to other observed constructs, however, this was not an insignificant level of support; thus, our content analysis framework contained the construct: *Education*. In our interviews, we asked about the importance of education and the college degree specifically. Since our content analysis framework is labeled *Education* rather than *College Degree*, one participant clarified that some kinds of education, such as work in *Trailhead*, are important, but that this participant did not require a college degree specifically:

When I think of education, I think of college, and I don't require a college degree. My bias was: oh, if someone has a college degree, they're going to be better with writing.... the first two employees on my CRM team, here I was able to hire two people, they didn't have degrees. Their writing skills are excellent, like they, I think, surpass some of the people that went to college. Critical thinking, organization, all those things they're great at. So no, I don't think it's really needed. I have respect for higher ed, I think it's great. I just think it's expensive for a lot of people, and everybody's got a different story. Some people aren't great at school and that doesn't... you can be great at work, but not great at school.

It seems that completing projects in *Trailhead,* Salesforce's gamified learning platform (Kinnett & Steinbach, 2021b) and potentially offset a lack of the college degree or the achievement of certifications. To the former, we asked the participant quoted above to clarify why she had deemphasized the college degree as a hiring criterion. Her response points to a perception of a shift across the entire Salesforce ecosystem: *I just feel like that's the direction that it's going with Salesforce is as long as you have some kind of technical background or you can get a certification or you can get a Trailhead or something like that, you're getting that experience that supplements the college degree....* Another participant underscored that obtaining achievements in *Trailhead* has the potential to offset a lack of formal Salesforce certifications: *If they don't have the certifications, [I want to see that] they're trying, they're working hard in Trailblazer[sic].*

Similarly, another participant referenced *Trailhead* as a means to demonstrate initiative and self-directed learning while bolstering one's Salesforce-based *hard skills*: *you can participate in Salesforce's own Trailhead platform, and they have got various badges that go to a higher depth of involvement – I think they're called super badges – which is really more like a little mini-project. I think that counts to some extent….*

Returning to the formal college degree, another participant, who also managed a Salesforce support team, suggested that requiring a college degree would be just an extra hurdle to make an already difficult task -- hiring a Salesforce Administrator -- even harder. We asked this participant to comment further on this phenomenon, with resulting commentary as follows:

> *from a macro standpoint as a people, we are learning to be more inclusive. We're all on a different spectrum as far as where that is. So, I feel like that's there's a reason why we have the with D&I professionals -- diversity and inclusion -- that's now a job to make sure people are treated equal and included so I think that there's some attitudinal changes going. Other than that: talent. Talent shortage. Yeah, it's like I need a body, we've got problems that need to be solved, and beggars can't be choosers....*

Not all participants were so quick to dismiss the acquisition of a college degree, and ultimately, we received mixed feedback overall about the importance of a college degree, just as we observed from the content analysis. While two of the

previously quoted participants were on the front lines of individual companies with hiring needs, other participants, particularly recruiters, described more favorable sentiments about the college degree. It does appear that the most lucrative jobs still expect college degrees. One recruiter described the phenomenon as follows:

> *Most of my clients want a degree. A few of them will be flexible and take real world experience, but finishing that degree, 100k job, 100k+ job, most of them want to see a degree. Mostly, because it just shows the kid had commitment, could finish something. It's also kind of a rite of passage. It's a good place to grow up with like-minded people that are going to end up in the workforce. So, I think all those things matter. I'd say 90%, maybe 95% of our jobs, they want someone who has got a degree.*

This passage reveals that the college degree demonstrates commitment. The use of the phrase *grow up* is also significant and reveals a perception that what we classified elsewhere as *maturity* is embedded in the perception of what a college education signifies, inculcated through the *rite of passage* dimension encapsulated within the college experience. Another recruiter emphasized that the college degree is often considered as a substitute for existing work experience:

> *The standard has always been: 'college degree or equivalent work experience'… if you don't have the college degree and you don't have the work experience, at that point you're competing with a lot of other people that [also] don't have either one of those things. So, I think having the*

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college degree does give you a step above the other folks that don't have

it.

Overall, the degree is still a differentiator, whether it actually provides purported skills or not. To the degree that college inculcates maturity or the roots of professionalism, candidates with a college degree should, on the whole, be more appealing to top companies.

Theme 5 – Data Skills

Although our content analysis framework grouped data and middleware as complimentary skills, we observed more support for data skills than middleware skills during our semi-structured interviews. We included participant sentiments about middleware during our analysis of participant sentiments regarding the original Lokuge framework. Roughly two-thirds of our participants described data skills as important qualifications for the Salesforce Administrator, though those participants were often passionate about the importance of these skills for the role and for IS professionals. Even the most diminutive participant on data skills noted that *people with good data skills are in high demand across most roles, so there's some value add there, but I wouldn't call it critical.* Another participant, with ample experience as a Salesforce Administrator and manager of a Salesforce team, disagrees, literally using the word *critical* to describe data skills:

one of those key skills that's setting people apart is like demonstrating an

understanding of the data models, of data operations as well, whether it's

just doing inserts and updates or modeling new things; that is absolutely

critical.

Another participant also felt passionately about the role of data skills to enable a candidate to succeed and differentiate themselves. The participant described her interview process, where she would ask candidates to sketch out a solution to a new business requirement, a process that revealed to her a candidate's competency relating to the relational database model:

One of the things that I feel very strongly about is, at the end of the day, no matter what cloud you're working on if you're a Salesforce admin you need to understand how to model data. I think a lot of times people think: Oh, I have to be a data scientist or.... No, it literally means on the platform itself, in order to get the utility, to get the value out of it, you are going to need over time to create new objects and new object relationships. Being able to understand when you get a requirement, does that require new fields or new objects? Does that require two new objects? Because there's an object and a junction object. That to me is a skill that every Salesforce admin needs to have. I can tell --usually pretty quickly -- folks that either get or don't get object models and the concept of a relational database. At the end of the day, that's all Salesforce is, I mean, it's not all Salesforce is, but that's a big chunk of what it actually is [, a relational database].

This participant, as we can see, considers its nature as a relational database to be one of the most important aspects of Salesforce. Overall, we saw strong support

for data skills even if other themes might appear slightly more often across our participant sample.

Theme 6 – Customer Experience/User Experience Design Skills

A new theme, which was not revealed in our content analysis, emerged from the semi-structured interviews. Participants themselves used varying words to describe the theme, but the main thrust of their sentiments could be termed *Customer Experience*. Embedded in this theme are codes including *UX, simpler is better,* and *UI-UX skills increasingly important.* One participant, who placed this concept as the third of three skills pillars alongside business analysis and understanding the Salesforce technical stack, struggled to provide the precise label:

> *We talked about business analysis, talked about a little bit of the tech skills and tech stack, which would be like the object-oriented stuff. The third pillar that's starting to really bubble up would be design, the UX, the UI, whatever you want to call it, CX -- customer experience. Being able to have an eye for -- I think 10 years ago you just throw things on the screen, you were very limited with the presentation of how things looked, and that was it. Now you've got a lot more tools where you can really paint yourself into a corner, so to speak, like you could have the most, the best automation that does all these complex things, but it's a horrible user interface and you're never going to have people adopt it.... I would have*

an eye on some high-level principles of design, and that comes into both

desktop and mobile.

This point was echoed by another participant, who described a virtually identical scenario: an emergent need for this suite of skills that resulted from a past focus on automation at the expense of user experience. We posit this may be due to the cumulative effects of a critical mass of CRM implementations beginning to feel the impact of what could be described as the CRM 1.0 paradigm, characterized by a focus on automation and reporting. The second participant acknowledges the focus on automation but considers it a risky endeavor that has not always paid off:

I did mention that about the whole strategy designer, user experience

designer. I think there's going to be more of a focus on making things

more simple, intuitive, because there's also all this focus on automation.

But you can get automation happy and really make a mess if you're not

thoughtful about that and I think there's a lot more focus on that...to make

sure what you're building, you're keeping the end user in mind, you are

designing it very clearly, because I think really five years ago, it was just:

you know the technical stuff, just build it. MS-1

Another participant described a similar observation: that historically CRM initiatives were focused on automation, noting that organizations got carried away with point-and-click delivery and presented too much to system users:

I think [there is] danger sometimes in giving everybody access, because

it's all relatively easy to expose everything to them. I feel things have

retreated back to the basics and making things as simple as possible to

access what you do 90% of the time, make it more efficient for the end

user. Simpler is better for most of the users. Not to say that automation is

bad. I think it's more having 50 tabs available to you of information that

you could be looking at when you only need four.

Precisely because it has not been as much of a priority for organizations in the

past designates the user experience/design theme was suggested by one

participant to be a good area of opportunity for newcomers to differentiate

themselves:

[One area that] gives newcomers an opportunity to get a leg up is UI/UX.

In the old days, meaning even like a year ago, UI/UX was not a thing that

existed within most Salesforce teams. And the reason was there's just

wasn't a whole lot you could do to change the experience.

Within a typical computing program, referring a student interested in CRM to a

UI or HCI course would not be difficult, and embedding basic UI/UX concepts

into an introductory CRM course is possible. It was in some respects surprising to

hear participants talk of the minimal attention paid historically to the user

experience, particularly since a good portion of the early literature on CRM

focused heavily on salesperson adoption and ensuring usability, in some cases

applying the technology adoption model (TAM) to CRM systems and users. It

now seems, many years later, that organizations are more thoughtfully

incorporating elements of design and user experience and – as we saw here – valuing such skills in their staff.

Theme 7 – Industry Expertise

Several participants expressed sentiments surrounding themes of industry knowledge, domain knowledge, and industry expertise. When role definitions were explored, this theme was most highly prized in the business analyst, but – particularly since not every company has the luxury of hiring support staff beyond the Salesforce Administrator, and because business analysis skills are prized in a candidate for the Salesforce Administrator role – it remains relevant to our research. One participant suggested that breadth of understanding both business functions and technology implementation options were critical aspects of success for the business analysis function.

> *That's right, [it is important to know a] little about a lot. To understand what Marketing does, what's their primary business function. What is Sales? What is HR? What is Finance? [A good analyst is] someone that's been around an organization and had a little experience working in those departments as an analyst in the past, just to be able to talk shop with them to some extent so everything's not completely foreign to them, and then working with the Salesforce team to say : 'well here's what Marketing is looking to do, what does that need from a technical CRM*

Salesforce implementation perspective?' and to be able to bridge the gap

between the two.

This passage implies that a rigorous, broad business curriculum is appropriate to orient students to acquire even greater knowledge about business verticals. This passage also dispels the notion that it is only soft skills that are solely responsible for success. The other biggest differentiator – and ostensibly partially responsible for the importance and value of actual experience in a given role or industry – underlies this construct we named *industry expertise*. The construct resulted from a discussion of the business analysis skill, and we separate this as a distinct skill, which we suggest moderates employee business analysis capability. Another participant described this ability – what we call *industry expertise* – as one of the most difficult aspects of working as a consultant.

> *I think industry knowledge is important…. If I had to rewind years ago,*
>
> *it's also different being in a consulting role and that's why I think I keep*
>
> *homing in on the industry knowledge is you flip from client to client and*
>
> *you don't necessarily have a deep understanding of the industry they're in*
>
> *and the challenges that they would specifically face in that industry. That*
>
> *was to me always the most challenging part of being on projects and not*
>
> *specializing in doing only financial services clients…it was having to*
>
> *learn new lingo.*

Overall, this theme encompasses concepts including *business process knowledge*, *domain skills*, and *industry knowledge*. The theme reflects the importance of

being able to 'talk the talk' in a given industry, along with an understanding of the terms and *lingo* within a given organization, which participants suggest is more intuitive if employees have worked within other organizations in the same industry.

Theme 8 – General Analytical Skills

Beyond the specific conception of business analysis or business *systems* analysis, we observed among some participants a collection of skills we coded as *quantitative analysis, detail orientation, attention to detail.* These reflect sentiments and perceptions around a generalized bank of analytical and quantitative reasoning skills. This theme is distinct from business analysis skills, which were enumerated as skills pertaining to requirements determination, constructing user stories, documentation abilities, separating real business needs and facilitating requirements sessions.

Answering Research Question RQ3

We can now return to our final research question, *RQ3: How do the results of the content analysis compare with the findings of the hiring manger interviews?* Our results indicate support for our content analysis framework, but several distinctions exist. To the former, both the job postings and interview participants emphasized the importance of human abilities/soft skills. The nature of the CRM artifact is that its support staff are continually shaping the artifact to meet business requirements or supporting the artifact. Both tasks require internal client

engagement. In larger organizations, the CRM Information Technology function is almost certain to require teams of varying sizes in order to keep the artifact usable, aligned with business goals, and to address support requests. Another area of alignment across the job postings and the interviews was the importance of business analysis skills. While such skills were identified from our content analysis, these skills received emphatic treatment from our interview participants, who described business analysis skills and analytical skills broadly as critical to candidates they consider for roles like the Salesforce Administrator. Project management skills were less emphasized in participant interviews than in the content analysis. Other distinctions exist as follows.

First, the job postings analyzed in the content analysis appear to over-state the importance and breadth of certifications. Virtually all participants we interviewed considered certifications to be a nice-to-have at best. The themes we already discussed of certification inflation, the inclusion of certifications is also a reflection of the difficulty hiring managers and recruiters face when attempting to ascertain candidate qualifications. As at least one participant observed, the title Salesforce Administrator could apply to someone working as a one-person IT shop, or a member of a Fortune 100 IT team. Understanding "what you *did*" was described as a distinct challenge for hiring managers and a boon to those participants able to effectively communicate their experiences. The spectrum of *support & maintain to architect & build* was proposed by one participant as a barometer to analyze CRM hard skills is a candidate for further investigation.

