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Orchestrating Performance Through a Digital Business Strategy – Creating Value by Leveraging IT Resources

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Dedicated to my parents and my wife,

Yusuf, Maryam, and Nouf

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Pursuing a PhD has proven to be one of the most challenging and rewarding experiences in my life. The transition from the fast-paced, ever-changing corporate world to academia forced me to shift my priorities, reexamine my views, and truly focus to achieve this goal. The knowledge, self-discipline, and contacts I have gained throughout this adventure are invaluable—and I am ever grateful for all of them.

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Academic Note: Cumulative Thesis

This is a cumulative thesis, a collection of scientific scripts that together form a united representation of a research work and its results. This thesis presents a unitary view of my doctoral research, along with a discussion of each of its individual elements. The thesis is a text presented as a chronicle explaining the progress of the research, and describing and discussing each of its elements comprehensively. My aim has been to write it in a simple and fluent style, avoiding complex academic terms; readers interested in a more academic approach are invited to refer to the publications cited in this thesis and the elements available as appendices.

Abstract

In today's economy, firms must rely on technology for competitive advantage. The value of information systems (IS) to firms has been widely discussed in relation to digital business strategies (DBS), defined as the manner in which a firm engages in any category of IT activity, but the empirical literature assessing specific components and related outcomes has yet to support the value of the rapidly changing business environments in which DBS occur. The massive proliferation of technological advances and the constantly changing technological environment yields a constant need for the re-evaluation of DBS. Therefore, it is essential for both academics and practitioners to understand modern challenges and best practices as they relate to advancing a firm's position through improving its DBS. This thesis seeks to provide empirical evidence in support of the need to incorporate a comprehensive digital strategy into the business environment through the presentation of three studies. In doing so, I seek to enrich the conventional knowledge of the components and details of DBS phenomena and the need to consider environments in which it is designed to govern. In each study, the processes and strategies employed by the examined firms is put forth to demonstrate various approaches to the incorporation of IS strategy into business strategy. In doing so, I demonstrate suitable approaches to DBS based on the outcomes for the assessed firms in light of the strategy each employed.

Study 1 addresses the use of *social media* for traditional media firms through the lens of information diffusion. In particular, this study examines the ways in which a DBS can be leveraged to achieve social influence and maintain the relevance of an organization's value creating processes. Study 2 assesses the efforts of three organizations in three different industries to incorporate *cloud computing* affordances into the formation of a DBS. Finally, study 3,

highlights some of the contradictions that might arise between individual actors and organizations in terms of appropriating value from a DBS. In this respect, it addresses the use and abuse of ***business-intelligence (BI)-based project management system*** for empire building purposes.

In sum, the cumulative offering of the studies presented in this research make significant contributions to the understanding of DBS through its assessment and discussion of social media presence, cloud computing-based offering, and empire building through the use of project management system. Insights from these higher-level frameworks for the incorporation of IS strategies into overall business strategies can arguably serve as a useful foundation for advancing our understanding and practices relating to the adoption, implementation, and governance of business technology. In this thesis, I systematically demonstrate using empirical evidence how social media strategies, cloud computing strategies, and the governance of actor use of technology can be embedded into DBS as part of a broader competitive strategy. Thus, the thesis shows how firms can increase their profitability and performance through employing technology strategies that are informed by validated approaches and respective outcomes.

Zusammenfassung

Um in der modernen Wirtschaft einen Wettbewerbsvorteil zu erzielen, sind Unternehmen auf die Technologie angewiesen. Die Bedeutung von Informationssystemen (IS) für Unternehmen ist in Bezug auf digitale Unternehmensstrategien (DBS - Digital Business Strategies) - definiert als die Art und Weise, in der ein Unternehmen IS implementiert hat - eingehend diskutiert worden, doch die Bedeutung der sich schnell verändernden Unternehmensumfelder, in die DBS eingebettet sind, muss von der einschlägigen empirischen Literatur hinsichtlich der Beurteilung spezifischer Dimensionen sowie der damit verbundenen Konsequenzen erst noch vorgenommen werden. Die raschen technologischen Fortschritte und das sich ständig verändernde technologische Umfeld erfordern eine konstante Neubewertung der DBS. Daher ist es sowohl für Wissenschafter als auch Praktiker notwendig, aktuelle Herausforderungen und Best-Practice-Beispiele zu erkennen, um die DBS permanent adaptieren und dadurch die Position eines Unternehmens verbessern zu können. Diese Dissertation liefert anhand von drei Studien empirische Belege für die Notwendigkeit der Implementierung einer umfassenden digitalen Strategie in das Unternehmensumfeld. Dadurch soll einerseits das bisherige Wissen über die Dimensionen und Detailbereiche des Phänomens DBS erweitert werden, andererseits soll deutlich werden, dass diese auch hinsichtlich ihres relevanten Umfelds zu betrachten sind. In jeder Studie werden die von den untersuchten Unternehmen angewandten Prozesse und Strategien analysiert, um die verschiedenen Ansätze der Implementierung der IS-Strategie in die Unternehmensstrategie insgesamt darzustellen. Basierend auf den Ergebnissen der jeweils umgesetzten Strategien werden anschließend geeignete Ansätze zur DBS identifiziert.

Die erste Studie behandelt den Einsatz von Social Media von traditionellen Medienunternehmen aus der Perspektive der Informationsverbreitung. Dabei wird insbesondere die Art und Weise untersucht, wie DBS genutzt werden können, um sozialen Einfluss zu generieren und die Relevanz der Wertschöpfungsprozesse eines Unternehmens zu erhalten. Die zweite Studie analysiert die Vorgangsweise von drei Organisationen aus unterschiedlichen Branchen, die Anforderungsbedingungen des Cloud Computing in die Entwicklung einer DBS zu integrieren. Die dritte Studie schließlich fokussiert einige Widersprüchlichkeiten, die zwischen den Organisationen und ihren individuellen Akteuren im Hinblick auf die Aneignung von Vorteilen aus den DBS auftreten können. Insbesondere wird hier auf die Gefahr eines Machtmissbrauchs des auf einem Business-Intelligence (BI) basierenden Projektmanagementsystems eingegangen.

Zusammenfassend erweitern die Ergebnisse der Analyse und Evaluierung dieser Studien zur Thematik der Social-Media-Präsenz, des Cloud-Computing sowie der Gefahr des Machtmissbrauchs das bisherige Verständnis der DBS. Die Erkenntnisse aus dieser übergeordneten Perspektive hinsichtlich der Implementierung der IS-Strategie in die Unternehmensstrategie insgesamt dienen als geeignete Grundlage für die Weiterentwicklung des theoretischen und praktischen Verständnisses hinsichtlich der Implementierung, Umsetzung und Steuerung von Unternehmenstechnologien. In dieser Arbeit wird anhand empirischer Evidenz systematisch gezeigt, wie Social-Media- und Cloud-Computing-Strategien sowie die Steuerung der individuellen Technologienutzung als Teil einer umfassenderen wettbewerbsfähigen Strategie in die Entwicklung der DBS integriert werden können. Ausgehend von dieser Grundlage wird dargelegt, wie Unternehmen ihre Wirtschaftlichkeit und Leistung durch den

Einsatz von technologischen Strategien, gründend auf evidenzbasierten Ansätzen und deren

Ergebnissen, steigern können.

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Preface

I aim to share findings with academic scholars and influential business leaders that are useful and directly applicable in the field of information systems (& management) and in business disciplines. The purpose is to translate these new findings and ideas—stemming from empirical and theoretical observations of the latest in management research, real cases, ideas, and executions— to actionable items for business executives and management teams. The thesis contributes to the existing state of knowledge in these fields through the provision of insights and new research about the most important and transformative management topics. Throughout the presentation of these findings, I systematically present the processes by which conclusions were drawn in an effort to contribute to the ability of the audience to understand and apply the findings in real situations, build sustainable organizations, and avoid failures.

DBS is an important motivator in shaping prospective business futures with respect to technology and digital business maturity. This cumulative thesis addresses social media, cloud computing, and the potential abuse of technology in relation to DBS through the lens of affordance theory.

My thesis is organized into seven chapters. In Chapter 1, I provide readers with a general introduction of my thesis. In Chapter 2 and 3, I provide the theoretical background and the empirical applications for the thesis research. The theoretical background focuses on the components of a DBS, the overarching framework of affordance theory, social media influence, cloud-computing strategies, and business intelligence-based project management system. In Chapter 4, I describe the research aims and scope. In Chapter 5, I detail the methodological approach. The methodological approach and summary of the studies sections are partitioned by the three studies presented within this research. In Chapter 6, I provide a summary of the studies.

Finally, in Chapter 7, I discuss the research, including its implications and conclusions, followed by the references. This chapter includes theoretical implications, managerial implications (implications to practice), and presentation of limitations and future research.

Part II consists of the three scientific studies. Study one is under review in Information Systems Frontiers, study two is published in Communications of the Association for Computing Machinery (CACM), and study three is under review in Management Information Systems Quarterly (MIS Quarterly). The studies present social media strategies, cloud computing strategies, and BI-based project management system's implications, respectively, within the realm of DBS and affordance theory. All three studies are a result of collaboration with colleagues.

Part I

1   Introduction

The increasing reliance on information systems (IS) in business organization and strategy to ensure successful business outcomes is largely acknowledged in both the academic and the business domain (Bharadwaj, El Sawy, Pavlou, & Venkatraman, 2013a; Fichman, Dos Santos, & Zheng, 2014; Kane, Palmer, Phillips, Kiron, & Buckley, 2015; Markus & Loebbecke, 2013; Mithas, Tafti, & Mitchell, 2013). Bharadwaj et al. (2013a, p. 472) define digital business strategy (DBS) as "that of organizational strategy formulated and executed by leveraging digital resources to create differential value." DBS, which can be understood as the manner in which a firm engages in any category of IT activity, is imperative to broader business strategy. In recognition of the invaluable role of IT, senior management must strategically incorporate and communicate the DBS, which entails coordinating digital assets and IT infrastructure, within a firm's business strategies (Prahalad & Krishnan, 2002). This coordination requires the synchronization of IT and business strategies to promote the firm's industry position. Digital technologies are playing an increasingly important role in business infrastructures. DBS provide firms with organization and strategy in regards to the incorporation of technology and IS into business operations, thus reflecting the alignment of IT strategies with business strategies.

The importance of a comprehensive DBS has also been emphasized in numerous business reports (Fitzgerald, Kruschwitz, Bonnet, & Welch, 2013; Kane et al., 2015; Rivera & Meulen, 2014). A 2014 Gartner Press Release states, "a lack of digital business competence will cause 25 percent of businesses to lose competitive ranking by 2017" (Rivera & Meulen, 2014, p. 1). The report emphasizes that technology is essential to revenue and market growth, as well as innovation. Rivera and Meulen (2014) distinguishes that DBS is not synonymous with IT, as the

former goes beyond IT to consider value, markets, revenue, and customers. Technology, therefore, is only one part of a larger business strategy.

The growing literature on the scope, speed, scale, and sources of DBS has stressed the transformational role that IT plays in contemporary business processes (Bharadwaj, El Sawy, Pavlou, & Venkatraman, 2013b; Fichman et al., 2014; Kane et al., 2015; Markus & Loebbecke, 2013). DBS views IT strategy as a functional-level-strategy, focusing on the business value of IT and associated technology and strategy (Bharadwaj et al., 2013a; Drnevich & Croson, 2013). Communication, information, and connectivity are essential to business success in the dotcom era and thus have fundamentally reshaped broader business strategy. As such, organizations are leveraging digital technology in multiple forms and environments to procure productivity, efficiency, and competitive advantage (Setia, Venkatesh, & Joglekar, 2013). Despite the cited benefits of a comprehensive DBS, 80 percent of digital mature companies do not have a clear and coherent DBS (Kane et al., 2015). In "Embracing Digital Technology," Fitzgerald et al. (2013) asserts that managers overwhelmingly believe that incorporation of technology can transform business practices, but that it can be difficult to observe the results of incorporating new technologies. Although 78% of the study participants perceive achieving digital transformation to be critical to their organization within two years, 63% also reported that their company does not adequately keep up with the pace of technology (Fitzgerald et al., 2013).

Despite the proliferation of research on DBS, there are two motivations driving this research based on defined gaps in the existing literature. First, technology is in constant evolution and as so, research must be continuously updated to reflect these changes. This research focuses on emerging technologies (e.g., cloud services, social media, business intelligence (BI)-based project management system) that are not captured in the existing DBS

literature. The methods, findings, and conclusions drawn from the study of these technologies both contribute to the literature on incorporation of these emerging technologies in general. Second, there is limited work on the value appropriation stemming from IT. This is a complex phenomenon that needs to be robustly addressed to provide practical implications for businesses seeking to improve value through DBS. It is herein addressed through the focus on emerging technologies, but also on the power affording by control of these technologies. Thus, this thesis is innovative in advancing the study of DBS through inclusion of the most conversant considerations and in applying both empirical evidence and a theoretical lens to satisfy these motivations. These applications stand to both progress the academic literature and the ability of practitioners to develop comprehensive DBS aimed at competitive advantage. Specifically, this research uses affordance theory to reexamine the classical approach of value creation, firm performance, and the dark side of IT through three studies emphasizing the path to effective DBS. The first study assesses social media within DBS for maintaining and gaining influence and relevance for the company value creation. The second study examines cloud computing within DBS as its role in company value creation and proposition. Finally, the third study introduces the dark side of IT in which DBS can be abused for power and influence through empire building (EB) for individual gains.

A common theme across these three studies is that DBS must be comprehensively developed and account for emerging technologies in order to generate value for the company. Affordance theory, also referred to as the theory of affordances, offers a novel approach for meeting the challenges relating to the inadequate development of DBS. Affordance theory addresses the "constitutive relationships between information systems and organizational action" (Aakhus, Agerfalk, Lyytinen, & Te'eni, 2014, p. 1190). Affordance theory thus provides a

framework for the study between DBS technologies and the environments in which they are enacted. It considers the organizational practices, the actors, the technologies and the affordances designed by each of these considerations (Fayard & Weeks, 2014). Essentially, the application of affordance theory presents the question of what outcomes are afforded by the environment in which these technologies are incorporated in broader business strategies through DBS.

Although the importance of DBS has been established, the literature assessing DBS through the lens of affordance theory is limited. Technology is in constant evolution, as are DBS, and as so, the literature examining the dynamic processes by which digital maturity occurs through clear and coherent DBS is often not available at a rate needed to remain relevant either academically or practically. In applying affordance theory to DBS, I account for the physical and social environments in which DBS are used to develop robust, yet dynamic, approaches to business outcomes. Specifically, this research focuses on the affordances related to Twitter as a form of social influence, cloud computing as a form of digital competitive advantage, and BI-based project management system as an enabler of empire building (EB). The concept of affordance provides a valuable lens for advancing our understanding of present organizational practices (Evans, Hackney, Wagner, Vollmar, & Wagner, 2014; Fayard & Weeks, 2014; Greeno, 1994). The design, adoption, and use of technology do not occur in a vacuum without social context and agency. The relationship between people and technology, including structure and setting, at all stages of technology adoption and implementation provides meaning as a conceptual tool. Business practices are governed by what is "physically possible and socially acceptable" (Fayard & Weeks, 2014, p. 245) and thus, the incorporation of technology into business strategies to develop robust DBS can be assessed through the lens of affordance theory.

Affordance theory provides DBS and IS researchers with a framework for studying the relationship between technologies and their physical and social environments in a nondeterministic way (Fayard & Weeks, 2014). Thus, affordance theory provides a conceptual vocabulary by which researchers can move beyond the traditional sociomaterial approach of organizational practices and technology usage to include more empirical studies of the phenomena (Fayard & Weeks, 2014). As a sub-area of structuration theory, affordance theory addresses the processes by which IS becomes dependent on specific organizational actions (Aakhus et al., 2014; Faraj, Jarvenpaa, & Majchrzak, 2011).

Just as business technologies are in constant redevelopment, so are the theories that are needed to address their incorporation and related environments. Both the business and academic focus on DBS are relatively new concepts. Despite the need for practitioners to gain a more in-depth understanding of the value and details of DBS, there are limited studies that provide this information and no study that compare emerging technologies or value creation through these technologies. Within the broader IS literature, affordance theory is one of the dominant theoretical lenses to examine individual and organizational outcomes. However, its application in DBS is still in its infancy. Simply put, the "why" of needing a DBS has been addressed, but the "how" of developing and implementing DBS has yet to be successfully introduced to the current state of literature on the topic. This is the gap that I seek to fill. I address the affordances and the factors that impact the influence of noted affordances. To do so, the thesis presents three related, yet independent studies. The first study examines the use of social media (Twitter) to advance understanding of the incorporation of social influence strategies into DBS and its ability to be used to maintain or increase the relevance of the company value creation. The second study addresses the inclusion of cloud computing in DBS. Finally, the third study approaches

the dark side of IT through the use of BI-based project management system for power and influence. The theory of affordances motivates our discussion of these topics to serve as a lens for the inclusion of physical and social affordances in the cases examines. Currently, there is limited research connecting the theoretical needs for DBS to implications for applications of DBS. The three studies outlined above seek to fill this gap by providing empirical evidence through the three different angles and across three different cases. The merits of the retrospective approaches of firms in each of the three studies are evaluated in terms of DBS.

