UNIVERSITY OF VAASA

SCHOOL OF MANAGEMENT

Noora Tuomisto

AFFORDANCES FOR PRACTICE IN CRM

A critical realist approach

Master`s Thesis in
Strategic Business Development

VAASA 2019

TABLE OF CONTENTS

TABLE OF FIGURES AND TABLES

ABBREVIATIONS

CRM	Customer relationship management
IT	Information technology
SAP	Strategy-as-practice
BI	Business intelligence

UNIVERSITY OF VAASA
School of Management
Author: Noora Tuomisto
Topic of the thesis: Affordances for practice in CRM: A critical realist approach
Degree: Master of Science in Economics and Business Administration
Master's Programme: Strategic Business Development
Supervisor: Suvi Einola
Year of entering the University: 2017
Year of completing the thesis: 2019
Number of pages: 105

ABSTRACT:

As digitalization sweeps through workplaces, the academics have been intrigued by the theory of sociomateriality to better explain the dynamic, emergent and entangled consequences of the technologies on contemporary organizing and work practices. Sociomateriality, connoting the ontological inseparability of the material and the social, emerged to challenge the various dichotomies in information systems research by employing an agential realist stance. Later, this line of inquiry has been utilized alongside multiple theories in organization, management and sociological studies in order to understand how matter matters in organizational life. Simultaneously, its ontological base has expanded – a critical realist approach to sociomateriality arose from the criticism on the relational view on humans and artifacts.

This study has been conducted from the critical realist approach to understand how a customer relationship management (CRM) system matters to strategy. It utilizes the practice-based approach, namely strategy-as-practice and the affordance approach to explain how a new customer-oriented strategy can be enacted through the interplay between the old and new technologies as well as the customer-facing employees. The thesis takes place in a case study environment, employing qualitative methods such as observation and semi-structured interviews. The case company is an occupational healthcare provider in Finland.

The study identified the following constraints that trigger organizational change and lead to new technology implementation and new practices in customer relationship management: data inconsistency, routine discrepancy and relationship erosion. The perceived affordances post-dating the constraints were knowledge diffusion, management and controlling, workflow integration as well as analysis and development. Affordances are experienced in all levels of the organization.

KEY WORDS: sociomateriality, customer relationship management, affordances, strategy-as-practice

1. INTRODUCTION

1.1. Motivation for the study

Services are an increasing source of employment in Finland, accounting for 40 % of the whole output, generating the majority of the new businesses and growing the fastest (Palta 2019). According to Ramiller and Chiasson (2008), information systems have grown into an indispensable asset in arranging and managing services. Both academics and practitioners are increasingly acknowledging the influence technology has not only on the breadth and width of the organization but also how services are designed and supplied. Among various fields of business research, the importance of relationships and performances has been foregrounded (Orlikowski & Scott 2015). Customer focused strategy and customer relationship management have taken root in order to understand and satisfy the customers' need. In order to customer relationship management to be successful, understanding both the IT-reliant systems and the more comprehensive organizational context is needed (Orlikowski & Scott 2015).

Customer relationship management (CRM) is a management concept, described as the identification, attraction, development and maintenance of successful customer relationships over time with the objective of increasing retention of profitable customers (Bradshaw & Brash 2001). It has been defined as a customer-focused business strategy (Shafia, Mazdeh, Vahedi & Pournader 2011), market orientation providing strategic flexibility to sustain competitive advantage (Javalgi, Whipple & Ghosh 2005), and a provider of competitive advantage needed to survive in the markets (Kotorov 2003). CRM helps companies to better understand their customers and the underlying factors of customer retention and loyalty. In turn, this improved information fosters customer relationships, retention and loyalty, thus giving a competitive advantage over rivals (Baht & Darzi 2016). Furthermore, CRM mediates customer experience, which is said to be the new competitive arena and originator of sustainable differentiation (Shaw & Ivens 2002 in Xu & Walton 2005).

In information technology literature, CRM is seen as an "*enterprise-wide integration of technologies working together, such as data warehouse, website, intranet/extranet, phone support system, accounting, sales, marketing and production*" (Bose 2002: 89). However, according to Orlikowski & Scott (2008), management literature is missing the crucial link in-between – technology in action.

Originated in the IT literature, and gained popularity in management research, especially the strategy-as-practice field (Einola 2018: 18), sociomateriality describes the inherent entanglement of social activities and material artifacts in day-to-day organizational settings (Jarzabkowski & Pinch 2013). Technology is one of the key artifacts of today's business life. Many CRM adoption and implementation projects fail, not only due to the selection of only the operational approach instead of the strategic approach (Kotorov 2003), but also due to not realizing the benefits of the utilized technology, as the companies are merely managing the technological artifact and not its use in practice (Feldman & Orlikowski 2011). From a research point of view, the separation between people, artifacts, things, items and equivalents hinders sufficient representation of phenomena (Leonardi 2013).

Furthermore, materiality in general has been largely set aside by organizational theory, as both technology and management students have focused on the social, such as interactions and interpretations, to avoid the stigma of determinism (Leonardi & Barley 2008). However, materiality is constitutive of organizing – it is said to be constitutively entangled with material forms and spaces of organizational life (Orlikowski 2007; Orlikowski & Scott 2008; Orlikowski & Scott 2014; Orlikowski & Scott 2015; Scott & Orlikowski 2014). There is still some ambiguity between scholars what is meant by matter and the material, stemming from different ontological assumptions of the researchers. Leonardi (2013: 144) describes it as "*the arrangement of a technological artifact's physical and/or digital materials into particular forms that endure across differences in place and time and are important to users*". This definition can be understood as the tangible, machine or nonhuman; data or algorithms (Jones 2014). Some argue that materiality is not a feature of technology, instead, an "*enacted material-discursive configurations of phenomena"* or "*assemblages of technology, people, work, and organizing in on going intra-action"*

(Cecez-Kecmanovic, Galliers, Hendfridsson, Newell & Vidgen 2014: 812). Whichever the definition, it can be stated that materiality is not necessarily the same as tangibility – it has both perceptible and less perceptible forms and it is inextricably bounded up with the social. (Orlikowski 2007; Orlikowski & Scott 2015).

When considering digital technology, information systems or work systems, materiality has especially important implications. It does not only represent but also creates other phenomena – it is *performative* (Orlikowski & Scott 2015). Given the prevalent existence of technology in modern organizations and its undervalued and underexplored role in organizational change (Zammuto, Griffith, Majchrzak, Dougherty & Faraj 2007; Leonardi 2007), the notion of sociomateriality could provide a valuable line of inquiry for understanding "*the multiple, emergent, and dynamic sociomaterial configurations that constitute contemporary organizational practices"* (Orlikowski & Scott 2008: 434) or to understand why some features are used and how they are consequential for organizing (Leonardi & Barley 2008).

1.2. Research gap

Sociomateriality is both under-researched and under-theorized in organizational and management literature (Orlikowski 2007; Leonardi & Barley 2008). Furthermore, the materiality of information technology prevails under-formulated in theory (Leonardi & Barley 2008). Leonardi & Barley (2008: 163) argue that the most significant research on organizations and information systems revolve around social dynamics or humanly interaction around technology instead of unraveling what discrete material attributes of the technology are used, why they are used as well as how and why the use patterns variate with time. They also state that researchers should study how the attributes of the technological artifacts grow intertwined in the social practices of work and the constraints and affordances of the artifacts. Constraints and affordances point to what the users are able and unable to do due to technology and which detours emerge because of the constraints. (Leonardi & Barley 2008).

From the case company's point of view, their current system of managing customer relationships (MS Excel) has become too inefficient and burdensome. Leonardi & Barley (2008) highlight the necessity to understand why and how the material properties of technology change the way of organizing, people's work and work practices. Studying the present ways of working with the current system at the case company would shed light on how the constraints ignite change in these practices.

Even though CRM is studied and theorized from multiple points of view, e.g. information technology, information systems, strategy and management, an understanding of the sociomaterial nature of customer relationship management and CRM systems is still lacking. In other words, there is no integrated view on the influence of technology on the human practices in CRM and the practices on the technology. Furthermore, the industry context of healthcare has not been very extensively studied, even though some research exists from different points of view (e.g. Hung, Hung, Tsai & Jian 2010). Therefore, this study has a unique setting of researching the management of customer relationships from the sociomateriality point of view in the context of occupational healthcare.

The unit of analysis in this study is practices, more specifically sociomaterial practices, which are defined as everyday doings bound up with materiality (Scott & Orlikowski 2015). To be more precise, sociomaterial practices are the *"recursive intertwining of the social and the material as they emerge in ongoing, situated practice"* (Orlikowski 2007: 1438).

1.3. Research problem and theoretical contribution

This research problems of the thesis are as follows:

RQ1. *What are the affordances for sociomaterial strategizing with customer relationship management technology?*

RQ3. *How can the constraints of a technology simultaneously account for choosing another technology?*

The theoretical contribution of the study is the description of how constraints emerge in the entanglement of human and material agency and what are the perceived affordances for strategy during the early implementation of an IT system. First, the thesis will develop the notion of sociomateriality as a theoretical instrument for studying management and information systems, as called for by Scott and Orlikowski (2013). Second, it will elucidate the inextricable sociomateriality of customer relationship management (Nyberg 2009). Third, the study will give an account of the case company and the dynamics of constraints and affordances within this particular organization.

The theoretical approach of the study is sociomateriality and sociomaterial practices, meaning, how CRM strategy is conducted and realized in everyday sociomaterial doings with CRM technologies which afford and constraint different sets of practice.

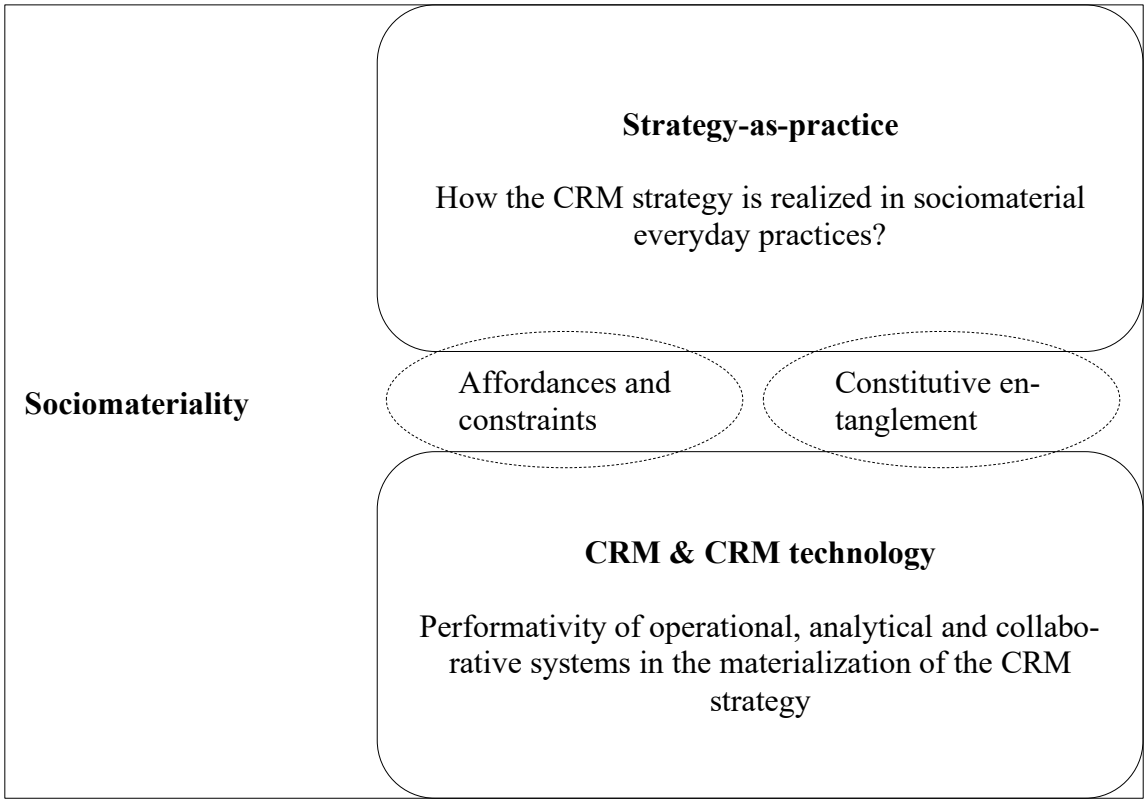

Figure 1. Theoretical basis of the study.

1.4. Thesis structure

The first chapter, introduction, gives an overview of the thesis, the research topic, the adopted perspectives in the theoretical framework as well as the research objectives and questions. In the second chapter, literature relating to the both theories are represented and then elaborated. Thus, the literature review is two-fold: first, it introduces the concept of sociomateriality; second, the focus is turned to customer relationship management and the related IT systems; and third, the both theories are integrated.

Following the literature review, the third chapter will introduce the case company as well as explicate the research methodology, data collection and analysis methods. Based on the data, the findings are analyzed in chapter four. Chapter five will close with a discussion of the empirical findings in the light of the literature review and the research objectives.

2. LITERATURE REVIEW

2.1. Sociomateriality

Sociomateriality is a theoretical approach in information systems, management and organization studies (Scott & Orlikowski 2013) and it has become "*one of the most popular, most cited, most debated, and most critiqued topics in the fields of information systems*" (Leonardi 2013: 60). Sociomateriality is seen as an umbrella term subsuming the different outlooks on the connection between the social and the material (Mutch 2013). Sociomateriality strives to understand how material objects and artefacts, such as the human body, furniture, spaces, hardware or software, are 'entangled' in the social and its structures, including institutions, norms, discourse, human interaction, and in practices, meaning the actual doing (Jarzabkowski & Pinch 2013; Leonardi 2013).

What is interesting for the research concerning sociomateriality is the foregrounding of how the bundle of everyday work practices is constituted and composed in the entanglement of actors, objects and intentions (Jarzabkowski & Pinch 2013; Orlikowski & Scott 2008). It is concerned with questions such as how sociomaterial, organizational forms shape practice as practices are what embody organizational phenomena (Orlikowski & Scott 2008). Management, technology and organizational research have been increasingly interested in sociomateriality (Leonardi 2013), because practices at work are intrinsically sociomaterial (Orlikowski & Scott 2008). Especially, in the era of digitization, different technologies are always bound up with everyday work. Yet, established research on information systems has scrambled to bring together the technological and social essence of the systems, whereas strategy and management studies have black-boxed what strategizing really is and how it is done (Golsokrhi, Rouleau, Seidl & Vaara 2015). Thus, in order to understand present-day work and organizing, its sociomaterial formations should be understood, too (Orlikowski & Scott 2008).

2.2. Towards sociomateriality in IS research

Traditionally, the research on technology, its adoption, implementation and effects on organization have been researched from the ontological stance of substantialism – humans and artefacts exist as independent and complete creatures (Cecez-Kecmanovic, Galliers, Henfridsson, Newell & Vidgen 2014: 809). Technology studies had perceived technology as a discrete entity (Orlikowski & Scott, 2008) and the contingency theorists in organization studies considered it as a structural determinant (Leonardi & Barley 2008). It was thought that technology influenced different organizational characteristics, for example, the span of control, centralization, culture, learning or inter-organizational relations (Leonardi 2013; Orlikowski & Scott 2008). Technology was studied as a separate phenomenon, in specific instances, such as adoption or implementation in organizations (Orlikowski 2007).

As a counterforce for the overly deterministic view of technology, the theories in social sciences emphasizing technology as socially constructed (Leonardi & Barley 2008), and the importance of human agency (Boudreau & Robey 2005) gained ground. As the focus shifted to language, discourse, and culture (Orlikowski 2007), materialism and materiality received a stigma of determinism (Leonardi & Barley 2008). Materiality's role in organizational life became disregarded or taken-for-granted (Orlikowski 2007). The focus on the social has been subsequently criticized by a post-humanist view, arguing that social scientists draw artificial lines around organizational phenomena (Leonardi 2013) and in the empirical reality, materiality is constitutive in every work practice (Orlikowski 2007).

In the post-humanist turn, the interest in materiality from a voluntarist (Leonardi & Barley 2008) standpoint gained momentum. Theories such as structuration (Giddens 1979, 1984), the actor-network theory (Callon 1986; Latour 1987, 1992, 2005) and mangle of practices (Pickering 1995 in Leonardi & Barley 2008; Orlikowski & Scott 2008) were influential in the field of sociology and spilled onto the studies of technology. For example, based on Giddens' (1979, 1984), Barley (1986) stated that even though not being determinants of organizational structure, technologies influence human actors and their interaction, aggregately causing organizational structures (Leonardi 2013). Pickering (1995) drew attention to non-human agency, arguing that technologies resist human intentions, or in other words, do not allow to do whatever human actors desire (Leonardi &

Barley 2008). The actor-network perspective (Callon 1986; Latour 1987, 1992, 2005) has notably contributed to the theorizing of sociomateriality. The ANT approach regards both the social and the technological components as equals in a system comprised of human and material agencies (Orlikowski & Scott 2008).

2.2.2. Relational ontology to sociomateriality

Even though the ANT approach and mangle of practices were seen as an improvement in theorizing (Mutch 2013), Orlikowski (2007) proposes taking the ontological intertwining of the social and the material more seriously. The majority of the theorizing and empirical research on sociomateriality is built upon an approach that is called agential realism (Mutch 2013). Agential realism is a philosophical standpoint suggested by Karen Barad, a physicist working with philosophy and feminist theory. Based on a relational view of ontology (Niemimaa 2018), it considers "matter already entangled with discourse in the enactment of phenomena" (Mutch 2013; Holt Nielsen 2019). Key concepts in Barad's thinking are material-discursive agencies – the intertwining of matter and meaning; how meanings are materially enacted in practice (Introna & Hayes 2011) – and intra-activity, in contrast to interactivity (Holt Nielsen 2019). Drawing on Barad (2003), the term sociomateriality evolved in the writings of Suchman (2002), who employed a feminist standpoint on the design and use of technologies (Mutch 2013).

The idea of constitutive entanglement of the material and the social is advanced especially by Orlikowski and Scott. As Orlikowski (2007: 1437) formulates it: "*the social and the material are [---] inextricably related – there is no social that is not also material, and no material that is not also social*". Humans and technology are not independent entities, instead, "*composite and shifting assemblages"* (Orlikowski & Scott 2008: 455). Thus, sociomateriality does not differentiate or ontologically separate between the material and the social (Leonardi 2013). Instead, the sociomaterial is "constitutively entangled".

Thereafter, scholars such as Orlikowski and Scott, have become prominent in the realm of *strong* sociomateriality (Cecez-Kecmanovic et al. 2014) and explicit proponents of Barad's and Suchman's works. They claim that even though the actor-network and

structuration theories capture the relationship between the human and the non-human more precisely, they still lack in their ontological position regarding the constitutive entanglement of the material and the social. (Mutch 2013.) Sociomateriality has been taken as an approach to make sense of this entanglement and enactment in material-discursive practices (Scott & Orlikowski 2013). They do not speak of interaction between the social and the material as there is only sociomaterial (Leonardi 2013). Instead, sociomateriality assumes that any distinction is "analytical only" and the human and the non-human do not have innate attributes (Orlikowski 2007).

This ontology has some crucial implications for research methodologies in the study of sociomateriality. Suchman (2007) has foregrounded some ramifications for sociomaterial research: first, as the units of analysis are not given but made, the researcher should be attentive to the boundary work and definition of entities; similarly, the demarcation of spatial and temporal relations is not given but enacted (Orlikowski & Scott 2008: 465). However, not all sociomateriality scholars engage in this ontology, especially for the practical difficulties it brings about (Mutch 2013). Some have consciously analytically separated the social from the material, and others just failed not to do so, even though claiming to research from the relational point of view.