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Next, the job postings appear to –at a minimum, not tell the whole story –

and at a maximum: overstate the importance of a college degree. Although the

degree requirement was hardly universal in our content analysis findings,

participants suggest that the degree will remain important at top companies, but

the talent shortage in this domain is so significant as to cause companies to flex

this requirement. The findings from participants are mixed, with some expressing

reluctance -- albeit sometimes with an admission of known bias -- to hire a

candidate without a college degree, Others expressed readiness to waive the

requirement or omit it entirely. The insights we obtained about the broader talent

ecosystem partially answer the question: top companies will continue to require

college degrees. Companies with less to offer will increasingly overlook a

degree's absence. When it comes to the Salesforce administrator role, the need for

maturity prompted one participant to acquiesce to the idea of a candidate without

a degree while insisting some other experience – military, workforce, internships

– be present to enable maturity. In the participants words, "I wouldn't want to hire

an army of 19-year-olds… because the position is too important." Even as we

note that individuals *can* get hired without a degree, we hardly recommend this

course of action. On the contrary, the degree still serves as a differentiator and not

having a degree will continue to place such candidates at a disadvantage

compared to candidates possessing the degree.

The concept of industry expertise or domain expertise did not emerge

from our content analysis coding, though it may have been present, and we were

not attuned to it prior to conducting our interviews. This notion of being able to "talk shop" with other employees was revealed as another important skill for the business analyst, but which would apply in many cases to the Salesforce Administrator in smaller teams, where an analyst would not be present, was articulated in varying terms by several participants. Beyond simply answering our second two research questions, however, the exploratory component of the semi-structured interviews yielded additional valuable insights: from enumerating the particulars of soft skills, to clarifying the roles and responsibilities of CRM support team members. We also learned that the Salesforce Administrator role is often marketed as a non-technical role, or at least described with an openness to employ candidates in the role without technical backgrounds. When asked about this phenomenon, participants noted that declarative development – that is, *clicks not code* – has revolutionized the talent search. No longer are organizations restricted to computer scientists as a candidate pool, but indeed organizations believe they can train just about anyone to administer their customer relationship management system. That a talent shortage remains – in spite of this – manifests the challenge for CRM staffing in organizations. Namely, a durable bank of soft skills, analytical skills (business analysis and general analytical skills), and a knack for understanding a business domain will provide sufficient foundation for an organization to hire and train a candidate as a CRM Administrator.

A Revised Factor Framework of Knowledge, Skills, and Abilities

Our content analysis framework represented a useful input for our grounded theory study, yet it bears revising based on participant feedback. We now present a framework, which may serve as an input for exploratory or confirmatory factor analyses. For example, the creation of survey questions for each construct and the proper administration of the resulting survey will enable the generation of a quantitative measurement model through a confirmatory factor analysis of the constructs. In that sense, our framework is the input to a measurement model to be operationalized via questions derived from select coded interview transcript passages. The transition from our exploratory qualitative methodology to a quantitative paradigm whereby identified constructs are merged with existing operationalizations from the literature and verified via survey administration represents the initial thrust of our ongoing research agenda.

Each of the sub-constructs listed in the framework is accompanied by the percentage of interview participants, who voiced support for the given construct. We did not impose a floor for constructs to be included, but we did include any construct receiving over 50% support. In some cases, we nevertheless included constructs receiving less support if participant sentiment was strong among those who did voice support or if we believed omitting the sub-construct would prevent a comprehensive story from being told. Our framework for knowledge, skill, and ability factors for the effective Salesforce Administrator is shown in Figure 23. A

description of the included constructs follows and includes, where applicable, specific revisions from the content analysis framework.

Figure 23: Knowledge, Skill, or Ability Factors for the Effective Salesforce Administrator
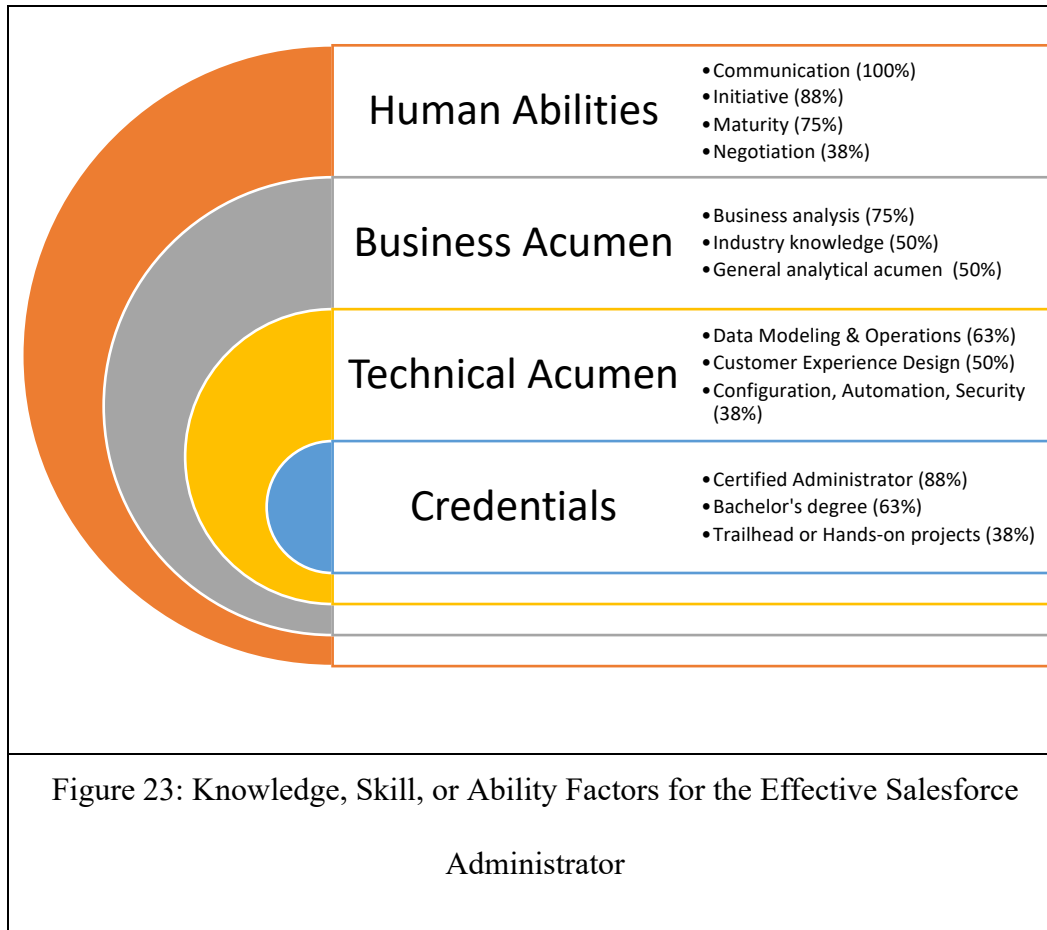
As noted by (Bassellier & Benbasat, 2004), no mechanism from disentangling knowledge from skills from abilities has not been empirically supported in the literature, and this research does not attempt to draw these distinctions. We note a number of differences, however, from our original content analysis framework and the revised framework. For example, we originally grouped *soft skills* with *education*, but interviews did not reveal any particular

relationship between soft skills and education. Indeed, one participant suggested that an assumption that a college degree in itself serves as a predictor for writing skills was misguided. We suggest the term *Human Abilities* as an analog for the traditional notion of soft skills. This factor consists of four sub-constructs: communication, negotiation, maturity, and initiative. The business analysis & project management and project management was removed, following the sentiment that business analysis skills were regarded as more important than project management skills by at least one participant.

The new factor, *Technical Acumen,* absorbs the technical sub-constructs in the content analysis framework and adds the user experience design sub-construct, which was a notable addition uncovered in the interviews. This factor varies from the content analysis in that we removed *customization*. Administrators are not performing much customization, where customization is defined as custom development outside of the "clicks, not code" declarative development paradigm. Thus, we removed the *Customization* construct since our focus is primarily the Salesforce Administrator role. In fact, participants frequently emphasized the concept of an Accidental Admin, which refers to employees without technical backgrounds and who were staffed in non-IT departments.

Accidental Admins were tasked with large amounts of responsibility over an organization's Salesforce platform. The span of functionality available via declarative development in Salesforce is comprehensive enough that some organizations appear to be able to utilize the system without the creation of

custom application code. It appears organizations will employ an additional employee or outsource custom development responsibilities. Of course, Salesforce Administrators who are competent with custom code development will be in high demand, but we no longer include customization skills in the framework. It seems that companies describe the certified admin as a proxy for the baseline Salesforce administrator skills and were less likely to specifically enumerate those skills, which accounts for the relatively low percentage of participants who discussed configuration, automation, or security. The presence of the Salesforce Administrator certification seems to substitute for explicit requirements for the *hard skill* of configuring the Salesforce platform.

To those ends, we revise the idea of credentials, not exactly skills themselves anyway but rather representations of presumed skills. This label reflects the broader range of *proof* that candidates can obtain to demonstrate their competence and qualifications for the Salesforce role. We enumerate the importance of having the basic *Administrator* certification, which demonstrate candidate abilities to configure the application using declarative development. Thus, the high-level factor *Credentials* absorbs the certifications, and the new construct *Trailhead & Hands-on Projects* demonstrates proof of exposure to the platform. Some participants expressed the importance of having not simply certifications but completed projects or suites of functionality in the Salesforce platform. Salesforce Trailhead is Salesforce's gamified online learning platform, which includes learning modules allowing students to complete projects and earn

points, badges, super badges, all while advancing through various ranks (Kinnett & Steinbach, 2021c). Participants sometimes invoked Trailhead, suggesting super badges were a worthy endeavor for candidates looking to get hired. Participants also suggested students implement personal projects, to solve problems in an existing job or at school, for example. Students might implement a course management tool to keep track of their courses and notes, for example, using custom objects on the Force.com platform.

Chapter 4 Summary

In this chapter, we defined the details of our grounded theory study, which was driven from semi-structured interviews with Salesforce Administrators, recruiters, and managers. We conducted, recorded, and transcribed these interviews into transcripts. We conducted multi-phase qualitative analysis via the process of coding the transcripts. We presented a revised framework for Salesforce Administrator skills, which reflects the relative frequency in which sub-constructs were discussed as a percentage of total cases. We resolved our remaining two research questions, RQ2 and RQ3, revealing that the Lokuge framework is generally supported but with concerns expressed surrounding the Marketing dimension, and our content analysis framework is generally supported by participants, who deemphasized the importance of a college degree as a baseline need, raised the priority of business analysis skills, decreased the importance of project management skills, supported the importance of data modeling skills, and supported the high importance of soft skills while revealing

greater insights into the sub-constructs that comprise the soft skills, or what we termed *human abilities*, factor. In the next and final chapter, we will close the research project by sharing the results of a preliminary post-hoc analysis and position our findings in the context of the 4th industrial revolution. Finally, we will present a research agenda for ongoing investigation.

CHAPTER 5: CONCLUSION

The 4th industrial revolution (4IR) describes the disruption and transformation of the means of production resulting from innovations in, among others, artificial intelligence (AI) and ubiquitous internet connectivity. The rapid changes in technology inherent in 4IR threaten to disrupt existing labor structures and employability norms. Constructs like *Education 4.0* and *Work 4.0* have emerged to conceptualize 4IR's manifestations and impacts on various domains. The continued diffusion of automation and AI-driven innovations could result in massive reduction in human capital requirements, resulting in mass unemployment. The extent of AI's disruption is a potential predictor to the outcome of mass unemployment. Given this contextual environment, questions surrounding the best mix of skills for students preparing to enter the labor market, including the portability, durability, and extendibility of those skills, are particularly timely. The socioeconomic model of higher education stipulates that a basic responsibility of colleges and universities is to prepare students to enter the workforce and obtain gainful employment. Indeed, a core value proposition of higher education has – for decades – been that obtaining a degree improves employability.

The potentially disruptive nature of 4IR and its unique inherent characteristics suggest that we cannot simply rely on past beliefs or embrace the norms or conventional wisdom that led to positive outcomes in the previous industrial revolution (i.e., the IT revolution). Many jobs exist today that didn't

exist ten years ago or twenty years ago, so an ongoing assessment of various industry domains and identification of the requisite skills for employees in those domains are worthy endeavors. Embedded within any examination of Industry 4.0 are the notions of the Knowledge Economy, the Knowledge Worker, and the theoretical underpinnings of the resource-based view (RBV) of the firm, the knowledge-based view (KBV), and the dynamic capabilities theory (DCT), which guide our understanding of how resources are combined and continually recombined to form organizational capabilities. Any examination of knowledge, skills, and abilities of industry employees, the knowledge workers, contains –at minimum – an implicit acknowledgement of RBV and its derivatives.

In this dissertation, we explored customer relationship management (CRM), which describes the use of information systems to implement a customer-centric strategy and to practice relationship marketing (RM). CRM is one domain grappling with, among other challenges, the talent shortage. While CRM systems have not yet incorporated a broad suite of 4IR technologies, many companies have a long history of implementing and re-implementing CRM systems: the amalgamation and accumulation of countless decisions surrounding automation has led, among other factors, to the need for workers to support these systems. Salesforce, a market leading CRM vendor, proposes its products alone will generate 9 million new jobs and $1.6 trillion in new revenues for Salesforce customers by 2024.

Despite the strong market for CRM skills, a recent paper in a prominent IS journal claims higher education is not preparing students for CRM careers. In order to supply the CRM domain with skilled workers, it is imperative that higher education develop curricula oriented toward the CRM professional. Assessing skills needed for specific industry roles has long been an important task in IS pedagogy, but we did not find a paper in our literature review that explored the Salesforce Administrator role. To answer our research questions, we determined a theoretical underpinning, conducted a comprehensive literature review, and reported background, methodology, and results of a content analysis of Salesforce Administrator job postings retrieved from popular job sites. We presented a framework for Salesforce Administrator skills, which guided the development of semi-structured interview scripts. We used these scripts to conduct interviews with CRM professionals. We next performed two-cycle qualitative coding methods to identify key themes and illuminate underlying insights. Analysis of our pre-hoc and post-hoc codes facilitated the generation of a four-factor framework, which guides the future development of a survey instrument and initiates a new phase of our research agenda. The main constructs of the factor framework: human abilities (i.e., soft skills), domain & analytical skills, technical acumen, and credentials largely reveal that the qualities most prized in customer relationship management (CRM) professionals are desired in virtually any area. At the same time, we identified important distinctions about the Salesforce CRM domain, such as the increasing importance of user experience design skills, the

criticality of obtaining the core Salesforce Administrator credential, and the importance of being able to *talk the talk* with the organizational units engaging with a CRM system (i.e., sales, marketing, customer service).