The three studies presented the three tenets of Bharadwaj et al. (2013a) definition of DBS. First, the definition highlights going beyond the traditional sources of information to accommodate the Web 2.0 era. The first study demonstrates this assertion through its focus on Twitter, the value of social media platforms, and maintaining values relevance for IS/business strategy. Value creation is thus discussed through assessing the incorporation of social media as a novel platform for firm promotion. Next, Bharadwaj et al. (2013a) puts forth avoiding a "no strategy" approach to technological applications, such as cloud computing storage and software applications (Benbasat, Goldstein, & Mead, 1987; Burton-Jones, 2009; Earl, 1993; Krishnakumar, 2015; Zhuang, 1995). The second study focuses on firms' incorporation of cloud computing in their business strategies. In this study, the manner in which firms leverage DBS is used to put forth three typologies of cloud computing strategies. Using DBS, therefore, is assessed within the second study in terms of the incorporation of cloud computing for firm value creation and proposition. Finally, the definition emphasizes the power that technology can afford to actors. This expands the narrow traditional view of IS strategy that limited recognition to the systems and technologies as merely digital resources, not as tools affording power to actors. The third study demonstrates the manner in which actors can use technology for EB purposes.

Highlighting the potential dark side of IT, the third study brings attention to the need to incorporate EB possibilities into DBS. Together, these three studies demonstrate the importance of including digital business technologies in business strategy, and highlight that the traditional approaches to IS strategies cannot account for the structural transformation between the consumer and the enterprise space.

Study 1 (Social Media): Effing and Spil (2015) emphasize the need for a mature corporate social media strategy with a thorough theoretical grounding to promote a positive reputation with the public. Social media strategies are increasingly important in business IS strategy (Wilson, Guinan, Parise, & Weinberg, 2011), and, as so, social media outlets should be incorporated in business IS strategy as a source of business value creation. Twitter, for instance, should be used in DBS to effectively motivate and guide the existing and/or potential clients/consumers towards a specific new product, promotional, events, or topics. Tweets are analyzed longitudinally to gain insight into the user's happiness or even perception of products and services. The first study demonstrates variation in social media involvement and influence. Just as consumers can use social media outlets for the diffusion of product innovation, companies can also use it for the same purposes. The first study concludes that while non-commercial organizations/users were the most involved in the Ukrainian conflict (i.e., in generating tweets about the news event), the retweets they attracted, which are a common measure of influence, were among the lowest. However, mass media and sources related to journalists, professional associations, and commercial organizations garnered the highest retweets. The contributions of this paper focus on the interactive nature of social media, such as Twitter. These approaches contrast the belief that social media's role in news dissemination may challenge conventional news media. This study highlights that whether this holds true is

dependent on factors of involvement and influence. In affording these insights, this research

deepens our understanding of the nature and role of social media, focusing on Twitter, in modern

news dissemination. Specifically, Twitter has the potential to impact the established authority

structures of new dissemination, but that this impact may be less than expected.

Study 2 (Cloud Computing): Given that communication, connectivity, and information

are essential to dotcom era business success, it is imperative that the facilitation of these

components be carefully considered within a DBS. Approaching the cloud without a clear

strategy opens many obstacles for success. As a shared pool of configurable data resources,

cloud computing is often a financially sound strategy for firms' performance and competitive

advantage. The second study analyzes three approaches to the offering of cloud computing in

business organizations to compare the innovating, optimizing, and disrupting strategies. It

presents and discusses the decision to utilize the cloud in respect to the firms' respective

industries and their existing stock in internal systems and processes. Moreover, this study

analyzes the five building blocks that comprise these strategies and offer an additional two

building blocks to account for clients and perceptions and concerns regarding the cloud

offerings. The main aim of this study is to assist researcher and practitioners in utilizing the

building blocks identified as essential ingredients in development and analyzing cloud strategy.

Study 3 (Business Intelligence-Based Project Management System): Given the power

of technology, BI-based project management system (PMS[1]) can be used by actors within

institutions to gain power and influence. Thus, the power dynamics accorded by technology

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[1] Project management system consists of applications that can help to plan, organize, and manage resource, develop resource estimates, manage estimation and planning, scheduling, control cost and manage budget, allocate resource, support communication, collaboration and decision-making, and manage project documentation (Cooke-Davies, Crawford, & Lechler, 2009; Davis, 1973; Duncan, 1996).

within organizations must also be considered in DBS. If operating with limited oversight or without a clearly defined strategy, employees are able to use technology and related tools and assets to increase their power and influence within the company. The study analyzes the planning phase of a BI-based project management system at a multinational real estate company to assess the degree and impact of EB behaviors. Using grounded theory methodology to demonstrate two streams of EB: expansionist and reductionist, this study concludes that EB is not always neccesarily detrimental, the annulment effects are effective for controlling EB behavior.

2   Theoretical Background

Theoretical concepts, commonly referred to a "sensitizing devices," provide the information needed to understand the background for research findings, as well as the interpretation of their findings (Giddens, 1989; Patton, 2002). As this research seeks to advance, rather than duplicate, the existing theoretical contributions governing and relating to DBS, the theoretical background begins with a focus on the components of DBS, followed by the overarching theoretical framework of affordance theory. I discuss each separately to provide an in-depth understanding of these key concepts. Affordance theory is the lens through which this research addresses the study of DBS. In addressing the study of DBS, this research focuses on cloud computing, social media, and BI-based PMS, each with their own theories and literature. Through the provision of the broad theoretical framework of affordance theory, this section provides the reader with the current state of knowledge in these areas of the literature.

2.1 Digital Business Strategy

DBS encompass all firm activities that rely on IT. This requires strategic incorporation of IT into business practices; the strategic nature of this engagement implies "a dynamic synchronization between business and IT to gain competitive advantage" (Bharadwaj et al., 2013a; Mithas et al., 2013, p. 513). Bharadwaj et al. (2013a) define DBS as the organization strategy to incorporate and execute digital resources to improve a firm's standing. DBS reflect the incorporation of IT strategy into the broader business strategy. In identifying fundamental IT strategies and how they can be aligned to broader business strategies, IS scholars are able to provide an innovative strategic framework for integrating the unique competencies of digital technology to gain competitive advantage. Yoo et al. (2010) argue that a new strategic framework is needed for this task, starting with a deeper consideration of the logic of DBS.

DBS drives digital maturity as companies seek to expand their competitive advantage. Despite a growing awareness of the need to digitally reimagine business strategies to secure competitive advantage, only 15 percent of companies at the early stages of digital maturity, defined by Kane et al. (2015, p. 3) as "an organization where digital has transformed processes, talent engagement and business models," expressed that their companies have a competent DBS. According to Mithas et al. (2013), strategies must focus on synchronization between business and IT practices to ensure competitive advantage. Competitive advantage can be garnered through IT by: 1) adjusting industry structure (e.g., ensuring favorable outcomes through firm promotion in terms of supplier and customer power, as well as competitive rivalry), 2) outperforming rivals by serving a niche segment, cost effectiveness, or cost differentiation, and 3) using IT to create new businesses (Porter, 2008; Porter & Millar, 1985). Furthermore, firms must consider their willingness to adopt or even lead new technologies within their industry

including the impact these decisions will likely have on new and current customers (Mithas &

Lucas, 2010).

The literature provides guidelines for assessing DBS. There are four key themes to

consider in the development of DBS success metrics: the scope, scale, speed, and sources of the

DBS in relation to business value creation (Bharadwaj et al., 2013a). Additionally, DBS studies

emphasize the conceptual advances provided by IS. First, companies increasingly need to

consider product-market segments, as well as ecosystems, in their DBS (Iansiti & Levien, 2004;

Porter & Millar, 1985). Second, proprietary data exchange conventions are increasingly being

replaced with open options for high-tech partner-interface-process. Finally, shared digital

platforms, such as cloud computing based hosting services are also increasingly viewed as more

efficient both in time and money (Loebbecke, Thomas, & Ullrich, 2012). Despite the themes

and concepts considered within the literature, little is known about comprehensive and effective

DBS development (Setia et al., 2013) and there is a lack of empirical evidence to demonstrate the

four key themes of assessing DBS. Failure to implement such DBS can be detrimental to the

success of organizations (Tallon & Pinsonneault, 2011).

It is imperative that DBS remain dynamic to account for the ever-improving technology

environment and to remain competitive in business (Setia et al., 2013). The synchronization

between IT and business is important for working towards competitive advantage within an

industry (Mithas & Lucas, 2010; Mithas et al., 2013; Prahalad & Krishnan, 2002).

There are multiple approaches to assessing DBS, such as digital strategic posture as an

examination of external factors (Mithas et al., 2013) and design-based logic as an examination of

internal factors (Woodard, Ramasubbu, Tschang, & Sambamurthy, 2013). Digital strategic

postures demonstrate the degree to which a firm's engagement in a digital business practice is

supported by industry norms (Bharadwaj et al., 2013a; Mithas et al., 2013). The interaction between the firm's current practices and the industry standards and environment—including industry turbulence, concentration, and growth—impacts the degree to which that firm converges or diverges to industry norms in regard to DBS (Mithas et al., 2013). Specifically, Mithas et al. (2013) propose that conditions of high industry turbulence, low industry concentration, and low industry growth result in intense competition and influence firms to develop DBS that diverge from industry norms. In contrast, it is proposed that low industry turbulence, high industry concentration, and high industry growth will influence firms to develop DBS that converge to the industry norms as these norms are reliable indicators of the possible success of particular strategic moves (Mithas et al., 2013).

As indicated by Woodard et al. (2013), it is not enough to examine external factors. Design-based DBS logic focuses on the internal processes and systems of a firm, which Woodard et al. (2013) labels the firm's design capital. The firm's option value is a form of design capital and includes the breadth of opportunities afforded by the firm's internal systems and processes, as well as technical debt defined as the expected cost or effort needed to exercise those opportunities (Woodard et al., 2013). Woodard et al. (2013) proposed that DBS be designed for low technical debt and high option value as the ideal state for high quality design capital in managing option value and technical debt. This ideal state yields conditions in which firms have access to ample market opportunities and are able to efficiently respond their own strategies to their competitors' maneuvers (Woodard et al., 2013).

DBS formation must start with the company's vision. Next, each sub-level of management must know their goals and the IT strategy that is needed to reach these goals. This hierarchical approach to DBS allows technological needs to be assessed at each level of the

company (Lerner, 2015). Thus, cloud computing, social media, and BI-based PMS may not be needed in every department and by all levels of management. DBS can account for this by being compartmentalized. Moreover, sections of the DBS can be revised to account for advancements in technology as digital industries are constantly undergoing transformations to remain competitive (Oestreicher-Singer & Zalmanson, 2012).

It is imperative to understand the manner in which firms approach technology adoption and implementation through IS strategies in order to understand firm outcomes through a higher-level framework. Addressing DBS development and implementation based on the affordances—the action possibilities available in an environment and dependent on capabilities— of technology in the business environment is an innovative lens through which to view the environments in which firms adopt technology. My conviction is based in the fact that social media strategies, cloud strategies, and the management of actor use of BI-based PMS each afford different business outcomes, but these affordances also vary by the environment in which these strategies are implemented. As these three technologies related strategies are necessary for digital maturity, they must be incorporated into a broader digital strategy. To understand the best practices for this incorporation, one must first understand the affordances provided by each—what are the outcomes afforded by the technologies and what is the role of the environment in which they are enacted on the resultant affordances? Thus, the industry environment and firms' internal capabilities must be taken into consideration as affordances in that they are primary determinants of respective firms' competitiveness (Mithas et al., 2013; Woodard et al., 2013; Wu, 2006). This research draws empirical support for these insights by analyzing the three studies and the affordances that each provide for DBS strategy and development. The analysis and findings will be presented for each study in the following sections.

2.2 Overarching Theoretical Lens: Affordance Theory

To address the opportunities afforded by technologies and the environment in which they are enacted as they relate to DBS, the research approaches DBS through the lens of affordance theory using three studies, each assessing different technology related affordances. Affordance theory or theory of affordances treats IS as a symbolic action system. In studying the relationship between an object, herein technology, and its environment, herein companies, the relationship afforded by these options could be better understood. In other words, affordance addresses the possibility of an action taking both the object and the environment into consideration. Affordances channel behavior, but do not determine it (Fayard & Weeks, 2014). As DBS have been defined as the synchronization between technology and environment in the context of business strategies, affordance theory is a valuable tool for conceptualizing the differences in strategic incorporation of technology across multiple environments. This approach allows the research to compare affordances across multiple emerging technologies as well as across multiple environments. The purpose of this approach is to advance our understanding of the scope, scale, speed, and sources related to DBS through the affordances of cloud computing, social media, and BI-based PMS. As DBS must remain dynamic to account for the ever-improving technology environment and to remain competitive in business (Setia et al., 2013), understanding the affordances of DBS technologies is essentail to business success.

2.2.1 General Overview of Theory of affordances

Gibson's (1977) seminal work, "The Theory of Affordances," defines affordances as the set of action possibilities available given an environment and dependent on capabilities. Although the theory of affordances was first developed within the fields of ecological and

cognitive psychology, it has developed to address the abilities and functions afforded by objects across multiple disciplines. Fayard and Weeks (2014) address Gibson's (1977; 1986) conceptualization of affordance and its application to sociomateriality in contemporary organizational practices. A tenet of the sociomateriality approach, as the name also implies, is that the social and material are inextricably related. In other words, neither the social or the material can exist independent of the other (Fayard & Weeks, 2014; Leonardi, 2013).

Affordance occurs at the intersection of practice and perception. The theory impacts how human communicate, teach, learn, create knowledge, and thus, how practices and perceptions impact their decisions and behaviors (McLoughlin & Lee, 2007). It interprets the options afforded by an object. For instance, doors afford to be opened or closed to allow or not to allow entry or exit. Perception allows humans to view an object from the perspective of its affordances (Fayard & Weeks, 2014; Goel, Johnson, Junglas, & Ives, 2013). Humans then act upon their perceptions. The perception that the handle on a cup affords the cup to be held by the handle automatically triggers an actor's mind to act on the affordance. Additionally, as perception is relative to the perceiving agent, the affordance of a single object can be perceived differently by two actors, which contradicts the concepts of subjective and objective.

Affordances are thus related to the environment in which they exist and cannot be separated. The affordance of a computer, for example, does not exist without a person to use the computer. These affordances are also multidimensional in that these must be understood in more than one way as environments offer a multitude of scenarios. Similarly, Fayard and Weeks (2014) support an integrative interpretation of affordance as relational and dispositional for best understanding how the social and material influence each other. This interpretation exhibits the ability to approach organizational practices in a fashion that transcends the traditional subject-

object duality. The affordances are relational in that they "arise from the encounter that a person, characterized by certain physical attributes and certain social and biological needs, desires, and intentions, has with a socially and physically constructed material environment" (Fayard & Weeks, 2014, p. 243). Additionally, the affordances are dispositional in that perceived and directly related to practice (Gaver, 1991). In all, affordances are the socially constructed product of an individual's goals, the abilities of a technology, and the organizational environment of the technology.

2.2.2 Affordances in IS research

IS studies of affordance must take into account concepts drawn from psychology, human-computer interaction (HCI), and IS literature and how the concepts contribute to our understanding of the interaction between actors and their material environments (Fayard & Weeks, 2014; Goel et al., 2013; Leonardi, 2013; Sadler & Given, 2007). Norman's (1988) application of the theory of affordances to IS research serves as a seminal work in the application of translating affordances in sociomaterial contexts (Fayard & Weeks, 2014). As Norman (1988) highlights, HCI and interaction design application yield implications for extending the application of affordances to studies (Fayard & Weeks, 2014; Wells, 2002). In essence, in applying affordance theory to DBS, I am refuting the dichotomy between agency and determinism; the thesis examines what behaviors technological advances and incorporation affords and how these perceptions shape behavior, yet do not determine it. Affordance theory provides a lens for understanding the possibilities provided by an environment and how they can be rejected, ignored, or misinterpreted (Fayard & Weeks, 2014; Goel et al., 2013; Leonardi, 2013; Sadler & Given, 2007). Essentially, affordance provides a "can do statement" of

functionality that prompts us to perform tasks based on perceptions of the environment

(McLoughlin & Lee, 2007).