2.2.3. Critical realist ontology to sociomateriality

The agential realist and relational point of view have been criticized by some researchers (see e.g. Mutch 2013; Sutton 2010; Faulkner & Runde 2012). Four significant difficulties for adopting an agential realist stance have been proposed. First, it may provide only descriptive studies as it does not allow separation between action and structure, leading to a focus on what 'is' (Leonardi 2013). Second, researchers have found it difficult to employ the sociomaterial lens in empirical studies as the material has to operationalized. This has led to focusing on the human side of the intra-actions and not being specific about technology (Leonardi 2013; Mutch 2013) Third, it does not regard temporality, which results in disregarding the change and development of practices. Finally, by considering all relations as mutually constitutive is making a claim of internal relations – that two entities would always need each other in order to exist (Leonardi 2013.) Not only

does this cause ontological problems, but also empirically this is not the case (Leonardi 2013; Tunçalp 2016)

Leonardi (2013) and Mutch (2013) argue for a substantialist or critical realist base for studying sociomateriality, sometimes also referred to as the *weak* form (Cecez-Kecmanovic et al. 2014) of sociomateriality. As opposed to agential realism, critical realism posits that the social and the material are separate entities in a relationship with one another (Leonardi 2013) and sees them as imbricating into what becomes "sociomaterial" entanglements through human action over time (Leonardi 2011; Leonardi 2013). This does not foreclose the close intertwining of the social and the material (Tunçalp 2016) as critical realism shares some of the assumptions of those of agential realism, for example, that there exists a reality independently of people (Leonardi 2013).

The critical realist approach advocates that some materials are not concurrently social. As Leonardi (2013: 69) puts it: "*In between the materiality of the technology and the socially formed goals of users is a perception of utility or impediment, of affordance or constraint*". Consequently, sociomateriality from a critical realist point of view is to acknowledge and mind the constitutive nature of materiality for the social, reciprocally, but not conflating those two (Leonardi 2013).

2.2.4. Summary of the ontological differences of the two approaches

Among the scholars, it has been accepted that sociomateriality can be studied from a variety of philosophical approaches (Scott & Orlikowski 2013; Cecez-Kecmanovic et al. 2014). Below are listed some of the key differences between the critical and agential realist approaches. The main difference between the approaches is that critical realism considers the human and the material entities being interdependent and becoming inextricable over time solely through human agency (Dulipovici & Vieru 2015).

Table 1. Differences of agential and critical realism (Leonardi 2013; Kautz & Plumb 2016; Jones 2014).

	Agential realism	**Critical realism**
Ontology	No social apart from material; there is only sociomaterial	The social context and the materiality of it are separate; they become sociomaterial by humans imbricating social and material agencies
Materiality	There is no materiality – only sociomateriality; ongoing materialization of phenomena	An artefact's physical/digital materials in different forms, lasting across different places and times
Relationality	Form, attributes and capabilities of entities transpiring from intra-actions	Forms, attributes and capabilities of entities may preexist without relations and independent of intra-actions
Inseparability	Mutual constitution	Mutual interdependency
Social	There is no social – only sociomaterial	Norms, policies, communication patterns, etc.
Sociomateriality	Inextricable entanglement of the material and the social	Enactment of activities that blend materiality with social phenomena
Practice	A sociomaterial achievement; embodied and materially mediated human activities	The entanglement of social and material agencies via imbrication; activities and processes
Performativity	Enactment of relations and boundaries	Independent nonhuman agency
Unit of analysis	The sociomaterial practice	Social and material agencies constituting practice
Focus	Implications of sociomaterial practices for organizational processes	How the social and the material become sociomaterial and what are the consequences for organizing

2.3. Practice theory and sociomaterial practices

Despite being sometimes contested (Mutch 2013), social practice theory has lent a useful lens for studying organizations, the activities of organizing and the intrinsic sociomateriality in organizational life (Orlikowski & Scott 2008). The practice approach to materiality originates in Suchman's (1987) publication Plans and Situated Actions and has been disseminated, for example, by Orlikowski (1992, 2000) who postulates that technology sculpts human action along usage and enactment in their practices (Nyberg 2009). In technology studies, the practice lens is supposed to reveal "*how work is made to work*" (Orlikowski & Scott 2008).

Practice theory researches "*what people actually do*" in their daily, ordinary doings as in "*the ways work gets accomplished*" (Erden, Schneider & Von Krogh 2014; Feldman & Orlikowski 2011). Social life being a continuous process emanating from repeated actions is fundamental to a practice perspective (Feldman & Orlikowski 2011). Deployed in organization studies, practice theorists explore the stream of 'situated action' (Orlikowski & Scott 2008), denoting the intricate, dynamic, dispersed and temporary nature of organizational life (Feldman & Orlikowski, 2011). People's ongoing and situationally constituted practices structure and sculpt, strengthen and remodel organizational processes, even to the point of routinization (Orlikowski & Scott 2008; Orlikowski & Scott 2015; Labatut, Aggeri & Girard 2012). Gaskin, Berente, Lyytinen and Yoo (2014) suggest that the study of sociomaterial practices should be viewed as enacted routines to account for the temporal dimension of organizational life. Here, routines depict regularity in the sequences of practices and allow analyzing their variance over time.

Practice theorists have taken different approaches to studying phenomena through the practice lens (Erden, Schneider & Von Krogh 2014; Feldman & Orlikowski 2011). However, Feldman and Orlikowski (2011) have identified three underpinnings for practice theory, regardless of the approach. The same assumptions are inherent in sociomaterial practices and the ontological assumptions of sociomateriality. First, practice theory argues that social life is the product of situated action. Second, theorizing refuses dualisms. Table 2 illustrates how dualisms, such as "*mind and body, cognition and action, objective*

and subjective, structure and agency, individual and institutional, free will and determinism" (Feldman & Orlikowski 2011: 1242) are perceived in both theories. Third, relations are mutually constitutive. (Feldman & Orlikowski 2011: 1241.)

Table 2. Shared ontological stances of sociomateriality and practice theory (Fayard & Weeks 2014: 237).

Dualism	**Aspects**	**Entanglement**
Physical realism vs. social constructionism	Practice is constitutive of physical actors and a material environment Practice is a social phenomenon, constitutive of meanings, ideas and norms	Practice conceptualizes both social and physical constructions
Determinism vs. voluntarism	Practice demands agency and discretion Practice modelled and restricted by social and physical impetus	Practice environment consists of physical and social facets, constraints and affordances

Erden et al. (2014) have plotted the research on practices on a matrix of approaches and themes. Their literature review concludes that practice theory has implicitly engaged in studying materiality in situated social practices, e.g. concerning the coordination of work, technology in organizations, strategy formation, unique features of the everyday work structure and the origination or change of work practices (Erden et al. 2014). Orlikowski (2007) discourages the categorization of organizational practices as social. She claims that it disregards the notion of materiality, which is integral to organizing (Orlikowski 2007). Practices are social and discursive but also always materially bounded (Orlikowski & Scott 2008), thus favorable for seizing the material aspect of organizational life (Erden, Schneider, & Von Krogh 2014). Alternately, she proposes the concept of sociomaterial practices. For Orlikowski, "*when embedded and embodied in situated practice, technology's performativity is sociomaterial"* (Cecez-Kecmanovic et al. 2014: 816). From Leonardi's (2011) point of view, sociomaterial practices indicate humans and material artifacts interacting – their agencies imbricating.

2.3.2. Human, material and sociomaterial agency

A humanist positioning and the accentuation of the abstract notion of human agency has been long-established in practice theory (Feldman & Orlikowski 2011). In general terms, agency is defined as an "*action or intervention producing a particular effect"* and *"a thing or a person that acts to produce a particular effect"* by Oxford Dictionaries (2019). In terms of human agency, Leonardi (2011: 147-148) defines it as "*the ability to form and realize one's goals".* From the critical realist point of view, this conveys that what people do at work is not dictated by the utilized technologies. Instead, people have the capability to do things differently; they have the volition to work around technologies and influence how it affects their work. (Leonardi 2011.)

As a consequence of trivializing technology by the human-centered perspective in practice theory and technology studies (Orlikowski 2007), and the later recognition that human agency is enacted in reaction to technology, the notion of material agency has been of increasing interest (Leonardi 2011). Material agency is expounded as "*the capacity for nonhuman entities to act on their own, apart from human intervention"* (Leonardi 2011: 148) or "*how the object acts when humans interact with the object"* (Wagner, Newell, Ramiller & Enders 2018: 195). This means that humans cannot entirely control their doings (Leonardi 2011: 148). Material agency extends farther than a technology's intended design or function. Materiality and the material agency of an artifact have distinct meanings – materiality can both constrain and enable material and social agency (Wagner et al. 2018). Determining are the perceived affordances and constraints of a technology (Gibson 1977). Nyberg (2009) suggests that non-human actors are active participators, enablers, mediators, facilitators, inhibitors, constrainers and resistors in the construction of the sociomaterial world.

The agential realist approach considers material agency as the performativity of a technology. Performativity means the doing having an effect on the outside reality; it constitutes or creates the reality or the phenomenon it describes instead of describing a pre-existing phenomenon. (Orlikowski & Scott 2008; Orlikowski & Scott 2015.) Technologies exert their material agency via their performativity. Material agency is the enactment

of the relations and boundaries between humans and nonhumans in practice – "*material and human agencies are mutually and emergently productive of one another"* (Pickering 1993: 567 in Orlikowski & Scott 2008: 459). As Doolin and McLeod (2012: 572) define:

> *"It is through the specific sociomaterial intra-actions of an 'apparatus' or socio-material practice that an observed phenomenon or 'object' is performed, and that the boundaries and properties of its social or material 'components' become determinate and meaningful."*

Sociomaterial agency arises from "intra-action" (Barad 2003), the performance of the human and material relations. The agencies of the human and the material are not known *a priori*, but reveal themselves in practice (Wagner, Newell & Piccoli 2010). Through the practice lens, a sociomaterial assemblage emanates from practice and demarcates *how* to practice, resulting in variabilities in the same practices carried out by different people (Wagner et al. 2010). The relational approach to sociomateriality conceives agency as neither an attribute or a property of humans or nonhumans, but a capability for action through the constitutive entanglement of both (Doolin & McLeod 2012).

2.3.3. Affordances and constraints

The concept of affordances originates from ecological psychology (Gibson 1977), meaning a possibility for action perceived by a subject, in addition to any merely physical properties. (Fayard & Weeks 2014; Jarzabkowski & Pinch 2013). Sometimes confused with a function of the system, an affordance reaches beyond any physical feature or characteristic of a technology (Jarzabkowski & Pinch 2013). For Gaskin et al. (2014: 856) an affordance is the particular way of appropriating the device during executing a task. Zammuto, Griffith, Majchrzak, Dougherty and Faraj (2007) describe affordances as follows (p. 753):

> *"[--] an affordance perspective recognizes that a technological object has some recognized functionality but needs to be recognized as a social object. As a social object, its influence on organizational functioning and performance cannot be separated from expertise, jobs, processes, or structures."*

Affordances do not determine or predict which actions will be taken but portray the possibilities for action to take place (Niemimaa 2018). Interesting for the sociomateriality research is what are the affordances *for practice* from both technology and organizing (Fayard & Weeks 2014) as in organizations, technologies are comprehended and appropriated contextually in a set of practices, where a set of practices can be understood as routines (Orlikowski 2007; Gaskin et al. 2014).

Along with sociomateriality in information systems and management research, the concept of affordances has been based on both relational and realist (substantialist, dispositional) ontologies, as well as on an integrated view of the dichotomy, the latter suggested by Fayard and Weeks (2014). On the one hand, a realist approach sees technology and humans as separate entities, which can reduce affordances to a list of functions afforded by the technology. On the other hand, the relational approach considering an affordance as a "*multi-faceted relational structure realized through the enactment of several mutuality relations between the technologies and the actor"* (Hultin & Mähring, 2014: 133) can result in a more holistic view. Simultaneously, this requires a high level of abstraction, does not guide how to identify an affordance nor account for constraints.

Thus, as suggested by Fayard & Weeks (2014) affordances have properties from both ontologies. First, they emerge in the context of the activities of the users (Jarzabkowski & Pinch 2013) as they are contingent on the competence, boundary-spanning, regulations and other social structures in the organization (Zammuto et al. 2007). Orlikowski (2005) talks about how materials "scaffold" social doings – enabling and constraining but not governing. Thus, they are relational. Second, while humans may be creative with the use of a technology, human agency is not without limit (Jarzabkowski & Pinch 2013). The *constraints* of technologies limit social action and human agency (Bourdreau & Robey 2005). This implicates that affordances are dispositional, too – social action is influenced by technology in the sense that not everything is possible (Fayard & Weeks 2014).

Leonardi (2007) refers to the concept of imbrication to explain how human and material agencies constitute affordances. An affordance is a possibility for goal-oriented action for a certain user or a group of users by a technological artifact (Markus & Silver 2008), in

other words, agency unfolds in intentions, affordances and constraints (Hultin & Mähring 2014). When people experience affordances or confront constraints in their practices, their choices imbricate the agencies to transform or construct new routines (human) or new technologies (material) (Leonardi 2007). The new sociomaterial imbrications, or in other words routines, enable or restrict new kinds of action (Introna & Hayes 2011; Jarzabkowski & Pinch 2013). Hence, affordances and constraints are the key apparatuses for powering and impeding organizational change (Hultin & Mähring 2014).

Three articles[1] theorize (Zammuto et al. 2007; Gaskin et al. 2014) or have empirically studied (Hultin & Mähring 2014) sociomaterial affordances. Zammuto et al. (2007) have identified five affordances that are co-constituted by organization and technology, four of which are relevant for this thesis. The first, *visualizing entire work processes*, means the capability to perceive the complete process from start to finish in writing, visually or via physical artifacts in order to make decisions. Similarly, Hultin and Mähring (2014) found an entanglement of *digitally visualized workflows* for planning and prioritizing. This may include the *representation* of an artifact or information (Gaskin et al. 2014).

Standardized processes and the related key performance indicators, joint problem-solving skills, valuing teamwork and cooperation as well as an appropriate reward system enact this affordance. The possible implications for new routines arising from the affordance include collective sensemaking, planning, prioritizing, proactive responses and work coordination. This is due to organizing around the work itself and having access to shared information. Further, this can mean that work practices develop more complex as expertise is utilized to entire work flows instead of discrete functions. (Zammuto et al. 2007; Hultin & Mähring 2014)

The second affordance by Zammuto et al. (2007) is *real-time/flexible product and service creation*. It is the ability to develop (software-enhanced) products and services by putting components together in novel and unconventional ways. As this usually stems from following emerging needs and answering to feedback, the affordance can also be

[1] Articles the author has access to.

comprehended as *visualized operational results for feedback and continuous improvement* (Hultin & Mähring 2014) and improving something results in *transformation* (Gaskin et al. 2014).

New products and services are materialized by exposing different experts, customers and partners jointly to new ideas and following the emerging possibilities. Furthermore, the swift feedback cycle allows to manage the trajectory of the ventures and fitting the contribution of one employee into the collective work. Further, virtual collaboration enables to share and combine others' knowledge by new means of collaborating if open knowledge management is encouraged. This may require understanding of how strategic value is created. In this way, the organizing process becomes emergent and liable to change as people can act in accordance to the stream of work as they are able to keep track of each other's work. (Zammuto et al. 2007; Hultin & Mähring 2014).

For the enactment of the affordances in practice, some technological features are required. For service innovation, the systems should be built web-based, service-oriented architecture. Regarding virtual collaboration, the systems must be able to contextualize the collective knowledge by keywords, include subject headers and relations between documents and workspaces as well as support virtual negotiation spaces. (Zammuto et al. 2007.)

Thirdly, Zammuto et al. (2007) have identified the affordance of *virtual collaboration.* Virtual collaboration refers to the aptitude to distribute and fuse knowledge and advocating open knowledge sharing, acquisition and upkeep. Open knowledge sharing necessitates also disclosing any problems, for which Hultin and Mähring (2014) found a similar affordance of *digital deviation reporting.* Collaboration and problem-solving afford *co-operative* use of information and possibly *storing* the outcomes in an archive (Gaskin et al. 2014).

Finally, the fourth identified affordance is *simulation/synthetic representation*, which is the ability to carry out scenarios (Zammuto et al. 2007). *Analysis* is the use of a tool to explore and simulate possible events (Gaskin et al. 2014). Business and artificial

intelligence working underneath the systems are able to execute what-if scenarios and propose next-best actions, which empower action, reduce information overload and help questioning established suppositions. Notwithstanding, the affordance will not materialize if the technology is not intertwined with an organizational culture that encourages the exploration of different options based on the results and is ready to put these into practice. If coupled with required knowledge, the offered profound analysis of the surrounding situation and possible future events will result in more confident and independent decision-making, thus, a more entrepreneurial attitude of the employees. (Zammuto et al. 2007.)

Furthermore, sometimes *control* (Gaskin et al. 2014) can be seen as an affordance, for example from the point of view of the management but comprehended as a constraint by another group of users, constraining their professional autonomy and authority (Hultin & Mähring 2014).

Table three synthesizes how the different authors perceive affordances, the material and human agencies and which kind of new practices or routines they implicate.

Table 3. Affordances of IT systems for organizing. (Zammuto et al. 2007; Gaskin et al. 2014; Hultin & Mähring 2014; elaborated by author).

Affordance	**Material agency**	**Human agency**	**New routines**
Visualization and depiction of full processes and workflows	Real-time dashboards; integrated database; business intelligence; illustrations, charts, graphs	Standardizing processes; setting KPI's; joint problem-solving; teamworking; rewarding	Collective sensemaking; proactive action; allowing emergent processes and permeable organizational boundaries; applying expertise into workflows; flow- and team orientating; coordinating work; planning; prioritizing
Product and service improvement, transformation and creation; visualized feedback	Component integration; visualization; feedback and survey tools; API's; sandboxes	Cooperating; shared understanding of strategic value; exposing oneself to multidisciplinary ideas, job rotating; heedful interrelating; boundary spanning	Following emerging needs; proliferating existing best practices
Virtual collaboration; reporting and storage	Keywords; relations, virtual meeting technology; disk storage space; virtual storage architecture; API's; creation of versioned copies	Supporting psychological safety and situational awareness to avoid interpersonal conflicts, not sharing knowledge, creating subgroups and not working with others	Participating broadly in work processes and decision-making; creating dynamic teams; extending boundaries temporarily, experimentally or permanently
Scenario simulation and prospective analysis	Dashboards; business intelligence	Allowing exploration based on simulations; willingness to implement new ideas	Sensemaking of new possibilities; more confident decision-making; entrepreneurship

2.3.4. Literature summarized

The below tables summarize the conceptual and empirical articles read for the literature review, excluding any literature reviews. Their ontology, definition of sociomateriality, materiality and sociomaterial practices, complementing perspectives and studied cases are explicated. As the above literature review and the below table illustrate, not only two fundamentally different ontologies but also a plurality of concepts reign in the domain of sociomateriality. The majority of the articles study sociomateriality from the "constitutive entanglement" point of view, but to a varying degree – some of the relational studies allow an analytical distinction between the human and the social. The rest allow an empirical separation between the two entities, applying more of the imbrication and affordances approaches.

Table 4. Summary of the reviewed literature: conceptual papers (source: the authors).