Ultimately, however, the staggering focus on human abilities and individual, personal, and character-based characteristics reflects the humanist paradigm of the modern workforce – consistent with some of the existing literature on 4IR and Education 4.0. To those ends, participants in our interviews often expressed with confidence their ability to train recruits in technical topics, convinced that algorithmic thinking was easily transferable. Within that tale lies our answer: the student, who is trained in algorithmic thinking, armed with a sufficient understanding of industry realities and sufficient personal and social characteristics, will be highly coveted as a would-be CRM professional or indeed in many other industry domains. Indeed, it is difficult to imagine a business domain willing to turn away a candidate with these traits. That industry is increasingly confident in its ability to train workers should also give pause to higher education institutions and supports a postulation made by Gartner analysts and discussed in chapter two, wherein one future model of higher education includes a heavy focus on workplace-driven training.

Although the knowledge economy, a prevailing paradigm for the modern era since shortly after the third industrial revolution, places a premium on employees as specialized knowledge holders, able to deploy specialized knowledge in the pursuit of business goals, our research indicates the importance

of a greater focus on generalist paradigms, tacit knowledge, something closer to intuition and the ability to adapt, to conduct diplomacy, to win the hearts and minds of colleagues and customers as the predominant traits predicting the sought-after employee. While, say, knowing when to listen and when to speak could be considered a form of tacit knowledge, it is not the same as understanding how to use spreadsheet software. Despite the incremental diffusion of 4IR innovations (e.g., artificial intelligence, blockchain), the individuals we interviewed suggest that their organizations are looking for high quality, human talent, with fundamental skills, not necessarily a glut of data scientists or blockchain experts. We include one final participant quote to underscore this reality:

> *Being in a non-profit, you're ten years behind the trends because you're trying to bring people up to not using Excel spreadsheets and sending those back and forth. We're very much on the basics. Democratizing access to information; not a new concept, but a new concept for some.*

The task of developing skilled employees to meet industry needs and demands has long fallen to higher education as characterized by the socioeconomic model of higher education. With the ultimate aim of informing curriculum development, we performed two qualitative studies: a content analysis of Salesforce Administrator job postings and a series of semi-structured interviews with Salesforce practitioners. Our findings indicate a need for employees with high levels of what we term *human abilities*. These findings align

with some existing conceptions of higher education, such as the construct of *Education 4.0,* which describes 4IR's impact or predicted impact or intended impact on higher education, including prescriptions for HE's transformation to realize these challenges. *Industry 4.0* requires a highly skilled workforce, and a 4IR world raises questions about skills portability, durability, and lifespan. Every vertical within industry will be impacted by 4IR and such impact will manifest in needs for diverse employees possessing distinct competencies. In order to better integrate our findings into the realities of 4IR, we performed a post-hoc analysis of our interview transcripts to identify the presence of any participant words related to the constructs of Education 4.0.

Implications for Education 4.0

We undertook a post-hoc coding exercise to determine the presence of the constructs comprising Education 4.0, the World Economic Forum's list of skills needed by a student to thrive in the emerging industrial revolution. As we discussed in Chapter Two, *Education 4.0* is comprised of guidance both for curriculum and learning experiences and can be generalized into 12 constructs: global citizenship skills, lifelong & student-driven learning, problem-based & collaborative learning, interpersonal skills, innovation & creativity, technology skills, personalized & self-paced learning, and accessible & inclusive learning (World Economic Forum, 2020a) pg. 4. Our results did not map to every single Education 4.0 construct, but we did find substantial treatment of the themes of interpersonal skills, problem-based & collaborative learning, and some limited

treatment of the themes of lifelong & student-driven learning, and personalized & self-paced learning.

Theme 1 - Interpersonal skills

As we noted in our primary analysis, communication and interpersonal skills (i.e., social skills) were highly rated by participants. We observed several passages, which we include below to encompass this skill domain. The first passage reflects the primacy of communication skills for the participant, along with justifications:

> *Communication is the top skill that I'm looking for because I feel like you can teach technology, and a lot of the front facing roles like -- I'm not hiring developers. Developers can put on their headphones and code, and maybe someone can help them through it. The communication side is limited to a stand up or getting those requirements from a business analyst. But the people on my team have to have really strong communication skills to understand what the end user is looking for in the system, and to be able to translate that to other more technical team members. They have to know the difference between something that is maybe training related or a true system issue.*

An aspect of interpersonal communication includes the notion of resilience and encompasses the emotional maturity dimension we included in our framework.

Returning to a relevant passage about these phenomena, we are reminded of how these skills apply to the Salesforce Administrator role:

> *I want them to be able to communicate effectively. I want them to be able to present themselves well. [Salesforce Admins] can be the punching bag, too. Do they have a thick skin in that sense? Are they a little resilient?*

Finally, one participant particularly called out the role of colleges and universities in inculcating the requisite communication skills, highlighting those skills as the differentiator between those who obtain – for lack of a better term – top jobs at top companies compared to those candidates who can only gain employment at companies with fewer perks and benefits.

> *Again, that list of clients: the As, the Bs, and the Cs. The As are putting three or four behavioral interviews into the mix and won't consider a candidate unless they can walk, talk, chew gum, carry on, and get along with everybody, and they've got an admin level job, and they put the person in front of the Company's CFO or COO. Because that's just a part of getting hired there, the bar is really high. If college was more about communicating, those are the kids that are getting the best jobs. I think social skills have to fit into every category.*

Theme 2 - Problem-based & collaborative learning

We opportunistically included questions surrounding curriculum and learning experience recommendations from our participants. We observed several

resulting passages, which underscore the importance of problem-based and collaborative learning. Group projects are included as a component of this suite of learning modalities. Four distinct participants commented specifically on solutions, which could be administered as part of a higher education experience. The first participant's quote below outlines the importance of problem solving as part of a preparatory curriculum for students entering the CRM space:

> *[College courses ought to include] problem solving, business problem solving. Give [students] use cases, maybe pull a bunch of use cases up. Have them answer: how would you solve this? What would you do? But not necessarily in CRM yet, and then step 2: How could you potentially do this in Salesforce?*

While this participant focuses upon problem solving in itself and foregoes any discussion of collaborative problem solving or the importance of collaboration, another participant homes in on the collaborative element, joining this element to general presentation capability:

> *The school needs interactive experiences. I think the school needs projects. We're trying to get something started, almost like an improv class to create better public speaking skills, better confidence in front of people.*

The next participant sentiment we include here joins the two together. Just as the World Economic Forum's theme includes problem-based and collaborative learning as a single construct, so too does our participant explore the importance

of group projects as a vehicle to facilitate problem-solving and to prepare students for the realities of day-to-day industry labor:

> *No one likes [group projects], but it really is the way of how work gets done in modern companies, or just in companies in general. Rarely is one single person going to be able to deliver some initiatives solely by themselves. You have to depend on other people to have input and participate. It teaches you that scheduling, that negotiating, that building a plan, so to speak. And I think what's just as important as the group projects there's usually the presentation side, so it's like you got to do all the work, and then you got to summarize it and deliver it in some kind of format and that is pretty crucial to being a successful admin, because you will be given business problems. You'll have a certain view of how that could be solved. You need to know why you need to be able to recommend the solution and then present why your solution, your recommendation is, like the best way to address the problem. I think that that's kind of like a group project.*

A final participant underscored the nature of project-based learning as appropriate preparation to enter the workforce, even if the projects are not derived from actual reported business scenarios: *I would focus on real world experience too, having them have a project, or even a fictional project would be good.*

Theme 3 - Lifelong & Student-driven Learning

One participant referred to a concept we discussed in chapter two without naming it as such. Namely, the participant described a non-linear college model characterized as the open-loop university. Embedded in this passage is also an endorsement of the importance of lifelong learning. Collectively this passage speaks to the need for college to rethink its core structure while reinforcing that the Salesforce administrator role requires a commitment to lifelong learning. Speaking as an apologist for the college education, the participant suggested:

> *Instead of skipping college, we figure out how to employ people in Salesforce roles during college and really figure out how to make a sustainable college career where you're starting to get some real-world experience but maybe get the best of both worlds. You're going to have to work really hard as a Salesforce admin. It is the best job there is, but it is a hard job for all the reasons that we've talked about. And you might be like me and think you can stop learning and then suddenly they give you Lightning and suddenly they give you Flow. You don't stop. You're always, always, always learning. JH-1*

Another participant suggested the importance of coachability and asking questions as indicators of a worthy job candidate: sentiments that also underscore lifelong learning. In this participant's words:

I look for someone who's very coachable, open to feedback. If someone

feels like they have it all figured out and they're closed to learning new

things, it's not always the best fit. If someone wants to learn new things

and ask questions, I would take that over someone who even was more

technical because we all are having to adapt and learn new things with

Salesforce.

Not only does this passage reinforce our observation that employers are

increasingly confident in their ability to train candidates on technical skills (i.e.,

hard skills), the passage also contains an implicit caution against believing one

knows it all and the importance of being a willing recipient of feedback.

Theme 4 - Personalized & Self-paced Learning

The distinction between self-paced and student-driven learning is not

necessarily overt, but we observed two passages from our transcripts, which speak

more to self-directed learning. The first passage speaks of the general importance

of learning by doing and marketing oneself as a job applicant based in no small

part on a portfolio of demonstrable results, even if these results are from building

Salesforce applications to address hypothetical or trivial scenarios. One

participant recommends that candidates trying to break-in to the Salesforce

ecosystem:

Build something, because I know for sure the learning is in the doing. If

you haven't built it, somebody else is going to beat you out for that job

because there's a lot of hungry people trying to get in this, and they are

spending their Saturdays in groups learning how to build stuff, building

up portfolios, getting their hands dirty.

Another participant outlined the importance of capitalizing on Salesforce's proprietary gamified learning platform, *Trailhead*, which provides countless exercises, learning modules, and extended projects, which aim to simulate real CRM scenarios. As guidance to job seekers, this participant reminded candidates that they *"can participate in Salesforce's own Trailhead platform, and they have got various badges that go to a higher depth of involvement, I think they're called super badges, which is really more of like a little mini project."* CP-1 While certification exams are essentially multiple-choice tests, certifications in and of themselves lack the demonstrable results that completing projects can indicate about platform competence and commitment to mastering the platform and applying it to solve business scenarios, which likely accounts for the participant's encouragement of job seekers to supplement their certifications with what we might call a project portfolio.

Practical & Curriculum Implications

Developing a curriculum for CRM is the next natural outcome from a CRM skills analysis. Clearly, the incorporation of Education 4.0 constructs – including but not limited to those discussed above – is a critical element of developing the appropriate CRM curriculum. We recommend that CRM courses

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seek to address all the higher-level constructs from our framework. Soft skills may be improved via the introduction of group projects and presentations into CRM courses and beyond. Case studies can help to inculcate business problem solving skills and lay the foundation for further development of business analysis skills. The larger curriculum –outside of a CRM course itself – should include a deep dive into the business analysis function including its importance and application. Quantitative reasoning skills ought to be a focus for the broader curriculum and included in specific CRM courses where possible. The technical curriculum of the course should be preparatory toward the achievement of the Salesforce Administrator certification, or a comparable certification for a different platform if Salesforce is not used in the course. Salesforce's position as a market leader experiencing a talent shortage, who has provided a robust, freeware gamified learning platform, *Trailhead*, is one argument for utilizing Salesforce as the vendor for the CRM technical knowledge.

Generalizability

The Lokuge framework proposed a set of skills for the CRM Analyst. This framework was the result of a panel discussion among academics and one industry practitioner from SAP. We endeavored to prepare an instance of this framework focused on a specific role in the CRM industry, the Salesforce Administrator. Our framework reveals a large bank of skills, which ought to easily transfer across CRM roles and platforms. Human abilities (soft skills), domain skills, and analytical skills do not seem in any way to be isolated or only

relevant to the Salesforce platform. Similarly, although the credentials are focused on the Salesforce ecosystem, and the technical acumen is largely centered on the Salesforce platform, even some sub-constructs from the technical construct are generalizable, such as customer experience design skills. As a result, we suggest that our findings are largely generalizable across both other roles in the Salesforce ecosystem and other roles across the CRM ecosystem. For example, an organization implementing or supporting Microsoft Dynamics CRM is likely seeking the same general skills bank with substitutions for credentials and specific platform acumen but without substitutions for the remainder of our framework constructs and sub-constructs. Validating this postulation is one goal within our ongoing research agenda.

We initially considered our framework to be an instance or specialization – tailored to the Salesforce Administrator role – of the more general Lokuge framework. Interview participants in our study, however, suggested the Lokuge framework over-emphasized and over-complicated the Marketing function and neglected the other two domains of CRM: sales and customer service. While some sub-constructs in the Marketing domain of the Lokuge framework are arguably relevant to sales and customer service, some participants believed that some sub-constructs were miscategorized as aspects of Marketing and really belonged to other domains. This may reveal a disconnect between how academics and practitioners view the Marketing domain. Additionally, while some participants applauded the presence and emphasized the importance of elements

of CRM strategy in the Lokuge framework, other participants considered the Salesforce Administrator role to be operational rather than strategic or even tactical, suggesting the strategic elements may be superfluous or nice to haves rather than imperatives.

Theoretical Integration

As firms are increasingly viewed through the knowledge-based view (KBV), whereby a firm's *raison d'être* is to facilitate the socialization, internalization, externalization, and combination of knowledge, the importance of understanding the knowledge, skills, and abilities required to be hired by an organization in various roles is ever more critical. The mix of skills we observed is consistent with the original conceptions of the knowledge-based view, which suggests that firms exist to integrate individuals' specialized knowledge; yet in order for firms to function, individuals must also possess overlapping or *common knowledge* (Grant, 1996). The domain skills we observed can be rightly classified as common knowledge; what one participant described as being able to *talk shop* with different areas of the business. We also observed specialized knowledge in the form of technical acumen and CRM-specific credentials, the latter serving as indicators of specialized CRM platform knowledge. Common language is another aspect of common knowledge, and the high importance of communication skill, which seems to be the quintessential soft skill, also reflects this reality.