The Web 2.0 era has generated a plethora of affordances that impact how societies and

individuals within communicate, learn, and create knowledge (McLoughlin & Lee, 2007).

Affordances, "the property to the environment relative to the observer" (Wells, 2002, p. 141), are

a central concept of understanding human-web interaction. Individuals are constantly receiving

"microcontent" or small fragments of digital content that impact their interpretations of the world

around them. The affordance of the Web 2.0 era is, therefore, an increase in the provision of

information and communication, as well as interaction capabilities (McLoughlin & Lee, 2007).

The study of affordances must also take into consideration false affordances or that

affordances may be misperceived or not perceived at all (Fayard & Weeks, 2014; Gaver, 1991;

Gibson, 1986, 2014). In considering the affordances, we must also consider the limits and

potential of an object or environment (McLoughlin & Lee, 2007). Gaver (1991) discusses

perceptible, hidden, and false affordances. Perceptible affordances entail an actor acting on

perceived information, hidden affordances entail non-perceived possibilities for action, and false

affordances entails an apparent affordance that does not actually have a real function to the actor

(Gaver, 1991). A placebo pill, for instance, is a false affordance.

Theorists have proposed formal models for the conceptualization of affordance (Greeno,

1994; Turvey, 1992; Turvey, Shaw, Reed, & Mace, 1981; Wells, 2002). These models provide a

basis for advancing the theoretical development of affordances. Conceptual approaches to

affordance are designed to prompt analysis questions that indicate data on the internal state of

perceivers as outlined by Gibson (1966)'s ecological approach. These approaches, however,

expand Gibson's (1966) primacy of an environment's information content. It remains

contentious within these conceptualization models as to whether or not the internal state of perceivers regarding affordance is actually tenable (Wells, 2002).

Fayard and Weeks (2014) broaden the traditional affordance approach taken in studies of technology to include the study of practice jointly taken by organizing and technology. In other words, both technological and social affordances must be considered, as well as the interaction between the two. Just as Sadler and Given (2007) use affordance theory to frame expectations regarding library services to draw implications for communication between libraries and patrons and to advance information literacy, I am using the application of affordance theory to DBS to explore the possibilities of IT projects and technologies as sources of business value creation.

Specifically, the thesis examines social media, cloud computing, and BI-based PMS to draw implications for DBS to advance digital maturity. Affordance literature as it relates to IS is currently limited to a theoretical approach. In beginning with an understanding of this theoretical approach and applying it as lens through which empirical studies can be understood, I am taking an innovative approach to developing the tenets within the IS and DBS fields. The three studies are provided to demonstrate the value of the theoretical application for developing practical implications. In these studies, I assess the socially constructed product of individual's goals, the abilities of a technology, and the organizational environment of each of the three technologies. In doing so, the thesis is both advancing the literature and the applications for practitioners.

3 Empirical Applications

To addresses DBS through the lens of affordance theory, this research focuses on three specific emerging technologies as empirical applications. This section provides a summary of the literature governing each of these three studies to provide the reader with a baseline of understanding the current state of research on the three topics. The baseline is necessary for understanding the affordances that each of these technologies provide to DBS. For more details or further analysis of any of these three studies, the reader is encouraged to refer to the full papers, as the summaries are succinct in their overview, whereas the full papers provide a comprehensive and systematic overview of the findings. Thus, in addition to the DBS and affordance theory literature provided in Section 2, this section provides an overview of the literature relating to the three studies to provide the reader with an understanding of the existing literature in each of the three study areas, as well as embed these studies in the overarching literature on DBS and affordance theory.

3.1 Social Media

The first study focuses on the social media affordances for DBS. Social media, such as Twitter, are computer-mediated tools that allow users to generate and share content through social networking. These technologies have yielded unprecedented changes in the manner in which individuals and corporations produce and obtain information. As users are often both receivers and generators of information, social media is user-centric and, thus, driven by users and their interactions (van Dijck, 2013). The affordances, thus, include the action possibilities available in the social media environment and dependent on capabilities, commonly approached as social media influence and content production.

Communication technology affords group members to organize themselves based on homophilous patterns. Social constructivist theories provide that individuals use communication technology to share meanings and actions. While early studies of the social construction of communication technology (Fulk, 1993) assessed patterns in e-mail communication, Web2.0 technologies, such as social media outlets are now commonplace in organizational life (Hughes, Rowe, Batey, & Lee, 2012; Kietzmann, Hermkens, McCarthy, & Silvestre, 2011).

Micro-blogging services also afford users to publish brief text or image updates. Popular micro-blogging services include Twitter, Pownce, Tumblr, and Jaiku (Grosseck & Holotescu, 2008). Twitter is a micro-blogging service with nearly two hundred million registered accounts worldwide and more than seventy million unique viewers a month (Bakshy, Hofman, Mason, & Watts, 2011; Castillo, Mendoza, & Poblete, 2011; Hughes et al., 2012). It is a user-declared network in which "tweets" are used to communicate information to followers. Tweets are limited to 140 characters in length. Tweets can be directed to other Twitter users using a handle denoted by "@" and the user's Twitter username, which is referred to as a "mention." They can also be directed to an issue or concept using a "#" and the "hashtag." If a topic is tagged enough, it is considered to be a "trending topic" (Bakshy et al., 2011; Castillo et al., 2011). Bastos (2015) describes Twitter as a "wire-like service for news organizations". Users are able to view the tweets of individuals they follow and have the option of sharing these tweets with their own followers, which is known as "retweeting" (Castillo et al., 2011). Users can generate tweets from multiple sources, including emails, SMS text-messages, and web-based platforms affording real-time data generation (Castillo et al., 2011).

The mutual determinism of social structure and technology has yielded studies of the social influence model of technology use (Fulk, 1993). Twitter researchers have approached

data from multiple perspectives and disciplines. Studies range from the attributes and relative influence of users (Bakshy et al., 2011) to social networks and news source credibility (Castillo et al., 2011). Data collection tools, such as Twitter Monitor, can be used to extract longitudinal Twitter data (Castillo et al., 2011). From a social network perspective, this allows for the study of reciprocity of following, degrees of separation, and homophily of attributes (Kwak et al., 2010). Weng et al. (2010), for instance, find that 72.4 percent of Twitter users follow at least eighty percent of their followers.

The spatial and temporal dynamics of influence are the study of many Twitter focused research. Influence is considered to be very concentrated in the Twitter network—approximately fifty percent of the Twitter URLs consumed are generated by only twenty thousand users (Wu et al., 2011). Twitter social network data is unique in that the direction of influence can be determined using a follower graph. Whereas on Facebook, individuals are bi-directionally connected, on Twitter, the direction of influence can be determined. These directed links represent a shared trait (e.g., friendship or interests) and represent the flow of information, treated as influence (Cha et al., 2010). To assess the direction and influence of Twitter social networks, researchers often rely on indegree (number of followers a user has), retweets, (number of user's tweets that are shared by other users), and mentions (number of comments directed at the user). Cha et al. (2010) find that having a high indegree does not necessary indicate a high number of retweets or mentions, that most influential users hold influence over many topics, and that influence is gained strategically. Furthermore, Twitter influence can be discussed as conversation based or content based.

Twitter is a "promising natural laboratory" for diffusions studies (Bakshy et al., 2011). Diffusion is the process by which information spreads through a population. It is of interest in its

ability to impact public opinion. Studies of diffusion often focus on the role that influence plays in the process and thus the role that influential actors play in the process.   Influence—defined by Merriam-Webster as "the power or capacity of causing an effect in indirect or intangible ways"— is a key concept of many social media studies, such as those focusing on viral marketing (Hong et al., 2011). Both network structure and the temporal order of information adoption must be considered in the study of influence one has on Twitter (Lee, Kwak, Park, & Moon, 2009). Influence is given its meaning by Bandura's (1986) social learning theory. This theory provides that we are interested in the influence that actors hold because this can impact the beliefs and behaviors of other actors.

As Twitter and other social network services have become a viable source of information for their users, it is important to understand the processes by which information is disseminated through the networks, as well as the type and accuracy of information that is broadcasted (Hong et al., 2011). Castillo et al. (2011) analyze the credibility of news promulgated through Twitter to find a measurable difference in the manner in which tweets are shared. They assessed tweets as credible or nor credible based on the truthfulness of the facts they present and consider the retweeting behavior of the posts. Similarly, Hong et al. (2010) argue that popular tweets, defined as those which will attract thousands of retweets, can be predicted based on past retweets, as well as TF-IDF[2] score of messages' topic. Zaman et al. (2010) develop a probabilistic collaborative filter model based on who and what was retweeted to predict the spread of information. Suh (2010) find that likelihood of retweet is based on the number of followers, the number of

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[2]Frequency–inverse document frequency (TF–IDF) is a numerical statistic that is intended to reflect how important a word is to a document in a collection (Rajaraman & Ullman, 2011).

followees, and the age of the account, but is not impacted by the number of past tweets (Suh, Hong, Pirolli, & Chi, 2010).

In addition to studying the tweets and users who are most influential, the personality characteristics of users in general are of interest. Hughes et al. (2012) assess the relationship between social network usage and users' personality and conclude personality (neuroticism, extraversion, openness-to-experience, agreeableness, conscientiousness, sociability and need-for-cognition) correlates with social media usage. Specifically, Hughes et al. (2012) found that the use of Twitter for informational purposes positively correlates with the need for cognition and consciousness, but negatively correlates with neuroticism, extraversion, and socialiability, which suggests that Twitter users who seek information are doing so for its cognitive stimulation and utilitarian value.

Finally, social media studies also address how the affordances of these platforms have impacted society. Kietzmann et al. (2011) argues that power has been taken from those in traditional information dissemination roles, such as marketing and corporate public relations and news journalists, and given to average individuals. Thus, the capabilities associated with social media affordances were once held by professional generators of information, but are now associated with average individuals, often consumers of knowledge. The social media environment has changed the traditional environments and capabilities of information dissemination. The Web 2.0 era affords individuals and communities to create Internet content and as so, communication related to topics of Internet. Therefore, the affordances of social media are believed to alter traditional channels of information dissemination, such as news dissemination. The first study examined this argument in the context of news dissemination on Twitter during the Ukraine conflict.

3.2 Cloud Computing

The second study focuses on the cloud computing affordances for DBS. Cloud computing refers to an on-demand network service that affords individual users or businesses to access configurable resources. It can also be defined as an on-demand delivery model that enables the synchronized delivery of computing resources such as applications, storage, servers, networks and services (Bento & Bento, 2011). Cloud computing is gradually replacing local servers and personal devices in its ability to organize IT infrastructure and doing so at a fraction of the cost (Barroso et al., 2013; Shayan et al., 2013). Microsoft, for instance, calculated that running 1,000 servers through cloud computing is 80% cheaper than running the equivalent through server data centers (Shayan et al., 2013). For this reason, the cloud computing market is estimated to reach over $240 billion by the year 2020 (Carcary, Doherty, & Conway, 2014). Despite the economic advantages that cloud computing stands to provide for firms, there is still a great deal of uncertainty in its application and implementation to meet its fullest potential (Peters, 2013).

As it stands, there are three cloud computing delivery models, each affording different DBS opportunities: 1) software as a service (SaaS - such as Salesforce.com and Google apps), that delivers applications to the end users over a network, 2) platform as a service (PaaS - such as the Google app engine and Microsoft Azure) that deploys applications to a cloud, and 3) infrastructure as a service (IaaS - such as the Amazon Elastic Compute Cloud) that rents storage, processing, and network capacity to host applications (Erl, Puttini, & Mahmood, 2013; Kappelman, McLeon, Luftman, & Johnson, 2013; Kavis, 2014). Of the three, the SaaS model has gained the greatest attention and will serve as the focus of this research, given its economically efficient foundations, as well as its ability to satisfy users' preferences for the

ubiquitous availability of data and applications (August, Niculescu, & Shin, 2014). From the perspective of application software providers, the SaaS model offers the obvious benefit of liberation from the traditional low-level tasks setting up IT infrastructures and deploying applications to client machines (Geetha, Kanagamathanmohan, & Paul, 2014). This enables the providers to scale their investments with a view to growing their businesses (Shayan et al., 2013), and focus on innovation and creating business value (Padhy & Patra, 2013). Additionally, cloud computing has been associated with a series of other benefits, such as offering a controlled interface, a virtual business environment, increased addressability and traceability, and the advantage of rapid elasticity/scalability (Iyer & Henderson, 2010).

Cloud computing adoption has grown significantly since its mass offering emergence in 2006 (Carcary et al., 2014). Adoption of cloud computing and the strategy —herein defined as the set of decisions relating to the creation and deployment of a networked information delivery system—surrounding it is governed by the diffusion of technology literature. Roger's (2003) theory of diffusion of innovation seeks to explain pre-adoption and adoption decisions (Rogers, 2003; Rogers & Shoemaker, 1971). An acceptance model can be applied to assess these stages, as well as the post-adoption stages to best understand the IT adoption environment (Shayan et al., 2013). Shayan et al. (2013) provide a model for the diffusion of cloud computing using forty-four cases of patented cloud data to model the diffusion of cloud computing. Similarly, Carcary et al. (2013) examine the considerations of those who adopted the application, as well as the factors that deter adoption.

Cloud computing offers many advantages to businesses, including elasticity and flexibility (Howell-Barber et al., 2013), but not all applications are created equal. Given the complexity of the dynamic cloud industry and recognizing the need for a clear and concise cloud

computing strategy, (Geetha et al., 2014, p. 1035) argue that there is a need for "cloud brokers" to "help users to find the right provider for their requests." In considering the optimal cloud provider for one's needs, the following aspects should be considered: customer service, availability, complexity, time, customization, security, billing and payment, analytics, and entitlement (Geetha et al., 2014). Similarly, Howell-Barber et al. (2013) conclude that business (.e.g., agility and competitive edge, cost benefits, executive involvement of IS organization, organizational change management, participation of client organizations, regulatory requirements, and strategic planning) and procedural (e.g., education and training, financial planning, process management, program and project management, risk management, SOA, standards, and technology change management) factors are more important than the technical factors (e.g., cloud computing center of excellence, cloud-to-cloud hybrid integration, cloud-to-non-cloud integration, continuous processing, data, elasticity of processing resources, and infrastructure architecture) in developing cloud based strategies. In other words, the authors find that the cloud implementation strategy is more important than the offerings of the service. The components listed by Howell-Barber et al. (2013) put forth strategic considerations of dependency, organizational politics, security, privacy, regulation, and reliability.

A recent Forbes article has noted that many firms exhibit a lack of strategy in moving to the cloud, thus leading more often to failures than successes (Peters, 2013). The "no strategy" approach and increasing pressure to utilize the technology has negated the ability of firms to scale their investment and grow their businesses (Shayan et al., 2013) and create business value (Padhy & Patra, 2013). This research, thus, seeks to provide evidence for strategies for embedding cloud computing within DBS.

3.3 Business Intelligence-Based Project Management System

The third empirical application focuses on the business intelligence-based PMS affordances for DBS. With the advent of new business technologies, organizations have become increasingly dependent on decision support applications for business intelligence (BI). The concept of BI, or analytic applications (BI&A), was first introduced in the 1990s and transformed to commonly refer to big data analytical techniques in recent years (Chen et al., 2012). BI is a top priority for business management (Watson & Wixom, 2007; Chen et al., 2012). A Gartner (2007) report declares that in a survey of 1,400 CIOs, strategic BI initiatives are instrumental for ensuring business innovation and effectiveness. Similarly, an IBM Tech Trends Report (2011) presents the findings of a survey of over 4,000 IT professionals from 25 industries across 93 countries in which respondents identified BI among the top four emerging technology trends. The success of BI implementation is further supported by the Bloomberg Business' (2011) statement that 97% of companies with over $100 million in revenue reported that they are using BI (Chen et al., 2012).

BI frameworks are comprised of two key components: data input and data output. Data input, also referred to as data warehousing, is the process of data collection from both internal and external sources for use in decision support. This data, however, is of limited value to an organization until it is used for BI. When these processes occur in real-time, they are called real-time BI or active data warehouse (Anderson-Lehman et al., 2004). In Chen et al.'s (2012) BI overview, BI is conceptualized in terms of evolution, applications, and emerging research. Three evolutions are presented; the first one is the commercial relational database management system (DBMS) based structured content, the second is the web-based unstructured content, and the third is mobile and sensor-based content. Applications in the overview include market and e-

commerce intelligence, science and technology, e-government and politics, smart health and well-being, and security and public safety. Finally, emerging research includes mobile analytics, network analytics, web analytics, big data analytics, and text analytics. Thus, BI, as presented in Chen et al.'s (2012) overview, assesses DBS affordance that are both provided by its applications and contributed to business decisions.