Author	Year	Ontology	Sociomateriality	Materiality	Sociomaterial practices	Complementing perspectives
Styhre	2010	Relational	Constitutive entanglement	Materiality is only enacted in practice	Practices that are inextricably tied up with specific technologies, tools and other material resources	Media theory
Leonardi	2011	Substantivist	Imbrication of human and material agencies	Material properties and relative affordances/constraints	Affordances constituted in relationships between people and the materiality of things	Structuration theory; actor-network theory
Robey et al.	2013	Substantivist	Material objects are implicated in human activity via affordances	Matter, substance, stuff, objects, things; data, information, ideas, databases, networks, software	Material agency interacting closely with human agency in the performance of routines	Sociotechnical perspective
Jarzabkowski & Pinch	2013	Relational	Constitutive entanglement	Materials, tools, software, technology	Activities *accomplished* with materials	Repurposing, reinscripting and repairing
Gaskin et al.	2014	Substantivist	A mutually constitutive and emergent relationship between humans and nonhumans	A functional affordance; physical or digital	An enacted sociomaterial routine that is repetitive, recognizable pattern of enacted, interrelated activities, comprised of social and material elements in the pursuit of specific organizational output	Relational reconstruction
Fayard & Weeks	2014	Relational / substantivist	Co-constitutive relation between the material and the social	Functionality	Affordances constituted in relationships between people, materiality and social structures	Habitus
Ramiller	2016	Relational (weak)	Constitutive entanglement	Materialized cognition	The emergence of human actors and technological artifacts in a temporary and situational way from the unfolding of routine practices.	Resistance and appropriation
Mueller, Renken & van den Heuvel	2016	Substantivist	The adaptation of ego, technology and social context to one another	Non-human objects and material structure	The meeting of the human and the material	Parson and Shil's (1951) general theory of action

Kautz & Plumb	2016	Relational	Constitutive entanglement	Ongoing materialization of phenomena	Mutual constitution of entangled agencies performing the world; intra-action	Heidegger (1927, 1962)
Tunçalp	2016	Substantivist	Recursive relationship of the social and the material	Matter, substance, stuff, objects, things; data, information, ideas, databases, networks, software	*No explicit definition*	Socio-technical systems

Table 5. Summary of the reviewed literature: empirical papers (source: the authors).

Author	**Year**	**Ontology**	**Sociomateriality**	**Materiality**	**Sociomaterial practices**	**Case**
Orlikowski	2007	Relational	Constitutive entanglement	Performed relations	Recursive intertwining of the social and the material enacted in practice	Use of Blackberries
Wagner et al.	2010	Relational	Constitutive entanglement	Materiality of a technology exists only in relation to humans who use it	Locally emerging doings of people including the material and the social	Evolution of an ERP system
Wajcman et al.	2011	Relational	Constitutive entanglement	The way machines are productive of social practices	Technologies becoming entangled with social factors	Technology-mediated interruptions at work
Introna & Hayes	2011	Relational / substantivist	Constitutive entanglement	A design, implementation or a use problem / solution	A continual interplay of imbrications producing affordances and constraints, which produce new possibilities for action	Plagiarism detection systems
Doolin & McLeod	2012	Relational	Sociomaterial configuration	Affordances as material implications	Materially constituted human action	IS development project
Østerlie et al.	2012	Relational	Recursive intertwining	The stuff world is made up of; dual materiality (performativity)	Materiality is performed in practices	Petroleum production
Scott & Orlikowski	2014	Relational	Constitutive entanglement	Ongoing materializations in practice	Practices constituted by meanings and materialities	Anonymity in TripAdvisor and AA

Jones	2014	Relational	Constitutive entanglement	Material, artefacts, the tangible, machine, nonhuman, and technology; intangibles, such as data and algorithms	The enactment of performativity	Adoption of a clinical information system
Mazmanian et al.	2014	Relational	Sociomaterial configuration	There is only sociomaterial	Figuring, configuring and configuring	Planetary exploration
Stein et al.	2014	Relational / substantivist	Joint human and material agency	A stimulus or event evoking emotional responses in individuals	*No explicit definition*	Software implementation
Orlikowski & Scott	2014	Relational	Constitutive entanglement	Performed relations	Relations as existing in and through enactment	Online valuations in the hospitality industry
Orlikowski & Scott	2015	Relational	Constitutive entanglement	Performed relations; not the same as tangibility	Everyday doings bound up with materiality	Crowd sourced algorithms in social media
Symon & Pritchard	2015	Substantivist	Constitutive entanglement	Tracks, signals, points	Sociomaterial assemblages producing the capacity for action	Use of smartphones constituting identities
Einola & Kohtamäki	2016	Relational	Recursive intertwining	Strategy tools, Power Point presentations, post its, software	Intertwining of tools and actors in strategy work practices	Strategy work in a public sector organization
Barrett, Oborn & Orlikowski	2016	Relational	*No explicit definition*	Sociomaterial configuration	Performing	Value creation in an online community
Holeman & Barret	2017	Substantivist	Imbrication of human and material agencies	What an ICT artifact or an object *is*	What the material and social do in particular situations	Implementation of an IoT system
Samdanis & Lee	2017	Relational	Constitutive entanglement	There is only sociomaterial	A sociomaterial enactment	Digitalization in an architecture firms
Gärtner & Huber	2018	Substantivist	*No explicit definition*	The persistence of the arrangement of an artifact's physical/digital materials across space and time	Instantiated in regularized patterns that express underlying organizational cultures / norms	Computer-based tools in a hospital

Wagner et al.	2018	Substantivist	Imbrication of human and material agencies	Material properties and relative affordances/constraints	Regularized patterns expressing underlying organizational culture or norms	Manifestation of an "agile" ideology
Hauge	2018	Substantivist	Co-constitutive relation between the material and the social	Techniques and tools	Situated valuations	Lean management in a children's hospital
Verhulst & Rutkowski	2018	Substantivist	Imbrication of human and material agencies	Technology, smartphone	The emergence of affordances and constraints from the imbrication of human and material agencies	Decision-making in the Dutch police force mediated by smartphones
Niemimaa	2018	Relational	Entanglement of the human and the material in practice	IT artefact, technology	*No explicit definition*	Technicians working with smart infrastructure

2.4. Sociomateriality in strategy-as-practice

Along with the practice turn in social sciences, practice has become of importance in the research agenda of strategy, strategic management, strategic decision-making, strategizing, strategy-making and strategy work. Strategy-as-practice is concerned with thoroughly exploring what in effect occurs in strategy making and implementation – in the doing of strategy. Scholars of the strategy-as-practice stream have been increasingly interested in the bearing of materiality in strategizing. (Golsorkhi, Rouleau, Seidl & Vaara, 2015.) For example, it has been investigated how strategy processes are impacted by material artefacts (Kaplan 2011), how objects inscribe knowledge (Jarzabkowski, Spee & Smets 2013) and what is the relationship between human agency and the choice, utilization and the results of tools (Jarzabkowski & Kaplan 2015) (within Golsorkhi, Rouleau, Seidl & Vaara, 2015). From the SAP point of view, practice is understood as the "*social, symbolic and material tools through which strategy work is done"* (Jarzabkowski & Spee, 2009) and strategy is "*something people do in organizations*" (Whittington 2006).

In line with sociomateriality, strategy-as-practice has drawn on structuration theory (Giddens (1984) to explore especially the effect of middle management's agency on strategizing (Whittington 2015) and actor-network theory (Callon, Law & Rip 1986) to explain stability and strategic change (Steen, Coopmans & Whyte 2006), rational decision making (Cabantous, Gond & Johnson-Cramer 2010) and the role of artifacts in strategic planning (Giraudeau 2008) (in Chapman, Chua & Mahama 2015). Thus, sociomateriality and strategy-as-practice share the same theoretical antecedents in social studies. In management studies, the theory of routine dynamics has been drawn on in both strategy-as-practice (Feldman 2015) and sociomateriality (Gaskin et al. 2014), not the least for the shared ontological base of mutual constitution. The contribution of routine dynamics to SAP has been especially to better understand the emergent nature of strategy, as both routines and strategy can be perceived as enacted practices (Feldman 2015).

Gaskin et al. (2014) suggest an approach to study sociomaterial routines, patterns of practice, and how "*activities, actors, artifacts, and affordances*" (p. 849) become entangled in them. They write on sociomaterial routines as follows (p. 853):

> *"The sociomaterial is a routine set of enacted and interrelated activities, comprised of social and material elements, for a purpose. This purpose involves a well-defined goal, and a sociomaterial routine often produces a well-defined output*."

Further, sociomaterial activities are described as (p. 853):

> *"The activity is the basic unit for carrying out a sociomaterial routine, since each routine consists of one or more activities. Each activity carries out a single function by a specific actor (or actors), at a particular location, using a specific tool, enacting a particular affordance, and producing an outcome."*

Thus, as the routine is enacted for a purpose and resulting in an output, it can be understood as the dynamic and consequential process that culminates in strategy (Feldman 2015). Activities can be understood as sociomaterial practices; the entanglement, imbrication of human and material agency, enacting an affordance or constraint. Next, the implications for customer relationship management as a strategic initiative are discussed from this point of view.

2.4.1. Customer relationship management as a strategic initiative

Customer relationship management (CRM) has had multiple definitions over the course of the research attention concerning it. Combining relationship marketing and the use of information technology, it has recently been accepted as an organization-wide and cross-functional strategy or a strategic method to develop customer relationships and maintain customers by increasing their satisfaction and loyalty (Xu & Walton 2005; Chen & Popovich 2003; Kim, Park, Dubinsky & Chaiy 2012). Francis Buttle, an honorary professor best known for framing CRM as a strategic business practice, defines it as "*a core customer-centric business strategy that aims at winning and keeping profitable customers"* (Buttle & Maklan 2015: 4). Further, this is achieved by "*a combination of people, processes and technology that seeks to understand a company's customers"* (Chen & Popovich 2003: 672). The key activities of CRM include customer portfolio management, comprehending identification, segmentation and retention of strategically significant customers, delivering customer-experienced value and managing customer experience (Buttle & Maklan 2015). In order to become a customer-centric, in contrast to a sales- or

product-centric company, an organization must put the customer first by gathering, spreading and utilizing customer information to develop and redeem the customer value proposition as well as to answer changing customer demands (Buttle & Maklan 2015: 5).

Customer-centricity is often a cultural change within an organization as it requires not only focusing on the customer instead of the product but also sharing information and knowledge (Chen & Popovich 2003; King & Burgess 2008). Scholars in CRM highlight information and knowledge as a crucial factor for maximizing customer value and utilizing it as a competitive strategy (Martelo Landroguez, Barroso Castro & Cepeda-Carrión 2011; Shoemaker 2001; Chen & Popovich 2003). Information is essential for product tailoring, service innovation, an integrated view of the customer and identifying strategically significant customers (Chen & Popovich 2003; Kim et al. 2012).

In order to understand the strategic role of knowledge, a market or customer-centric orientation is a necessity, shifting from transaction-based customer interaction to a long-lasting relationship perspective on customership (Martelo Landroguez et al. 2011; Shoemaker 2001). These committed customer relationships are seen as a competitive advantage (Shoemaker 2001; Kim et al. 2012). Enabled by the competitive advantage, companies are expected to increase revenue and value (Elmuti, Jia & Gray 2009). In order to find ways to maintain the competitive advantage, customer value emerges as a key factor (Martelo Landroguez et al. 2011). What is the "glue" between these two capabilities, is technology and technological readiness, comprehending CRM systems (Ryals & Knox 2001). It can be stated that customer relationship management is inherently sociomaterial as the strategizing related to it is fundamentally intertwined with the material – the technology. By definition, customer relationship management is organizing around what can strategically be accomplished with information.

Furthermore, CRM is a management initiative, the success of which is heavily dependent on management buy-in and support in terms of leadership, strategic orientation, vision and business objectives (Chen & Popovich 2003). According to Orlikowski and Scott (2008), management concepts are, without exception, sociomaterial enactments and their perusal necessitates powerful theoretical tools that enable the studying of the

intermingling of the abstract and the matter of these concepts. As Zammuto, Griffith, Majchrzak, Dougherty and Faraj (2007) observe, the issue with the current management literature is the absence of attending to the changing connection between technology and structure, and how IT is superseding hierarchy in organizing and managing activities. Furthermore, comparing the research on CRM in the management and IS disciplines, Maklan, Peppard & Klaus (2016) state that management literature isolates CRM from the organizational and human context, as opposed to IS scholars. IS literature sees customer relationship management, associated technology, practices as a system network, from which customer knowledge cannot be abstracted as a resource – it is situated and provisional (Maklan et al. 2016).

Kaplan (2011: 320) conceptualizes strategy-making as a knowledge production process in an expert culture – what she calls an "epistemic culture" (Knorr-Cetina 2000). In other words, epistemic cultures are cultures of knowledge production. In this context, culture is understood as the discursive and materially mediated practices constituting it. More specifically, this "objectual practice" occurs by interacting with artifacts which create knowledge. (Kaplan 2011.) These knowledge processes are local, situated and inseparable of an individual's practices. The artifacts can be seen as boundary objects, which facilitate knowledge depiction, definition and modification and allow knowledge sharing across heterogeneous communities of practice. (Erden, Schneider & Von Krogh 2014; Bechky 2003.) Similarly, Ramiller (2016: 30) notes that when adopting a sociomaterial approach, there is a perpetual movement between knowledge and practice:

> "*How people know in practice, even how they creatively imagine the possibilities for practice, are framed by a grammar of materiality in which personal boundaries flex with the tasks and technologies that are engaged.*"

The materiality of a boundary object originates in action – practice (Doolin & McLeod 2012). Consequently, organizational practices should promote use of the technology's features that enact affordances resulting from information and knowledge. For instance, the lack of managing the feeling of safety or situational awareness can discourage people from sharing their knowledge and lead to inefficient coordination of work and interpersonal conflicts. (Zammuto et al. 2007.) After all, the success of a CRM strategy hinges

on understanding how knowledge which the information, produced in the sociomaterial entanglement of the technology and practices around it, is shared and used, and whether this is done efficiently. However, the current research on CRM has not discussed strategizing from the practice point of view, nor been interested in the sociomateriality of the activities and routines. This is somewhat surprising, as this outlook applied to CRM could be helpful for understanding why so many CRM adoption and implementation projects fail (Kotorov 2003). It has been suggested that this is not only due to failing to understand CRM as a strategic initiative but also merely managing technological artifacts and not their use in practice (Feldman & Orlikowski 2011). Figure 1 below describes the traditional outlook on CRM strategy and process.

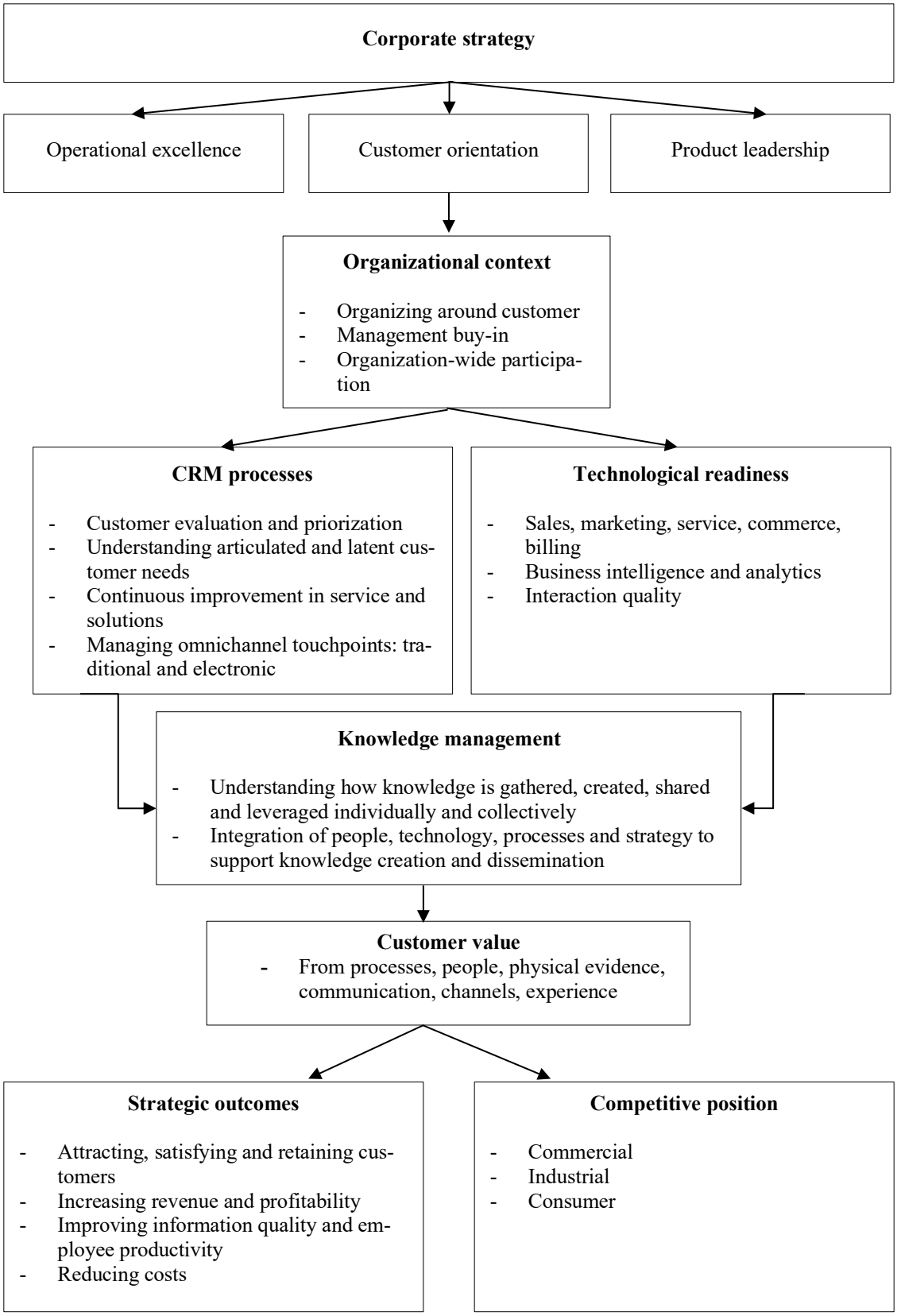

Figure 2. Traditional outlook on the CRM process and strategy (author's elaboration).

2.4.2. CRM technology as a strategizing tool

In management literature, the concept of technology has had a variety of definitions and theorizations for its equivocal nature (Orlikowski & Scott 2008). Orlikowski (2000: 408) defines technology-as-an-artifact as a "*bundle of material and symbol properties packaged in some socially recognizable form, e.g. hardware, software, technique*". In addition, from the practice point of view, a technology also comprises the use of technology – "*what people actually do with the technological artifact in their recurrent, situated practices"* (Orlikowski 2000: 408). When talking about technology, sociomaterial studies often refer to information systems, which transmit potential for the generation, alteration, dissemination and retention of information as well as allow for new affordances and constraints on information use in organizations (Leonardi 2007). Similarly, CRM systems are defined as a collection of information systems facilitating the accumulation, storage and analysis of customer data. Further, they are utilized for the contacting of customers through various media. The outcome should be a comprehensive, or a 360-degree-view of the customer in order to develop and maintain customer relationships. (Khodakarami & Chan 2014.) The practices of customer relationship management are fundamentally entangled with the CRM systems, being in and of themselves a constitutive entanglement.

Today's CRM technologies are mostly software-as-a-service applications (SaaS), usually accessed via a browser or an application (Hoch, Kerr & Griffith 2001; Salesforce 2019). All infrastructure and data are installed and maintained by the vendor in a centralized datacenter outside the organization's firewall, either independently or through a third-party (Keifer 2007; Hoch et al. 2001). The data is then supplied to the organization via the Internet. (Hoch et al. 2001). In the software industry, SaaS is seen as a paradigm shift for two reasons: first, the revenue model is based on success. Compared to traditional software, the user does not pay any perpetual license fees but instead subscribes to a monthly recurring fee. If the user is not content with the application, the change to a competing vendor can be done fairly effortlessly. Second, SaaS is a service-based model, where the vendor not only develops the code, but also implements, tests, trains, troubleshoots, maintains, hosts and upgrades. (Keifer 2007.) Sociomateriality in service innovation sees service not as interaction, but relational intra-action where humans and matter

emerge and re-emerge, creating new relations and co-dependencies (Orlikowski & Scott 2015). In the sphere of CRM, the software-as-a-service model is a sociomaterial practice constituted by the exchange process and the cocreation of value between the vendor and the user.