Some of the earliest theorizing of the knowledge-based view suggests that it is not simply the extent of specialized knowledge in a firm that predicts organizational capability, but rather the effectiveness of knowledge integration. We therefore interpret the high desirability of soft skills as a reflection that higher levels of soft skills facilitate higher knowledge integration across employees, which in turn leads to higher levels of organizational capability. In other words, soft skills moderate the relationship between the other constructs in our framework (which become independent variables) and the higher order construct of CRM Competence, which is itself a predictor of CRM capability. The degree to which CRM support team competence contributes to CRM Capability occurs through knowledge integration: particularly, the extent of CRM team's ability to integrate its knowledge with other firm employees (e.g., sales management, service management, marketing management, front line sales personnel, etc.). While other variables may also contribute to CRM capability, the findings of our research allow us to evaluate CRM capability through these constructs, which can subsequently be integrated with other factors to determine the extent to which the support team's competence drives the firm's CRM capability.

We suggest that the high desirability of communication skills is precisely what would be expected in an organizational paradigm that reflects the knowledge-based view of the firm. If the firm's point of existence is to integrate knowledge, we then ask: how does knowledge get integrated across firm employees? The answer: through communication. Accordingly, we suggest that

this one aspect of our framework has high face validity. As we have noted, identifying and validating the structural relationship between all our observed constructs is a fast follower in our research agenda subsequent to establishing a measurement model via confirmatory factor analysis. Based on our qualitative understanding from our two studies, we present our hypothesized structural model in Figure 24, which will be evaluated as part of future research.

The sub-constructs from each of our categories, excluding credentials, which are a separate class of constructs, are converted to exogenous variables, with the main constructs now represented as second-order endogenous variables receiving direct effects from the exogenous variables. We then introduce CRM Competence as a third order endogenous variable receiving direct effects from business acumen and technical acumen. CRM Competence is meant to reflect the individual or support-team level of competence. We propose soft skills as a moderator to the ultimate dependent variable of CRM capability. In other words, the strength of the direct effect of CRM Competence on organizational CRM capability depends upon the extent of soft skills. Achieving CRM capability therefore depends on the successful integration of the CRM support team's competence with other relevant CRM stakeholders (e.g., Sales Management) knowledge, which depends on the soft skills possessed by the CRM support team (or individual). Due to limitations with our diagramming tool, we use a rectangle to note the moderating effect of soft skills on CRM Competence. That is, the interaction effect (moderation effect) is an observed, calculated value, which we

thus represent with a rectangle in contrast to the latent variables of the remaining

constructs.

Figure 24: Hypothesized Structural Relationships Among Observed Constructs
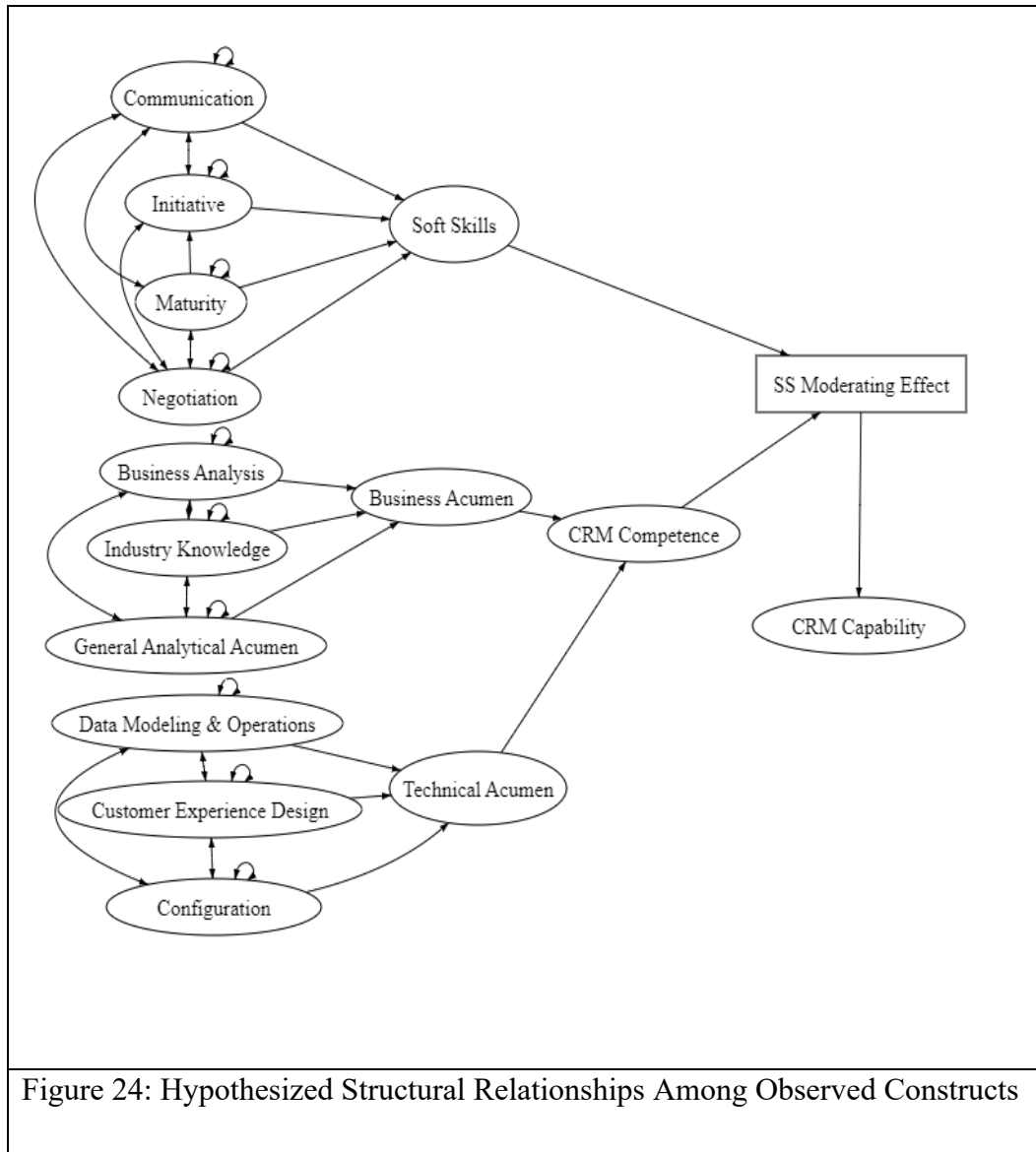
Limitations & Future Research

We acknowledge that both our pilot content analysis study and our

analysis of semi-structured interview transcripts are both qualitative methods

subject to limitations of not being *provable.* Such qualitative methods are

nevertheless appropriate, however, when a research area is nascent and under-developed, as is the case with the CRM knowledge, skills, and abilities domain. These qualitative methods are part of the interpretivist tradition, whereby reality is not absolute, but rather interpreted from experience and observation. We sought to enhance the rigor of our methods by employing two separate studies – content analysis of job postings and analysis of semi-structured interview transcripts – which collectively address a bank of interrelated research questions. The limitations of the studies can be subsequently addressed by undertaking quantitative methods as the next steps in our research agenda.

For example, the grounded theory method, by capturing sentiments and transforming them into constructs, the natural foundations for subsequent survey questionnaire generation are created. Our future research agenda centers upon the use of data collected during the existing research to form a survey. Grounded in the positivist view, we can use quantitative methods, such as exploratory and confirmatory factor analyses to interpret user responses so as to allow us to attempt to disprove multiple hypotheses surrounding causal or covariate relationships between latent constructs operationalized by the questionnaire. Thus, we can validate our proposed model, develop scales for the measurement of our identified constructs, and ultimately gain additional insights into applications of the resource-based, knowledge-based, and dynamic capabilities underlying the customer relationship management domain. This future research will also provide

a springboard to assessing the generalizability of our findings across other CRM platforms and other enterprise systems.

Chapter Summary

In this chapter, we concluded our dissertation with a review of our research questions and methodology, along with a discussion of our findings and their implications for theory, industry, and curriculum development. Customer relationship management has undergone a remarkable transformation from its origins in database marketing over forty years ago. As we move forward in the current 4th industrial revolution, we observe that CRM technology has not yet experienced a broad diffusion of emerging technologies, but rather organizations largely seek to master fundamentals with a focus on addressing business requirements using out-of-the-box features. The lag in the incorporation of 4IR technologies may be accounted for in no small part by the talent shortage organizations report even as market-leading platforms like Salesforce are expected to continue generate millions of new jobs over the next five to ten years.

As such, the overall impact of 4IR on the labor market has yet to be realized, congruent with some propositions made by Gartner, Inc., who suggested that the extent of AI's disruption of the labor market (AI being a key 4IR innovation) will be either severe or incremental. The advent of generative AI innovations, such as ChatGPT, has already begun to be integrated into the

Salesforce technical stack. While the features are primarily user-facing, the administration of the platform will also be impacted by such innovations. Generative AI will further democratize access to knowledge, allowing practitioners to streamline their knowledge acquisition and search more seamlessly for solutions to configuration challenges. The heavy focus on business acumen for the Salesforce Administrator and related roles, however, suggests a durability and we suggest it is unlikely that this area of the workforce will be significantly disrupted anytime soon.

Similarly, the appearance and emphasis on core, transferable, interdisciplinary skills -- such as soft skills -- however, aligns with some of the existing literature on the primary skills required to succeed in the emergent 4IR labor market. As we suggested, the knowledge worker – emblematic of the transformations brought about by the IT revolution – has not been displaced. Rather, perhaps, the knowledge worker must consider evolving into the humanist worker: thoughtful, with a diverse range of abilities, a commitment to lifelong learning, the ability to collaborate both with humans and – one day soon – machines.

In contrast to the knowledge worker of years past, who was tasked with utilizing higher education in order acquire a body of specialized knowledge and to integrate it with other knowledge specialists within a firm, the new humanist worker relies more upon personal abilities – communication, diplomacy, negotiation – along with an ability to acquire knowledge and skills rapidly to

address ever-more rapidly changing business scenarios and market pressures. Rather than alleviate business challenges, 4IR has increased the velocity with which organizations must operate in order to be successful, which in turn increases the need for employees to serve as utility players: easily pivoting from one challenge to the next; applying knowledge where they have it, acquiring it where they don't, all the while cultivating collegiality and professionalism across the firm.

No, the knowledge worker is not dead, but rather evolved into what we characterize as the humanist worker. Rather than entering a firm as a knowledge repository, the humanist worker enters the firm with the agility needed to skill-up, collaborate, walk away from legacy ideas and tools and embrace emerging paradigms and technologies. The accumulation of explicit knowledge and the advancement of knowledge management tools and decision support systems suggests that – within the 4IR firm – the focus is less on acquiring human resources with knowledge *per se*, but rather on acquiring human resources with the superior capability to integrate knowledge. Knowledge holders are valued less than knowledge integrators – even if those integrators happen to have less total knowledge on the day they enter the firm. The raw knowledge from multiple disciplines can be more easily acquired than ever, but the synthesis of that knowledge, the integration and application of that knowledge to solve business problems represents the challenge for modern industry, and firms' subsequent remit lies in acquiring employees with the potential to resolve that challenge.

While some fields, such as medicine, are experiencing a decline in generalists and an advancement in hyper-specialization, this is not the case for business enterprises. Rather – consistent with a recent book in popular literature – even though increased specialization exists in the marketplace—generalists are more likely to thrive overall (Epstein, 2019). This may also suggest that firms have been more successful than previously thought in codifying tacit knowledge of individuals into explicit organizational knowledge. This is reflected in the high confidence so many participants expressed in their ability to train employees on what we might call *hard skills*. Another component of this equation lies in the no-code/low-code/declarative development inherent in many enterprise systems such as Salesforce. While one participant noted that finding a computer scientist to undertake declarative development would be ideal, it is not believed to be strictly necessary. Another participant's suggestion that "anyone" can learn Salesforce reflects the impact that declarative development and Software as a Service have collectively had on organizations' hiring needs.

While we don't believe this should in any way dissuade students from pursuing computing majors or specializations, we believe that computing knowledge – isolated from human abilities – is insufficient to obtain gainful employment in an increasing number of roles in IT departments and beyond. No doubt, there remain plenty of software engineering roles and a dearth of talent to fill them, but the CRM domain is not necessarily where such roles are plentiful, and the increasing diffusion of declarative development and SaaS-based solutions

foretells a decrease in such roles in years to come. Thus, IT departments are increasingly composed of analysts and configurators able to maintain, support, and enhance packaged software solutions – all the while being able to talk the talk with the business and apply problem solving techniques and quantitative analyses.

We stand on the brink of a 4th industrial revolution, a disruptive transformation to the means of production, the labor market, and arguably the fabric of society itself. The relentless march of innovation in artificial intelligence leads to doomsayers predicting humanity's obsolescence as contributors in the workforce. Although we focused on the industry domain of customer relationship management, our findings carry broad implications for the workforce in general. Namely, rather than becoming obsolete, it is the unique abilities of humans, which – perhaps paradoxically – become the most important to preserve, to cultivate, and to extend. Unlike the Education 3.0 paradigm, which emerged in parallel to the third industrial revolution, the emergent higher education of tomorrow must return to its roots in developing whole human beings possessing a diverse range of skills: the ability to think critically, to communicate across all forms, to negotiate, to integrate specific questions into broader contexts, to conduct affairs with a knowledge of history and ethical obligations, to win hearts and minds. The more technology permeates our daily lives, the stronger the call – the imperative – to return to the fundamentals of what it means to be human.

-END-

APPENDIX A: INSTITUTIONAL REVIEW BOARD (IRB) INFORMATION

SHEET

Optimal Knowledge, Skills, and Abilities of CRM Employees

Principal Investigator: Seth J. Kinnett, Doctoral Student, College of Computing & Digital Media (CDM)

Institution: DePaul University, USA

Faculty Advisor: Theresa A. Steinbach, Ph.D., Associate Dean, CDM

We are conducting a research study to learn more about the skills and behavioral composition that creates the optimal *Salesforce Administrator* employee and other employees working in the customer relationship management (CRM) domain. We are asking you to be in the research because you recruit, actively hire, or have hired a Salesforce Administrator or other CRM IT employee. If you agree to be in this study, you will be asked to complete an interview by either face-to-face meeting, phone, or Zoom video. The interview will include questions about your thoughts, opinions, and experiences recruiting or filling Salesforce Administrator or related roles in your organization. The interview will be audio recorded and transcribed. The content of the audio recording will be kept confidential. Once transcribed, the recording will be destroyed. Neither your name, job title, nor direct quotes (unless anonymized) will be used in publications without your explicit permission.