The affordances of the environment strategies produced through BI analysis must also be considered. Watson and Wixom (2007) demonstrated that BI-enabled business strategies are most effective when they are 1) supported by management, 2) part of the organization's culture, 3) aligns with broader business strategies, 4) effectively governed, and 5) supported by decision based data infrastructure. BI affords businesses with the opportunity to use data and analysis to generate favorable results. Thus, BI is essentially the systematic quantification of the environment and capabilities—the affordances-- of an organization to make business decisions and is, therefore, essential for evidence based DBS. Businesses can incorporate BI into DBS through the assessment of technologies and related techniques, systems, applications, and practices. This analysis considers the affordances of these factors to make better business decisions (Chen et al., 2012). BI is a data driven business strategy based on analysis of past and/or existing factors for determining priorities and policies that then impact future affordances.

Given the growing importance of BI for both analyzing existing affordances and improving future affordances (Watson & Wixom, 2007; Chen et al., 2012), information systems are being transformed to meet the needs of BI (Rai & Sambamurthy, 2006). Just as this dramatic transition provides opportunity for the digitization of affordances, it also alters the business environment, including the flow of information and associated power. The third study focuses

on a case study that examines the flow of information and its impact on power within an

organization in the planning phase of developing a BI-based PMS.

4   Research Aims

The thesis employs diverse methods to contribute to the literature on DBS and to identify DBS strategies that contribute to business success. The aim of the research is to provide empirical support to the theoretical tenets of DBS and actionable findings for the businesses. Specifically, this research is driven by two specific aims. The first aim is to update the existing state of knowledge to include emerging technologies. In acknowledging that technology is not static and in fact, it is strategically immature for businesses to view technology as static, this research is driven by the aim of capturing emerging technologies and contributing their affordances to DBS and the literature governing it. To meet this first aim, this research seeks to understand the affordances provided by cloud computing and social media, as well as the BI-based PMS. Both the methods employed and the outcomes and implications discussed are designed to meet this specific aim.

The second aim of this research is advance the state of knowledge on value appropriation stemming from emerging technologies. The purpose of DBS, as previously discussed, is to promote firm's digital maturity through the creation of a business environment in which technology affords successful business outcomes. Thus, this aim is driven by the desire to contribute to the existing literature through addressing the complex phenomenon by which DBS affordances— specifically in the areas of cloud computing, social media, and BI-based PMS, and more broadly in the area of emerging technologies and information systems—promote an organization's value.

To address these two specific aims, this research assesses the incorporation and control of technology in different environments and the affordances demonstrated in each through three studies. By assessing the environments in which IT strategy was incorporated into business

strategy under varying scenarios, this research presents and seeks to specify considerations that fall within the scope of DBS. While the focus of each of the three studies is limited to a single IT area, the studies are discussed and compared to provide broader theoretical and practical implications regarding DBS. Furthermore, the findings are not only applicable beyond the technologies and strategies that they are drawn from—the findings also provide broader implications of using DBS to 1) create and maintain firm's social influence and relevance, 2) devise strategy for new technological offerings, and 3) control the technological use to limit individual's power gain. In all, focusing on these areas to accomplish the overall purpose of this research provides insights and implications for firm's value creation through DBS.

The cases analyzed within this research demonstrate how firm's use of technology is embedded in a broader business strategy through the affordances provided by the interaction between these technologies and the environment in which they are interacting and, thus, has an impact on firm's success or failure. Intended for both academics and practitioners, this research is robust in the cases examined, in their applicability to advancing the IT/IS/DBS research in which it is situated, as well as in the ability of practitioners to use the findings to enhance firm value through DBS. While there is ample literature that discusses the need for DBS, there is limited research that provides empirical demonstrations of how DBS components impact outcomes. Practical implications of this research stem from insights on the higher-level frameworks of IS strategy and how they can be incorporated into DBS to serve as a foundation for improving the implementation of technology to advance firm outcomes. The research thus provides implications for the affordances of emerging technologies, their incorporation into DBS, and the impact these affordances and incorporations have on business outcomes and value creation. As the environment in which each practitioner is operating cannot be determined, the

findings I provide are specific enough to demonstrate the cases and their outcomes, yet broad

enough to be applied to the DBS of businesses across multiple industries.

5   Methodological Approach

The aforementioned research questions were examined in three studies using diverse methods. In examining and presenting three research studies in their specific contexts, this research made comparisons and generalizations across the studies (Lee & Baskerville, 2003; Mingers, 2003). The first study uses Twitter API[3] for data collection at fifteen-minute intervals by crawling and collecting a large amount of data using specific keywords. The second study reveals a typology of implementation strategies regarding cloud computing applications using case study methodology.   The third study adopts a single-case study methodology to analyze the causes of the failure of a BI-based PMS during the pre-implementation and implementation phase. The three studies are discussed and analyzed based on their unit of analysis, their impact and relevance to IS strategy, and their overall implications for academic scholars and influential business leaders (refer to table 1).

	Study 1: Social Media	Study 2: Cloud Computing	Study 3: IB-based PMS
Unit of Analysis	Egonetworks	Organizational Networks	Actor and Team Interaction
Research Design	Content analysis	Comparative Case Study	Single Case Study

Table 1: Methodological Approach

5.1 Study 1: Contents Analysis

Tweets posted during the Ukrainian conflict in Kyiv between November 21, 2013 and February 23, 2014, the date that Mr. Yanukovych fled and Olexander Turchynov was appointed as temporary president (Table 2 below depicts the key events[4] that occurred during the whole episode) were extracted. This research takes an egonetwork approach in its focus on individuals (singular Twitter users) and those they are directly connected to through the virtual environment,

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[3] Twitter offers an Application Programming Interface (API) that is easy to crawl and collect data. API is a set of routines, protocols, and tools for building software applications.
[4] From the collected data and confirmed through major media agencies

as opposed to seeking to explain the larger structure and relationship among users (Arnaboldi et al., 2012). In other words, the extracted data focused on the users, their participant category, and the source of their re-tweeted information instead of focusing on the larger Twitter network on the topic. Twitter was crawled at fifteen-minute intervals for tweets that contained the words "Russia" or "Ukraine" for the duration of the conflict. This produced a data set that included most tweets related to the study. The data were then cleaned to remove tweets that were irrelevant to the conflict although including these keywords. The remaining tweets were coded based on the participant categories provided in Table 3. Based on the above criteria, 95,986 tweets were captured and analyzed. Tweets were first coded as event-related or people-related. For the event-related tweets, we used a Boolean[5] search to identify two sets of tweets based on the two key events occurring during the conflict: those using the words "protest" and "square" and those using the words "Russia" and "troops." The resulting n-value was 7,429 for the former and 12,333 for the latter. For the people-related tweets, similar searches were conducted for "Obama" and "Putin," as the key political figures of the conflict. The resulting n-value was 48,251 for Obama and 27,973 for Putin. To develop categorizations of the Twitter participants, this study first extracted a set of Boolean features based on the user screen name and the corresponding description. Participant categories included: major news agencies, radio and TV stations, other news agencies, news aggregator, affiliated journalists, independent journalists, blogging associations, independent bloggers, non-commercial organizations, commercial organizations, and celebrities. Heuristic guidelines were then applied to categorize participants based on specific values of the features. Several rounds of clustering were used to ensure accuracy, including the manual coding of participants not identified by the features of the

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[5] Used to represent logical propositions by means of the binary digits 0 (false) and 1 (true).

machine coding. A total of 230 thousand tweets were ultimately coded by thirteen individuals (averaging 17,705 tweets each) due to their inability to be categorized by the machine algorithms. The coders were modified to ensure inter-rater reliability throughout the process, including thorough explanations of the categories and their meanings and conducting assessments of the accuracy of the human coding, addressing discrepancies through iterative discussions. After the tweets were coded, the participants' involvement and influence were analyzed. Level of involvement was based on the number of tweets related to the aforementioned search terms. Level of involvement was compared by participant type as well as the four sets of search terms (e.g. protest-square, Russia-troops, Putin, and Obama). Level of influence was then determined by the average number of retweets and by comparing participant type and search terms. By doing so, the study could systematically assess the role and influence of traditional media agencies in social media platform.

Key event	Date
Protests gather pace, as 100,000 people attend a demonstration in Kiev.	Late November 2013
Protesters occupy Kiev city hall and Independence Square in dramatic style. Some 800,000 people rally in Kiev.	Early December 2013
Vladimir Putin throws President Yanukovych an economic lifeline, agreeing to buy $15bn of Ukrainian debt and reduce the price of Russian gas supplies by about a third	17 December
Parliament passes restrictive anti-protest laws as clashes turn deadly. Protesters begin storming regional government offices in western Ukraine.	16-23 January
Prime Minister Mykola Azarov resigns and parliament annuls the anti-protest law. Parliament passes amnesty bill but opposition rejects conditions.	28-29 January
All 234 protesters arrested since December are released. Kiev city hall, occupied since 1 December, is abandoned by demonstrators, along with other public buildings in regions.	14-16 February
Clashes erupt, with reasons unclear: 18 dead.	18 February
Kiev sees its worst day of violence for almost 70 years. At least 88 people are killed in 48 hours. Video shows uniformed snipers firing at protesters holding makeshift shields.	20 February
President Yanukovych signs compromise deal with opposition leaders.	21 February
• President Yanukovych disappears • Protesters take control of presidential administration buildings • Parliament votes to remove president from power with elections set for 25 May • Mr Yanukovych appears on TV to denounce 'coup' • His arch-rival Yulia Tymoshenko is freed from jail	22 February
Ukraine's parliament assigns presidential powers to its new speaker, Oleksandr Turchinov, an ally of Tymoshenko. Pro-Russian protesters rally in Crimea against the new Kiev administration	23 February
Ukraine's interim government draws up a warrant for Yanukovich's arrest.	24 February

Pro-Russian Aleksey Chaly is appointed Sevastopol's de facto mayor as rallies in Crimea continue.	25 February
Crimean Tartars supporting the new Kiev administration clash with pro-Russia protesters in the region.	26 February

Table 2: Key Events during the Ukraine Conflict

Type	Description	Examples
Mass media		
Major news agencies	Mainstream news producers that are directly linked to corporate conglomerates	@CNN, @BBCNews
Radio and TV stations	Mainstream news producers that are linked to radio and TV stations	@PressTV (a TV broadcaster)
Other news agencies	Various non mainstream news producers, such as non-commercial or regional news agencies	@ria_novosti, @IndyWorld
News aggregators	Aggregate news from other news producers, but do not produce news themselves	@MSN
Journalists		
Affiliated	Individual journalists who are affiliated to a news agency	@patrickjackson (affiliated to BBC)
Independent	Individual journalists who produce first-hand news materials, e.g., interviews, photos, etc., but are not affiliated to a news agency	@AHernandezDj (journalist and DJ)
Bloggers		
Blogging associations	Blogging platforms that host blogs on news from different sources	@mashable
Independent bloggers	Independent bloggers who are not affiliated to any news media and do not produce news by themselves; they highlight or forward news information from other sources	@ArminaLaManna (self-described as storyteller, director, and writer)
Organizations		
Commercial	Commercial organizations	@JECComposites (an organization dedicated to promote composite materials internationally)
Non-commercial	Non-profit, grassroots organizations	@100prayingwomen
Celebrities	Individuals who are famous for reasons unrelated to politics or activism.	@KirkWhalum (Grammy-winning jazz saxophonist / recording artist)

Table 3:Descriptions of the Participant Categories

5.2 Study 2: Comparative Case Study

The second study uses comparative case analysis to analyze the recent strategic decisions by three firms to offer cloud-based application software. To this effect, this research focuses on the manner in which three firms incorporated cloud-based application software into their software offerings. Each of the three firms was treated as a single case study in the data collection and analysis phase, but then compared in the discussion phase. These methods, in line with comparative case study analysis methods, allow us to provide a robust, in-depth overview of the firm's cloud-based application environment and profile. The cases, which were selected based on their distinct differences in strategy, are located in the same European country, but are positioned in different industries. Firm 1 is a leading large telecommunications provider serving both residential and business customers; Firm 2 is a provider of engineering simulation software specializing in computational fluid dynamics and multiphase flow heat transfers; and Firm 3 is a mid-sized company specialized in offering customer relationship management (CRM)[6] software. While it may take a while before one can conclude whether these companies' cloud strategies have been ultimately successful or not, by synthesizing the analyses of these three firms at the point where they made their decisions, this study contributes to both researchers' and practitioners' understanding of the different parameters that firms take into account during the unfolding of a cloud strategy. The study examines the manner in which the software was rigorously examined by each firm, the operating procedures surrounding it, the specific challenges firms may have experienced, and the interval outcomes of its use. It also considered the roles of management, technology, security, and legality in the decisions surrounding the cloud strategy at each firm.

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[6] Customer relationship management (CRM) is an application to monitor and managing a company's interaction with current and potential customers.

5.3 Study 3: Single Case Study

The final study uses a single case study, focusing on the planning phase of BI-based PMS at GPM (pseudonym), a multinational real estate company. Using grounded theory methodology, the study examines the empire building (EB) forces throughout the period and the impact on the final failure of the project. As the project ultimately ended in failure due to EB behaviors, the data was used to understand the dynamics of the actors and the environment in which EB occurred to provide both theoretical and practical knowledge regarding the role of EB in IS planning phase. Both primary and secondary data relating to the project were collected. Data gathered include documents, archival records, interviews, observations, and physical artifacts. These data, which are described in detail in Appendix A at the end of study 3, were provided by the Human Resources Department, the IT Department, the Marketing Department, the Operations Department, PMS-related committees, and interviews with actors involved in the project. The researchers were granted open access to all actors involved in the PMS project, including project related emails correspondences and documentation exchanged between actors.

The inductive approach to the extensive corpus of data enabled to identify key EB actors and their actions. Following the recommendations of Corbin and Strauss (2014) and Urquhart et al. (2010), the data collected was coded using grounded theory methods. Forty-one open codes were applied to the data in the open coding process, which were then refocused in the axial coding stage (Charmaz, 2013; Strauss & Corbin, 1990; Urquhart, 1997). In the selective coding stage, two types of EB emerged: expansionist EB and reductionist EB, each with a focal actor. To provide a thorough presentation of these streams of EB, the analysis bifurcates the case description along the lines of two key actors. For each actor, key events are provided with supporting evidence (e.g., quotes from interviews, presentations, emails, meetings, or related

documents), followed by a presentation of the underlying mechanisms of each the actor's actions. Finally, the discussion of the data and findings provide the motives, relationship with data/information, the exercise of power, the management approach, and the system preference for each of the actors.

6   Summary of the Studies

This section provides a summary of the three studies. These summaries comprehensively provide the reader with the findings of each study. For more details or further analysis of any of these three studies, reader should refer to the full papers as the summaries are succinct in their overview, while the full papers provide a comprehensive and systematic overview of the findings. In the next section, I discuss implications and conclusions for each of these studies, as well as for the overarching application of these studies to DBS.

6.1 Study 1: Who are More Active and Influential on Twitter? An Investigation of the Ukraine's Conflict Episode

Social media technologies are useful tools for both producing and obtaining user-driven information. Twitter, in allowing users to micro-blog—to send short messages of less than 140 characters—provides a real-time information network connecting participants with user-centric content (van Dijck, 2013). As a result, Twitter has emerged as a major platform for reporting, organizing, and disseminating news information during major events (Lenhart & Fox, 2009; Ronzhyn, 2014). Moreover, the sharing and receiving of information is nearly instant (Sunstein, 2006), replacing news and communication structures of the pre-social media age and prompting a new understanding of news dissemination (Boyd & Marwick, 2011; Hermida, Fletcher, Korell, & Logan, 2012). The immediacy and unofficial nature of social media news dissemination challenges previous studies and methods of news dissemination. For instance, Hu et al. (2012) observed that the news of Osama Bin Laden's death was shared on Twitter before mainstream news outlets reported it. They also noted the existence of three groups of opinion leaders: 1) the mass media, 2) individuals affiliated with the media, and 3) celebrities.