The software's existence in the cloud might make the idea of materiality hard to grasp (Leonardi & Barley 2008) but even if the appearance is intangible, as Orlikowski and Scott (2015: 204) note, the software "*only exist in relation to the particular computers, networks, bodies, and workplaces through which [they are] produced and used. For software to exist, it has to be enacted in some form – minds, computers, code, specifications, etc*." Additionally, when interpreted from the affordances point of view, material properties can be seen as invitation for or constraint on action. (Leonardi & Barley 2008.) Furthermore, the materialized service (SaaS) is performative – the quality of the software operations and usability is contingent on the *"material capabilities of the activities, bodies, and artifacts involved in its production and use"* (Orlikowski & Scott 2015: 204), materializing the supplied service.

Literature in CRM systems has viewed them as "discrete entities", moderating and influencing different variables in an organization, and the focus has been on information efficiencies and synergies as well as performance and profitability increases (Orlikowski & Scott 2008). The studies have thus employed a deterministic stance to technology (Nyberg 2009). The sociomateriality lens has not been applied to customer relationship management systems research specifically, but in information systems more generally. For example, Wagner et al. (2010) employed the approach to study why prepackaged enterprise resource planning (ERP) systems have more implementation problems when compared to custom-made ones. This was due to misalignments between assumed best practices and an organization's legacy practices. Prepackaged ERP systems are configured ahead of use, which will limit users in specific regards (Bourdreau & Robey 2005), but software-based best practices cannot be forced upon people. Instead, the sociomaterial components of a practice are adjusted by negotiating. (Wagner et al. 2010.)

Traditionally, CRM systems are often categorized as follows: first, operational systems for automating and enhancing the efficiency of CRM processes; second, analytical systems for analyzing customer data and producing customer knowledge; third, collaborative systems for omnichannel and touchpoint management (Khodakarami & Chan, 2014: 27). Contemporary CRM systems combine the three sub-systems, either wholly or partly. A connective concept aligning the different systems is strategic CRM, denoting the coordination and integration of a customer-focused strategy throughout the organization and aligning the relevant information systems accordingly (Wahlberg, Strandberg, Sundberg & Sandberg 2014). Literature on strategic CRM discusses implementation issues, critical success factors, change management and the profitability and measurement of the CRM initiatives. (Wahlberg et al. 2014). Below are the explications for different types of CRM systems.

Operational

Operational CRM systems automate customer-facing service, sales and marketing related processes in order to improve efficiency, productiveness and measurability (Khodakarami & Chan 2014; Wahlberg et al. 2014). These systems collect customer data through an array of different touch points: contact centers, contact management systems, e-mail, sales force, webpages, service desks, etc. (Xu & Walton 2005).

Analytical

Analytical CRM concerns knowledge and relationship management, encompassing "*knowledge creation, sharing, dissemination and exploitation"* and "*communication, creation of loyalty and stable customer base, customer service, trust cultivation and relationship maintenance"*, respectively (Xu & Walton 2005: 956). The data is analyzed by means of a range of analytical tools such as predictive and prescriptive analytics, machine learning, customer journey analytics, contextual insights, natural language processing (NLP), voice of customer (VoC), robotic process automation (Cox 2018) that segment customers, create customer profiles, discover regularities in behavior or recognize customer satisfaction levels (Xu & Walton 2005). The overall objective is to yield a better

understanding of customer behaviors, needs and anticipate their next actions as well as recognizing strategically meaningful customers (Khodarakami & Chan 2014; Xu & Walton 2005). The focus of the analytical system is supporting the strategic decision-making of the management, instead of mere operational efficiency.

Collaborative

Collaborative CRM systems manage and integrate customer channels and touchpoints, e.g. websites, e-mail, portals and extranets as well as possible partner, employee and supplier channels to the CRM system in order to achieve better customer responsiveness across the supply chain (Khodakarami & Chan 2014; Xu & Walton 2005). A sub-field of collaborative CRM research is e-CRM, defined as "*a web-centric approach to synchronizing customer relationships across communication channels, business functions, and audiences"* (Forrester Research 2001 within Xu & Walton 2005: 961). Table 5 provides an overview of collaborative applications.

Table 6. Collaborative CRM applications (Khodakarami & Chan 2014: 34).

Collaborative CRM applications
Tele/video/web conferencing
Communication support / departmental portals
Social media
Partner portals
Extranet / customer portals

CRM systems are modular and come in different levels of advancement, especially in terms of their analytic capabilities. Thus, their sociomaterial performativity varies – it is composed of the performativity of networks, software, machine learning algorithms, datacenters, artificial intelligence, and infrastructure, which in turn are enacted by human agency involved in the design, coding and operation (Orlikowski 2007). CRM systems can be seen as "epistemic machineries" (Knorr-Cetina 2000), meaning how they produce knowledge entangled within practices in a wider organizational context (Kaplan 2011). Each category of the CRM system has affordances for knowledge creation and sharing practices if coupled with structures that support boundary objects (technology) and

boundary spanners (human) (Zammuto et al. 2007). Table 6 summarizes the literature on CRM, how it is conceptualized, its key items and how the authors conceive technology's role.

Table 7. Summary of the reviewed CRM literature (source: authors).

Author	Year	CRM	Key items	Technology
Ryals & Knox	2001	An integrated approach to managing customer relationships.	Customer portfolio, retention, customer information management, segmentation, value creation	Reporting tools, online analytical programming tools, data mining
Chen & Popovich	2003	A combination of people, processes and technology that seeks to understand a company's customers.	Customer orientation, front and back office alignment, proactivity, monitoring and improvement	Linkage between front office, back office and customer touch points
Park & Kim	2003	Collection of a vast amount and depth of customer data turned into information for strategic business purposes to ensure customer commitment.	Acquisition, retention, expansion	Relationship management package, customer information system, customer database, decision support application
Fan & Ku	2003	A technology-enabled business strategy, based on customer knowledge to build profitable relationships, optimizing value creation and delivery, automating and improving sales, marketing, customer service and support processes.	Customer interaction processes, knowledge management, identification and satisfaction of customer needs	Web-enabled customer interfaces, call-tracking, CRM software, computer and telephony integration, customer-service expert systems
Gebert et al.	2003	An interactive process with an optimum balance between corporate investments and the satisfaction of customer needs to generate the maximum profit.	Customer cost accounting, knowledge management, cross-functional integration, IT systems implementation	*No explicit definition*
Reinartz et al.	2004	Building a single view of the customer across all contact channels and the distribution of customer intelligence to all customer-facing functions.	Relationship initiation, maintenance and termination	IT for initiating, maintaining, and/or terminating customer relationships; a moderating factor.
Zablah et al.	2004	An ongoing process that involves the development and leveraging of market intelligence for the purpose of building and maintaining a profit-maximizing portfolio of customer relationships.	Knowledge and interaction management	Database, data mining, interactive technologies

Zineldin	2005	A strategic approach concerned with creating improved shareholder value through the development of appropriate relationships with key customers and customer segments.	Strategy development, value creation. multi-channel integration, performance assessment	Data repository, IT systems, analytical tools, front and back office applications
Chalmeta	2005	A customer-focused business strategy that dynamically integrates sales, marketing and customer care service in order to create and add value for the company and its customers.	Organizational culture, customer strategy, redefined business processes, human resources training	Automation, data warehousing, OLAP, data mining, statistical analysis, integration to other IT's
Plakoyannaki et al.	2008	A core organizational process extending throughout the firm. Creates value through the formation and maintenance of relationships with external marketplace entities.	Strategic planning, information, value creation, performance measurement	*Not explicitly defined; related to generation of customer knowledge*
Zahay & Peltier	2008	Collecting, storing, moving and using customer information throughout the organization.	Customer information management, strong middle management, systems / data integration, teamwork	Data-driven technologies, SFA, CRM, data warehouse, data mining
Elmuti et al.	2009	Business strategies, processes and information technology that enable a company to optimize revenue and increase the value through understanding and satisfying the individual customers' needs.	Customer service strategy, marketing strategy, system analysis, back office activities, business analysis, strategic supplier alliances analysis	Robust database, network speed, ERP functions, Internet acceptance, communications technology.
Ryals & Payne	2011	Identification and selection of target customers and utilizing technologies including data warehousing to better deliver and extract value.	Customer orientation, cross-functional teams, data warehouse, relationship building with data	Databases, data warehousing, data mining
King & Burgress	2014	An approach based on maintaining positive relationships with customers, increasing customer loyalty and expanding customer lifetime value.	Acquisition, value proposition, good service, retention, tailored offering, extension	System for communications, greater customer insight and targeting, improved service and increased sales
Buttle & Maklan	2015	A core customer-centric business strategy integrating internal processes and functions and external networks, to create and deliver value to targeted customers at a profit. Based on high-quality customer data and enabled by information technology.	Portfolio management, customer-experienced value delivery, customer experience management	SFA, service and marketing automation, databases, data mining

3. RESEARCH DESIGN AND METHODOLOGY

3.1. Research philosophy

Research philosophy stands for "*the development knowledge and the nature of that knowledge*" (Saunders, Lewis & Thornhill 2009: 107) and has critical implications on how the researcher views the world, chooses the research strategy, data collection and data analysis methods. Research philosophy can be examined from two principal standpoints: ontology, interested in the nature of reality and epistemology, defining what is admissible as knowledge in a field of study. (Saunders et al. 2009.)

The literature review came to the conclusion that the study of sociomateriality has two predominant ontologies: agential realism and critical realism. As there are multiple problems related to agential realism's operationalization of constructs in the empirical reality, this study is written from the critical realist point of view to allow the analytical and empirical separation of the social and the material. This eases the implementation of the empirical part with limited resources and timeframe. Further, it also enables to focus on the *materiality* of organizational life more concretely. This has been called for by Orlikowski, Scott and other sociomateriality researchers.

Critical realism is a philosophical position, a metatheory comprising both ontological and epistemological questions. Critical realism interposes between positivism and interpretivism, suggesting that the majority of reality prevails and performs autonomously without human acknowledgement or consciousness of it. It combines both explanation and interpretation to investigate what influences human action and interaction, without falling to the trap of reductionist causation in a complex reality. (Archer, Decoteau, Gorski, Little, Porpora, Rutzou, Smith, Steinmetz & Vandenberghe 2016.)

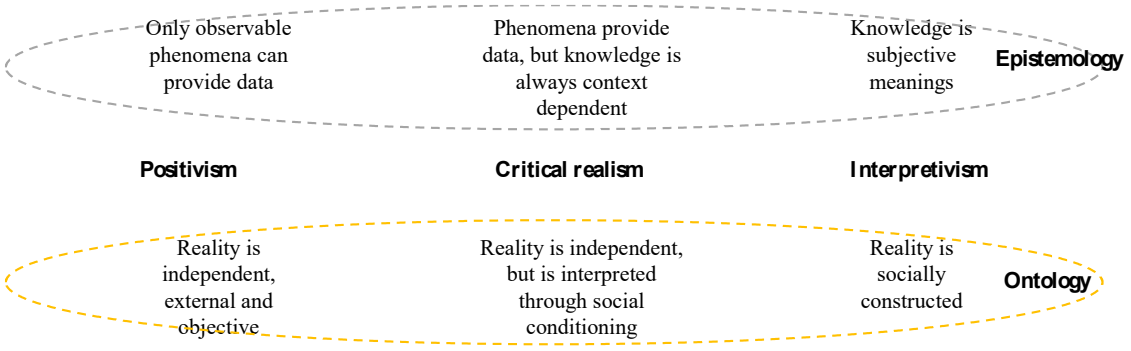

Figure 3. Ontological and epistemological assumptions of the study. (Saunders et al. 2009; Archer et al. 2016).

However, when assessing epistemology, critical realism allows a relativist interpretation:

> "*Our knowledge about [--] reality is always historically, socially, and culturally situated. Knowledge is articulated from various standpoints according to various influences and interests and is transformed by human activity—in other words, our knowledge is context-, concept-, and activity-dependent."* (Archer et al. 2016).

When taking practice as the focal point of inquiry, one might ask how it fits critical realist assumptions. However, as Orlikowski (2015) and Feldman and Orlikowski (2011) state, there are three main ways to utilize practice in research: phenomenon (empirical), perspective (theoretical) and philosophy (philosophical). The first, practice as a phenomenon is interested in what practitioners *do.* It acknowledges that practices matter, still separating practice and theory. (Orlikowski 2015.) In contrast, as Orlikowski (2015: 37) explains, the third approach makes a metatheoretical claim that "*practices are reality*", often conflating agency and structure (Elder-Vass 2016). Furthermore, Orlikowski (2015) notes, that this lens has been useful in technology studies. Thus, this study takes the empirical lens on practices.

3.2. Research approach and strategy

Traditional research approaches are divided into induction and deduction. Deduction refers to testing theory, meaning formulating, operationalizing, testing and assessing

hypotheses, and if need be, modifying the theory. On the other hand, induction is building theory, without any prior expectations or assumptions. Induction is interested in the attached understandings and the meaning of context. (Saunders et al. 2009.) Abduction, on the other hand, is a compound of the two major approaches, in which the researcher moves iteratively between theory and empirical findings. Abduction is prevalent, for example, in action research (Halecker 2015), which, in turn, is a method employed by practice researchers (Orlikowski 2015).

Supportive of the abductive research approach is a research strategy called action case study, which is rooted in information systems research (Halecker 2015). It combines characteristics of both action research and the case study method. Action research is focused on solving a real-life, organizational problem together with the people who are influenced by the issue. A case study, on the other hand, is an empirical exploration of a contemporary phenomenon in its context and it can include multiple data collection methods, e.g. interviews, observation and archival data (Saunders et al. 2009). Halecker (2015: 28) notes:

> *"Action case study operates on an interface and is useful for interpreting a case study in depth through e.g. archival studies or interviews and making interventions (action) via e.g. observation or moderated workshops in past time (case study) and real time (action) within the distinct environment (i.e. project, department) of the studied organization."*

My participation as a member of a project team in the case organization makes the action case study is a more suitable option than a traditional case study. However, it still allows the traditional case study data collection methods, thus having a two-fold outcome: an action outcome for the organization and a research outcome of an input to theory. (Halecker 2015.)

3.3. Research, data collection and data analysis methods

The nature of this study is qualitative, meaning that it uses and analyzes non-numerical, narrative data. I employed multi-method data collection. Multi-method data collection

means that there is more than one way to collect data, but the methods do not mix quantitative and qualitative techniques, as in mixed-methods research. (Saunders et al. 2009.)

The principal data collection method was participant observation, which is an established method in social anthropology but not so widely used in management research. Observation necessitates a thorough absorption of the researcher into the research setting in order to detect and grasp the subtleties of the situation. (Saunders et al. 2009.) As noted above, I was also an active participator in the project and spent half a year in the company. Simultaneously, I gathered and analyzed the information and material stemming from the active involvement. In other words, I was a *participant as observer*, so that my purpose as a researcher was revealed and I took part in the activity (Saunders et al. 2009).

Other data collection methods comprised of interviews, both unstructured and semi-structured. Both interview styles are suitable for an exploratory study, which seeks to "*find out what is happening [and] to seek new insights"* (Robson 2002: 59 within Saunders et al. 2009: 322). The unstructured interviews served as a basis for formulating the semi-structured interview. The interview protocol can be found in Appendix 1.

Table 8. Data collection methods.

Data collection methods	
Observation	
Project meetings	Participation and observation in project meetings related to the preparation of the CRM project
Formal meetings	Participation and observation in the supplier demo meetings with the project team and supplier representatives (ca. 8 hours)
Field notes	Taking field notes of meetings
Audio recording	Meetings were audio recorded and transcribed in part or in full
Interviews	
Semi-structured interviews	Four interviews (totaling 2 hours; average 30 min) were conducted with four participants, including: chief customer officer, key account manager, CRM coordinator and product manager
Unstructured interviews	Multiple unstructured, casual interviews or discussions were conducted, and field notes taken

Audio recording	Interviews were recorded with permission and fully transcribed
Open-ended survey	An open-ended online survey was sent to the overhead, some of the medical staff, sales and marketing for context in other functions of the company outside of the customer relationship management team
Document review	
Project-related emails	Email correspondence was available as the researcher was included as a project team member
Customer satisfaction surveys	Customer satisfaction survey material was available for analysis
Internal training material	Internal training material on customer orientation and a personnel training session (3 hours) were included as supporting material

As already noted above, the analytic approach to the material was abductive and iterative in nature – the theory was written prior to analyzing the empirical material and the coding was done inductively. The data was read through multiple times to establish a good understanding of the content. All notes, interview transcripts and other material was analyzed in Excel according to Gioia, Corley & Hamilton (2013) methodology. I started with coding first-order constructs, meaning informant-centric terms and codes, and then abstracting those codes into second-order dimensions and concepts, which composed the "data structure" (ibid). The features of the method are described in table 8.

Table 9. Method for data analysis (Gioia et al. 2013).

Step	**Key features**
1st order coding	Initial data coding with informant-centric terms Summary of first-order terms Coding with theory-centric terms
2nd order thematization	Categorization of first-order codes into second-order themes Abstraction of second-order themes into theoretical dimensions
Data structure	Creation of a data structure of first-order terms and second-order themes
Theory formulation	Creation of a dynamic model of the second-order dimensions
Articulation	Honing and elaboration of assertions of concepts and connections based on literature

Further, I developed a narrative description of the observations to explain and elaborate on how and why the constraints and affordances and the subsequent changes unfolded.

3.4. Trustworthiness of the study

Validity denotes the accuracy or trustfulness of a study and its findings – is it measured what is supposed to be measured? Reliability on the other hand is concerned with consistency and stability in producing similar results. A major threat to validity and reliability, or *trustworthiness*, of a study is error. Error can result from the researcher, the subjects, the situation or data collection and analysis methods. (Brink 1993: 35.)

Researcher bias and competency

Researcher bias can stem from 1) an inexperienced researcher; 2) the researcher's own interpretation; or 3) the presence of the researcher affecting the subjects (Brink 1993: 35-36). Researcher competency is the biggest threat to this study as I am new to qualitative research, its data collection and analysis methods and might be prone to my own interpretation. However, this has been mitigated by coding the empirical material with informant-centric codes, affording more transparency to my own coding. Further, observations were done over a longer period of time. Thus, I paid several visits to the organization and "lived" within the organization, increasing the trust between the researcher and the subjects (Brink 1993).

Subject error

Subject error implies either that the researcher has chosen a sample or subjects of the population that do not correctly represent the situation under study (Saunders et al. 2009: 309) or that the responses of the subjects are not truthful (Brink 1993: 36). As the sample of this study was the key persons in the customer relationship management team, sales and marketing team and some nurses, the study should have a representable sample. In

addition, I informed the subjects about why I was present in the organization and what I was researching, as well as granted anonymity, in order to receive truthful answers.

Situation and time errors

The social circumstances can influence the subjects to answer differently as compared what they would say in another context (Brink 1993: 37). I discussed the matters in various off-the-record instances before the interviews to ensure that the answers follow along the lines of those in the unofficial situations.

Time error means that the researcher would get data that is not characteristic for the study object due to time distortion (Saunders et al. 2009: 309). The case company was going through some organizational changes and the time under study included the holiday season, both of which might have contributed to time error. However, as I spent half a year in the company, it should allow ample time to understand the situation correctly.

Data collection and analysis errors

In addition to researcher competency, data collection and analysis methods can pose a threat to the validity and reliability to the study (Brink 1993: 37-38). Section 4.3. describes how the data has been collected and analyzed in this study. I have used multiple data collection methods to ensure the consistency of the findings and strived to give thick description of the situation and context where the study took place. However, it must be acknowledged that due to my inexperience as a researcher, this can be the culprit of the study.

3.5. Case company

The case company, HealthCo (a pseudonym), is an occupational healthcare services provider for small- and medium-sized as well as large companies. In addition to customer-tailored occupational healthcare services, it provides occupational well-being, laboratory,

rehabilitation and x-ray services as well as healthcare services for private customers. HealthCo operates in Finland in six different locations and has a cooperation network of 50 service providers in the area. It employs circa 200 professionals and has 2000 company customerships, amounting to 42 000 people. For each customer, HealthCo forms a team of professionals, including a doctor, nurse, psychologist and physiotherapist. When needed, it offers also specialist services of orthopedics, psychiatrics, dermatology and physical therapy.