The study will take less than 60 minutes of your time. All data collected in this research will be kept confidential and recordings will be destroyed once they have been

transcribed. The transcripts will be assigned a code, and a key will be maintained separately, which links your name to the code used in the transcript. For a period of time, it is possible to link your transcript to your identity. However, we have put some protections in place, such as using an encrypted file and storing the information in a secured computer under password protection. After the study is completed (in about 10 months), we will remove all the identifiers and make the data de-identified. The data will be kept for an undetermined period of time in the de-identified way, since there should be no risk to you should someone gain access to the data.

Your participation is voluntary, which means you can choose not to participate. There will be no negative consequences if you decide not to participate or change your mind later after you begin the study. This interview will be recorded for research purposes. You have the right for the researcher to stop recording at any time during the interview.

If you have questions or concerns about this study, would like to request additional information about the research or to provide additional input, please contact Seth Kinnett (773.577.7033, skinnett@depaul.edu)

If you have questions about your rights as a research subject, you may contact Jessica Bloom in the Office of Research Services at 312-362-6168 or by email at jbloom8@depaul.edu. You may also contact DePaul's Office of Research Services if:

- Your questions, concerns, or complaints are not being answered by the research team.
- You cannot reach the research team.
- You want to talk to someone besides the research team.

Please reply to this email with the words "I agree." You may keep [or print] this information for your records.

APPENDIX B: INTERVIEW QUESTIONS

Interview Script: Salesforce Administrator

This interview is being recorded for research purposes. If you do not wish to be recorded, please let me know now or at any time during the interview. Recording starts now. Do you agree to have your quotes potentially used without disclosing your identity in a research publication?

<Background>

Tell me about your current job title and responsibilities.

<Salesforce Administrator General Recruitment>

What is your general experience recruiting Salesforce Administrator? For example, is it especially easy or difficult compared to other parts of your job?

Compared to other CRM-related roles, how is the Salesforce Administrator unique, or which aspects are most fungible with other roles?

What's the number one thing you look for when hiring a Salesforce Administrator?

What are the most important skills for a Salesforce Administrator to possess?

Of candidates you have had to reject for the position, what is the most frequent reason you pass or otherwise aren't interested in pursuing?

<Initial Framework Verification>

When you think about this role, how extensively do candidates need to be versed in strategic considerations like customer centric strategy or deep understanding of CRM's strategic importance?

We embraced a coding paradigm of configuration as declarative clicks not code and customization as the use of things like APEX, visual force, programmatic development. Do you agree with that parsing and if not, how do you see those terms? We want to delineate the responsibilities of a developer somehow.

How do you conceptualize middleware? (CRM middleware is not necessarily well-defined in the extant literature, and we would value your interpretation)

How do you conceptualize business architecture? (CRM business architecture is not necessarily well-defined in the extant literature, and we would value your interpretation)

A framework we encountered, which attempted to capture important skills for employees in the CRM space, highlighted a need for substantial marketing acumen in:

o   Customer Portfolio Management

o   Customer Lifecycle Management

o   Customer Retention & Development

o   Campaign and Campaign Management

o   Channel Management

o   Customer Complaints.

At the same time, we did not find much evidence of these dimensions in our analysis of job postings. Do any of these concepts jump out as particularly important? If a candidate was technically sound but had no exposure to any of these concepts, would that be disqualifying?

<In Vivo Construct Validation>

How important is certification in a candidate? More = better?

Which certifications do you require?

Do certifications serve as a proxy for configuration skills?

How important is it that a candidate have at least a bachelor's degree? If important, do you require it to be in a given set of domains?

Soft skills like communication came up extensively in the job postings we analyzed. How do you prioritize soft skills compared to other requirements in a candidate?

How can/does a candidate demonstrate soft skills? How do you assess those in a candidate?

How critical are project management and business analysis skills to this role?

Do you prioritize knowledge of specific Salesforce products? For example, we noted a chunk of the ads we reviewed listed explicitly, e.g., Sales Cloud, Pardot, etc.

Do you screen specifically for database acumen or specific data skills? Or do you

find things like certification demonstrate that knowledge in a way that you don't

have to screen for it?

APPENDIX C: RECRUITMENT EMAIL TEMPLATE

Dear <recipient name>:

I'm conducting academic research to complete my PhD and I was hoping you could help. I'm looking to understand the optimal skills composition of CRM employees – specifically focused currently on the Salesforce Administrator role. Given all of your experience, it naturally makes sense that I'd want to talk to you. Could we have a Zoom videoconference? Attached please find an information sheet containing more details about the study and the interview process and details about your rights as a participant in this research, including details about your ability to remain anonymous. I hope you'll take a look and consider participating as I'd be grateful for your expertise. Please let me know if you are up for chatting or if you have any questions.

Thanks!

Seth

APPENDIX D: SOCIAL MEDIA SOLICITATION TEMPLATE

<This template will be posted in relevant LinkedIn groups and to the PI's

LinkedIn feed>

Wanted: You!

Are you a current or former Salesforce Administrator? Do you recruit or manage

Salesforce Administrators? Do you want to contribute your expertise – attributed

or anonymous – to educational research? If so, we'd be grateful for your expertise

in helping to shape the next generation of CRM employees by influencing CRM

curriculum in universities. In order to meet industry demands, we want to ensure

university instructors are up to speed on industry needs for employees in the CRM

domain. In this study, we are focused specifically on the Salesforce Administrator

role, but we have upcoming projects examining additional roles both in the

Salesforce domain specifically and the broader CRM domain generally, so if this

project isn't a perfect fit, please don't hesitate to reach out anyway if you'd like to

participate in one in the future. Similarly, if you know of others who would be a

good match for this study, please feel free to forward this information to them.

Thanks!

APPENDIX E: FOLLOW-UP SCHEDULING TEMPLATE

Dear <recipient name>:

Thank you for agreeing to be interviewed as part of our research study on knowledge, skills, and abilities of CRM employees. We would like to conduct the interview as a Zoom videoconference. Could you please suggest a few days/times you would be available? The interview will take no longer than 60 minutes. Thanks again, and we look forward to speaking with you.

Best regards,

Seth

APPENDIX F: REMINDER TEMPLATE

Dear <recipient name>:

Thank you again for agreeing to be interviewed as part of our research study on knowledge, skills, and abilities of CRM employees. Friendly reminder & confirmation of our Zoom meeting to occur <custom date/time insert>. Thanks again, and we look forward to speaking with you.

Best regards,

Seth

APPENDIX G: SALESFORCE ADMINISTRATOR JOB POSTING - CODING

DETAILS

Code	Case	Text	Words
Business			
Customer Centric Strategy	Case #37	Develop reports and dashboards to help senior management monitor Key Performance Indicators (KPIs)	13
Strategic Importance	Case #37	Learn how Salesforce.com fits into standard processes and contributes to business performance	13
Strategic Importance	Case #24	Strategic Mindset - Seeing ahead to future possibilities and translating them into breakthrough strategies.	13
Strategic Importance	Case #46	Ability to take insights and turn them into actionable steps that drive business value	14
Information Systems			
Configuration	Case #1	Experience in implementing end to end config based solutions including field creation requests, validation rule implementation, workflow implementation, new record types and Approval flows	24
Configuration	Case #2	You have a strong understanding of Salesforce functionality	8
Middleware	Case #1	Excellent understanding of Salesforce SOQL, SOSL and sharing and security model	11
Configuration	Case #3	3+ year experience supporting enterprise edition or above.	8
Configuration	Case #3	Deep understanding of the salesforce setup, features, and functionality. e.g. permission model (roles, profiles, permission sets). Custom objects, validation rules, master-detail relationships, recordtypes and page layout assignments. Reports and dashboards. Workflow rules, tasks, alerts.	36
Customization	Case #5	Apex proficiency	2

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Middleware	Case #5	Comfortable with complementary tools: Spreadsheets, Dataloader, DemandTools, Pardot et	9
Configuration	Case #6	1-3 years of Salesforce experience	6
Configuration	Case #6	Able to build dashboards, reports, workflow rules, custom objects and validation rules in Salesforce	14
Customization	Case #6	Click to code experience is a plus	7
Configuration	Case #6	Click to code experience is a plus	7
Customization	Case #8	Strong understanding of the platform, with the ability to build custom apps and objects, formula fields, workflows, custom views, and other content of intermediate complexity	25
Configuration	Case #8	Strong understanding of Salesforce.com best practices and functionality	9
Business Architecture	Case #8	Ability to assess the impact of new requirements on Salesforce.com and all upstream and downstream applications, systems and processes	20
Customization	Case #1	Hands on experience with Apex, Visualforce Pages, Visualforce Components & Controllers, Force.com Platform preferred	15
Configuration	Case #9	Proficient in workflow rules, field updates, email alerts, validation rules, process builder, and other Salesforce automation tools	17
Configuration	Case #9	Strong background with data management tools like data loader and import wizards	12
Configuration	Case #9	Capable of building complex reports and dashboards	7
Customization	Case #9	Familiar with Apex triggers, Visualforce pages, and Lightning components	9
Configuration	Case #10	3-5 years of Salesforce administration experience	7
Configuration	Case #11	6-8 years' experience as a primary system administrator using Salesforce	11
Configuration	Case #11	Experience with advanced reports, LWC , data models, workflows, validations roles and other tools used for configuration	16

Customization	Case #11	Must be able to recognize what can be built with declarative development against custom development for new solutions	18
Middleware	Case #11	Very good knowledge on Salesforce metadata and Salesforce CLI and use of SOQL	13
Configuration	Case #12	3 years (minimum) experience as a Salesforce administrator/developer.	9
Configuration	Case #12	Experience in the administration and maintenance of Salesforce systems.	9
Middleware	Case #12	Experience in performing Salesforce upgrades and ensuring successful integrations.	9
Middleware	Case #12	Experience with identity management and integration a plus.	8
Business Architecture	Case #12	Demonstrated ability to understand and articulate complex requirements/ information into common parlance and distinguish between users' vocalized requests and the underlying heart of their needs.	25
Customization	Case #12	Apex experience is preferred.	4
Middleware	Case #12	Ability to handle SSO , multifactor authentication, and certificate problems.	9
Configuration	Case #12	Proficiency in creating Salesforce profiles, allocating roles, and managing access h	11
Middleware	Case #1	Experience with use of the Salesforce.com APIs (via java, or through web services) to integrate Salesforce.com with other tools preferred	22
Configuration	Case #13	Deep knowledge of Salesforce internals	5
Configuration	Case #14	1-2 years declarative configuration and administration experience working with Salesforce Sales Cloud.	13
Customization	Case #14	Comfortable working with developers to read and understand Apex, VisualForce, JavaScript, Lightning Web Components use cases and other languages regularly used within the Salesforce platform.	25

Configuration	Case #15	Strong understanding of Salesforce Lightning platform with the ability to build custom apps, objects, formulas, custom views, page layouts and other administrative configurations	23
Middleware	Case #15	Strong understanding of relational databases and data integration tools	9
Middleware	Case #16	Writing and utilizing APIs¶ Experience with designing and implementing SFSC integration architecture and solutions	14
Configuration	Case #12	Knowledge of importing sales data and generating Salesforce reports.	9
Middleware	Case #16	Salesforce Force.com application build and Mulestoft integration with Salesforce¶ Experience in implementing Communities enterprise integration architectures	17
Middleware	Case #16	Strong XML and JSON skills	5
Customization	Case #17	3+ years in a System Administration role with a customized instance	11
Middleware	Case #18	+ Experience integrating Salesforce data with third-party applications and custom applications	11
Configuration	Case #18	+ Confident building solutions with Flow, Process Builder, Workflow	8
Configuration	Case #19	At least two years' experience serving as a Salesforce.com administrator is required	13
Middleware	Case #19	Experience with the Salesforce API is preferred	7
Customization	Case #19	2+ years' experience with Apex and Visualforce development is preferred.	10
Middleware	Case #20	Experience integrating Salesforce.com with other platforms	7
Configuration	Case #20	3+ years Salesforce configuration experience	5
Middleware	Case #20	Experience with ETL's such as Talend, Celigo, or Jitterbit	10

Customization	Case #20	Proficient in Workbench, Dev Console, and using the command line	10
Configuration	Case #21	2-3 years of Salesforce Administration experience required¶ Salesforce Lightning experience required	12
Configuration	Case #22	Advanced knowledge of Salesforce as an Admin	7
Customization	Case #22	Advanced knowledge of Salesforce as an Admin	7
Configuration	Case #23	The ideal candidate will have 7+ years of experience as a Salesforce.com Administrator.	14
Configuration	Case #23	Ability to configure Salesforce and provide recommendations for enhancements and modifications to improve system performance, operational efficiency, business process, and reporting.¶ Develop and build reports, dashboards, workflows, profiles, page layouts, and permission sets.	33
Configuration	Case #9	Deep understanding of roles, profiles, sharing rules, permission sets, and the Salesforce security mode	14
Business Architecture	Case #25	Ability to critically evaluate information gathered from multiple sources, reconcile conflicts, decompose high-level information into details, abstract up from low-level information to a general understanding, and distinguish user requests from the underlying true needs¶ Ability to assess the impact of new requirements on Salesforce.com and all upstream and downstream applications, systems and processes	56
Configuration	Case #25	Strong understanding of the platform, with the ability to build custom apps and objects, formula fields, workflows, custom views, and other content of intermediate complexity	25
Configuration	Case #25	Strong understanding of Salesforce.com best practices and functionality	9

Middleware	Case #26	Must have knowledge/experience in an integrated implementation between different business systems as well as working with integration tools	19
Customization	Case #27	Develop and/or maintain all declarative aspects for SF applications and assist in programmatic customizations as needed	17
Middleware	Case #27	Manage the installation, maintenance and troubleshooting of all system add-ons (AppExchange apps, Office integrations, mobility etc.)	17
Middleware	Case #27	Extract, normalize, map and upload data from multiple systems to Salesforce.	11
Configuration	Case #27	Minimum 5 years of proven Salesforce administration experience	8
Middleware	Case #27	In-depth knowledge of the Force.com platform features and limitations, experience in integrating Salesforce with external systems	18
Configuration	Case #28	Previous re-engineering experience updating an existing Salesforce.com configuration to provide solutions for reporting, workflows and enhanced functions required¶ Proven ability to utilize Salesforce.com as a sales analysis tool	31
Configuration	Case #30	Extensive experience managing configuration for high complex Salesforce instances	9
Configuration	Case #2	Ability to build and demonstrate prototypes in Salesforce.	8
Configuration	Case #32	Strong understanding of the platform functionality and best practices	9
Configuration	Case #2	5+ years of experience working within the Salesforce platform on an Administrative or Development level.	15