Compared to the extant research, this study is innovative in three ways and is more extensive that comparable studies, as tweets were comprehensively coded using both human coding and machine analysis. First, while previous studies have employed limited samples of data (e.g., Hermida et al. 2014; Lotan et al. 2011), this study employs more extensive data comprising 95,986 tweets extracted during the Ukrainian conflict in Kyiv, which took place from November 21, 2013 until the Crimean Tartars that supported the new Kiev administration clashed with the pro-Russia protesters on February 26, 2014. The study builds on the previously addressed concepts of Twitter participant level and influence in using the Ukrainian 2013-2014 conflict to assess participant type in news dissemination. Tweets were first coded as event-based or people-based. Within the event category, focus was given to tweets including the words "protest" and "square" or "Russia" and "troops". Second, categories of participants were comprehensively coded. This included mass media (further coded as major news agencies, news aggregators, radio and TV stations, other news agencies), journalists (further coded to differentiate between affiliated and independent journalists), bloggers (further coded to differentiate blogging associations and independent bloggers), organizations (further coded to differentiate commercial and non-commercial), and celebrities. Finally, while previous research has predominately used manual human coding to differentiate the aforementioned, this research uses a combination of machine and human coding to process the dataset. The efforts collectively allow for more accurate and comprehensive examination of the tweets relating to the Ukranian conflict and the influence that these tweets held. Using a combination of machine analysis and human coding processes, the producer of each of these Tweets was categorized as major news agencies, radio and TV stations, other news agencies, news aggregator, affiliated journalists, independent journalists, blogging associations, independent bloggers, non-commercial

organizations, commercial organizations, and celebrities. Analyses focused on comparing these groups by their level of involvement (i.e., number of tweets) for Ukrainian conflict tweets related to "protest" and "square," tweets related to "Russia" and "troops," tweets related to "Putin," and tweets related to "Obama," as well as their level of influence (i.e., number of retweets) related to each of these four categories.

The analysis process reveals[7] that non-commercial organizations (e.g., religious networks, charities, volunteers) were the most involved based on the number of tweets generated related to the focal event (see Figure 1). Non-commercial tweets were 2.88 times more than the next highest group, major news agencies. The influence of these non-commercial organizations, as determined by the number of retweets attracted, however, was the lowest (see Figure 2). Major news agencies were 6.22 times more likely than non-commercial participants to be retweeted. Mass media and sources related to journalists, professional associations, and commercial organizations generated fewer tweets, but garnered higher retweets. An exception to this pattern was found for tweets focusing on Obama and Putin, in which celebrities' influence became salient. This study concludes that people self-select news information from amongst the mass media options to retweet, resulting in the dominance of mass media despite the user-generated nature of Twitter (see Figure 3).

As a whole, the research findings indicate that conventional mass media and related journalists continue to hold a dominant influence on Twitter. This is true despite social media enabling a full spectrum of communication, including personal, private, and mass personal in comparison to traditional mass media (Walther et al. 2010). The findings also reveal distinct

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[7] This is one of the four findings; refer to the original paper in the appendix for the rest of the findings.

differences in regards to the level of influence and involvement among certain Twitter participants. The findings of this study collectively offer a more refined understanding of the influence and involvement of these Twitter participants in regards to news dissemination during conflicts, such as the Ukrainian example.
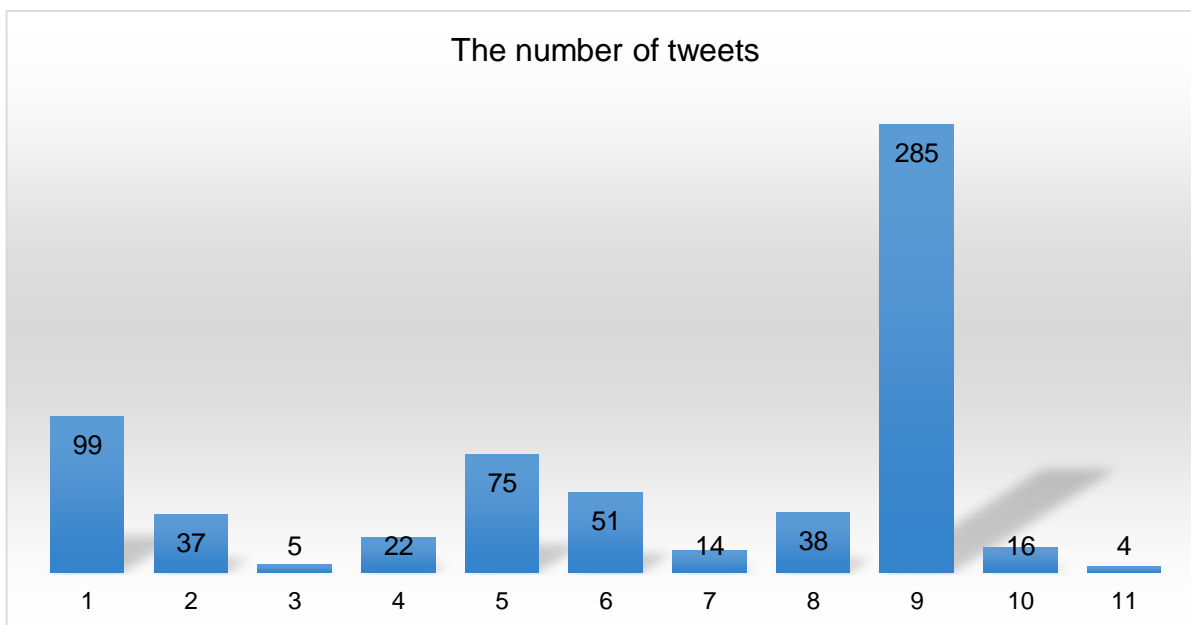
Legends: 1- Major news agencies; 2- Radio and TV stations; 3- Other news agencies; 4-News aggregator; 5- Journalists (affiliated); 6- Journalists (independent); 7- Blogging associations; 8- Independent bloggers; 9- Non-commercial participants; 10- Commercial organizations; 11- Celebrities

Figure 1:. Levels of Involvement of the Different Participants for Tweets Related to "Protest" and "Square"
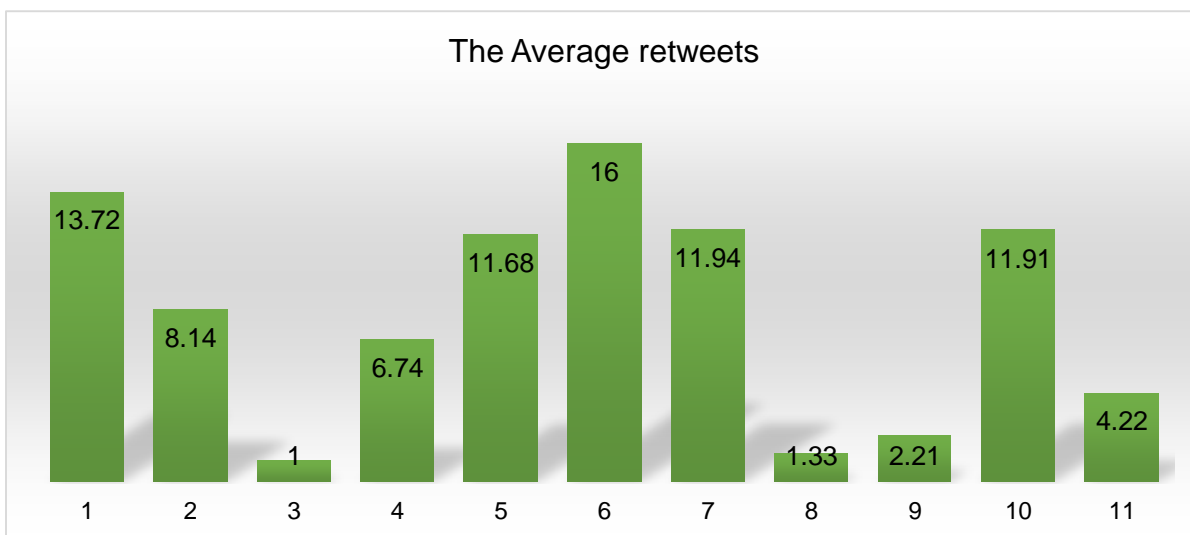

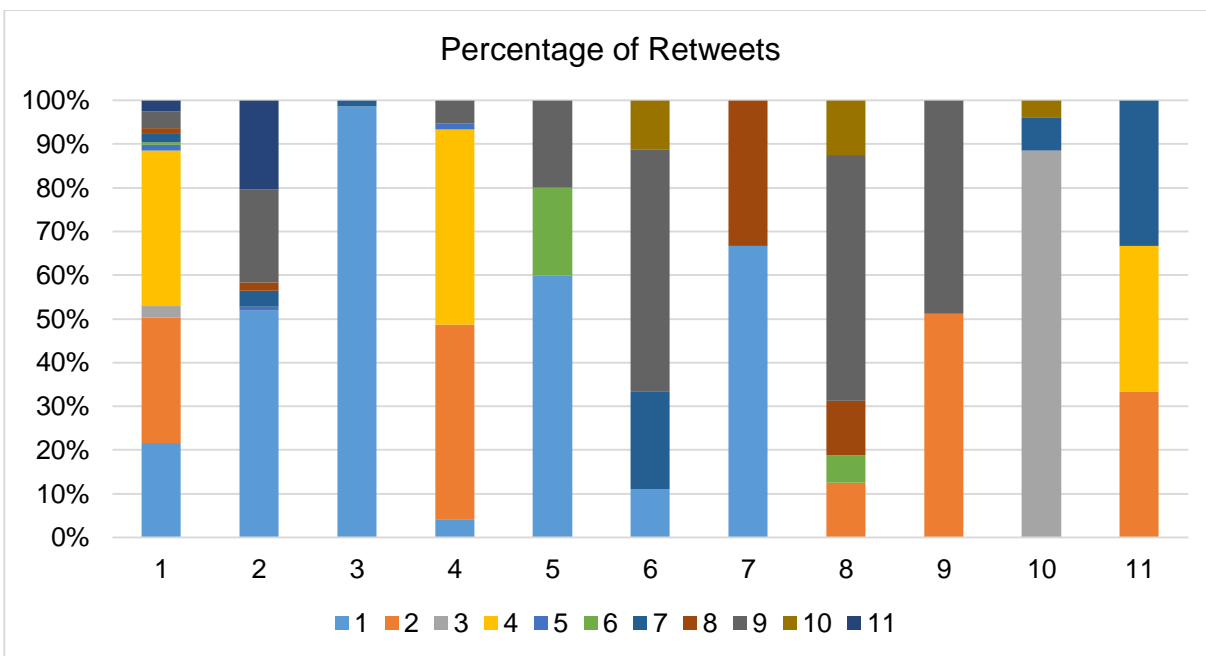*Figure 2: Levels of Influence of the Different Participants for Tweets*

Figure 3:" Protest" and "Square" – Types of Users Who Retweeted in Each Category

6.2 Study 2: The Building Blocks of a Cloud Strategy: Evidence from Three SaaS Providers

Firms often approach the cloud without a clear strategy, which has yielded negative results for many different reasons (Fang et al., 2012; Mithas et al., 2013; Vance, 2013). The study analyzes the decision processes of three firms regarding their use of cloud-based application software to demonstrate three strategies: 1) innovating strategies, 2) optimizing strategies, and 3) disruptive strategies. Each of the strategies represents distinct ways that firms utilize the cloud to impact the industry, including their customer value propositions and value chains. All three of the case firms are located within the same European country, but each represents a different industry.

Firm 1 is a large telecommunications provider serves both residential and business clients. The norm in this industry is to supplement traditional offerings, such as voice calls and data plans, with more non-traditional arrangements, such as mobile payments, which is often achieved through collaboration with other industries, such as firms in the financial industry. While its telecommunication infrastructure presents plenty of options to enter the cloud business, significant investment is needed to make it IaaS ready. Firm 1 decides to invest on developing a cloud infrastructure and developing new business models by offering various SaaS to end users instead of offering IaaS to application services providers. In other words, Firm 1 decides to diverge from the industry norm; instead of offering the usual telecommunication infrastructure-related offering for traditional and non-traditional arrangements, Firm 1 aims to offer SaaS to business customers. Regarding strategy, Firm 1 is an innovator, which entails that it will often stand a chance of combining elements of the value propositions and value chains that were previously unrelated to increase their competitive advantage. The cloud is not only a technology

that enables businesses to embrace opportunities for innovation, but also serves as a catalyst for business model transformation.

Firm 2 is a provider of engineering simulation software specializes in simulating computational fluid dynamics and multiphase flow heat transfer. Since the market is small, not very adaptable, and dominated by two large companies, Firm 2 is considering deploying its software as a cloud-computing hosted service with the aid of the academic people. By deploying the software as a cloud-computing hosted service, Firm 2 believes that it can increase the market size and compete with the dominant players of the current market. Regarding strategy, Firm 2 is characteristically classified as having a disruptive strategy due to the sharing of the conception that the cloud services generate completely different value chains. Disruptors have the potential to capture inimitable competitive advantage through the creation of disruptive mechanism in an existing market or industry. Furthermore, disruptors, such as Firm 2, provide customers with what they were either unaware of or knew that they needed.

Firm 3 is a mid-sized software company specializes in CRM software, such as iPhone and iPad applications, as well as a web frontend. Firm 3 views cloud computing as a new opportunity that would extend its business and so is planning to provide that SaaS version of their CRM software and offer this alongside the on-premises version of the software. While it is the current industry norm for a CRM software provider to have a cloud solution, for Firm 3, there is not only the question of whether is it worth the cloud solution investment, but also whether is it possible for the company to survive in the long run without the cloud solution. Regarding strategy, Firm 3 is an optimizer in that it intensifies customer relationships with special emphasis on preventing the company from risking the latent failure that may occur naturally. Optimizers can expand their value propositions through enhanced products and

services, improved customer experience, and/or more extensive channel delivery options. This strategy is more risk averse than innovators or disruptors.

Each of these strategies is considered to represent distinct ways of utilizing the cloud to impact the industry as well as firms' value propositions. Analysis of these strategizing demonstrates how the decision to utilize the cloud is dependent on seven key elements: industry turbulence, industry concentration, industry growth, option value, technical debt, criticality of software security optimization, and demand for software customization (see Figure 4).
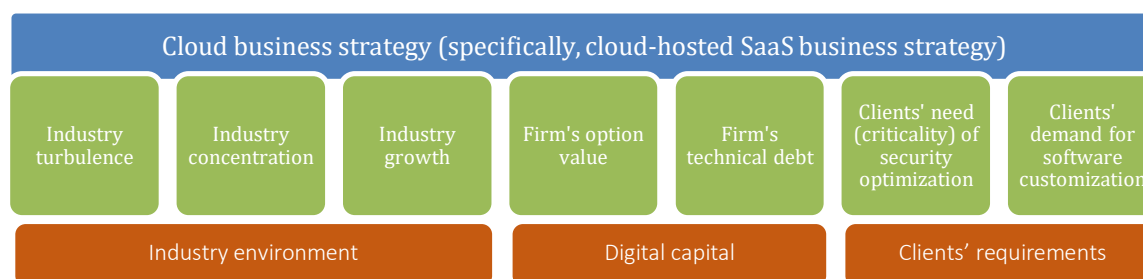

Figure 4: The Seven Building Blocks

6.3 Study 3: 'Demystifying' Empire Building within IS Projects: A Path Dependency Perspective

Empire building (EB), the increasing of the size or scope of a person's power and influence (Gammelgaard, 1999; Hope & Thomas, 2008; Prezas, 2009; Wysocki, 2010), can be detrimental to new information system (IS) projects. For decades, information systems (IS) have been recognized as a player in the distribution of power (Backhouse, Hsu, & Silva, 2006; Jasperson et al., 2002; Keen, 1981; Levina & Vaast, 2008; Silva & Backhouse, 2003; Smith, Winchester, Bunker, & Jamieson, 2010). IS nurtures the development of power in organizations by making it possible for information to be disseminated in directed ways, where some employees have better access to information than others (Markus, 1983). As a result, employees are often triggered to participate in EB behaviors. There is an intricate relationship between structures of power, authority, patterns of information flow, and work within an organization. IS can alter this relationship in its impact on authority, control, and affordance to employees to seek authority and power through control of IS. (Allen, Brown, Karanasios, & Norman, 2013; Bloom, Garicano, Sadun, & Van Reenen, 2014; Davidson, 2006; Keen, 1981; Markus & Robey, 1988).

Due to the potential for employees to use IS to achieve power within organizations, the development and implementation of IS often creates political divisions or events. (Jasperson et al., 2002; Keen, 1981; Krotov, Boukhonine, & Ives, 2011; Markus, 1983; Sabherwal & Grover, 2010; Sillince & Mouakket, 1997; Silva & Backhouse, 2003; Wilson & Howcroft, 2005) and counter-implementation efforts as early as its planning stage (Brightman, 1988; Krotov et al., 2011; Thomas, 2002). In the IS planning phase, individuals in opposition to the IS project may demonstrate stances that prove to be counter effective to successful implementation. For instance, these opposing individuals could increase the system complexity or scope beyond the

ability of the organization or they may reallocate resources needed to initiative the IS. These actions could result in the delay or permanent failure of the IS. Alternatively, some individuals might support the project based on the potential power it could bring them and as so, seek to control the project from the planning stage (Brightman, 1988). In this case, individuals might modify or reevaluate the IS design to align with their potential personal benefits envisioned through gaining control of the IS project. Study three focuses on this counter-implementation approach, i.e., individual empire builders' attempts to control the planning of a new IS. The study begins with a summarization of existing works on EB, the majority of which stem from research conducted in the areas of business and finance, followed by an outline of the methodology and an introduction to the case. The evidence for two streams of EB, each with five supporting mechanisms are provided followed by a discussion of the implications of the findings for research and practice.