HealthCo's mission is to be a customer-oriented, skilled and strong provider of preventative occupational healthcare, nursing, mental and physical well-being and working life services to the inhabitants of its sphere of operations. It strives for a healthy society from multiple points of view – as a Finnish company, HealthCo pays all its taxes to Finland and contributes to the well-being and vigor of the community by operating sustainably.

HealthCo's vision is to be the most desired provider of occupational healthcare services in its operating region and be the number one producer of innovations that support the ability to work and the productivity of the customer companies. HealthCo's values are based on partnership, fairness, courage and strength. Amongst other things, partnership means that HealthCo identifies its customers' needs and finds solutions to them and provides value-added by growing and developing its own operations.

HealthCo is wholly owned by the city of its place of business and the local hospital district's joint municipal board. The Local Government Act sets an incorporation requirement for municipal service providers that operate in a competitive market (Kuntalaki 410/2015). The idea behind the requirement is to promote competition, secure market-based pricing and improve the transparency of the cost structure, efficiency as well as the comparability of profits (PwC 2019). In addition, it eliminates unsubstantiated tax-related benefits and bankruptcy protection of the public sector (Kuopion Yrittäjät 2016).

As a publicly owned operator enters the competitive market under the same set of rules as private companies, various variables change. One of the key differences in private and public businesses is customer relationships – the acquisition of new customers and the

management of the existing ones. In practice, as a public service provider in a non-competitive public sphere, customers are a given. But in a competitive market, the company must make similar efforts to create and foster customer relationships as private companies do. Meeting the needs and wishes as well as providing value for the customers is, or should be, a cornerstone of many businesses in competitive markets, and these businesses have the appropriate mindset, tools and strategies to implement a customer-centric view. As a public company, these same resources and capabilities need to be absorbed and implemented to match the competition's service and product offering. It is a completely different organizational culture and way of doing business than just to merely satisfy the basic needs on a break-even basis.

4. EMPIRICAL FINDINGS

4.1. Initial conditions

Before I entered the company, HealthCo had been growing extensively during the past few years, but the structure nor the technology had kept up with the increasing customer base and dozens of new professionals employed at the same pace. Similar kind of growth was expected to continue also in the future. During the time of the study, larger strategic and organizational changes were taking place in HealthCo. New branches were planned to be established, and existing ones were moved to brand new facilities. New services were introduced, and all of them productized. The strategy was still under revision but there was a clear direction – a lighthouse project of introducing customer orientation throughout the organization and increasing customer value had been commenced. Top management buy-in and support was strong.

> *"It will take a long time of persevering work to bring a customer-oriented view to traditional healthcare. Customer is not the same as patient."*[2]

> *"Customer value is firmly connected to the precondition of our existence – it defines the essence of our business."*

Multiple actors and processes were onboard on this strategic change. The chief customer officer (CCO) was going through an executive MBA program in sales and customer relationships management; sales representatives were employed; and an in-house training academy for nurses, taking a new position in the organization, was launched. This academy was directed towards improving the service of larger customer accounts, which were identified as strategically significant and the relationships with them a source of competitive advantage. Instead of handling a single patient that came to the medical practice,

[2] All discussions, interviews and other correspondence were in Finnish. All citations are translated from Finnish to English by the author.

these nurses would take on a more challenging role of an organizational nurse. They would be in contact with the contact person of the customer company throughout the set contact plan, manage and review reports, supervise the budget and coordinate the sub-contractor network. This was a key position between the customer company and the customer relationship management team as well as creating strategic customer relationships.

In addition, the rest of occupational nurses treating patients were supposed to take a more customer-oriented attitude and think of how they could actively increase customer gains and reduce their pains. The quality of the medical practice was excellent and the trust in colleagues doing their work right was strong – there was even a notion of a "HealthCo spirit".

> "*I always try to find the best way of serving the customer, whether a person or a company. That wouldn't change even if our strategy was just to leap over the lowest hurdle…"*

The challenge laid, however, in how to have a shared understanding of the customer not being the same as a patient, as noted above by one of the respondents. The whole personnel of the company would go through training on customer orientation during the spring and fall 2019.

The upper and middle management seemed to have converging ideas of what are customer-oriented practices in their own everyday work – they spoke the same language. They would have open conversations with the customers and spend time understanding the customer's operating environment, related requirements and possible unconscious needs:

> "*Customer orientation is manifested in co-operation with the customer throughout the customer lifecycle. From selling occupational healthcare services, to making proposals keeping the customer needs first and possibly understanding what the customer needs before they realize it. I stay in active contact with them and try to anticipate things."*

> "*In my own everyday work, I constantly bring forward HealthCo's strategy and [customer-oriented] modes of action. Open conversation with the customers always leads to the best result, both in terms of customer satisfaction and retention.*"

However, it had not gone unnoticed that some unstructured processes and management of knowledge had become significant issues. This would pose problems in implementing and succeeding in the new strategic aspirations.

> "*Our professionals, the medical staff, are constantly in contact with customers, and this is where the customers have the possibility to talk about their needs. The room for improvement is especially before and after these core processes – how are the customers reached already before doing business with HealthCo and how the relationship is maintained after doing business*."

Much of the literature on CRM highlight management support as a critical success factor in any CRM initiatives. Furthermore, the role of middle management as the mediator between top management and employees has been considered substantial (e.g. Zahay & Peltier 2008). I argue that because of the strong top management support in trying to change the strategic direction of the company, the constraints of the legacy systems on practices were on one hand understood and on the other hand taken seriously. Material agency was constraining the practices so that they could not be aligned with the new strategy. This was to be corrected by developing the technology and subsequently, the routines.

> *"My experience is that these days customer perspective must be taken into account also in all development."*

Figure 5 below summarizes the findings in a data display as suggested by Gioia, Corley and Hamilton (2013). The results will be further elaborated in the upcoming sections, starting with the constraints stemming from the initial situation, followed by the affordances associated with the practices internal to the organization and lastly, the affordances concerning the customer-facing operations.

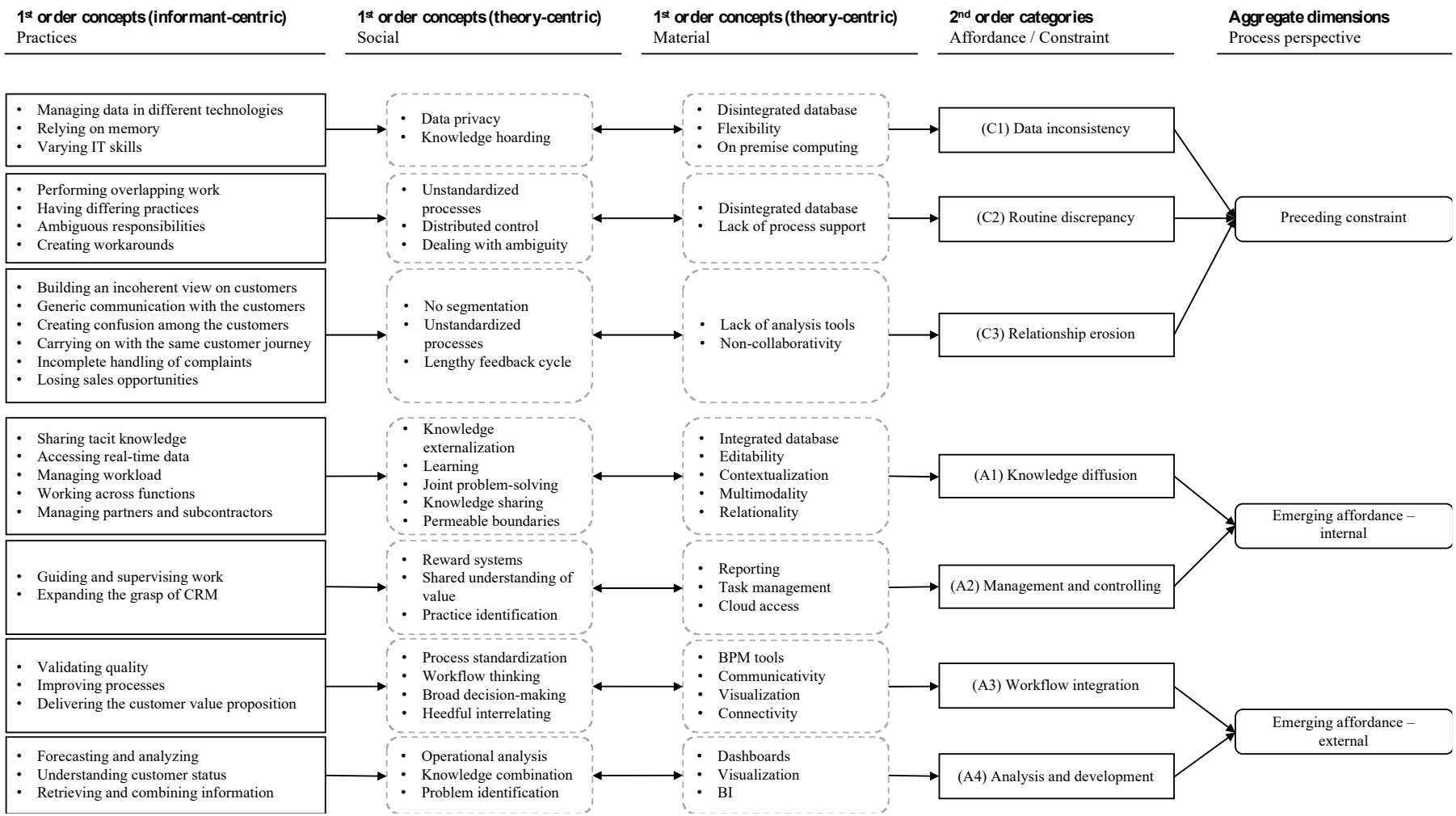

Figure 4. Data display on the findings based on the Gioia methodology.

4.2. Preceding constraints

Data inconsistency (C1)

Table 10. Social and material features of C1.

Social	Material
Data privacy	Disintegrated database
Knowledge hoarding	Flexibility
	On-premise computing

HealthCo did not have a systematic way of handling B2B customer information other than related to the medical situation of the customer company employees. Some of the information was gathered in the health information system but it was not appropriate for handling data for the purposes HealthCo was aiming at – creating a relationship with an organization. In addition, because the majority of the data in the system was privileged, not everybody had access to it. The knowledge that could not be updated to the HIS was piling up in multiple Excel files, calendar entries, e-mails, personal notes and archived papers. As one of the members of the customer relationship management team noted:

> *"Information is fragmented and there is a lot of tacit knowledge. Various files are supposed to be updated and a lot of this updating is contingent on the memory of people. I think that we might also have some files that we don't even know about."*

Microsoft Excel is a useful tool for various objectives due to its flexibility. However, as a database for information that should be used for reporting and analyzing purposes, the flexibility was more of a hindrance than an advantage. Even though the customer relationship management team had somewhat understood how information should be recorded and updated in the Excel files, meaning consistency and the proper input of information in rows and columns, many of the nurses used Excel more creatively. Even though there had been some attempts to formalize the Excel files each nurse was using for their

customer information, the lack of Excel skills and understanding of data management allowed them to work their way around any formalizations.

For example, if there was a cell committed to the name of the customer, there might have also been markings of a cancelled contract or information on the last contact they had had with the customer. This would make it impossible to produce any meaningful reports or information without massive manual work done to the input data.

Furthermore, having the information contingent on people's memories would produce a multiplicity of unwanted outcomes as this information might not get recorded anywhere at all.

> *"The major problem for me to be more customer-oriented is the lack of information. The customer might take contact about an issue and solving it can take a lot of working time as there is no knowledge."*

> *"I think we also might have some [data] that nobody is even aware of."*

Personnel turnover would amplify this problem. As the data was not recorded anywhere and the person holding the information resigned or otherwise quit working, there was no possibility to restore the information.

> "*There is this thinking that everybody knows [everything], but that's not correct. The people have changed so many times that certainly not everybody knows. And for real, it is truly related to occupational safety, too. Not everything should have to be known but all information should be available to be found. It's not relevant at all to try to memorize everything, it is just overriding your capacity."*

Without a golden record, that is, a single data point that includes all necessary information about an object and is completely accurate, there was no visibility into future development. There was a clear need to track accepted and declined proposals and contracts in

order to forecast resourcing and recruiting needs as well as steer the company based on anticipated financials.

Both material and human agency are identifiable with regard to the first constraint of flawed and missing data. First, the health information system set constraints due to data privacy. As it included medical information on individuals, access could not be granted to everyone. Further, it was not *perceived* as a suitable place for handling information related to potential future sales or other information that was not strictly related to the handling of the occupational health status of the organization and its employees. Second, even though MS Excel does afford a myriad of uses, its flexibility became a constraint. It allowed increased customization of the data and its formatting, inputting inaccurate data and risked losing data. This meant that everybody with varying IT skills could use it the way they saw fit. Third, without a suitable IT system to share data, information and knowledge, the personnel engaged in unintentional knowledge hoarding (Kumar Das 2018) or managing data in their personal files.

Routine discrepancy (C2)

Table 11. Social and material features of C2.

Social	**Material**
Unstandardized processes	Disintegrated database
Distributed control	Lack of process support
Dealing with ambiguity	

Even though there had been attempts to clarify certain practices and responsibilities and establish proper operation modes, scattered data posed multiple problems in various areas of work. It created confusion about the correct ways of working and several noted that they have trouble coping with unclear responsibilities and instructions. A significant issue that came across the interviews and other correspondence was the inability to efficiently

work together both within and across teams. Some of the nurses worked in more than one of the locations and the work of the customer relationship team was increasingly mobile. For the CRM team, remote working was encouraged, too. As there was not necessarily a possibility consult a colleague, access to quality data and process visualization would have been required in real time. This resulted in ambiguous responsibilities, performing overlapping work, having differing practices and creating workarounds.

> ”*Sometimes, I have to come up with my own rules, mostly related to doing things in some specific order.”*

The lack of a foolproof way to ensure if an issue was taken care of resulted in the waste of time and efficiency. The CRM team would update each other on the status of tasks by creating e-mail strings spanning a large number of messages but this could not always be done quickly enough, and the messages could easily be lost in the bursting mailboxes.

> “*It takes so much time when there’s uncertainty about if the issue is being handled, by whom it’s being handled and if somebody’s already had an initial call about it. It does not come across from any message.”*

The lack of a structured way of working and data would amplify the vagueness of responsibilities, especially during the first contacts with the customer and later in the possible customer takeover process. As one of the respondents noted:

> *”We are four in the team who get the requests for proposals. Yes, approximately. Then we do a… mental division of who will take care of it.”*

The requests for proposals as well as other contacts came through different media and oftentimes the customers would call another person and email another. If the issue was urgent, the employees would start working on it immediately, just to later notice that a colleague had also started to solve it. The entanglement of the technology not affording effortless capabilities for knowledge sharing and the practice of not recording a definite set of information about the customer caused the lack of understanding of the previous

interaction with the customer. This resulted in inefficiencies in handling both internal and external affairs. Filling and checking an Excel file for this type of data was perceived counterintuitive.

> *"And a lot of that overlapping work, which you probably saw we're doing. We update multiple Excel files – I fill this Excel and the other person fills the other Excel – and all of them partly include the same information."*

> *"I got an email that this request from a customer had come in and a colleague of mine had started to work on it. I emailed our team back quickly that I had already taken care of it. Then I got a response that I should've informed the team beforehand. How should I have known that I had to inform everybody of it when the customer personally called me about it?"*

Overlapping work was mostly the problem inside the CRM team. On the other end, the nurses had fairly different practices when it came to contacting and managing customer accounts, which would create problems for the CRM team dealing with complaints and other feedback on processes. The differing practices stemmed from having different views of the meaning of customer orientation.

> *"The employees have highly divergent practices and thoughts about customer orientation."*

> *"The problem is trying to steer through different points of view."*

These differing practices would come up, for example, during longer customer relationships where convenient workarounds had become established. There could be a verbal agreement between the HealthCo team and the customer that the customer's employees are allowed a few days of sick leave by just notifying the employer. However, these verbal agreements should have been updated in the real contract, which were handled in Excel and the HIS. Not having the information about the changes in the contract written down would later cause problems in handling the customer relationship in the CRM team.

> *"But now many such practices have been established that are not written in the contract at all. They are just recorded into the HIS's additional information box. Then the box starts to live its own life even though it might include such information that should have been updated to the contract."*

In addition, co-operation with the billing department was troublesome. Many of the complaints regarded billing as the invoices were perceived difficult to interpret by the employers – the reasons, persons and other information could not be individualized due to data privacy. These complaints went straight to the billing team and the CRM team was cut out of the loop.

> *"It never even came to my mind that such thing could happen. I had no idea that they [the billing department] call the customers. Our billing is a completely separate island."*

The lack of structured processes and vague responsibilities (human agency) as well as collaborative and integrative features (material agency) turned into a constraint of *routine discrepancy.*

Relationship erosion (C3)

Table 12. Social and material features of C3.

Social	**Material**
Limited segmentation	Lack of analysis tools
Unstandardized processes	Non-collaborativity
Lengthy feedback cycle	

The loss of data integrity and routine discrepancies led to a more severe constraint, *revenue and relationship erosion.* Without proper data and information nor established processes, some of the opportunities for increased revenue and enhanced relationships were

passed. For example, regarding new customer acquisition, some members of the CRM team noted having a bad consciousness about forgetting to follow up proposals sent to new leads. Not following up the proposals meant the loss of revenue. Similar to the double work inside HealthCo's teams, the lack of structured processes would produce confusion among the customers. For example, they would receive more than one proposal as two or more employees at HealthCo started processing the request for it. Even though the proposals had the same content, this was perplexing to the customers. On the other hand, the track of some tasks could be lost, or nobody was managing them.

> *"Then I just emailed [another respondent] that I wish we had some sort of an IT system for this; we get so confused about each other and the customers get such a crooked picture of us."*

In addition, a part of the nurses were not sales oriented and/or not willing to improve the skill. Pushing sales does not traditionally belong to the sphere of occupational healthcare, especially in the public sector. Also, a couple of the nurses noted that they do not possess enough information about HealthCo's occupational healthcare services and are thus unable to offer them to customers. However, this comment would indicate the unwillingness to upsell and cross sell, as the nurses were given instructions to familiarize themselves with the newly created product cards. Familiarizing oneself with the products was given a deadline and the progress was monitored. The product cards included the name of the service, a description of the service, selling arguments, ideas for marketing and the responsible person for creating the product card.

Attesting to the lack of sales and customer orientation was also not contacting the customer proactively. The paucity of contacts was deemed the most likely reason for dissatisfaction since it had been highlighted by the customers in several customer satisfaction surveys. The customers wished for more than the basic statutory contacting from HealthCo, for example, proactive advisory services and suggestions for improvement. The statutory contacts, including e.g. the workplace survey, an initial assessment of the health and safety aspects of the workplace, were described in a yearly clock created in Excel. Superiors as well as the CRM team tried to monitor the number and frequency of

the contacts by the means of these Excel files, but it had proven to be inefficient due to the characteristics of the program described under the previous constraints.

> *"For example, contacting the customer. If we could somehow measure how well the customers are contacted [by the nurses]; then I could tell where there is no contacting at all."*

However, inadequate contacting was not only due to unwillingness or lack of customer orientation but also sparse time. Many of the nurses treated dozens of small clients besides more important larger clients, which contributed to rush and even working overtime. The circumstances described in this section did not help in managing the workload. Time-related problems were also experienced in the CRM team, which manifested in not spending as much time at the customers as hoped for.

Needless to say, keeping existing customers satisfied was the main objective also at HealthCo. Like noted in the literature review, this approach is more profitable than attracting new customers. Correspondingly to the scarcity of contacting and the resulting dissatisfaction, HealthCo had identified the number of complaints as one of the markers anticipating customer defection. The CRM team had recently come up with a system to record the complaints in Excel. However, Excel had shortages equally in this regard. The most serious problem was not giving any notifications if the number of complaints from a single customer was alarming. What is more, it allowed bypassing the process.