Configuration	Case #33	Strong understanding of the platform, with the ability to build custom apps and objects, formula fields, workflows, custom views, and other content of intermediate complexity	25
Middleware	Case #34	Experienced with converting and data mapping from existing finance systems, loading into Salesforce¶ Experience with various data migration tools¶ Nice to have:¶ ¶ Ideally has experience on data migration and updates through App Exchange Data Loader and Informatica Data Load¶ Degree Requirements	41
Configuration	Case #35	Strong experience with Full Salesforce development life cycle - admin, configure, develop including object/field customization, deploy/test in sandbox, deploy/verify in production, sandbox management.	25
Middleware	Case #35	Experience with Data loading and data extraction using non-Salesforce ETL tools	12
Configuration	Case #36	Demonstrated success in design and implementation of Salesforce Sales and Service Cloud and Marketing Cloud processes and technical solutions¶ Ability to build custom application and objects, formula fields, workflows, custom views, and content	33
Middleware	Case #36	Strong data management abilities including design of integrations with other business systems and external technology vendors and suppliers	18
Business Architecture	Case #36	Solid understanding of delivery methodology and lead teams in the implementation of the solution according to the architecture and design	20
Configuration	Case #37	Maintain an expert knowledge of Salesforce.com including design	9
Middleware	Case #37	integration scenarios	2

Business Architecture	Case #33	Ability to assess the impact of new requirements on Salesforce.com and all upstream and downstream applications, systems and processes	20
Configuration	Case #37	Develop reports, dashboards, and processes to continuously monitor data quality and integrity¶ Maintain users, profiles, roles, permissions and licenses	19
Middleware	Case #31	Preferred basic understanding of Salesforce Plugins, and how the interact with Web based API's	15
Configuration	Case #61	Minimum of 5 years proven working experience with Salesforce.com	10
Configuration	Case #38	Proficient configuring the Salesforce.com platform and creating reports and dashboard¶ Proficient in both classic and lightning enabled Salesforce.com instances	21
Business Architecture	Case #38	Strong understanding of Salesforce security and sharing model	8
Middleware	Case #38	Experience with AppExchange partners such as Pardot, Riva, Seismic	9
Middleware	Case #38	Experience integrating with 3rd party data providers and services	9
Business Architecture	Case #39	as well as two (2) years developing System Architecture Documents	10
Customization	Case #39	In-depth understanding of Salesforce programming including APEX, Force.com, and Visual Force	13
Middleware	Case #39	Experienced with integrations between Salesforce and multiple other platforms and technologies	11
Configuration	Case #39	Strong knowledge of Salesforce.com including workflows, triggers, reporting, general design concepts and overall approach of Salesforce.com as a CRM platform	22
Business Architecture	Case #39	Architecting and designing frameworks	4

Configuration	Case #40	In-depth knowledge of the Salesforce platform and functionality	9
Configuration	Case #40	Proficiency in creating Salesforce permission sets, profiles, and managing access	10
Customization	Case #41	Lightning Community and Lightning Web Component experience required.	8
Customization	Case #41	Knowledge of Salesforce programming languages such as Apex and Visualforce as well as Lightning Components	15
Business Architecture	Case #41	Comfortable with complementary tools and add-ins, such as: Apex Data Loader, Service Cloud, Community Cloud, Einstein/Wave Analytics, Pardot, DocuSign and other popular appexchange products	26
Customization	Case #41	Good understanding of how and when to use out of the box Salesforce.com lead assignment rules and when to use custom code for lead assignment.	26
Configuration	Case #41	Good understanding of how and when to use out of the box Salesforce.com lead assignment rules and when to use custom code for lead assignment.	26
Business Architecture	Case #41	Ability to translate high level business requirements into Salesforce.com implementation requirements and design.	14
Configuration	Case #42	2-3+ years of Salesforce Administration	6
Configuration	Case #42	Strong use of Salesforce Lightning UI	6
Middleware	Case #42	Understanding of APIs & Integrations, Apex code analysis and methods of automation	12
Customization	Case #42	Understanding of APIs & Integrations, Apex code analysis and methods of automation	12
Configuration	Case #42	Full comprehension of standard Salesforce functions	6
Configuration	Case #43	Detailed Knowledge of Custom Report types and reporting/dashboards in Lightning experience	12

Configuration	Case #43	Advanced understanding of Salesforce reporting concepts (Use of bucket fields, cross filters, Matrix vs Joined Reports, Dynamic dashboards, Reporting Snapshots)	20
Configuration	Case #43	Creates ad hoc and customized report types, reports and dashboards	10
Customization	Case #44	Experience in unit testing, deploying change sets from Salesforce sandbox and be familiar with common software development practices and methods.	20
Middleware	Case #46	Experience integrating Salesforce data with third-party applications and custom applications	11
Configuration	Case #46	Confident building solutions with Flow, Process Builder, Workflow	8
Customization	Case #16	Strong knowledge and experience in Salesforce.com architecture components - CRM Service Cloud Permission Sets, Visualforce, Apex, Angular, SOQL, SOSL Lighting Framework, Lighting Components, Lightning App Builder, Lightning Design Systems Aura Components	31
Middleware	Case #47	Integrate with other data sources (internal data warehouse, salesforce health cloud, SFMC connect) outside of SFMC to provide an even greater level of personalization and possibilities.	26
Configuration	Case #47	Good understanding of Salesforce object, data & security models.	9
Business Architecture	Case #61	utilizing sandbox architecture to manage releases	6
Configuration	Case #59	Deep knowledge of Salesforce internals, SOQL, and command terminal experience	10
Middleware	Case #58	Experience with tools and add-ins, i.e. Apex Data Loader, Service Cloud, Community Cloud, Einstein/Wave Analytics, Pardot, DocuSign and other popular AppExchange products.	25

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Customization	Case #58	Knowledge of Salesforce programming languages including Apex, Visualforce and Lightning Components.	11
Configuration	Case #58	Proven experience building Lightning Communities and developing Lightning Web Components (LWC).	11
Configuration	Case #58	5 - 7 years' experience with Salesforce.com required.	8
Configuration	Case #47	5+ years marketing automation experience in Salesforce Marketing Cloud, responsibilities including systems design, database management, administration and implementation	18
Customization	Case #48	Vlocity hands-on experience with products such as Vlocity DataRaptor, Vlocity Cards, Vlocity OmniScript, VlocityDX and knowledge of Vlocity Integration Procedures.	21
Customization	Case #50	Experience with Aex	3
Customization	Case #50	Experience in troubleshooting and resolvingworkflow and Apex issues	8
Middleware	Case #51	Salesforce data integration	3
Configuration	Case #51	configuration, and custom workflows and objects	6
Configuration	Case #51	4+ years of Salesforce administration experience	6
Configuration	Case #51	Experience with Lightning custom and out of the box components	10
Configuration	Case #51	Mastery of Salesforce administration, data structures, and workflows	8
Middleware	Case #51	Experience managing Salesforce integrations with multiple internal applications	8
Configuration	Case #57	Strong understanding of the platform, with the ability to build custom apps and objects, formula fields, workflows, custom views, and other content of intermediate complexity¶ Strong understanding of Salesforce.com best practices and functionality	34

Business Architecture	Case #52	Develop reports, data tables, graphs, and charts to effectively communicate relevant data and information to others in the organization.	19
Configuration	Case #52	Serves as primary system administrator for the SFDC platform -handles SFDC administration duties including:¶ User account maintenance¶ Data imports, validation and cleanup	22
Configuration	Case #52	Report and dashboard generation¶ Workflows	5
Middleware	Case #52	Manages data feeds and integrations with other systems.	8
Configuration	Case #52	1-3 years' experience with Salesforce.com (SFDC) CRM platform preferred.	11
Configuration	Case #53	Manages Security, Users, Roles, Profiles, Groups, Queues, Sharing Rules, Page Layouts, Email Services, Approvals, Workflows, Tasks Actions and other setup options	21
Configuration	Case #53	Manages a process to deploy updates, enhancements, and new system functionality including the creation of custom objects, custom formulas, scalable triggers, and workflows	23
Configuration	Case #53	Develop reports, dashboards, and processes to continuously monitor data quality and integrity¶ Provides the management team with activity dashboards as needed applications and the user interface using Salesforce.com programming languages	31
Configuration	Case #53	Strong understanding of the platform, with the ability to build custom apps and objects, formula fields, workflows, custom views, and other content of intermediate complexity	25
Customization	Case #53	Experience in Apex (Classes, Controllers / Triggers), Apex Scheduler, Batch Apex, Apex Web Service, Visualforce Pages, Custom Tabs, Custom Objects, Dashboards)	20

Business Architecture	Case #54	Ability to work cross-functionally with stakeholders in Sales, Marketing, and Customer Success	13
Configuration	Case #54	A proven understanding of setting up users, profiles and roles, and configuring reports and dashboards in the Salesforce platform.	19
Middleware	Case #54	Practical knowledge of data migration from CSV, SQL or other systems to the salesforce platform, using tools such as the Apex Data Loader.	23
Configuration	Case #54	Experience with click development in the Salesforce platform including but not limited to custom fields, page layouts, process builder workflows.	20
Middleware	Case #54	Experience with installing and configuring AppExchange applications.	7
Configuration	Case #54	Experience with developing Flows.	4
Configuration	Case #55	2 to 5 years of experience working with Salesforce CRM as an admin of the platform	16
Middleware	Case #55	and knowledge of the related applications that integrate with Salesforce	10
Configuration	Case #55	Professional experience working with both Salesforce Classic and Salesforce Lightning	10
Middleware	Case #56	data loader	2
Configuration	Case #56	page layouts, multiple record types, role hierarchy, sharing rules, workflow actions, validation rules and process builder	16
Customization	Case #56	· Ability to read and amend existing Apex code and Visualforce pages	11
Configuration	Case #57	Minimum two years of experience as a Salesforce.com administrator	10
Marketing			
Customer Lifecycle Management	Case #52	Accurately collect, organize, analyze, and disseminate data and reports on key performance metrics across the customer life cycle to the organization.	21

Customer Complaints	Case #47	Solid grasp of sales & marketing functional roles	8
Channel management	Case #47	Solid grasp of sales & marketing functional roles	8
Customer Retention-development	Case #47	Solid grasp of sales & marketing functional roles	8
Customer Lifecycle Management	Case #47	Solid grasp of sales & marketing functional roles	8
Customer Portfolio Management	Case #47	Solid grasp of sales & marketing functional roles	8
Campaign management	Case #47	Solid grasp of sales & marketing functional roles	8
Campaign management	Case #37	Collaborate with marketing to support and enhance marketing activities and campaigns (via Eloqua)¶ Work with product marketing to integrate online campaign initiatives into the Salesforce.com database	27

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APPENDIX H: SALESFORCE ADMINISTRATOR JOB POSTING - IN VIVO

CODING

Code	Case	Text	Words
Certification	Case #1	ADM 201, 211, (401 Preferred) Certified Salesforce advanced administrator with 5+ years Administrative experience.	14
Soft Skills	Case #1	Works on problems of diverse scope where analysis of data requires evaluation of identifiable factors.¶ Demonstrates good judgment in selecting methods and techniques for obtaining solutions.¶ Networks with senior internal and external personnel in own area of expertise.	38
Certification	Case #2	Salesforce Admin Certification Required, additional certifications preferred	7
Soft Skills	Case #2	an clearly communicate its capabilities and limitations to customers	9
Platform Specific	Case #2	You have hands-on experience with Sales Cloud, Service Cloud, Salesforce CPQ (Billing experience is a plus)	17
Soft Skills	Case #2	You are a highly motivated individual with a desire to learn and contribute.¶ ¶ You have strong presentation and communication skills.	20
Platform Specific	Case #2	Salesforce.com Service Cloud¶ ¶ Salesforce.com Community Cloud¶ ¶ Salesforce.com Sales Cloud	12
Data Skills	Case #2	Experience with data migration tools	5
Soft Skills	Case #3	Excellent written and verbal communication skills, a persuasive and passionate communicator	11
Certification	Case #3	Certified Salesforce Administrator	3
Soft Skills	Case #3	Strong ability to effectively prioritise competing requests, while managing user expectations¶ ¶ Strong logical reasoning, critical thinking, and problem-solving skills	20
Soft Skills	Case #3	Ability to engage with a wide range of stakeholders and build relationships	12
Certification	Case #4	Salesforce Certification: Administrator.	3
Soft Skills	Case #4	Strong communication skills, able to interact with both end-users and stakeholders.¶ Strong problem-solving and analytical skills.¶ Ability to work with a team of Salesforce programming and declarative experts, data scientists, technical architects and other 3rd party resources.¶ Strong analytical and problem—solving experience.	45
Project mgmt	Case #4	Able to manage multiple tasks and projects.	7
Soft Skills	Case #4	Versatility, flexibility, and a willingness to work within constantly changing priorities with enthusiasm.	13
Certification	Case #5	Certified Salesforce administrator with 2+ years Administrator experience	8