Through an in-depth case study of the planning of a business intelligence (BI)-based project management system (PMS) in a real estate organization, two distinct EB practices are discovered. The first, reductionist EB, was an effort to maintain superiority in real-estate project information and knowledge with the ultimate aim of solidifying his own position within the company. Reductionist empire building is herein defined as actions characterized by the efforts to either simplify the information systems to maintain domain knowledge supremacy or put the IS project on hold for as long as possible until people lose interest in the project allowing the empire builder to resume domain knowledge supremacy. The focal actor, a contract manager from the operation department, attempted to simplify the PMS as merely a project-recording tool that receives input data from the operation department. The second EB practice, expansionist EB, was an effort to achieve IS excellency, which accordingly could advance the actor's influence in

the organization. Expansionist empire building is herein defined as behaviors characterized by the efforts to gain control or ownership of important data or information by taking control of the system development and integration, and the governance of the access rights to the integrated data or information. The focal actor, a chief information officer (CIO) from the IT department, attempted to include comprehensive features in PMS and integrate it with the other existing systems. The study highlighted the interplays between these empire builders and the underlying mechanisms of their individual actions (see Figure 5 and Table 4).

This study provides several key implications. First, the study demonstrates that, contrary to the governing literature, EB is not necessarily detrimental to an organization although driven by self-interest. While the first EB actor was driven by self-interested desire to control and shape the system in a fashion that reinforced his control over the PMS and related business processes, the second EB actor was driven by the desire to comprehensively develop the system to produce a product that could be integrated with existing legacy systems and yield greater oversight of the organization's system. While both actors were interested in increasing their own authority and power, the latter may benefit the firm as well. Second, although previous studies have highlighted the need for corporate governance in addressing EB, this research advocates the presence of annulment effects for cases in which such opposing EB behaviors and mechanisms are present. Third, this study demonstrates that diverse network controls can be used in EB practices to achieve actor motivations. The first EB actor, for instance, relied on his social network influence and alliances while the second EB actor relied on IS resource control and hierarchical authority. Fourth, this study focuses on a series of underlying EB mechanisms while previous studies have limited analysis to the final outcome. This study provides and analyzes a chronological series of underlying mechanisms for each of the EB actors and their power

struggles. These underlying mechanisms add richness and depth to analysis of the relationship between motives and outcomes for the EB actors in the planning of a new IS. Specifically, this study has provided five distinct mechanisms for each of the EB streams, each of which aligned with the respective actor's desire to attain power over and control of the PMS. Consequently, this research advances the literature on organizational path dependence as the reductionist EB actor was complicit in path-reinforcement, while the expansionist EB exhibited path-breaking or even path-creating. The real-estate's BI-based PMS is an organizational path that includes interconnected processes, people, and information technologies. The intended path of the expansionist empire builder was to have a new more encompassing and transparent system, while the intended path of the reductionist empire builder was focused on a simplified new system that was similar to the existing system. These findings provide a foundation for analyzing underlying EB mechanisms in future applications of EB theory to other IS planning, implementation, and design.
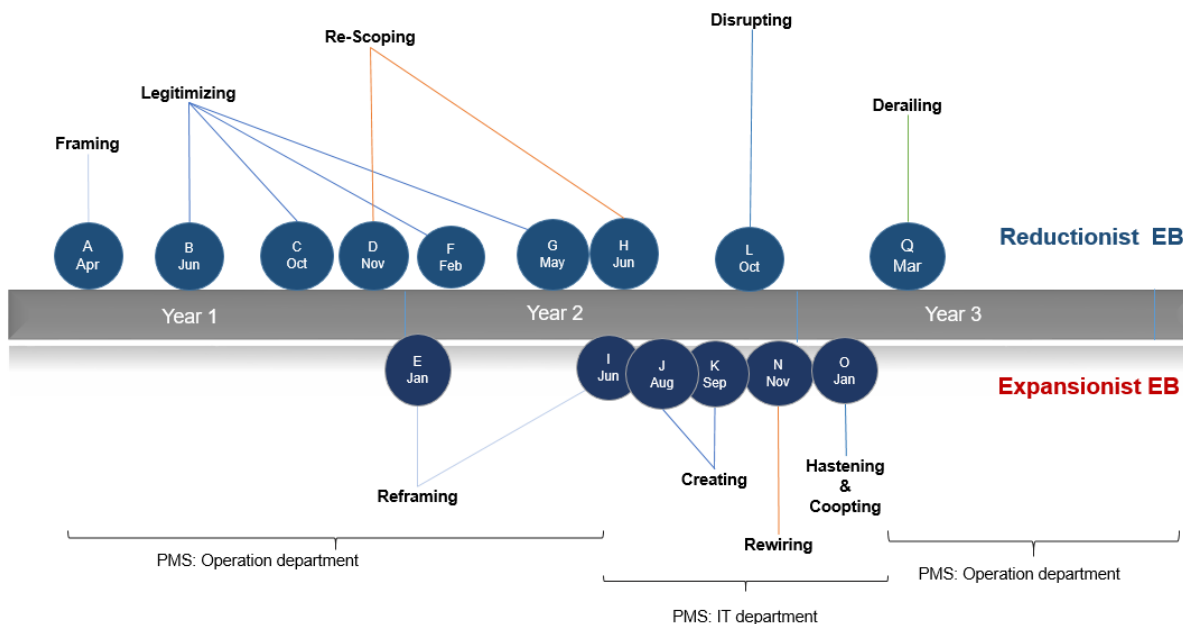

Figure 5: Visual Chronology of Mechanisms Underlying Reductionist and Expansionist Empire Building

Path Dependency Attribute	Reductionist Empire Building [Path Reinforcement]		Expansionist Empire Building [Path Breaking and Creation]	
	Mechanism	**Action**	**Mechanism**	**Action**
Self-Reinforcement Mechanisms	***Framing*** system implementation according to prevalent business practices	Reductionist empire builders will ***frame*** newly planned IS in ways that match current business practices and preserve status quo.	***Reframing*** system implementation according to desired business practices	Expansionist empire builders will ***reframe*** newly planned IS in ways that match desired business practices.
	Legitimizing contemporary roles in system implementation	Reductionist empire builders will leverage on newly planned IS to ***legitimize*** his institutional role within the organization.	***Creating*** new institutional roles in system implementation	Expansionist empire builders will ***create*** new institutional roles for newly planned IS in order to expand the sphere of influence.
	Re-scoping system implementation based on personal competencies	Reductionist empire builders will ***re-scope*** newly planned IS in ways that draws on competencies they possessed.	***Rewiring*** information flows surrounding system implementation	Expansionist empire builders will ***rewire*** information flows surrounding newly planned IS in order to moderate interactions among stakeholders.
	Disrupting system implementation to await favorable conditions	Reductionist empire builders will find ways to ***disrupt*** newly planned IS until favorable conditions manifest.	***Hastening*** system implementation	Expansionist empire builders will ***hasten*** the implementation of newly planned IS to preempt unforeseeable disruptions.
	Derailing system implementation through intentional suboptimal decisions	Reductionist empire builders will derail newly planned IS by making suboptimal decisions about system implementation intentionally.	***Coopting*** system implementation through integration with controlled systems	Expansionist empire builders will ***coopt*** newly planned IS through integration with systems that are already under their control.
Exercise of Power	Mostly exercised through cultivated alliances and social networks		Mostly exercised through hierarchical authority and/or resource allocation	
System Preference	Downgraded system similar in scale and scope to existing system with the latter serving as a fallback lock-in option		Comprehensive system with no fallback lock-in option	

Table 4: Path Dependency Perspective of IS-Related Empire Building

7   Conclusion

7.1 Limitation and Future Research

Findings in this thesis have to be viewed in light of its limitations. The first limitation of the thesis is that not all aspects of each environment have been taken into account. In the interest of time and focus, the analysis is limited to the most relevant factors to each of the studies and as so, further analysis would be needed to incorporate all relevant factors, such as shifts in the economic environment that may have also impacted the firms. The second limitation of the thesis is that only short-term impacts are discussed. For instance, further research is needed to investigate the long-term impacts of the employed cloud-based strategies on the firm's outcomes. Moreover, this research has presented the details germane to understanding the DBS of the cases studied and the outcomes of interest. While determining which details are germane through systematic iterative processes to maintain research reliability, it remains a subjective process. Finally, just as this research filled a gap in the literature by addressing the emerging technologies, technology is constantly changing and so, there is a constant need for refining the state of the literature that bridges affordance theory and DBS as future research will need to account for technological advances that cannot be predicted or accounted for in current research.

7.2 Concluding Remarks

The aforementioned limitations minimally distract from the overall contributions that have been highlighted within the thesis. While the focus of each of the three studies is limited to a single IT area (e.g., social media, cloud computing, and BI-based PMS), the studies are discussed and compared to provide broader implications regarding DBS. The wide array of cases presented allows practitioners to compare and contrast their current business strategies, as well as incorporate this knowledge into their future business strategies. The findings provided are specific enough to demonstrate the cases and their outcomes, yet broad enough to be applied to the DBS of businesses across multiple industries. In other words, even if the practitioner audience of this research is not in the same industry as the studies, the outcomes of these studies can be applied across all industries to some extent in their efforts to develop DBS. Specifically, the first paper provides an example of influence in Twitter can be measured, the second paper provides the building blocks for developing cloud-related strategy, and the third paper provides a lens for which to understand the many faces of empire building through BI-related applications. Together, these three studies provide practitioners with the environmental impact on and of the affordances to be considered in DBS development through the provision of empirical studies addressing the affordances of emerging technologies for business strategies.

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Part II

Study 1: Who are More Active and Influential on Twitter? An Investigation of the Ukraine's Conflict Episode

Who are More Active and Influential on Twitter? An Investigation of the Ukraine's Conflict Episode

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Abstract

Twitter has been indicated to be an emerging form of news media with a wide spectrum of participants involving in news dissemination. Owing to their open and interactive nature, individuals, non-media, and non-commercial participants may play a greater role in this regard; thus, it is deemed to disrupt conventional media structures and introduce new ways of information flow. While this may be true in certain aspects in news dissemination such as allowing a broader range of participants, our analysis of the involvement and influence of the different participant types, based on a large tweets dataset collected during the Ukraine's conflict event (2013-2014), portrays a different picture. Specifically, our results unveil that while non-commercial participants were the most "involved" in generating tweets about the news event, the retweets they attracted, a common measure of influence, were among the lowest. In contrast, mass media and sources related to journalists, professional associations and commercial organizations garnered the highest retweets. An exception found was when the tweets focused on popular political figures (Obama, Putin) related to the event, in which celebrities' influence in terms of retweet count became salient.

Keywords: Twitter; News dissemination; Retweets; Mass media; Non-commercial participants; Independent participants; Celebrities

1 Introduction

Social media technologies have been touted to bring about unprecedented changes to how people produce and obtain information such as news. Owing to their open and interactive nature, people are able to actively create and share information with each other, rather than just being a passive information receiver. Indeed they are deemed to be user-centric and facilitate communal activities, implying that users and their interactions are at the core of these technologies (van Dijck 2013).

Being a typical form of social media technologies, Twitter has drawn substantial attention from both researchers and practitioners in recent years (e.g., Cha et al. 2010; Bakshy et al. 2011; Hermida 2010; Hermida et al. 2014; Kwak et al. 2010; Mocanu et al. 2013). Twitter allows users to send short messages of less than 140 characters, or "micro-blogs", in an instantaneous manner to other users. It has described itself as "a real-time information network that connects you to the latest information about what you find interesting". Indeed prior research notes that the technology enables users to "obtain immediate access to information held by all or at least most, and in which each person can instantly add to that knowledge" (Sunstein 2006). Noting this characteristic, the extant research has argued that the technology (and social media alike) may enable new relational structures that disrupt the existing authoritative structures and established ways of information flow, one pertinent area affected being news dissemination (Hermida et al. 2012; Boyd and Marwick 2011).

Twitter is used extensively by individuals to read and share news with each other. For instance, it has emerged as a major platform to help report, organize and disseminate news information during major events such as the US presidential elections in 2008 (Lenhart and Fox 2009) and the Euromaidan revolution in 2013 (Ronzhyn 2014). Indeed Smith and Rainie (2010)

found that news sharing on Twitter is very common, with 55 per cent of users posting links to news stories. A study by An et al. (2011) also found that news messages was forwarded 15.5 times on average, thereby substantially increasing the reach of their audiences. Yet, at the same time, Twitter fosters the dissemination of short fragments of information from a diversity of news sources, both official and unofficial ones (Goodrum et al. 2010; Hermida 2010). This is deemed to have challenged the conventional ways of news dissemination that are mainly controlled by official, authoritative news sources (e.g., CNN, New York Times), and undermined the gatekeeping function of journalists in determining the what and when of disseminating news content (Hermida 2010). To what extent is this true?

A number of prior studies have investigated how Twitter is used for news dissemination (for a review, refer to Table 1). An early seminal study that notes such a usage of Twitter was Kwak et al. (2010); they showed that Twitter serves mainly as a news medium rather than a social network given its characteristics such as a low reciprocity among the participants. This was echoed by several other studies. For instance, Goodrum et al. (2010) found that people prefer using social media such as Twitter to obtain news information due to its currency. Hermida (2010) noted that Twitter enables ambient journalism, defined as an awareness system that offers citizens with diverse means to collect, communicate, share and display a variety of news information. He and his co-authors (Hermida et al. 2012) further employed survey to show that users valued social media as a news source because it exposed and helped them to keep up with a wide range of news events.

Building on this notion, subsequent studies have attempted to examine how Twitter relates to conventional news media. Hu et al. (2012) observed that Twitter broke the news on Osama Bin Laden's death before the mainstream media. Furthermore, they noted the involvement of

three groups of influential participants or opinion leaders, i.e., mass media, individuals affiliated with media, and celebrities. Lotan et al. (2011) considered a wider range of participant types including bloggers and activists, and investigates how they participated in the disseminations of news during the Tunisian and Egyptian Revolutions. They concluded that such news on Twitter is being co-constructed by bloggers and activists alongside journalists. Focusing on news related to the Arab Spring, Hermida et al. (2014) studied how a key information broker during the event, Andy Carvin, selected sources of news to cite in his tweets. They found that non-elite sources (e.g., bloggers, activists, non-media organizations) had a greater representation than elite sources in the content that Andy Carvin cited. However, Poell and Borra (2012) found that the use of social media including Twitter appears less of a success from the perspective of providing a more balanced participation and coverage of activist news reporting such as the G20 protests in Toronto. Hudoshnyk (2015), focusing on the Ukraine's Euromaidan news, also cautioned that social media including Twitter might be given too much credence for social uprisings such as the focal event. This calls for further attention on how news disseminations occur on Twitter with the involvement of a variety of participants.

Author (year)	News event of focus	Method	Relevant key findings
Kwak et al. (2010)	General (not specific to a news event)	Network analysis	Found a non-power-law follower distribution, a short effective diameter, and low reciprocity in Twitter, which deviate from known characteristics of human social networks (therefore suggesting that it is more a news media)
Cha et al. (2010)	General (not specific to a news event)	Content and network analysis	Three key findings from the study: First, popular users who have high in-degree are not necessarily influential in terms of spawning retweets or mentions of news information. Second, the most influential users can hold significant influence over a variety of topics. Third, influence is not gained spontaneously or accidentally, but through concerted effort such as limiting tweets to a single topic.
Goodrum et al. (2010)	General (not specific to a news event)	Survey	Respondents used blogs, search engines, and online newspapers as means of accessing news information online, while only half used broadcast news sites.