> *"Those haven't been systematically collected to a single place; I think that's the problem. And it hasn't been followed, if the process proceeds how it should and whether the complaint has been categorized in a certain way. After that we could measure, which complaints we get a lot. And also measure the criticality – to which ones should we react by changing the course of action. Or if we repeatedly get similar types of complaints."*

Cross selling and upselling were aimed at by marketing and communications; for existing customers this meant mainly sending an e-mail-based newsletter. Nevertheless, as the customer record was upkept in several Excel files, it was barely up to date, lacked proper

segmentation and information of the needs, wants and preferences of a customer. Consequently, all customers ranging from a business name to a group of companies received the same newsletter with the same content. Untargeted marketing did not produce the effects that were hoped for. In terms of larger accounts, it meant the loss of non-statutory service sales. On the other hand, the employees of smaller customers would not possibly even know the contents of their occupational health care contract and HealthCo wished to improve their knowledge on the matter.

> *"We have the communications team for sending out those messages, but it is just like [another respondent] said, all companies get the same message no matter what."*

The three constraints, data inconsistency, routine discrepancies as well as revenue and relationship erosion share the same human and material roots and inflicted one another. Managing data in different technologies without a certain set of rules lead to fragmented information. Some technologies allowed too much flexibility in terms of data input and management whereas others constrained it due to data privacy reasons. The lack of established and structured ways of working across the medical staff and the overhead resulted in uncertainty about the responsibilities both inside and among the teams. Coordinating the practices of employees at the customer interface was difficult due to certain attitudes, IT skills and lack of collaborative and visualizing features. Little visibility to the overall status of the customers and poor segmenting capabilities coupled with scattered data and differing practices, customer relationships and revenues were eroded to some point.

These constraints triggered a change in the organization – the acquisition of a new IT system. According to Volkoff & Strong (2017), change is a concatenation of imbrications of human and material agency, where the IT grows constraining and necessitates changes to routines. The next section will assess the perceived affordances of the chosen CRM technology. Furthermore, there will be an inevitable change in routines and practices when adopting a new system and abandoning the legacy system, which will be examined in the last section of chapter four.

4.3. Emerging affordances – internal

During the time of the study, the CRM system was not yet in use but was prepared for implementation. Thus, the emerging affordances in this part stem from how employees perceived the technology to most likely imbricate with their work. According to Lamprou (2017: 1734), it means the *theoretical significance*, i.e. the attributed value of the CRM system during the development and initial implementation phases. This meaning is attached to the upcoming roles, information requirements and workflows once the system is set for go-live.

Lamprou (2017) notes that while the development phase engages with theoretical significance of an IT system, the project team and other participators are involved in practice. They are forecasting realizable uses and possible consequences of the use of the tool in practice (ibid). Whether the affordances truly actualize after implementation – meaning the *practical significance* (Lamprou 2017) – is left for a subsequent study.

Section 4.3. concerns the affordances that are related to the internal efficiency of the company. The following section concerns the external affordances – those that are visible to the customer. However, the borderline between these two is rather vague and to some extent, artificial as the affordances are enmeshed in a network of practices.

Knowledge diffusion (A1)

Table 13. Social and material features of A1.

Social	**Material**
Knowledge externalization	Integrated database
Learning	Editability
Joint problem-solving	Contextualization
Knowledge sharing	Multimodality
Permeable boundaries	Relationality

The first affordance is the most fundamental of all and lays the foundations for the rest of the affordances. Knowledge diffusion entails all different practices that allow sharing, storing, accumulating, accessing and transforming tacit and explicit information and the consequences of such practices. In the case of HealthCo, the consequences included working collaboratively across functions, coping with workload and managing subcontractors and partners. Moreover, this affordance is crucial not only in the grand scheme of things, such as managing and steering the company, but also for the several roles changing among the nurses. Accessing and transforming the information allows also the changes in the nature of work, tasks and roles (Leonardi & Barley 2008).

The company was inclined to dispense information and utilize it within and across the functions and teams – some of the teams were already utilizing Microsoft Teams in some projects to allow knowledge sharing and collaborative editing. The integrated database, the ability to contextualize others' knowledge with tags and categories (Zammuto et al. 2007) and creating relations between the parent company and its subsidiaries or divisions, documents, appointments and discussions were perceived as crucial characteristics in the system to actualize the affordance. In addition to managing customer relationships, this capability was integral for managing other external relations, namely subcontractors and partners. The affordance made the organizational boundaries more permeable as the outside partners would receive a more visible part in the whole network of relationships.

The following quote distills the benefit of this affordance in the work practices of specialists. While recognizing organizational goals, the individual employees were chiefly preoccupied with the eminent execution of their own work responsibilities (Volkoff & Strong 2017). In addition to facilitating one's own work, the IT was seen to also support the transition from individual to group sensemaking (Balogun, Jacobs, Jarzabkowski, Mantere & Vaara 2013). For the management, this affordance triggered another affordance of increased visibility to the operations as well as controlling and managing the company (Volkoff & Strong 2017).

> *"I can retrieve all relevant information about a company from a single source. It will facilitate the whole CRM team so that everybody will have that information that's required and in real time. This general awareness of things [is important]*

and not having to always ask from others what's the situation with each customer, but you can access the information yourself."

Besides accessing information from other teams, collaboration across teams was perceived as a crucial implication of this affordance. It would also translate positively to customers and the development of services.

"It'll ease the work in other functions if the customer comes up for them at some point. They can just check what's been discussed previously."

"I've taken as my objective to take multi-professionality and co-operation with the CRM team into account in the development of medical care."

Developing into a more customer-oriented company suggested alertly listening to customers' needs and hopes and sharing the tacit knowledge forward. Tacit knowledge had previously, for example, accumulated to the contract negotiator. As the contract negotiator did not necessarily continue as a part of the medical team and there was no place to save this kind of information, it was difficult utilize the knowledge later in the construction of the relationship.

"I'm talking about that kind of information which emerges when a contract is being negotiated. It is crucial to bring that to the [medical] team. The information only the negotiator knows. [--] Tacit knowledge about the personnel, its well-being and any special characteristics of the company."

"The whole organization listens to the needs of the customers and those who are in straightforward contact with our customers work to provide high-quality preventive healthcare and when needed, also acute medical care in multi-professional teams."

The absence of a knowledge diffusing system implicated cumulating workload and time pressure. The employees assessed the information sharing capabilities accompanied with automatic reminders of upcoming tasks and notifications of missed assignments to enable more focus on the customers.

"Quite simply, managing your own workload, I don't know if this could help with it. Today when I opened the computer, I had 110 new emails. When you start going through it all, everything what you had planned for that day, is left undone."

"I would have more time for customer contacts."

Management and controlling (A2)

Table 14. Social and material features of A2.

Social	Material
Reward systems	Reporting
Practice identification	Task management
Shared understanding of strategic value	Cloud access

Affordance two emerged from the constraints one and two. It was a remedy against the eroding customer relationships, which were the result of the discrepancies in employee practices. The established processes with defined tasks and the subsequent reporting in the system would allow practice identification. During the implementation of more customer-oriented practices, affordance two was needed to monitor how those practices were rooting across the company.

> *"We will be able to lead with information – confirm and measure how we're operating."*

> *"We can ensure all specific policies or strategies [are being followed]. Whether a company has been contacted within a deadline or not and what has been done. This will be a tool, a means to lead and control."*

Further, some of the nurses had a more active role in negotiating and renegotiating proposals and contracts. They would receive a reward for a successfully negotiated contract. With the milestones and related information in place, these favorable practices could be more easily recognized.

Negotiating contracts were not the only practices that were seen necessary to recognize. There were also other favorable and not as favorable practices the management wanted to fish out. Employees that were the most customer and sales oriented would be assigned to more important customers and the management wanted to identify these employees.

More and more customers wanted to meet the preliminary medical team before committing to a certain service provider and HealthCo needed to have the nurses and other staff that would rise to the expectations of the customers.

> *"This issue [customer orientation] must be constantly brought up, organize training and try to share best practices. We need right people in the right place."*

The system was also seen to have a somewhat symbolic meaning in terms of cultivating customer orientation and the related practices. In practice, it would keep everyone accountable for their acts but also by visualizing and combining the information, it would translate the idea of customer orientation into actions. Like Jarzabkowski and Kaplan (2015: 544) write about strategy making, the same applies to strategy implementation: it involves people with different "thought worlds" (Dougherty 1992 in Jarzabkowski & Kaplan 2015) from different functions and roles of the organization, which necessitates a medium for conquering interpretive hurdles. The system would act as the medium for this – it could be accessed from all branches of the organization and integrate functions, roles and information.

> *"[--] to integrate the understanding what belongs to the sphere of CRM in this house. Somehow this concept of CRM and taking care of customer relationships is perceived only as taking patients to consultation."*

As discussed in the literature review, affordances are relational – they are interpreted by the human agent. Thus, it would not be wrong to state that this affordance is rather a constraint as it constrains the actions of the nurses. However, as the study is conducted from the managerial point of view, it is classified as an affordance.

4.4. Emerging affordances – external

Workflow integration (A3)

Table 15. Social and material features of A3.

Social	Material
Process standardization	BPM tools
Workflow thinking	Connectivity
Heedful interrelating	Communicativity
Broad decision-making	Visualization

To actualize affordance three in the future, a specific configuration of the technology and avoiding workarounds in its use were required (Volkoff & Strong 2017). Even though the flexibility of Excel had become a constraint, packaged software that is configured in standard templates was perceived compelling, too (Stein et al. 2014). Thus, the chosen IT was a cloud-based solution that could be configured to HealthCo's requirements to an extent and supported the processes that needed to be standardized. Adherence to some software-based best practices were seen necessary.

Routine standardization meant validating quality for all customers and subsequently, delivering the value proposition. The value proposition was primarily related to response times in receiving a proposal and a contract as well as the rapidity of the takeover process. Process modelling and task manager were key qualities of the IT system for the actualization of the affordance. In addition to workflow thinking – applying one's expertise to actual workflows rather than functions (Zammuto et al. 2007), it allowed heedful interrelating, a concept similar to the former. Heedful interrelating means efficient coordinating within a team so that team members acknowledge how their performance promote achieving the team's objectives (Dougherty & Takacs 2004). The system would also play a part as a boundary object mediating between different parts of the organization and allowing broader problem-solving and decision-making (Jarzabkowski & Kaplan 2015).

> *"In principle, I think that each customer ought to be handled with the same quality, with the same operational model. So that we have a yearly clock done for each company or operate according to a specific process."*

> *"When the contract is done and I pass it over to the team, the takeover process would be something that we would need in the system. We would need those points, when the customer has been contacted, so that we could be sure that the takeover has occurred. At the moment, we have no documentation."*

In addition to process and routine standardization, the affordance would capacitate the improvement of processes by making possible bottlenecks more tangible. By visualizing workflows and systematically gathering and managing complaints, problems could be identified more rapidly and necessary changes to processes and practices carried out.

> *"I think everything will be more seamless and we can spot any possible problematics that could be done more easily and better. Those spots that need intervention. It will clarify things."*

> *"In future we get the information about into which themes they [complaints] fall into. If they concern that our billing staff have left some box unchecked or something similar. Or is there a mistake in another process, for which we could do something."*

Similarly to workflow thinking and heedful interrelating, Volkoff & Strong (2017: 829) describe standardizing affordances as "*a relation between deep structures and [--] the group of individuals performing similar tasks who need to negotiate the outcomes"*. This denotes that as individuals have their personal goals that they seek to actualize with the system, they are also members of larger groups realizing the objectives of larger entities, like organizational goals.

Analysis and development (A4)

Table 16. Social and material features of A4.

Social	**Material**
Operational analysis	Dashboards
Knowledge combination	Visualization
Problem identification	Statistics
Proactivity	Reports

One of the most crucial affordances for the management was analysis and development. By being able to understand past trends and forecast the future, HealthCo would be able to recruit new human capital and know-how into the company according to the evolving needs from the customer base. Furthermore, this information was key to manage and steer the whole company.

> *"We can obtain statistics about our current situation and we'll be able to forecast where we're going in terms of customers and understand what kind of customer population we have and which kind of know-how we need."*

In addition to the upper level management of the business, the social and material features of affordance four would allow the management of an individual relationship. This meant an intimate understanding of a single customer and the capacity to change the direction of a relationship when it was not mutually satisfying. This far, there had been troubles to change the course of the relationship early enough, which could lead to customer defection.

> *"It's crucial to be able to manage the relationship. Seeing the signs – now there's happening too much with some customer, and it can lead to cancellation of the contract."*

> *"When we recognize it, we can start managing the customer journey in a different way."*

By being able to retrieve and combine data, information and knowledge in the system, a proactive approach to customers would be enabled. It had become clear from the customer satisfaction surveys that many of the customers hoped for proactive development proposals on how to improve working conditions and support the working capacity of the personnel and wished that occupational healthcare would operate as a strategic partner alongside the customer companies' managements. The ability to do this would indicate strong partnership and customer lock-in as well as how the business of HealthCo would evolve in the future.

> *"Similarly, being proactive. Are we passive and wait that customers always tell us what they want? [--] The ability to set ourselves into the shoes of the*

> *customer; we need to understand what the business is they're in and in which environment they're operating."*
>
> *"We [will] know who our customers are, how much we have customers, how the number of customers is developing and how our business is evolving."*

As the system is only facing implementation after the study took place, the way the affordances will actualize will be dependent on the new, emerging practices. The system will necessitate a myriad of changes in practices, which are not in many cases acknowledges as strategic but "*still have an important role vis-á-vis strategy-making*" (Vaara & Whittington 2012: 311). Vaara and Whittington (2012) note further that the agency in strategy-making and the work associated in the implementation of strategies is more intricate, unpredictable and dispersed than previously thought. The theory of sociomateriality corroborates this view as it demonstrates how closely also non-human actors take part as practitioners of strategy.

On the following page, the dynamics of the evolvement of the affordances and constraints are depicted from a process perspective.

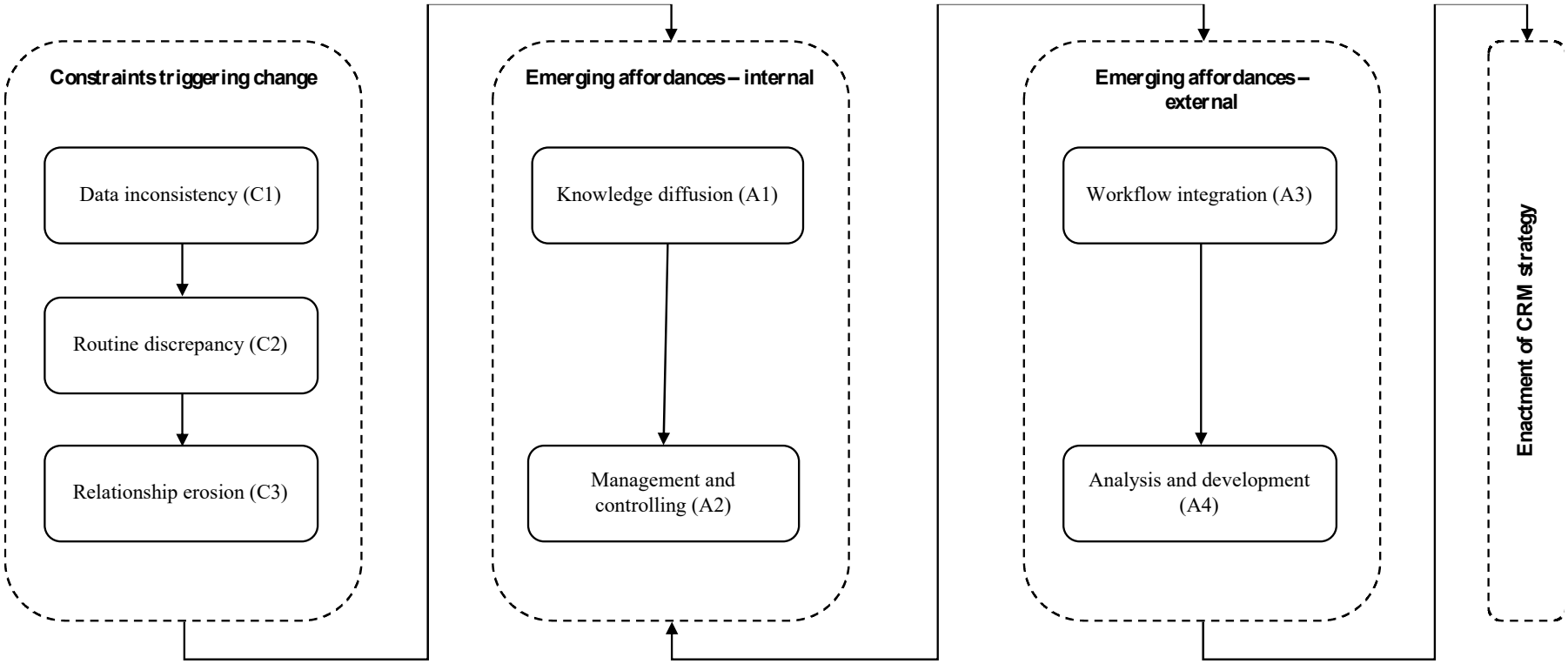

Figure 5. Dynamic model of the perceived constraints and affordances.

5. DISCUSSION AND CONCLUSIONS

In the fast consolidating healthcare market in Finland dominated by a handful of big players, customer orientation and customer relationships have emerged as a critical differentiator. In order to realize a customer-oriented strategy, the basic building block – a CRM system – should be in place. As digitalization is sweeping through workplaces, IS research has been increasingly interested in the social and material nature of information technology (Cecez-Kecmanovic et al. 2014). Digitalization connotes organizational change and changes in the strategic direction of a company, in which information is a key factor. However, IS research has been criticized of disregarding the role of information technologies, viewing them as mere technologies. (Leonardi 2007.)

5.1. Theoretical implications

This study carries some incremental (Corley & Gioia 2011) theoretical implications. First, it summarizes a body of literature on sociomaterial research, plotting it to a matrix of papers based on the approach (weak/strong) and the type of research (empirical/conceptual). The concept of sociomateriality, that is the constitutive entanglement of the human and the material, strives to better explain the dynamic, emergent and situated nature of materiality in organizational life (Orlikowski 2007). In addition to IS researchers, sociomateriality has been of interest to practice theorists and further, those involved in the research of strategy-as-practice. As Cecez-Kecmanovic et al. (2014) note, practices are fundamental to social phenomena in both information systems and organization research.

Second, it fills a gap in the research related to the sociomaterial nature of CRM and information systems in general. The study has a unique context of occupational healthcare; an industry, which currently undergoes several changes in Finland. Further, even though the body of papers on sociomateriality has increased quite significantly during the recent years, it is still a line of inquiry without consensus. This paper adds to the critical realist approach of sociomaterial research, but still seeks to avoid placing emphasis on the human or the material as well as making differentiations between idealism and materialism

or subjectivism and objectivism and objectivism (Law 2004; Leonardi & Barley 2010 in Cecez-Kecmanovic et al. 2014: 813).

Third, the study contributes to the understanding of the entangled nature of strategic initiatives (Lamprou 2007) and strategy-as-practice. Strategy-as-practice has especially focused on strategy making, but as Leonardi (2015) argues, the distinction is rather vague between strategy making and strategy implementation. Thus, it is crucial to understand how the strategy becomes materialized across the company. Balogun et al. (2014: 185) argue that materiality is central in strategy work – *"tools, locations, and spatial arrangements configure strategic interactions between bodies and things".* Visualization, analytic tools and software are established in strategy work (Jarzabkowski & Pinch 2013), which is usually understood as strategy making. But as Leonardi (2015) writes, the line between strategy formulation and implementation is far from distinct. Instead, it is rather vague as the strategy materializes only if employees are able to implement the strategy through tools and technologies. If the strategy cannot be executed, it is as good as none. Leonardi (2015: S20) concludes: "*To materialize a strategy is to focus on the materiality through which the strategy is enacted*."