Soft Skills	Case #5	Pragmatic, self-directed with attention to detail.	7
Data Skills	Case #5	SQL proficiency would be a bonus	6
Edu-Degree	Case #5	Bachelor's Degree Required	4
Certification	Case #6	Salesforce Certified a plus	4
Soft Skills	Case #6	Adjusts to changes with no decline in attitude or performance¶ Collaborates with others to resolve problems and improve processes	19
Soft Skills	Case #6	Effectively conveys an accurate, complete, and concise message verbally and in writing¶ Demonstrates a willingness to learn¶ Deals with mistakes constructively and quickly recovers from setbacks	26
Certification	Case #7	" Certified Salesforce Administrator	3
Soft Skills	Case #7	Personal traits: o Listener o Influencer o Patient o Driven o Energetic o Sensitive o Responsive o Gritty	18
Data Skills	Case #8	Strong data management abilities	4
Business Analysis	Case #8	A demonstrated ability to understand and articulate complex requirements	9
Project mgmt	Case #8	Previous experience working in a SCRUM or agile environment preferred¶ Excellent project management skills and a positive attitude	18
Soft Skills	Case #8	Demonstrated ability to meet deadlines, handle and prioritize simultaneous requests, and manage laterally and upwards¶ Creative and analytical thinker with strong problem-solving skills¶ Must demonstrate exceptional verbal and written communication skills¶ Must demonstrate ability to communicate effectively at all levels of the organization	44
Soft Skills	Case #9	Excellent communication and analytical skills, with a close attention to detail¶ Ability to work independently, as well as part of an Agile team, on multiple assignments	26
Certification	Case #9	Salesforce Administrator Certifications	3
Edu-Degree	Case #10	Associates degree	2
Certification	Case #10	Salesforce.com Administrator certification preferred	5
Certification	Case #10	Salesforce.com Administrator certification preferred	5
Data Skills	Case #10	Experience within data and software applications	6
Certification	Case #11	Salesforce Admin Certification	3
Data Skills	Case #11	Very good knowledge on Salesforce metadata and Salesforce CLI and use of SOQL	13
Soft Skills	Case #11	Excellent communication skills	3
Edu-Degree	Case #11	College degree in Computer related field	6
Platform Specific	Case #12	Knowledge of and experience in Salesforce Security and Marketing Cloud are required.¶ Knowledge of and experience in Sales Cloud and EDA are preferred.	23
Project mgmt	Case #12	Excellent project management skills and a positive attitude	8
Soft Skills	Case #12	Ability to think creatively and strong problem-solving skills.¶ Ability to critically evaluate information gathered from multiple sources, reconcile conflicts, and distill high-level information into detailed pieces.	28
Certification	Case #12	Salesforce Certified Administrator is required.¶ Salesforce Certified Advanced Administrator credential is a plus.	13
Data Skills	Case #13	and SOQL	2

Business Analysis	Case #13	Experience working with business teams to define requirements; ability to articulate a strong technical vision to the product team	19
Certification	Case #13	Salesforce Administrator certification	3
Platform Specific	Case #14	Diverse Salesforce product knowledge and proven technical expertise. Versed in Salesforce Sales Cloud, CPQ, B2B Commerce, and ParDot.¶ Experience with AccountingSeed, an integrated financial software solution built on the Salesforce cloud.	31
Soft Skills	Case #14	Strong communication skills with a great team player mentality.	9
Soft Skills	Case #14	Focused and driven with superb problem-solving attributes.	8
Soft Skills	Case #14	Exceptional organizational skills with the ability to prioritize multiple projects.	10
Certification	Case #15	(Salesforce certified admin preferred)	4
Data Skills	Case #15	Strong understanding of relational databases and data integration tools	9
Soft Skills	Case #15	Strong written and verbal communication skills¶ Strong organizational skills and attention to detail¶ Ability to work under tight deadlines and prioritize responsibilities¶ Ability to work in a collaborative environment	29
Platform Specific	Case #16	5+ years of Salesforce Sales Cloud and 10+ years of IT experience	12
Data Skills	Case #16	Fluent in Salesforce Query and Search Language (SoOL and SoSL).¶ Must be able to speak with limitations of languages and differences between SoQL and SQL.	25
Soft Skills	Case #16	Strong analytical, prioritizing, interpersonal, problem-solving, presentation, budgeting, project management (from conception to completion), & planning skills¶ Strong verbal and written communication skills (including analysis, interpretation, & reasoning)¶ Solid understanding and application of mathematical concepts¶ Ability to develop and maintain collaborative relationships with peers and colleagues across the organization, as well as, internal and external clients¶ Ability to work well autonomously and within a team in a fast-paced and deadline-oriented environment.¶ Ability to work with and influence peers and senior management¶ Self-motivated with critical attention to detail, deadlines and reporting	93
Business Analysis	Case #17	Experience in business analysis, fact finding interviews, and synthesizing insights into a product roadmap that solves business problems	18
Soft Skills	Case #17	Effective communication and interpersonal skills.¶ Attention to detail and ability to take initiative.	13
Edu-Degree	Case #17	A Bachelor's degree focused on Information Technology, Operations Management, Information Systems, Business Administration, or Computer Science.	17
Certification	Case #18	+ Salesforce certifications – required: Admin; Preferred: Advanced Admin, Sales/Service Consultant, Platform App Builder	13
Soft Skills	Case #18	+ Operate efficiently with a high degree of accuracy¶ ¶ ¶ + Proven ability to prioritize, multi-task and complete tasks within specified timelines¶ ¶ ¶ + Detail-oriented, organized and dependable.	25
Certification	Case #19	Salesforce.com Administrator and Developer certifications are preferred	8
Data Skills	Case #19	Proficient in data management	4
Data Skills	Case #19	Experience with Data Loader and other data scrubbing and reporting tools strongly preferred	13
Business Analysis	Case #19	Experience understanding and analyzing business needs, designing solutions based on needs, documenting functional requirements and assessing business impact	18
Soft Skills	Case #19	Strong team player with a customer service-oriented attitude¶ Demonstrated organizational skills and detail orientation with ability to multi-task in a fast-paced environment with competing priorities¶ Ability to communicate effectively, both orally and in writing¶ Excellent interpersonal skills	40

Data Skills	Case #20	Experience with data cleaning, Data Import Wizard, NPSP Importer, etc.	10
Data Skills	Case #20	Expert at building solutions with Flow, Process Builder, Workflow, and DLRS	11
Certification	Case #20	Salesforce certifications: Required: Admin, Preferred: Advanced Admin, Sales/Service Consultant, Pardot, and Platform App Builder.	15
Edu-Degree	Case #21	Education: Bachelor's Degree in Business, Computer Science, MIS, or equivalent work experience	13
Soft Skills	Case #21	Strong oral and written communication skills	6
Certification	Case #21	Certified Salesforce Administrator preferred	4
Platform Specific	Case #21	Previous experience with Sales Cloud preferred	6
Soft Skills	Case #21	Ability to work independently, as well as within a team environment¶ Ability to thrive in a fast paced, cross regional, diverse, and dynamic work environment¶ Dedication to learn and develop with growing company and advocate for optimization	37
Platform Specific	Case #23	Salesforce Sales Cloud and Service Cloud is required.	8
Soft Skills	Case #24	Drives Results – consistently achieves results, even under tough circumstances and tight deadlines.¶ Situational Adaptability – adapting approach and demeanor in real time to match the shifting demands of different situations.¶ Collaborates - building partnerships and working collaboratively with others to meet shared objectives.¶ Communicates Effectively - developing and delivering multi-mode communications that convey a clear understanding of the unique needs of different audiences.	61
Certification	Case #24	Salesforce Administrator certification (ADM201) required¶ Salesforce Advanced Administrator certification (ADM211) preferred	11
Project mgmt	Case #25	Excellent project management skills and	5
Soft Skills	Case #25	positive attitude	2
Soft Skills	Case #25	Must demonstrate exceptional verbal and written communication skills¶ Must demonstrate ability to communicate effectively at all levels of the organization	20
Certification	Case #25	Salesforce.com Admin (ADM201 and ADM211) certified¶ Sales Cloud, Service Cloud and Developer certifications preferred	15
Data Skills	Case #25	Strong data management abilities	4
Business Analysis	Case #25	A demonstrated ability to understand and articulate complex requirements	9
Soft Skills	Case #26	strong analytical skills and communication	5
Business Analysis	Case #26	Conducts business process analysis, detailed requirement gathering, document user stories, prioritize backlog and preliminary cost/benefit analyses in an effort to align information technology solutions with business initiatives.	28
Project mgmt	Case #26	Develops, owns, and executes product roadmap. Translates product roadmap features into well-defined product requirements including features, epics, user stories, and acceptance test criteria. Prioritizes and maintains the sprint backlog for assigned products, balancing the requirements of stakeholders.	38
Project mgmt	Case #26	Lead key meetings including discovery sessions, sprint demos, user acceptance testing, and end user training	15
Business Analysis	Case #27	Assist in the gathering of requirements, propose solutions and workarounds based on platform features and limitations	16
Data Skills	Case #27	Monitor and maintain data quality and set up automated processes to effectively manage duplicates	14
Data Skills	Case #27	familiarity with databases/data models and	6
Certification	Case #27	com Administrator and Advanced Administrator certifications required	7

Edu-Degree	Case #27	Minimum expectation of a University/college degree OR equivalent education/experience	11
Data Skills	Case #27	Database refactoring and advanced migration experience a plus	8
Edu-Degree	Case #28	Bachelor's degree in a Business or Technical Discipline (i.e., Computer Science and Information Services) required	17
Certification	Case #28	Salesforce Admin and Einstein Analytics certification preferred	7
Soft Skills	Case #28	Must be a self-starter with analytical, detailed and multitasked oriented, and with complex problem solving abilities¶ Excellent written and verbal communication, and strong interpersonal skills	26
Edu-Degree	Case #29	Bachelor's Degree in a business management, information systems or related field or similar experience	15
Certification	Case #29	Certifications: ADM201, ADM211	3
Platform Specific	Case #29	1+ years experience as a Service Cloud Administrator; 1-2+ years	11
Project mgmt	Case #29	Agile project management experience	4
Data Skills	Case #29	data project and data loader experience	6
Business Analysis	Case #29	Strong skills in systems analysis, problem analysis, troubleshooting, and technical error resolution	12
Business Analysis	Case #29	Strong business requirements analysis skills: ability to develop alternatives, identify pros and cons, and recommend preferred systems solutions to business problems	21
Data Skills	Case #29	Strong data analysis skills and ability to translate business reporting needs into specific business, functional design documentation and reports designs	20
Soft Skills	Case #29	Communicates clearly and effectively in both written and verbal communications; able to clearly explain technical solutions to a businessperson.	19
Edu-Degree	Case #30	Bachelor's Degree in Information Systems or Business	8
Certification	Case #30	Salesforce Developer Certified Professional¶ Salesforce Administrator Certified Professional¶ Sales or Service Cloud consultant certification	14
Edu-Degree	Case #31	Bachelor's Degree, preferably in Computer Science, Engineering, Marketing or Business	11
Soft Skills	Case #31	Demonstrated ability to meet deadlines, handle and prioritize simultaneous requests, and manage laterally and upwards¶ Proven success in and genuine enthusiasm for working directly with end users	27
Data Skills	Case #31	Experience with relational database management tools	6
Soft Skills	Case #31	Effective oral and written communication skills to deliver technical information in an easily understood manner across all departments in an organization	21
Certification	Case #31	Salesforce.com admin certified preferred	5
Certification	Case #32	Salesforce.com Admin ADX201 or ADM201¶ ¶ Service Cloud certifications	9
Data Skills	Case #32	Strong data management abilities	4
Soft Skills	Case #32	Excellent project management skills and a positive attitude¶ ¶ Excellent verbal and written communication skills	14
Soft Skills	Case #32	Creative and analytical thinker with strong problem-solving skills¶ ¶ Ability to critically evaluate information gathered from multiple sources, assess impact of new requirements on Salesforce.com and upstream and downstream applications, systems, and processes	34
Soft Skills	Case #32	Ability to meet deadlines, handle and prioritize simultaneous requests	9
Certification	Case #32	Salesforce.com Admin ADX211 or ADM211 strongly preferred	8

Project mgmt	Case #32	Experience with Agile methodology and Jira	6
Platform Specific	Case #32	Experience with Salesforce.com Sales Cloud	6
Edu-Degree	Case #32	Typically requires 2-4 years of related experience with a 4 year degree.	13
Certification	Case #33	Salesforce Administrator Certification would be ideal	6
Soft Skills	Case #33	Excellent project management skills and a positive attitude	8
Soft Skills	Case #33	Must demonstrate ability to communicate effectively at all levels of the organization	12
Business Analysis	Case #33	Ability to critically evaluate information gathered from multiple sources, reconcile conflicts, decompose high-level information into details, abstract up from low-level information to a general understanding, and distinguish user requests from the underlying true needs	36
Data Skills	Case #33	Strong data management abilities	4
Business Analysis	Case #33	A demonstrated ability to understand and articulate complex requirements	9
Platform Specific	Case #33	Experience with Community and Marketing clouds	6
Certification	Case #33	Salesforce.com Advanced Admin certified¶ Sales Cloud, Service Cloud certifications preferred	11
Project mgmt	Case #33	Previous experience working in a SCRUM or agile environment preferred	10
Edu-Degree	Case #34	Bachelor's degree in related field and 10+ years related experience. Advanced degree in related technical field desired.	18
Soft Skills	Case #35	Ability to facilitate a team to consensus on the scope, design decisions, and implementation decisions.	15
Business Analysis	Case #35	Ability to document requirements formally or informally depending on the need of the project.	14
Project mgmt	Case #35	Understanding of the agile development process.	6
Project mgmt	Case #35	Understanding of the agile development process.	6
Business Analysis	Case #35	Familiarity with requirements techniques such as user stories, use cases, and informal modeling.	13
Business Analysis	Case #35	Familiarity with requirements techniques such as user stories, use cases, and informal modeling.	13
Edu-Degree	Case #35	Education: Minimum of Bachelors' Degree	5
Certification	Case #35	Salesforce Certifications of Application Architect and/or Advanced Administrator and/or Data Architecture & Management Designer and/or 'Platform Developer I' required.	22
Platform Specific	Case #35	Strong working knowledge of NPSP.¶ ¶ Knowledge of Pardot systems and administration.	11
Soft Skills	Case #35	Creative thinker with a vision.	5
Soft Skills	Case #35	Candidate must have a strong attention to detail and must be a team player with constructive attitude towards the business problems.¶ ¶ Candidate should be able to communicate (written and verbal) effectively with both technical and non-technical parties.¶ ¶ Candidate must be a self-motivated leader who is results driven, and technology enthusiast.¶ ¶ Candidate must be able to make decisions quickly and work under strict deadlines.¶ ¶ Can effectively communicate a vision to technical and non-technical people.¶ ¶ Experience working in a team-oriented fast paced, distributed and collaborative environment.¶ ¶ Excellent troubleshooting skills, self-motivated, results-driven and well organized.¶ ¶ Excellent multi-tasking and prioritization skills	104
Edu-Degree	Case #36	Bachelor's Degree required in Computer Science, Information Technology, or other relevant degree with a high-level understanding of supply chain business processes	23