			The dominant genre that blogs users read was entertainment blogs, followed by personal blogs. Respondents valued currency more than in-depth background information. They also highly valued clarity, originality, and aesthetics.
Hermida (2010)	General (not specific to a news event)	Conceptual	Twitter enables citizens to maintain a mental model of news and events around them; thus it can be considered as an awareness system that helps people construct and maintain awareness of each other's activities, context or status, even when they are not co-located. Specifically, Twitter enables ambient journalism - an awareness system that offers diverse means to collect, communicate, share and display news information, serving diverse purposes
Lotan et al. (2011)	Tunisian and Egyptian Revolutions	Coding and content analysis	Twitter served both as a common medium for professional journalism and citizen journalism, and as a site of global information flow. News on Twitter is being co-constructed by bloggers and activists alongside journalists.
Poell and Borra (2011)	Toronto G20 Protests	Content analysis	The use of activist social media including Twitter appears less of a success from the perspective of alternative (non-mainstream) journalism. As with mainstream reporting, activist social media accounts were dominated by the violence that accompanied the protests.
Hu et al. (2012)	Osama Bin Laden's death	Content analysis	Twitter broke the news first, and managed to convince a large number of audience before mainstream media reported the news. Attention on Twitter was highly concentrated on a small number of three groups of opinion leaders. Specifically, individuals affiliated with media played a large part in breaking the news, mass media brought the news to a wider audience, and celebrities helped to spread the news and stimulate conversation.
Hermida et al. (2012)	General (not specific to a news event)	Survey of 1,600 Canadians	Social media including Twitter are becoming a significant source of news for Canadian users. They valued social media because it exposed and helped them to keep up with a wide range of news events.
Hermida et al. (2014)	Arab Spring	Content analysis of sources cited by National Public Radio (NPR)'s Andy Carvin (a social media strategist) on Twitter during the Arab Spring	Non-elite sources (e.g., bloggers, activists, non-media organizations) had a greater representation in the content cited by Andy Carvin than elite sources. Alternative actors accounted for nearly half of the messages.

| Hudoshny (2015) | Ukraine's Euromaidan | Case study and discourse analysis | Twitter is used mainly for providing news in real time and informing the international audience about the conflict's evolvement.

In general, social media might be given too much credence for triggering social uprisings. A systematic offline campaign and a powerful network of strong ties are important to implement and sustain solid changes. |

Table 1 *Relevant Prior Literature*

Compared to the extant research, our study differs and contributes in three ways. First, in contrast to previous studies that employed a limited set of sampled data (e.g., Hermida et al. 2014; Lotan et al. 2011), our study employs more extensive data comprising 95,986 tweets extracted during the Ukraine's conflict in Kyiv from November 21, 2013 until Crimean Tartars supporting the new Kiev administration clashed with pro-Russia protesters in the region on February 26, 2014. The data was extracted by crawling Twitter for tweets that contain the word "Ukraine" or "Russia" every 15 minutes interval, covering most of the related tweets posted during the time period. The tweets irrelevant to the Ukraine's conflict, such as weather in Ukraine tweets, were removed. Next, we comprehensively coded the categories of participants (See Table 2 for a description), including mass media (further differentiated into major news agencies, radio and TV stations, news aggregators, other news agencies), journalists (further differentiated into those affiliated to media and those independent journalists), bloggers (further differentiated into blogging associations and independent bloggers), organizations (further differentiated into commercial and non-commercial), and celebrities. Third, while previous research mainly relied on human coding to perform the categorizations, we employed a combination of machine analysis and human coding to achieve the purpose in view of the large dataset. Collectively, these measures allow us to more accurately and comprehensively examine how the various participants were involved in the Ukraine's conflict tweeting activities, and which among them were more influential than others in the relevant news dissemination.

Type	Description	Examples
Mass media		
Major news agencies	Mainstream news producers that are directly linked to corporate conglomerates	@CNN, @BBCNews
Radio and TV stations	Mainstream news producers that are linked to radio and TV stations	@PressTV (a TV broadcaster)
Other news agencies	Various non mainstream news producers, such as non-commercial or regional news agencies	@ria_novosti, @IndyWorld
News aggregators	Aggregate news from other news producers, but do not produce news themselves	@MSN
Journalists		
Affiliated	Individual journalists who are affiliated to a news agency	@patrickjackson (affiliated to BBC)
Independent	Individual journalists who produce first-hand news materials, e.g., interviews, photos, etc., but are not affiliated to a news agency	@AHernandezDj (journalist and DJ)
Bloggers		
Blogging associations	Blogging platforms that host blogs on news from different sources	@mashable
Independent bloggers	Independent bloggers who are not affiliated to any news media and do not produce news by themselves; they highlight or forward news information from other sources	@ArminaLaManna (self-described as storyteller, director, and writer)
Organizations		
Commercial	Commercial organizations	@JECComposites (an organization dedicated to promote composite materials internationally)
Non-commercial	Non-profit, grassroots organizations	@100prayingwomen
Celebrities	Individuals who are famous for reasons unrelated to politics or activism.	@KirkWhalum (Grammy-winning jazz saxophonist / recording artist)

Table 2 Descriptions of the Participant Categories

Our analyses show that across the different types of participants, non-commercial participants (e.g., religious networks, charities, volunteers) were the most 'involved' in that they generated the highest number of tweets related to the event. Yet, the retweets[8] they attracted, which is a commonly used measure of influence (Cha et al. 2010), was among the lowest. In contrast, mass media and sources related to journalists and commercial organizations, while generated lesser tweets, garnered the highest retweets. We further found an exception to this

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[8] Retweet refers to the reposting of a tweet content while referencing either the source of the content or the last person who shared it (Boyd et al. 2010).

pattern - when the tweets focused on popular political figures (Obama, Putin) related to the event, celebrities' influence in terms of retweet count became salient.

As a whole, our findings suggest that the role of traditional mass media (and their related journalists) remain dominant on Twitter. This is despite the fact that Twitter as a social media now enables a full spectrum of communications from personal and private to 'mass-personal' (e.g., celebrities) to traditional mass media (Walther et al. 2010). Also its open, interactive, and instantaneous nature leads to the view that the traditional mass media system may be 'in flux' (Hermida 2010). It seems that people actually self-select news information from mass media to share with others (i.e., retweeting), causing the dominance of mass media to persist on Twitter in spite of its nature. Our findings also agree with previous research that news dissemination on Twitter was led by 'elite voices' through the practice of retweeting (Poell and Borra 2012), while offering two additional insights.

First, we highlight the stark differences in the levels of involvement and influence among the various participants on Twitter. While non-media, non-commercial participants are indeed the most active on Twitter in generating tweets about the event; it was the traditional mass media, journalists, and commercial organizations that was the most influential on this social media platform. Second, by considering not only event-related tweets but also people-related tweets (popular political figures), we show the content-dependent influence of the different participants. In particular, the influence of celebrities became salient when the tweets are related to popular political figures during the focal event (Obama, Putin). Collectively these offer a more fine-grained and accurate understanding of the involvement and influence of the various participants on Twitter in news dissemination during conflicts such as the Ukraine episode.

2 Data and Method

We embarked on a series of efforts to categorize the different types of participants on Twitter, first via machine analysis and then through human coding. We extracted tweets posted during the Ukraine's conflict in Kyiv from November 21, 2013 until Crimean Tartars supporting the new Kiev administration clashed with pro-Russia protesters in the region on February 26, 2014. Table 3 below depicts the key events that occurred during the whole episode.

Key event	Date
Protests gathered pace, as 100,000 people attended a demonstration in Kiev.	Late November 2013
Protesters occupied Kiev city hall and Independence Square in dramatic style. Some 800,000 people rallied in Kiev.	**Early December 2013**
Vladimir Putin threw President Yanukovych an economic lifeline, agreeing to buy $15bn of Ukrainian debt and reduce the price of Russian gas supplies by about a third	17 December
Parliament passed restrictive anti-protest laws as clashes turn deadly. Protesters began storming regional government offices in Western Ukraine.	16-23 January
Prime Minister Mykola Azarov resigned and parliament annulled the anti-protest law. Parliament passed amnesty bill but opposition rejected conditions.	28-29 January
All 234 protesters arrested since December were released. Kiev city hall, occupied since 1 December, was abandoned by demonstrators, along with other public buildings in regions.	14-16 February
Clashes erupted, with reasons unclear: 18 dead.	18 February
Kiev saw its worst day of violence for almost 70 years. At least 88 people were killed in 48 hours. Video showed uniformed snipers firing at protesters holding makeshift shields.	20 February
President Yanukovych signed compromise deal with opposition leaders.	21 February
• President Yanukovych disappeared • Protesters took control of presidential administration buildings • Parliament voted to remove president from power with elections set for 25 May • Mr Yanukovych appeared on TV to denounce 'coup' • His arch-rival Yulia Tymoshenko was freed from jail	22 February
Ukraine's parliament assigned presidential powers to its new speaker, Oleksandr Turchinov, an ally of Tymoshenko. Pro-Russian protesters rallied in Crimea against the new Kiev administration	23 February
Ukraine's interim government drew up a warrant for Yanukovich's arrest.	24 February
Pro-Russian Aleksey Chaly was appointed Sevastopol's de facto mayor as rallies in Crimea continue.	25 February
Crimean Tartars supporting the new Kiev administration clashed with pro-Russia protesters in the region.	26 February

Table 3 *Key Events during the Ukraine Conflict*

We obtained 95,986 tweets in total that contain the word "Ukraine" or "Russia" (excluding tweets that are unrelated to the conflict in Ukraine, such as weather tweets). In analyzing the data, we considered two types of tweets as previously discussed: event-based and people-related tweets. For event-related tweets, we further extracted the tweets based on the

following two sets of keywords: 1) "protest" and "square", and 2) "Russia" and "troops". These keywords were selected because they were related to two key events that occurred during the conflict that attracted most attention, and resulted in respectively 7,429 and 12,333 tweets extracted. For people-related tweets, we further extracted the tweets based on the following two sets of keywords: 1) "Obama", and 2) "Putin", as they are the key political figures who made decisions that affected how the conflict evolved during the whole episode. This resulted in respectively 27,973 and 48,251 tweets extracted. These tweets were subsequently used as the inputs for our data analyses.

To implement the categorizations based on machine analysis, we first extracted a set of Boolean features based on the "user_screen_name" and "user_description". These features were derived by observations in the dataset and the known list of some specific media names (refer to Table 4). Based on the values of the features, we employed heuristic rules to categorize the participants based on the values of the features (see Table 5). We conducted the clustering for several rounds to increase accuracy. We also manually coded the participants in the 'Others' category who were not identified by the feature rules, but who owns a website or a webpage either as non-commercial participants, commercial organizations, or celebrities.

Features	If any &str in "user_screen_name"→ (ind1= 0 or 1)	If any &str in "user_description" "→ (ind2(3)= 0 or 1)	
Magazine		{"magazine"}	ind2
Newspaper		{"newspaper"}	
Othermedia	{'Mississauga','BBC','CNN','NYTimes','nytimes','LATimes','usatoday','AJE','sfchronicle','washingtonpost','AJAM','CBS','ABC','Bloomberg','Reuter','DailyMirror'}	{'@bbc',' cnn ', 'cnn.' 'cnn,', '@cnn','@latimes','@ajam','aljazeera', 'ny times', 'new york times','al jazeera','breaking news',\ 'huffington', 'washington post', 'wall street journal', 'york times', 'bloomberg','difficult stories', 'telegraph', 'usatoday', 'usa today','daily mirror','reuter'} **or** {'world news', 'news service', 'news network', 'news media', 'news agency', 'bringing latest news', 'latest news', 'source news', 'local news', 'covering latest', 'covering news', 'providing latest', 'provide latest', 'daily news', 'daily updates', 'leading source', 'leading provider', 'announce latest','announce news', 'stay connected', 'stay tuned', 'stay updated', 'stay informed', 'international news', 'global news', 'news provide', 'news features', 'news analysis', 'news feats'}	ind1*ind2
Tv_radio	{'Mississauga','BBC','CNN','NYTimes','nytimes','LATimes','usatoday','AJE','sfchronicle','washingtonpost','AJAM','CBS','ABC','Bloomberg','Reuter','DailyMirror'}	{'world news', 'news service', 'news network', 'news media', 'news agency', 'bringing latest news', 'latest news', 'source news', 'local news', 'covering latest', 'covering news', 'providing latest', 'provide latest', 'daily news', 'daily updates', 'leading source', 'leading provider', 'announce latest','announce news', 'stay connected', 'stay tuned', 'stay updated', 'stay informed', 'international news', 'global news', 'news provide', 'news features', 'news analysis', 'news feats'}→ind2 {' tv ', 'radio', 'tv program','podcast','television program', 'tune in'}}→ind3	(ind1*ind2) or (ind2*ind3)
Media_people		{'writer','anchor', 'host','editor', 'producer','correspondent',\ 'reporter','columnist','commentator','journalist','newsroom','photographer',\ 'presenter', 'curator', 'trustee', 'publisher', 'analyst', 'investigat', 'meteorologist',\ 'media specialist', 'media expert', 'illustrator','staff','writing'}	ind2
Affiliated		{"contributing", "contribute to","contributor","journalist for","journalist @","journalist at","journalist with","journalist of","associate","affiliate","staff","editor for", "affiliation","reporter at","reporter @","correspondent for","correspondent at","correspondent @","correspondent", "based",'present','i cover',	ind2

		'head of', "writing in", "writing at", "write for","writing @", "writing for",'presenter of','work at'} AND NOT {"not affiliate","freelance", "unaffiliate", "non affiliate", "self employed", "self-employed"}	
Independent		{ "independence", "independent", "autonomous", "autonom", "uncontrolled", "freelance", "free lance", "free-lance", "non profit", \ "nonprofit", "non-profit", "free"}	ind2
Blog	{ "mashable", "lifehack", "blog"}	{"blog", "trend", "blogger", "social media", "blogging", "enthusiast", "website", "vlog"}	ind1 or ind2
Fan_site		{"fan", "fanpage", "lover", "promoter", "fansite", "fan site", "fan page", "fanclub", "fan club", "fandom", "fanatic", "fanboy"}	ind2
Official_Site		{"official twitter account", "official account"}	ind2
Organized_eff ort		{"organization", "organisation", "foundation", "platform", "community", "fundrais", "campaign", "association", "venture", 'press release','.org'}	ind2
Former		{"former", "ex-", "retired", "departed", "prior", "latter"}	ind2
Aggregate	{"feed", "RSS", "Feed", "FEED"}	{"translat", "dispense", "repost", "re-post", "rssfeed", "rss feed", "rss-feed", "rss", "review news", "review interviews", "sharing", "retweeter",\ "retweet endorsement", "news reader", "newsreader", "aggregat", "related news", 'news site', 'news website', 'news review', 'news insight', 'news gossip', 'news comment'}	ind1 or ind2

Table 4 Features of the Participants

Class	Rule (for each user i)

1. Major News Agencies	if (features['magazine'][i]==1 and features['media_people'][i]==0 and \ features['tv_radio'][i]==0 and (features['blog'][i] == 0)
	 OR
	 if (features['magazine'][i]==1 and features['media_people'][i]==0 and \ features['tv_radio'][i]==0 and (features['blog'][i] == 0))
	 OR
	 if (features['othermedia'][i]==1 and features['media_people'][i]==0 and features['tv_radio'][i]==0 and (features['blog'][i] == 0)\
	 and if (features['independent'][i] == 0)and features['organized_effort'][i] == 0\
	 and features['fan_site'][i] == 0 and features['former'][i] == 0)

2. Radio and TV Stations	if (features['media_people'][i]==0 and features['tv_radio'][i]==1 and (features['blog'][i] == 0) and (features['independent'][i] == 0)and features['organized_effort'][i] == 0\ and features['fan_site'][i] == 0 and features['former'][i] == 0)
3. Other News Agencies	if ((features['magazine'][i] + \ features['newspaper'][i] + features['othermedia'][i] > 0) and features['media_people'][i]==0 and features['tv_radio'][i]==0 and (features['blog'][i] == 0) and (features['independent'][i] == 0)and features['organized_effort'][i] == 1\ and features['fan_site'][i] == 0 and features['former'][i] == 0)
4. News Aggregators	if (features['aggregate'][i]==1 and features['media_people'][i]==0 and features['tv_radio'][i]==0 and (features['blog'][i] == 0) and (features['independent'][i] == 0)and features['organized_effort'][i] == 1\ and features['former'][i] == 0)
5. Journalists Affiliated to News Agency	if (features['media_people'][i]==1 and (features['magazine'][i] + \ features['newspaper'][i] + features['othermedia'][i] > 0) and (features['affiliated'][i] == 1)\ and (features['independent'][i] == 0))
6. Independent Journalists	if (features['media_people'][i]==1 and (features['magazine'][i] + \ features['newspaper'][i] + features['othermedia'][i] > 0) and (features['affiliated'][i] == 0)\ and (features['independent'][i] == 1))
7. Blogging Associations	if ((features['blog'][i] == 1)\ and (features['independent'][i] == 0) and features['organized_effort'][i] == 1\ and features['former'][i] == 0)
8. Independent Bloggers	if ((features['blog'][i] == 1)\ and (features['independent'][i] == 1))
9. Others	Else

Table 5. Heuristic Rules to Categorize the Participants based on the Values of the Features

3 Analysis Results

With all the eligible[9] tweets coded, we analyzed the spread of involvement and influence of the different participants. We present the analysis results first regarding the levels of involvement followed by the levels of influence of the different participants.