In order to enact a strategy, the entanglement of the human and the material comes together as affordances. An affordance is an enabler for practice – an invitation to act. Volkoff and Strong (2017: 821) describe affordances as behavior-invoking potential to attain an instant, tangible result from the connection between an object and an actor with an objective. Here, the realization of a strategy is the goal for which materiality is fundamental. Thus, it can be concluded that "*materiality is inherently consequential: it endures in ways that continually remind us and accumulates in ways that cannot be ignored"* (Dameron, Lê & Lebaron 2015: S7).

5.2. Key findings and managerial implications

The key findings should answer the research questions, which were stated as follows:

1) What are the affordances for sociomaterial strategizing with customer relationship management technology?

2) How can the constraints of a technology simultaneously account for choosing another technology?

The found affordances to the first research question are knowledge diffusion, management and controlling, workflow integration as well as analysis and development. The former two arise from the knowledge integrating features of the CRM technology and its reporting and analyzing tools, which facilitate leadership. The latter affordances result predominantly from standardizing processes and routines as well as the ability to visualize their possible bottlenecks.

The constraints prompting organizational, technology and routine change in this case context were data inconsistency, routine discrepancy and relationship erosion. The most prominent material feature was the flexibility of Excel, leading to incomplete and defective information and inefficient processes, which ultimately could be seen in the customer interface.

In addition to the answers to the research questions, a couple of more findings are worth noticing as they corroborate the body of literature already existing on sociomateriality. The following observations can be concluded: 1) constraints are relational; they emerge in the situated activities of actors with objects and could be perceived as affordances in a different situation; 2) constraints trigger change; they evoke changes both in routines and technologies; 3) affordances are critical to the materialization of strategy through new practices; 4) even though affordances emerge as interlinked and simultaneous, this case study identified the affordances knowledge diffusion as well as management and controlling to predate the affordances of workflow integration and analysis and development. The former are related to the internal organization of the company, whereas the latter become more visible for the customers. The key findings reflect strategizing on the durable, macro-level constitutions of organizing, which is typical for the critical realist or weak sociomaterialist approach (Jones 2014).

The managerial implications of this study include accounting for how the changes in technology causes changes in individual routines, accumulating to more comprehensive organizational change. In IT systems development, mapping, considering and understanding current constraints can be a starting point for significant organizational change and a powerful propeller for implementing strategy across the organization. The implementation process can be better planned and staggered as some affordances must be in place before more complex affordances can be actualized (Volkoff & Strong 2017).

Further, IT affords standardization of both the healthcare professional practices (Petrakaki, Klecun & Cornford 2016) as well as the customer relationship management practices, broadens decision-making and widens nurses' roles in the organization, as well as creates more permeable functional and organizational boundaries. It creates visibility and increases the possibilities to better lead and manage.

5.3. Suggestions for future research and limitations

As previously mentioned, this study focuses on the theoretical significance of an IT system. Thus, interesting for future research would be to investigate how the theoretical significance materializes, whether the anticipated affordances take place, how practices change and how constraints develop into being in the long term. Ultimately, how will the CRM strategy materialize through the affordances? This would necessitate gathering longitudinal data on the imbrications of human and material agency over a longer period of time. Observing the use of the system in practice in different organizational levels could further increase understanding of the technology's materiality.

Further, this study focuses on an "entry level" system, which is rather straightforward and the reasons for implementing it are most importantly practical. Similarly, it would be intriguing to follow how the situation would change along the implementation of a more complicated system. The circumstances in HealthCo will most likely develop more complex, and ultimately a more comprehensive system will be needed. However, even though the technology itself is quite standard, it has consequences of its own on employee roles,

in addition to the extensive changes throughout the organization its implementation is enmeshed in. The mental state of the employees can affect how successfully the system will be adopted in the daily practices. Introducing emotions to sociomaterial study could dispel the myth of a rational actor that is now intrinsic to sociomateriality. (Stein et al. 2014.)

Future theorizing could still clarify and establish the practical usefulness of sociomaterial research and elaborate the benefits of using this lens in studying technologies in organizations. The lack of generalizable, insightful theoretical frameworks to aid understanding of these phenomena and the seemingly difficult task to create such lead to the lack of sufficient implications for managers. This is crucial for sociomaterial theorizing to matter in organizational life and in practice. Especially agential realism and its notions of performativity and agential cuts can be rather burdensome to grasp in the fast-moving corporate life focused on changes on the bottom line.

The main limitation of the study is that the findings are hardly generalizable. Not only due to the case study research setting but also as the sociomaterial lens is so thoroughly focused on the intricacies of situated practice. However, the findings do echo similarities found in other sociomaterial studies, which may implicate some universal ramifications of information technologies. There have been some attempts to produce research designs that allow more generalizable findings (e.g. Gaskin et al. 2014), but these still call for tailoring. The question thus remains – to which extent can these designs be tailored until they no longer yield generalizable results?

Further, the study only covers the theoretical and not the practical significance of the system as it was not yet implemented. This traces back to the competence of the author as a researcher and her ability to plan a sustainable research design. Further, a challenging theory and novelty to qualitative research methods can impede the proper interpretation of data and results.

LIST OF REFERENCES

Archer, Margaret, Claire Decoteau, Philip Gorski, Daniel Little, Doug Porpora, Timothy Rutzou, Christian Smith, George Steinmetz & Frédéric Vandenberghe (2016). *What is critical realism?* Perspectives: A Newsletter of the ASA Theory Section, Fall 2017. Available from Internet: <URL: http://www.asatheory.org/current-newsletter-online/what-is-critical-realism>.

Baht, Suhail & Mushtaq Darzi (2016). Customer relationship management: An approach to competitive advantage in the banking sector by exploring the mediational role of loyalty. *International Journal of Bank Marketing* [online]. 34:3 [cited 2019-3-6], 388-410. Doi: 10.1108/IJBM-11-2014-0160.

Balogun, Julia, Claus Jacobs, Paula Jarzabkowski, Saku Mantere & Eero Vaara (2013). Placing Strategy Discourse in Context: Sociomateriality, Sensemaking and Power. *Journal of Management Studies* [online]. 51:2 [cited 2019-8-1], 175-201. Doi: 10.1111/joms.12059.

Barad, Karen (2003). Posthumanist Performativity: Toward an Understanding of How Matter Comes to Matter. *Signs: Journal of Women in Culture and Society.* 28:3, 801–831.

Barley, Stephen (1986). Technology as an occasion for structuring: evidence from observations of CT scanners and the social order of radiology departments. *Administrative Science Quarterly.* 31, 78–108.

Barrett, Michael, Eivor Oborn & Wanda Orlikowski (2016). Creating Value in Online Communities: The Sociomaterial Configuring of Strategy, Platform, and Stakeholder Engagement. *Information Systems Research* [online]. 27:4 [cited 2019-5-14], 704-723. Doi: 10.1287/isre.2016.0648.

Bechky, Beth A. (2003). Sharing meaning across occupational communities: The transformation of understanding on a production floor. *Organization Science* [online]. 14:3 [cited 2019-6-5], 312–330. Doi: 10.1287/orsc.14.3.312.15162.

Bose, Ranjit (2002). Customer relationship management: key components for IT success. *Industrial Management & Data Systems* [online]. 102:2 [cited 2019-3-7], 89-97. Available from Internet: <URL: https://doi.org/10.1108/02635570210419636>.

Boudreau, Marie-Claude & Daniel Robey (2005). Enacting Integrated Information Technology: A Human Agency Perspective. *Organization Science* [online]. 16:1 [cited 2019-5-14], 3-18. Doi: 10.1287/orsc.1040.0103.

Bradshaw, David & Brash, Colin (2001). Managing customer relationships in the e-business world: How to personalize computer relationships for increased profitability. *International Journal of Retail & Distribution Management* [online]. 29:12 [cited 2019-5-14], 520–529.

Brink, H. I. L. (1993). Validity and Reliability in Qualitative Research. *Curationis* [online]. 16:2 [cited 2019-25-7], 35-37. Doi: 10.1007/s12031-011-9669-1

Buttle, Francis & Stan Maklan (2015). *Customer Relationship Management: Concepts and Technologies.* 3rd Edition. London, New York, Routledge: Taylor & Francis Group. 400 p.

Cabantous, Laure, Jean-Pascal Gond & Michael Johnson-Cramer (2010). Decision Theory as Practice: Crafting Rationality in Organizations. *Organization Studies* [online]. 31:11 [cited 2019-5-4], 1531-1566. Doi: 10.1177/0170840610380804.

Callon, Michel, John Law & Arie Rip (1986). *Mapping the Dynamics of Science and Technology: Sociology of Science in the Real World.* Basingstoke: Macmillan.

Cecez-Kecmanovic, Dubravka, Robert D. Galliers, Ola Henfridsson, Sue Newell & Richard Vidgen (2014). The Sociomateriality of Information Systems: Current Status, Future Directions. *MIS Quarterly* [online]. 38:3 [cited 2019-5-14], 809-830. Doi: 10.25300/MISQ/2014/38:3.3.

Chapman, Christopher S., Wai Fong Chua & Habib Mahama (2015). Actor-Network Theory and Strategy as Practice. In: *Cambridge Handbook of Strategy as Practice,* 265-279. Ed. Damon Golsorkhi, Linda Rouleau, David Seidl & Eero Vaara. Cambridge: Cambridge University Press.

Chen, Injazz J. & Karen Popovich (2003). Understanding Customer Relationship Management (CRM): People, process and technology. *Business Process Management Journal* [online]. 9:5 [cited 2019-5-4], 672-688. Available from Internet: <URL: https://doi.org/10.1108/14637150310496758>.

Corley, Kevin G. & Dennis A. Gioia (2011). Building Theory about Theory Building: What Constitutes a Theoretical Contribution? *Academy of Management Review* [online]. 36:1 [cited 2019-8-17], 12-32. Available from Internet: <URL: https://doi.org/10.5465/amr.2009.0486>.

Cox, Jeremy (2018). *2019 Trends to Watch: Customer Engagement Platforms* [online]. London: Ovum Informa. Available from Internet: <URL: https://www.oracle.com/assets/ovum-trends-customer-engagement-5191349.pdf>.

Dameron, Stéphanie, Jane K. Lê & Curtis LeBaron (2015). Materializing Strategy and Strategizing Material: Why Matter Matters. *British Journal of Management* [online]. 26:S1 [cited 2019-8-3], S1-S12. Doi: 10.1111/1467-8551.12084.

Doolin, Bill & Laurie McLeod (2012). Sociomateriality and Boundary Objects in Information Systems Development. *European Journal of Information Systems* [online]. 21 [cited 2019-4-26], 570-586. Doi: 10.1057/ejis.2012.20.

Dougherty Deborah J. (1992). Interpretive Barriers to Successful Product Innovation in Large Firms. *Organization Science* [online]. 3:2 [cited 2019-7-25], 179–202. Doi: 10.1287/orsc.3.2.179.

Dougherty, Deborah J. & C. Helen Takacs (2004). Team play: heedful interrelating as the boundary for innovation. *Long Range Planning* [online]. 37:6 [cited 2019-8-5], 569–590. Doi: 10.1016/j.lrp.2004.09.003.

Dulipovici, Alina & Dragos Vieru (2015). Exploring Collaboration Technology Use: How Users' Perceptions Twist and Amend Reality. *Journal of Knowledge Management* [online]. 19:4 [cited 2019-5-14], 661-681. Doi: 10.1108/JKM-11-2014-0468.

Einola, Suvi & Marko Kohtamäki (2018). Sosiomateriaalisten käytäntöjen rooli kuntaorganisaation strategiatyössä. *Hallinnon tutkimus* [online]. 35:3 [cited 2019-5-14], 189-203. Doi: http://dx.doi.org/10.1037/1196-1961.51.4.336.

Einola, Suvi (2018). *The Interplay between the Sociomaterial, Cognitive and Paradox Views in the Field of Strategy as Practice: "How Can We Know What We Think Until We See What We Do".* Vaasa: Vaasan yliopisto. ISBN 978-952-476-812-2.

Elder-Vass, Dave (2016). *Realism and Practice Theory.* Materially Social. Available from the Internet: <URL: http://materiallysocial.blogspot.com/2016/01/realism-and-practice-theory.html>.

Elmuti, Dean, Heather Jia & Dane Gray (2009). Customer Relationship Management Strategic Application and Organizational Effectiveness: An Empirical Investigation. *Journal of Strategic Marketing* [online]. 17:1 [cited 2019-6-4], 75-96. Doi: 10.1080/09652540802619301.

Erden, Zeynep, Andreas Schneider & Georg von Krogh. The Multifaceted Nature of Social Practices: A Review of the Perspectives on Practice-Based Theory Building

about Organizations. *European Management Journal* [online]. 32 [cited 2019-5-14], 712-722. Doi: 10.1016/j.emj.2014.01.005.

Faulkner, Philip & Jochen Runde (2012). On Sociomateriality. In: *Materiality and Organizing: Social Interaction in a Technological World.* Ed. P. M. Leonardi, B. A. Nardi & J. Kallinikos. Oxford: Oxford University Press.

Fayard, Anne-Laure & John Weeks (2014). Affordances for Practice. *Information and Organization* [online]. 24:2 [cited 2019-4-11], 236-249.

Feldman, Martha & Wanda Orlikowski (2011). Theorizing Practice and Practicing Theory. *Organization Science* [online]. 22:5 [cited 2019-5-14], 1240-1253. Doi: 10.1287/orsc.1100.0612.

Feldman, Martha (2015). Theory of Routine Dynamics and Connections to Strategy as Practice. In: *Cambridge Handbook of Strategy as Practice,* 317-330. Ed. Damon Golsorkhi, Linda Rouleau, David Seidl & Eero Vaara. Cambridge: Cambridge University Press.

Forrester Research (2001). Glossary [online]. Available from Internet: <URL: www.forrester.com>.

Gaskin, James, Nicholas Berente, Kalle Lyytinen & Youngjin Yoo (2014). Toward Generalizable Sociomaterial Inquiry: A Computational Approach for Zooming in and out of Sociomaterial Routines. *MIS Quarterly* [online]. 38:3 [cited 2019-4-11], 849-871. Available from Internet: <URL: https://www.academia.edu/13638577/Toward_generalizable_sociomaterial_inquiry_a_computational_approach_for_zooming_in_and_out_of_sociomaterial_routines>.

Gibson, James J. (1977). The Theory of Affordances. In: *Perceiving, Acting, and Knowing*, 67-82. Ed. Robert Shaw & John Bransford. Hillsdale: Lawrence Erlbaum.

Giddens, Anthony (1979). *Central Problems of Social Theory.* London: Macmillan.

Giddens, Anthony (1984). *The Constitution of Society.* Cambridge: Polity.

Gioia, Dennis A., Kevin G. Corley & Aimee L. Hamilton (2013). Seeking Qualitative Rigor in Inductive Research: Notes on the Gioia Methodology. *Organizational Research Methods* [online]. 16:1 [cited 2019-7-5], 15-31. Doi: 10.1177/1094428112452151.

Giraudeau, Martin (2008). The Draft of Strategy: Opening Up Plans and Their Uses. *Long Range Planning* [online]. 41:3 [cited 2019-5-4], 291-306. Available from Internet: <URL: https://doi.org/10.1016/j.lrp.2008.03.001>.

Golsorkhi, Damon, Linda Rouleau, David Seidl & Eero Vaara (2015). Introduction: What is Strategy as Practice? In: *Cambridge Handbook of Strategy as Practice,* 1-29. Ed. Damon Golsorkhi, Linda Rouleau, David Seidl & Eero Vaara. Cambridge: Cambridge University Press.

Gärtner, Christian & Christian Huber (2018). Pick Up Your Tools: Integrating Tools into a Sociomaterial Model of Mindful Organizing. *Journal of Management Inquiry* [online]. 27:3 [cited 2019-5-4], 267-283. Doi: 10.1177/1056492617703199.

Halecker, Bastian (2015). Action Case Study – A Research Strategy Based on Abduction for Relevant and Rigorous Management Research. *International Journal of Business Research* [online]. 15:3 [cited 2019-7-24], 23-32. Doi: 10.18374/ijbr-15-4.3.

Hauge, Amalie M. (2018). Situated Valuations: Affordances of Management Technologies in Organizations. *Scandinavian Journal of Management* [online]. 34:3 [cited 2019-5-4], 245-255. Doi: 10.1016/j.scaman.2018.06.001.

Hoch, Fred, Michael Kerr & Anne Griffith (2001). *Software as a Service: Strategic Backgrounder.* Washington DC: Software & Information Industry Association.

Holeman, Isaac & Michael Barrett (2017). Insights from an ICT4D Initiative in Kenya's Immunization Program: Designing for the Emergence of Sociomaterial Practices. *Journal of the Association of Information Systems* [online]. 18:12 [cited 2019-5-15], 900-930. Doi: 10.17705/1jais.00476.

Holt Nielsen, Knud (2019). *Agential Realism – New Materialism* [online]. Copenhagen: Aarhus University. Available from Internet: <URL: http://edu.au.dk/en/research/research-themes/all-themes/agential-realism-new-materialism/>.

Hultin, Lotta & Magnus Mähring (2014). Visualizing Institutional Logics in Sociomaterial Practices. *Information and Organization* [online]. 24:3 [cited 2019-4-11], 129-155. Doi: 10.1016/j.infoandorg.2014.05.002.

Hung, Shin-Yuan, Wei-His Hung, Chia-An Tsai & Shu-Chen Jiang (2009). Critical Factors of Hospital Adoption on CRM System: Organizational and Information System Perspectives. *Decision Support Systems* [online]. 48 [cited 2019-5-14], 592-603. Doi: 10.1016/j.dss.2009.11.009.

Introna, Lucas D. & Niall Hayes (2011). On Sociomaterial Imbrications: What Plagiarism Detection Systems Reveal and Why It Matters. *Information and Organization* [online]. 21 [cited 2019-5-14], 107-122. Doi: 10.1016/j.infoandorg.2011.03.001.

Jarzabkowski, Paula & Andreas P. Spee (2009). Strategy-as-Practice: A Review and Future Directions for the Field. *International Journal of Management Reviews* [online]. 11:1 [cited 2019-5-4], 69-95. Doi: 10.1111/j.1468-2370.2008.00250.x.

Jarzabkowski, Paula & Trevor Pinch (2013). Sociomateriality is 'the New Black': Accomplishing, Repurposing, Reinscripting and Repairing in Context. *M@n@gement* [online]. 16:5 [cited 2019-3-7], 579-592. Doi: 10.1016/j.cpr.2010.02.004.

Jarzabkowski, Paula, Andreas P. Spee & Michael Smets (2013). Material Artifacts: Practices for Doing Strategy with 'Stuff'. *European Management Journal* [online]. 31:1 [cited 2019-5-4], 41-54. Doi: 10.1016/j.emj.2012.09.001.

Jarzabkowski, Paula & Sarah Kaplan (2015). Strategy Tools-in-use: A Framework for Understanding "Technologies of Rationality" in Practice. *Strategic Management Journal* [online]. 36 [cited 2019-5-4], 537-558. Doi: 10.1002/smj.2270.

Javalgi, Rajshekhar R., Thomas W. Whipple, Amit K. Ghosh and Robert B. Young (2005). Market Orientation, Strategic Flexibility, and Performance: Implications for Service Providers. *Journal of Services Marketing* [online]. 19:4 [cited 2019-5-14], 212-221.

Jones, Matthew (2014). A Matter of Life and Death: Exploring Conceptualizations of Sociomateriality in the Context of Critical Care. *MIS Quarterly* [online]. 38:3 [cited 2019-5-14], 895-925. Available from Internet: <URL: https://pdfs.semanticscholar.org/e8a8/a971724fcb06972c11e683edcd90ae000e11.pdf.>

Kaplan, Sarah (2011). Strategy and PowerPoint: An Inquiry into the Epistemic Culture and Machinery of Strategy Making. *Organization Science* [online]. 22:2 [cited 2019-5-4], 320-346. Doi: 10.1287/orsc.1100.0531.