Project mgmt	Case #36	Previous experience working in a SCRUM or Agile environment preferred	10
Certification	Case #36	Salesforce.com Admin (ADM201 and ADM211) certified¶ Sales Cloud, Service Cloud, and Developer certifications	14
Platform Specific	Case #37	A minimum of two years of Salesforce.com administration or analyst experience; experience with Lightning, Service Cloud, and Salesforce CPQ preferred	21
Certification	Case #37	Salesforce.com certification(s)	4
Soft Skills	Case #37	•Demonstrated analytical and problem-solving skills with strong attention to detail	11
Soft Skills	Case #37	•Ability to prioritize multiple tasks in a fast-paced, team environment¶ •Effective interpersonal and communication skills with an ability to maintain positive working relationships	24
Business Analysis	Case #37	Elicit business requirements from end-users	6
Soft Skills	Case #37	Collaborate with peers and management to continuously improve the platform	10
Data Skills	Case #37	Perform database de-duping and cleanup procedures	7
Soft Skills	Case #37	Communicate in a professional, compelling, and articulate manner of speech, writing and formal presentation¶ Demonstrate corporate values and culture¶ Develop professional and positive relationships with customers and colleagues¶ Maintain a reputation of competence, integrity and professionalism	36
Edu-Degree	Case #38	University (Degree), Preferred	3
Certification	Case #38	Salesforce Administrator certification¶ Sales Cloud, Platform App Builder, or Pardot certification a plus	13
Data Skills	Case #38	Proficient with Salesforce Dataloader	4
Data Skills	Case #38	Strong understanding of object oriented concepts and relational database concepts¶ Intermediate/advanced SQL or similar query language	17
Platform Specific	Case #38	Experience with Salesforce Community Cloud, Marketing Cloud, Sales Cloud, Service Cloud	11
Data Skills	Case #38	Experience with Demand tools or similar 3rd party data tools	10
Soft Skills	Case #38	Strong presentation, writing and analytical skills¶ Ability to display independent judgment to make decisions where no clear precedents exist; adjusts plans and deliverables with the right approvals and the business goals in mind. Ensures that all standards are followed and controls are adequately designed and implemented	46
Edu-Degree	Case #39	Education: Required Bachelor's Degree (accredited) in Business, Information Systems, or similar area of study, or in lieu of degree High School Diploma or GED (accredited)	26
Certification	Case #39	Salesforce Architect Domain Certifications¶ Salesforce Administrator Certification	7
Soft Skills	Case #39	Strong communication skills¶ Ability to learn quickly and function as a positive and creative member of a team¶ Ability to excel in an unstructured environment of rapid growth and constant evolution¶ Communicate complex technical issues and solutions in a clear, simple and understandable way	44
Data Skills	Case #39	In-depth understanding of data model	6
Soft Skills	Case #39	Present, communicate and articulate effectively to all levels of the organization (including technical and non-technical audiences, Senior Leadership, VPs and C-level executives).	24
Project mgmt	Case #39	Development methodology.	2
Business Analysis	Case #39	Completing design artifacts using UML.	5
Project mgmt	Case #39	Project management (including ability to lead a project team) and organizational skills.	12

Project mgmt	Case #39	Knowledge and understanding of prototyping and methods of implementation.	9
Business Analysis	Case #39	Ability to provide input to business processes and translate them into technical requirements.	13
Certification	Case #40	Salesforce Administrator certification	3
Platform Specific	Case #40	Salesforce NPSP preferred	3
Data Skills	Case #40	Exceptional ability to create and maintain Salesforce databases	8
Data Skills	Case #40	Knowledge and experience using de-duping, loading, and exporting using Data Loader and DemandTools	14
Platform Specific	Case #40	Experience with DemandTools, Cvent, Conga, Form Assembly, and Pardot preferred but not required	13
Soft Skills	Case #40	Ability to work effectively and efficiently under pressure in a fast-paced environment with competing and changing priorities, juggle multiple tasks and requests¶ Superior analytical skills; keen attention to detail¶ Proactive self-starter: ability to work well independently and as part of a team¶ Strong written and verbal communication skills	50
Edu-Degree	Case #41	Bachelor's degree in Computer Science or equivalent experience required, Master's degree is a plus	16
Certification	Case #41	Salesforce Certified Administrator and Platform Builder certifications are required.	9
Certification	Case #42	Salesforce Administrator Certification	3
Project mgmt	Case #42	Experience with Agile/Scrum methodology	5
Data Skills	Case #42	Use tools such as Data Loader and Microsoft Exce	9
Soft Skills	Case #42	Understands and respects team dynamics¶ ¶ Enjoys working in a fast-paced environment	12
Business Analysis	Case #43	Proven ability in interviewing business stakeholders for complex operational reporting requests and translating into simplified business needs and requirements	19
Business Analysis	Case #43	Ensures success criteria is documented and measurement can be achieved	10
Business Analysis	Case #43	Writes user stories and acceptance criteria for complex Agile deployments	10
Soft Skills	Case #43	Strong influencing and communication skills. Conversant with both technical and business audience	12
Soft Skills	Case #43	Works independently to make decisions regarding resolution of issues¶ Experience working with technical and business stakeholders from global cross-functional teams	21
Certification	Case #43	Salesforce Certifications required to be considered for this position: Administrator	10
Data Skills	Case #43	Working experience with Hadoop, Tableau or other similar data analytic tools	11
Certification	Case #43	Salesforce Certifications preferred to be considered for this position: Advanced Administrator	11
Edu-Degree	Case #43	The highest level of education desired for candidates in this position is a Bachler's degree or equivalent experience.	19
Edu-Degree	Case #44	Bachelor's degree	3
Certification	Case #44	Salesforce Administrator Certification preferre	4
Project mgmt	Case #44	project management experience.	3
Soft Skills	Case #44	Advanced problem solving skills and be detail oriented with proven process oriented mindset.¶ Strong technology skills and understanding with the ability to work effectively with managers, users and technical staff and be pro-active in problem resolution.¶ Ability to work flexible hours and balance multiple complex projects in a fast paced environment.¶ Strong written and oral communication skills with the ability to present to small groups.¶ Involves exposure to highly confidential information requiring tact and discretion.¶ Work	93

		is under minimal supervision which requires independent judgement in the interpretation of existing policies and procedures	
Certification	Case #45	Salesforce Administrator Certification	3
Project mgmt	Case #45	Experience project managing website/platform development	6
Platform Specific	Case #45	Salesforce Communities and Marketing Cloud experience	6
Soft Skills	Case #45	Strong writing, editing skills, and communication skills;	7
Soft Skills	Case #45	Experience in a fast-paced, high growth, rapidly evolving workplace;¶ ¶ Ability to collaborate with a global and highly matrixed workforce.	20
Edu-Degree	Case #46	BS or BA degree in Business, Business Systems, or equivalent	10
Platform Specific	Case #46	Sales Cloud, Service Cloud, and Experience Cloud (formerly Communities)	9
Certification	Case #46	Salesforce certifications – required: Admin; Preferred: Advanced Admin, Sales/Service Consultant, Platform App Builder	13
Soft Skills	Case #46	Operate efficiently with a high degree of accuracy¶ Proven ability to prioritize, multi-task and complete tasks within specified timelines¶ Detail-oriented, organized and dependable.	25
Soft Skills	Case #47	Experienced working in a fast-paced, high-tech environment and comfortable navigating conflicting priorities and ambiguous problems	17
Soft Skills	Case #47	Team-oriented, self-motivated, success-driven, roll-up-your-sleeves attitude.¶ Excellent attention to detail, strong problem solving, troubleshooting and analytical skills.	22
Certification	Case #47	Salesforce certifications upon hire strongly preferred (Marketing Cloud Email Specialist/Administrator/Developer or Salesforce Administrator/Developer/Architect).	17
Edu-Degree	Case #47	Bachelor's degree preferred.	4
Edu-Degree	Case #48	Bachelor's degree in Computer Science, Information Technology or related field, or equivalent education and work experience.	17
Certification	Case #48	Salesforce Certified Administrator certification.	4
Soft Skills	Case #48	Critical Thinking – The candidate must have the ability to analyze complex issues and demonstrate the ability to comprehend complex processes and workflows. ¶ Flexibility – The candidate must have the ability to direct or assist as needed to complete their objectives. Overnight deployments will be required. ¶ Resilience – The candidate should possess the ability to overcome challenges and remain focused on deliverables. ¶ Interpersonal Skills – The candidate should possess strong interpersonal skills and the ability to interface with many different personality types to complete objectives, as well as form positive working relationships with team members. ¶ Research – The candidate must be capable of self-driven research where needed. ¶ Highly motivated / self-starter – The candidate must be a self-starter, experience establishing priorities, delivering results and meeting deadlines.	122
Certification	Case #49	Salesforce.com Admin (ADM201 and ADM211) certified	7
Soft Skills	Case #49	Must demonstrate exceptional verbal and written communication skills¶ Must demonstrate ability to communicate effectively at all levels of the organization	20
Soft Skills	Case #49	Excellent project management skills and a positive attitude; a documented history of successfully driving projects to completion	17
Business Analysis	Case #49	Ability to critically evaluate information gathered from multiple sources, reconcile conflicts, decompose high-level information into details, abstract up from low-level information to a general understanding, and distinguish user requests from the underlying true needs	36
Certification	Case #49	SalesCloud, ServiceCloud, CommunityCloud and Developer certifications	6
Soft Skills	Case #49	Creative and analytical thinker with strong problem-solving skills	9

Data Skills	Case #50	Experience using Salesforce Data Loader, CRMFusion Demand Tools, and other data cleansing tools	13
Data Skills	Case #50	Experience in troubleshooting and resolving database integrity, integration, and performance issues; troubleshooting and optimizing queries and reports	17
Soft Skills	Case #50	Ability to work independently while also supporting a team¶ ¶ Ability to exercise strict confidentiality with regard to sensitive information.¶ ¶ Strong analytical skills; excellent verbal communication and teaching skills	28
Certification	Case #51	Salesforce Administration Certification	3
Edu-Degree	Case #52	Position requires a bachelor's degree in computer science, mathematics, statistics or business-related field.	15
Data Skills	Case #52	High proficiency with SQL preferred.	5
Data Skills	Case #52	Experience using business intelligence applications and other data analysis tools.	10
Certification	Case #53	Salesforce Admin Certification	3
Data Skills	Case #53	Prepare data files and uploads the data into Salesforce using the data loader and other 3rd party tools	18
Platform Specific	Case #53	Service Cloud, Live Agent, Salesforce Communities	6
Certification	Case #53	Salesforce.com Admin certifications preferred	5
Data Skills	Case #53	Strong data management abilities	4
Platform Specific	Case #53	Salesforce Service Cloud¶ Service Cloud Live Agent	7
Project mgmt	Case #53	Salesforce Communities Cloud	3
Certification	Case #54	Certified Salesforce Administrator preferred (ADM-201)	6
Platform Specific	Case #54	2+ years' previous experience with Salesforce Sales and/or Service Clouds.	11
Data Skills	Case #54	Practical knowledge of data migration from CSV, SQL or other systems to the salesforce platform, using tools such as the Apex Data Loader.	23
Platform Specific	Case #54	Experience with developing and deploying Communities.	6
Platform Specific	Case #55	Experience with both Service & Sales clouds,	7
Certification	Case #55	Certification is preferred, not required (ex: ADM 201, CRT 101, ADX 201, Advanced Administrator, Platform App Builder, CPQ Specialist)	19
Soft Skills	Case #55	Exemplary verbal and written communication skills ¶ If you have the experience listed above, possess a great attitude	17
Soft Skills	Case #56	Excellent organizational skills, with the ability to multi-task and work to deadlines under pressure	15
Certification	Case #56	· SFDC certified administrator in ADM201	5
Project mgmt	Case #57	Excellent project management skills	4
Soft Skills	Case #57	positive attitude	2
Certification	Case #57	Salesforce.com Admin (ADM201 and ADM211) certified¶ Sales Cloud, Service Cloud and Developer certifications preferred	15
Project mgmt	Case #57	Previous experience working in a SCRUM or agile environment preferred	10
Edu-Degree	Case #58	Bachelor's degree in Computer Science or similar is preferred	10
Certification	Case #58	Salesforce Certified Administrator and Platform Builder certifications are required	9
Data Skills	Case #59	SOQL	1

Business Analysis	Case #59	Experience working with business teams to define requirements	8
Soft Skills	Case #59	A habit of continuous organizational and self-improvement	8
Certification	Case #59	Salesforce Administrator certification	3
Soft Skills	Case #59	A bias towards building relationships and consensus - be able to articulate your opinions, listen well and integrate input from others.	20
Soft Skills	Case #59	Excellent communication skills	3
Project mgmt	Case #59	Excellent project management skills with the ability to organize and prioritize the work with a forward thinking mindset	18
Certification	Case #60	Salesforce.com Admin (ADM201) certified (ADM211 is a plus)	9
Project mgmt	Case #60	Excellent project management skills and a positive attitude	8
Soft Skills	Case #60	Strong organization, communication, and motivational skills	6
Project mgmt	Case #60	Previous experience working in a SCRUM or agile environment preferred	10
Soft Skills	Case #60	A self-starter attitude; strong written and verbal communication skills	10
Certification	Case #60	Salesforce Sales Cloud Consultant certification or other consultant certifications are a plus	12
Edu-Degree	Case #61	Bachelor's Degree in Technology	5
Platform Specific	Case #61	Experience with Community Cloud / Partner Communities	6
Soft Skills	Case #61	Excellent communication skills	3
Business Analysis	Case #61	ability to translate technical requirements to business stake holders	9
Platform Specific	Case #61	Pardot experience is a plus	5
Certification	Case #61	Required Salesforce.com certifications:¶ ¶ Certified Salesforce Administrator¶ ¶ Certified Salesforce Advanced Administrator¶ ¶ Certified Salesforce CPQ Specialist¶ ¶ Preferred, but not required Salesforce.com certifications:¶ ¶ Certified Platform App Builder¶ ¶ Certified Platform Developer 1¶ ¶ Sales / Service Cloud Consultant	34

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