Kautz, Karlheinz & Melinda Plumb (2016). Strong Versus Weak Sociomateriality: Neither Subordinate nor Privileged – A Rejoinder to 'New Technology and the Posthuman Self: Rethinking Appropriation and Resistance'. *The DATA BASE for Advanced Information Systems* [online]. 47:4 [cited 2019-5-14], 34-40. Available from Internet: <URL: https://dl-acm-org.proxy.uwasa.fi/citation.cfm?doid=3025099.3025103>.

Keifer, Steve (2007). Software as a Service for the Supply Chain [online]. Waterloo: Opentext Business Network [cited 2019-5-8]. Available from Internet: <URL: https://www.slideshare.net/stevekeifer/software-as-a-service-saas-for-the-supply-chain>.

Kim, Molan, Jeong Eun Park, Alan J. Dubinsky & Seoil Chaiy (2012). Frequency of CRM implementation activities: a customer- centric view. *Journal of Services*

Marketing [online]. 26:2 [cited 2019-5-4], 83-93. Available from Internet: <URL: https://doi.org/10.1108/08876041211215248>.

Khodakarami, Farnoosh & Yolande E. Chan (2014). Exploring the Role of Customer Relationship Management (CRM) Systems in Customer Knowledge Creation. *Information and Management* [online]. 51:1 [cited 2019-6-4], 27-42. Doi: 10.1016/j.im.2013.09.001.

King, Stephen F. & Thomas F. Burgess (2008). Understanding Success and Failure in Customer Relationship Management. *Industrial Marketing Management* [online]. 37:4 [cited 2019-6-4], 421-431. Doi: 10.1016/j.indmarman.2007.02.005.

Knorr-Cetina, Karina (2000). Objectual practice. In: *The Practice Turn in Contemporary Theory,* 175-188. Ed. T. R. Schatzki, K. Knorr-Cetina, E. von Savigny. New York: Routledge.

Kotorov, Rado. (2003). Customer relationship management: strategic lessons and future directions. *Business Process Management Journal* [online]. 9:5 [cited 2019-3-6], 566- 571. Doi: 10.1108/14637150310496686.

Kumar Das, Anupam (2018). Knowledge withholding within an organization: The psychological resistance to knowledge sharing linking with territoriality. *RISUS – Journal on Innovation and Sustainability* [online]. 9:3 [cited 2019-8-2], 94-108. Doi: doi.org/10.24212/2179-3565.2018v9i3p94-108.

Kuntalaki 410/2015.

Kuopion Yrittäjät (2016). *Kunnan toiminta markkinoilla ja yhtiöittämisvelvoite* [online]. Available from Internet: <URL: https://www.yrittajat.fi/savon-yrittajat/kuopion-yrittajat/a/uutiset/325906-kunnan-toiminta-markkinoilla-ja-yhtioittamisvelvoite>.

Labatut, Julie, Franck Aggeri & Nathalie Girard (2012). Discipline and Change: How Technologies and Organizational Routines Interact in New Practice Creation. *Organization Studies* [online]. 33:1 [cited 2019-5-14], 39-69. Doi: 10.1177/0170840611430589.

Lamprou, Eleni (2017). Spatiality as Care: A Heideggerian Perspective on Sociomaterial Practices. *Organization Studies* [online]. 38:12 [cited 2019-6-8], 1733-1752. Doi: 10.1177/0170840617693267.

Latour, Bruno (1897). *Science in Action. How to Follow Scientists and Engineers through Society.* Cambridge: Harvard University Press.

Latour, Bruno (1992). Where Are the Missing Masses? The Sociology of a Few Mundane Artifacts. In: *Shaping Technology/Building Society: Studies in Sociotechnical Change*, 225-258. Ed: W. E. Bijker & J. Law. Cambridge: MIT Press.

Latour, Bruno (2005). *Reassembling the Social: An Introduction to Actor–Network Theory*. Oxford: Oxford University Press.

Law, John (2004). *After Method: Mess in Social Science Research*. London: Routledge.

Leonardi, Paul (2007). Activating the Informational Capabilities of Information Technology for Organizational Change. *Organization Science* [online]. 18:5 [cited 2019-5-14], 813-831. Doi: 10.1287/orsc.1070.0284.

Leonardi, Paul (2011). When Flexible Routines Meet Flexible Technologies: Affordance, Constraint, and the Imbrication of Human and Material Agencies. *MIS Quarterly* [online]. 35:1 [cited 2019-5-14], 147-168. Doi: 10.2307/23043493.

Leonardi, Paul & Stephen Barley (2008). Materiality and Change: Challenges to Building Better Theory about Technology and Organizing. *Information and Organization* [online]. 18:3, 159-176. Doi: 10.1016/j.infoandorg.2008.03.001.

Leonardi, Paul (2013). Theoretical Foundations for the Study of Sociomateriality. *Information and Organization* [online]. 23 [cited 2019-4-15], 59-76. Doi: 10.1016/j.infoandorg.2013.02.002

Leonardi, Paul (2015). Materializing Strategy: The Blurry Line Between Strategy Formulation and Strategy Implementation. *British Journal of Management* [online]. 26: Supplement S1 [cited 2019-8-3], S17-S21. Doi: 10.1111/1467-8551.12077.

Maklan, Stan, Joe Peppard & Philipp Klaus (2015). Show Me the Money: Improving Our Understanding of How Organizations Generate Return from Technology-led Marketing Change. *European Journal of Marketing*. 49:3/4 [cited 2019-6-5], 561-595. Available from Internet: <URL: https://doi.org/10.1108/EJM-08-2013-0411 Permanent>.

Markus, M. Lynne & Mark S. Silver (2008). A Foundation for the Study of IT Effects: A New Look at DeSanctis and Poole's Concepts of Structural Features and Spirit. *Journal of the Association for Information Systems* [online]. 9:10 [cited 2019-5-14]. Available from Internet: <URL: https://aisel.aisnet.org/jais/vol9/iss10/5/>.

Martelo Landroguez, Silvia, Carmen Barroso Castro & Gabriel Cepeda-Carrión (2011). Creating dynamic capabilities to increase customer value. *Management Decision* [online]. 49:7 [cited 2019-6-4], 1141-1159. Available from Internet: <URL: https:// doi.org/10.1108/00251741111151181>.

Mazmanian, Melissa, Marisa Cohn & Paul Dourish (2014). Dynamic Reconfiguration in Planetary Exploration: A Sociomaterial Ethnography. *MIS Quarterly* [online]. 38:3 [cited 2019-5-4], 831-848. Doi: 10.25300/MISQ/2014/38.3.09.

Mueller, Benjamin, Uta Renken & Gijs van den Heuvel (2016). Get Your Act Together – An Alternative Approach to Understanding the Impact of Technology on Individual and Organizational Behavior. *The DATA BASE for Advances for*

Information Systems [online]. 47:4 [cited 2019-5-14], 67-83. Doi: 10.1145/3025099.3025107.

Mutch, Alistair (2013). Sociomateriality – Taking the Wrong Turning? *Information and Organization* [online]. 23 [cited 2019-5-14], 8-40. Doi: 10.1016/j.infoandorg.2013.02.001.

Niemimaa, Marko (2018). Affordances and Agential Realism: A Relational Ontology for a Relational Theory. *Research Papers. 107* [online]. Available from Internet: <URL: https://aisel.aisnet.org/ecis2018_rp/107>.

Nyberg, Daniel (2009). Computers, Customer Service Operatives and Cyborgs: Intra-actions in Call Centres. *Organization Studies* [online]. 30:11 [cited 2019-5-14], 1181-1199. Doi: 10.1177/0170840609337955.

Orlikowski, Wanda (1992). The Duality of Technology: Rethinking the Concept of Technology in Organizations. *Organization Science*. 3:3, 398–427.

Orlikowski, Wanda (2000). Using Technology and Constituting Structures: A Practice Lens for Studying Technology in Organizations. *Organization Science*. 11, 404-428.

Orlikowski, Wanda (2007). Sociomaterial Practices: Exploring Technology at Work. *Organization Studies* [online]. 28:9 [cited 2019-3-8], 1435-1448. Doi: 10.1177/0170840607081138.

Orlikowski, Wanda & Susan Scott (2008). Sociomateriality: Challenging the Separation of Technology, Work and Organization. *Academy of Management Annals* [online]. 2:1 [cited 2019-3-11], 433-474. Doi: 10.5465/19416520802211644.

Orlikowski, Wanda & Susan Scott (2014). What Happens when Evaluation Goes Online? Exploring Apparatuses of Valuation in the Travel Sector. *Organization Science* [online]. 25:3 [cited 2019-8-4], 868-891. Doi: 10.1287/orsc.2013.0877.

Orlikowski, Wanda & Susan Scott (2015). The Algorithm and the Crowd: Considering the Materiality of Service Innovation. *MIS Quarterly* [online]. 39:1 [cited 2019-5-14], 201-216. DOI: 10.25300/MISQ/2015/39.1.09.

Orlikowski, Wanda (2015). Practice in Research: Phenomenon, Perspective and Philosophy. In: *Cambridge Handbook of Strategy as Practice,* 1-29. Ed. Damon Golsorkhi, Linda Rouleau, David Seidl & Eero Vaara. Cambridge: Cambridge University Press.

Østerlie, Thomas, Petter G. Almklov & Vidar Hepsø (2012). Dual Materiality and Knowing in Petroleum Production. *Information and Organization* [online]. 22:2 [cited 2019-5-1], 85-105. Doi: 10.1016/j.infoandorg.2012.01.001.

Oxford Dictionaries (2019). *Definition of Agency in English.* Available from Internet: <URL: https://en.oxforddictionaries.com/definition/agency>.

Palta (2019). *Finland's private service sector* [online]. Helsinki: Service Sector Employers Palta. Available from Internet: <URL: https://www.palta.fi/en/palvelualat-suomessa/>.

Petrakaki, Dimitra, Ela Klecun & Tony Cornford (2016). Changes in Healthcare Professional Work Afforded by Technology: The Introduction of a National Electronic Patient Record in an English Hospital. *Organization* [online]. 23:2 [cited 2019-5-4], 206-226. Doi: 10.1177/1350508414545907.

Pickering, Andrew (1993). The Mangle of Practice: Agency and Emergence in the Sociology of Science. *American Journal of Sociology*. 99:3, 559-589.

Pickering, Andrew (1995). *The Mangle of Practice: Time, Agency, and Science.* Chicago: University of Chicago Press.

PricewaterhouseCoopers 2019. *Onko aika yhtiöittää?* [online]. Available from Internet: <URL: https://www.pwc.fi/fi/toimialat/julkinensektori/yhtioittaminen.html>.

Ramiller, Neil C. & Mike Chiasson (2008). The Service Behind the Service: Sensegiving in the Service Economy. In: *Information Technology in the Service Economy: Challenges and Possibilities for the 21st Century*, 11-20. Ed. M. Barrett, E. Davidson, C. Middleton and J. DeGross. Boston: Springer.

Ramiller, Neil C. (2016). New Technology and the Post-human Self: Rethinking Appropriation and Resistance. *The DATA BASE for Advances in Information Systems* [online]. 47:4 [cited 2019-5-4], 23-33. Doi: 10.1145/3025099.3025102.

Robson, Colin (2002). *Real World Research.* 2nd Edition. Oxford: Blackwell.

Ryals, Lynette & Simon Knox (2001). Cross-Functional Issues in the Implementation of Relationship Marketing through Customer Relationship Management. *European Management Journal* [online]. 19:5 [cited 2019-6-5], 534-542. Doi: 10.1016/S0263-2373(01)00067-6.

Salesforce (2019). *SaaS* [online]. Available from Internet: <URL: https://www.salesforce.com/saas/>.

Samdanis, Marios & Soo Hee Lee (2017). White Space and Digital Remediation of Design Practice in Architecture: A Case Study of Frank O. Gehry. *Information and Organization* [online]. 27:2 [cited 2019-5-4], 73-86. Doi: 10.1016/j.infoandorg.2017.02.001.

Saunders, Mark, Philip Lewis & Adrian Thornhill (2009). *Research Methods for Business Students.* 5th edition. Harlow: Pearson Education.

Scott, Susan & Wanda Orlikowski (2013). Sociomateriality – Taking the Wrong Turning? A Response to Mutch. *INFORG* [online]. 23 [cited 2019-5-14], 77-80. Doi: 10.1016/j.infoandorg.2013.02.003.

Scott, Susan & Wanda Orlikowski (2014). Entanglements in Practice. Performing Anonymity through Social Media. *MIS Quarterly* [online]. 38:3 [cited 2019-5-14], 873-894. Available in Internet: <URL: https://misq.org/entanglements-in-practice-performing-anonymity-through-social-media.html>.

Shafia, Ali M., Mohammad M. Mazdeh, Mahboobeh Vahedi, Mehrdokht Pournader (2011). Applying fuzzy balanced scorecard for evaluating the CRM performance. *Industrial Management & Data Systems* [online]. 111:7 [cited 2019-5-14], 1105-1135.

Shaw, Colin & John Ivens (2002). *Building Great Customer Experiences*. Basingstoke: Palgrave Macmillan.

Shoemaker, Mary E. (2001). A Framework for Examining IT-Enabled Market Relationships. *Journal of Personal Selling & Sales Management* [online]. 21:2 [cited 2019-6-4], 177-185. Available from Internet: <URL: https://www.jstor.org/stable/20832590>.

Steen, John, Catelijne Coopmans & Jennifer Whyte (2006). Structure and Agency? Actor-Network Theory and Strategic Organization. *Strategic Organization* [online]. 4:3 [cited 2019-5-4], 303-312. Available from Internet: <URL: https://doi.org/10.1177/1476127006067033>.

Stein, Mari-Klara, Sue Newell, Erica L. Wagner & Robert D. Galliers (2014). Felt Quality of Sociomaterial Relations: Introducing Emotions into Sociomaterial Theorizing. *Information and Organization* [online]. 24:3 [cited 2019-6-3], 156-175. Doi: 10.1016/j.infoandorg.2014.05.003.

Styhre, Alexander (2010). Organizing Technologies of Vision: Making the Invisible Visible in Media-laden Observations. *Information and Organization* [online]. 20:1 [cited 2019-6-3], 64-78. Doi: 10.1016/j.infoandorg.2010.01.002.

Suchman, Lucy (1987). *Plans and Situated Actions: The Problem of Human-Machine Communication*. Cambridge: Cambridge University Press.

Suchman, Lucy (2002). Located Accountabilities in Technology Production. *Scandinavian Journal of Information Systems* [online]. 14:2 [cited 2019-5-14], 91-105. Available from Internet: <URL: http://aisel.aisnet.org/sjis/vol14/iss2/7>.

Suchman, Lucy (2007). *Human-Machine Reconfigurations: Plans and Situated Actions*, 2nd ed. Cambridge: Cambridge University Press.

Sutton, Robert I. (2010). *Sociomateriality: More Academic Jargon Monoxide* [online]. Available from Internet: <URL: http://bobsutton.typepad.com/my_weblog/2010/10/sociomateriality-more-academic-jargon-monoxide.html>.

Symon, Gillian & Katrina Pritchard (2015). Performing the Responsive and Committed Employee through the Sociomaterial Mangle of Connection. *Organization Studies* [online]. 36:2 [cited 2019-5-6], 241-263. Doi: 10.1177/0170840614556914.

Tunçalp, Deniz (2016). Questioning the Ontology of Sociomateriality: A Critical Realist Perspective. *Management Decision* [online]. 54:5 [2019-4-20], 1073-1087. Available from Internet: <URL: https://doi.org/10.1108/MD-07-2014-0476>.

Vaara, Eero & Richard Whittington (2012). Strategy-as-Practice: Taking Social Practices Seriously. *Academy of Management Annals* [online]. 6:1 [cited 2019-7-3], 285-336. Doi: 10.1080/19416520.2012.672039.

Verhulst, Matthijs & Anne-Françoise Rutkowski (2018). Decision-Making in the Police Work Force: Affordances Explained in Practice. *Group Decision and Negotiation* [online]. 27 [cited 2019-5-4], 827-852. Doi: 10.1007/s10726-018-9587-5.

Volkoff, Olga & Diane M. Strong (2017). Critical Realism and Affordances: Theorizing IT-Associated Organizational Change Process. *MIS Quarterly* [online]. 37:3 [cited 2019-6-5], 819-834. Doi: 10.25300/misq/2013/37.3.07.

Wagner, Erica L., Sue Newell & Gabriele Piccoli (2010). Understanding Project Survival in an ES Environment: A Sociomaterial Perspective. *Journal of the Association for Information Systems* [online]. 11:5 [cited 2019-4-30], 276-97. Available from Internet: <URL: www.lse.ac.uk/c>.

Wagner, Erica L., Sue Newell, Neil Ramiller & Jeanne Enders (2018). From Public Ideology to Socio-Material Reproduction of Agile Principles: The Case of Pivotal Labs. *Information and Organization* [online]. 28:4 [cited 2019-5-14], 192-210. Doi: 10.1016/j.infoandorg.2018.10.002.

Wahlberg, Olof, Christer Strandberg, Håkan Sunberg & Karl W. Sandberg (2014). Trends, Topics and Under-Researched Areas in CRM Research. *International Journal of Public Information Systems* [online]. 3 [cited 2019-4-9], 191-208. Available from Internet: <URL: https://www.researchgate.net/publication/237749523_TRENDS_TOPICS_AND_UNDER_RESEARCHED_AREAS_IN_CRM_RESEARCH_-_A_LITERATURE_REVIEW>.

Wajcman, Judy & Emily Rose (2011). Constant Connectivity: Rethinking Interruptions at Work. *Organization Studies* [online]. 32:7 [cited 2019-5-14], 941-961. Doi: 10.1177/0170840611410829.

Whittington, Richard (2006). Completing the Practice Turn in Strategy Research. *Organization Studies* [online]. 27:5 [cited 2019-5-4], 613-634. Available from Internet: <URL: https://doi.org/10.1177/0170840606064101>.

Whittington, Richard (2015). Giddens, Structuration Theory and Strategy as Practice. In: *Cambridge Handbook of Strategy as Practice,* 145-165. Ed. Damon Golsorkhi, Linda Rouleau, David Seidl & Eero Vaara. Cambridge: Cambridge University Press.

Xu, Mark & John Walton (2005). Gaining customer knowledge through analytical CRM. *Industrial Management and Data Systems* [online]. 105:7 [cited 2019-3-6], 955-971. Doi: 02635570510616139.

Zahay, Debra L. & Jimmy Peltier (2008). Interactive Strategy Formation: Organizational and Entrepreneurial Factors Related to Effective Customer Information Systems Practices in B2B Firms. *Industrial Marketing Management* [online]. 37:2 [cited 2019-7-6], 191-205. Doi: 10.1016/j.indmarman.2006.10.004.

Zammuto, Raymond F., Terri L. Griffith, Ann Majchrzak, Deborah J. Dougherty & Samer Faraj (2007). Information Technology and the Changing Fabric of Organization. *Organization Science* [online]. 18:5 [cited 2019-5-14], 749-762. Available from Internet: <URL: https://doi.org/10.1287/orsc.1070.0307>.

APPENDIX 1. Interview protocol

Background

1. Could you tell me about yourself?
2. Could you describe your ordinary workday?
3. What does customer relationship management mean to you?

Customer relationship management practices

4. Could you describe your routines and practices related to customer relationship management?
5. Could you describe the routines with which you have problems to carry out?
6. Could you describe the routines, which can be easily accomplished?
7. What is the connection between CRM and HealthCo's strategy in your opinion?

CRM systems

8. Could you describe the technologies you use related to customer relationship management?
9. Could you describe what is challenging / effortless with the current technologies?
10. Considering your tasks / the whole organization, what is the most important about a CRM system?
11. Is there something you would still like to add?