3.1 Analysis of levels of involvement.

We first present the results of analyzing the levels of involvement of the different participants. Figure 1 and Figure 2 present the results respectively for the analyses based on the event-related keyword sets of 1) "protest" and "square"; and 2) "Russia" and "troops".
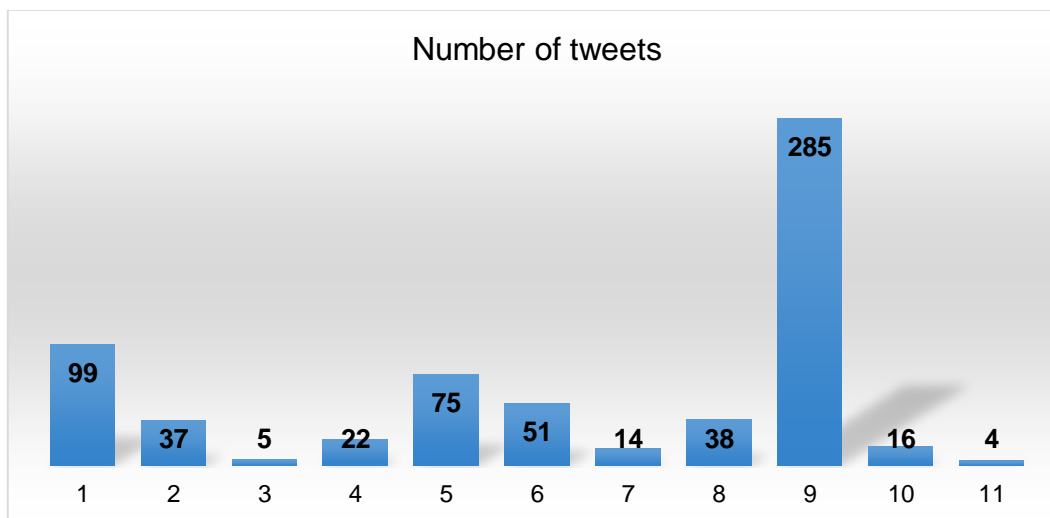
Fig. 1 *Levels of Involvement of the Different Participants for Tweets related to "Protest" and "Square"*

Legends: 1- Major news agencies; 2- Radio and TV stations; 3- Other news agencies; 4-News aggregator; 5- Journalists (affiliated); 6- Journalists (independent); 7- Blogging associations; 8- Independent bloggers; 9- Non-commercial participants; 10- Commercial organizations; 11- Celebrities

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[9] Some were removed because of an absence of URL to reliably categorize the participants.
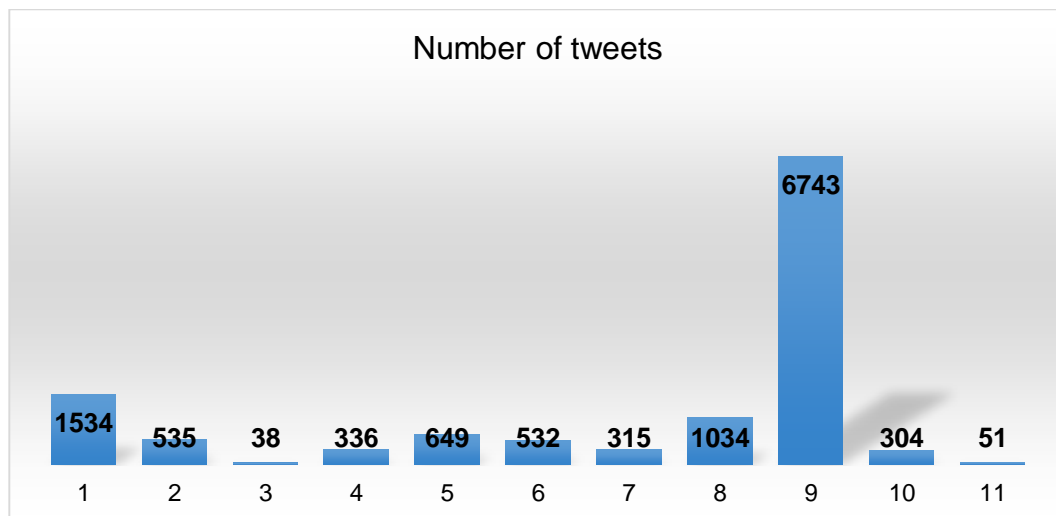
Fig. 2 *Levels of Involvement of the Different Participants for Tweets related to "Russia" and "Troops"*

From Figure 1 and Figure 2, the levels of involvement of the different participants appear quite consistent. Specifically, non-commercial participants were notably the most active in posting tweets related to the two events. This seems consistent with the general view that grassroots and layman people dominate and take a central stage on the social media. It is also to note that major news agencies participated quite actively in positing the related tweets (second most active in both the events), although to a much lesser extent.

Next we analyze the levels of involvement of the different participants when tweets related to the key political figures ("Putin", "Obama") were concerned (Figure 3 and Figure 4 below).

tweets

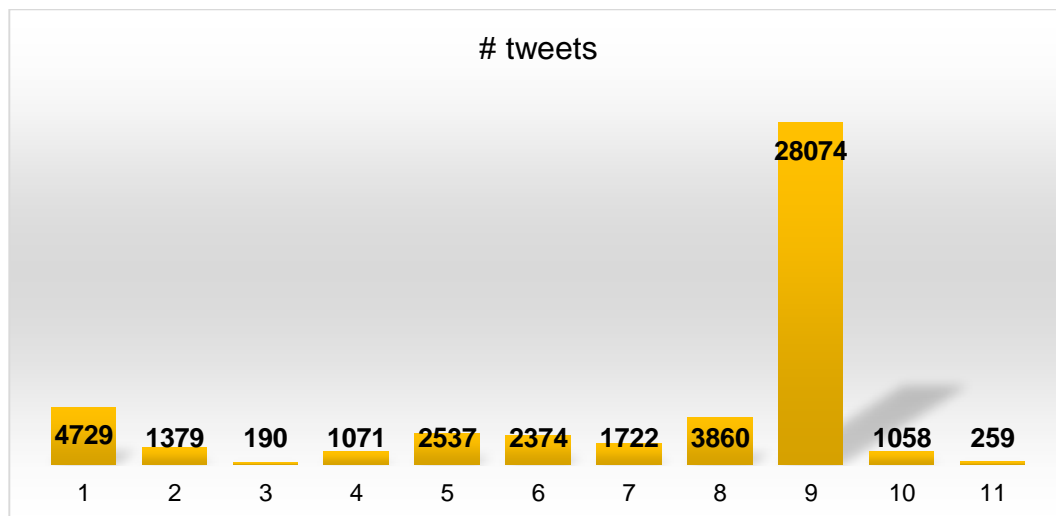| 1	2	3	4	5	6	7	8	9	10	11
4729	1379	190	1071	2537	2374	1722	3860	28074	1058	259

Fig. 3 *Levels of Involvement of the Different Participants in Tweets related to "Putin"*

Legends: 1- Major news agencies; 2- Radio and TV stations; 3- Other news agencies; 4-News aggregator; 5- Journalists (affiliated); 6- Journalists (independent); 7- Blogging associations; 8- Independent bloggers; 9- Non-commercial participants; 10- Commercial organizations; 11- Celebrities

Number of tweets

1	2	3	4	5	6	7	8	9	10	11
3014	1116	94	617	1463	984	763	2039	16678	558	137

Fig. 4 *Levels of Involvement of the Different Participants in Tweets related to "Obama"*

From Figure 3 and Figure 4, the levels of involvement of the different participants are highly consistent with those depicted in Figure 1 and Figure 2. That is, non-commercial participants are the most active in generating tweets about the key political figures "Putin" and "Obama". In addition, major news agencies remain the next most active, although again to a much lesser extent.

3.2 Analysis of levels of influence.

As with the analysis of the levels of involvement, we first present the results of analyzing the levels of influence of the different participants for event-related tweets (see Figure 5 and Figure 6). We employed average number of retweets to indicate the levels of influence of the different participants.

Fig. 5 *Levels of Influence of the Different Participants for Tweets related to "Protest" and "Square"*

Legends: 1- Major news agencies; 2- Radio and TV stations; 3- Other news agencies; 4-News aggregator; 5- Journalists (affiliated); 6- Journalists (independent); 7- Blogging associations; 8- Independent bloggers; 9- Non-commercial participants; 10- Commercial organizations; 11- Celebrities
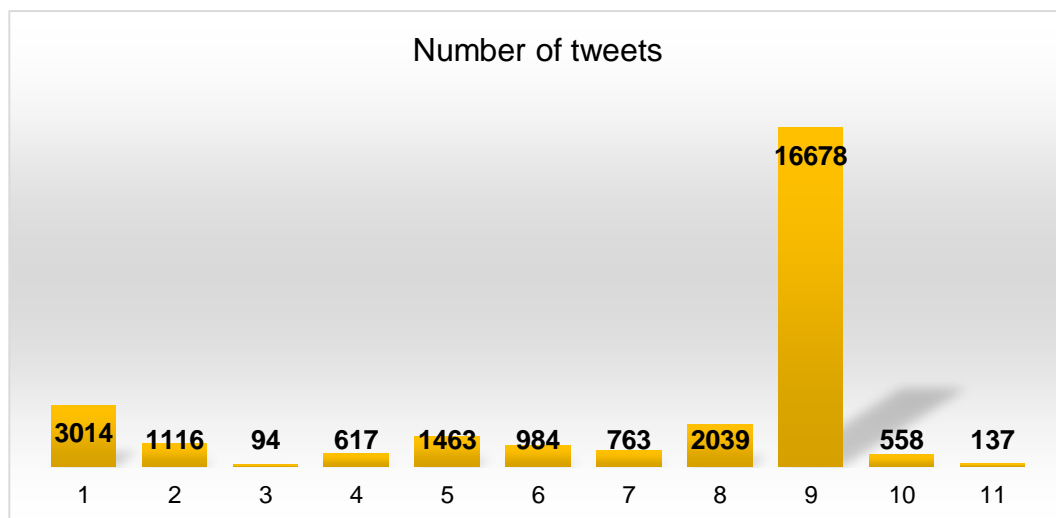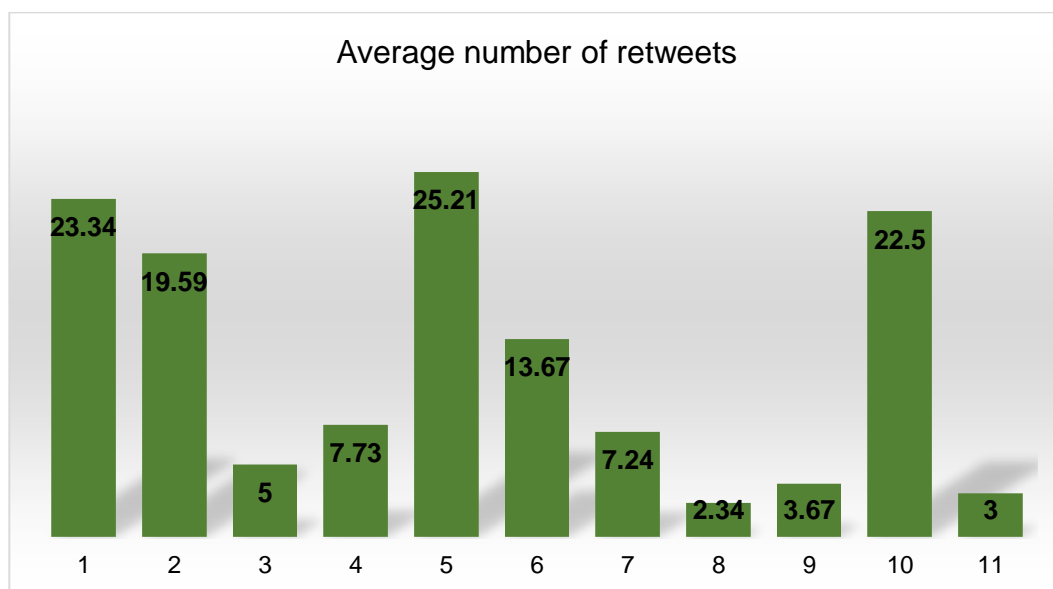
Fig. 6 *Levels of Influence of the Different Participants for Tweets related to "Russia" and "Troops"*

From Figure 5 and Figure 6, a strikingly different pattern emerges when the number of retweets garnered by the different participants was examined. Five types of participants consistently attracted the most retweets in both cases, i.e., major news agencies, radio and TV stations, affiliated journalists, independent journalists, and commercial organizations. In the tweets related to the keyword set "Russia" and "troops", the number of retweets garnered by the blogging associations was also notably high. It seems that while non-commercial participants were the most active in generating tweets on Twitter for the news event, it was the mainstream media, journalists, and commercial organizations that were more influential in terms of garnering retweets.

Next we analyze the levels of influence of the different participants when tweets related to the key political figures ("Putin", "Obama") were concerned (Figure 7 and Figure 8 below).
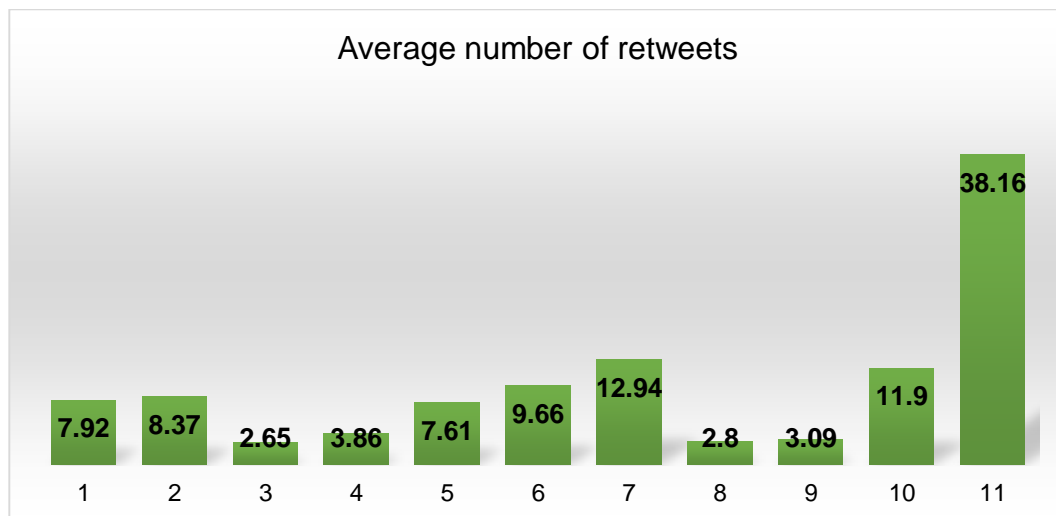
Fig. 7 *Levels of Influence of the Different Participants in Tweets related to "Putin"*

Legends: 1- Major news agencies; 2- Radio and TV stations; 3- Other news agencies; 4-News aggregator; 5- Journalists (affiliated); 6- Journalists (independent); 7- Blogging associations; 8- Independent bloggers; 9- Non-commercial participants; 10- Commercial organizations; 11- Celebrities
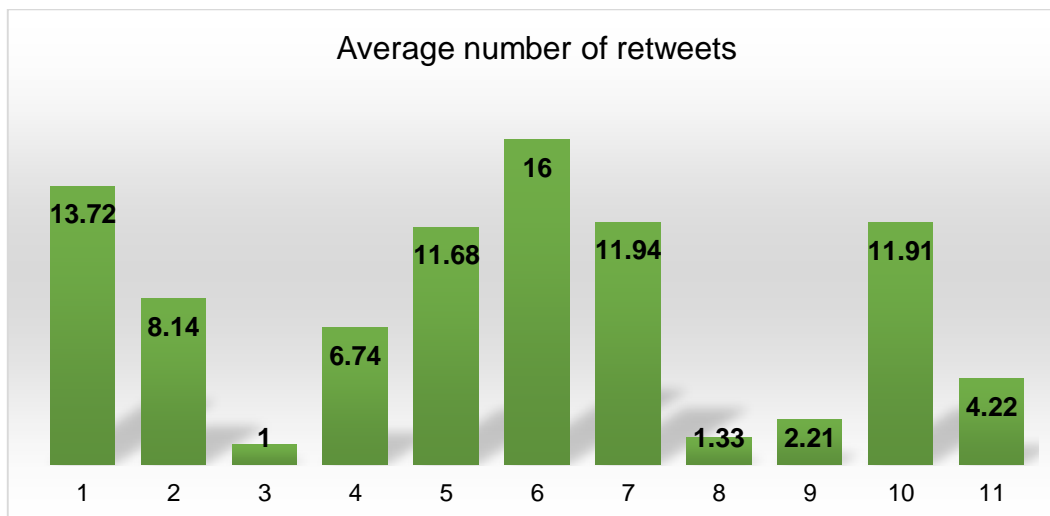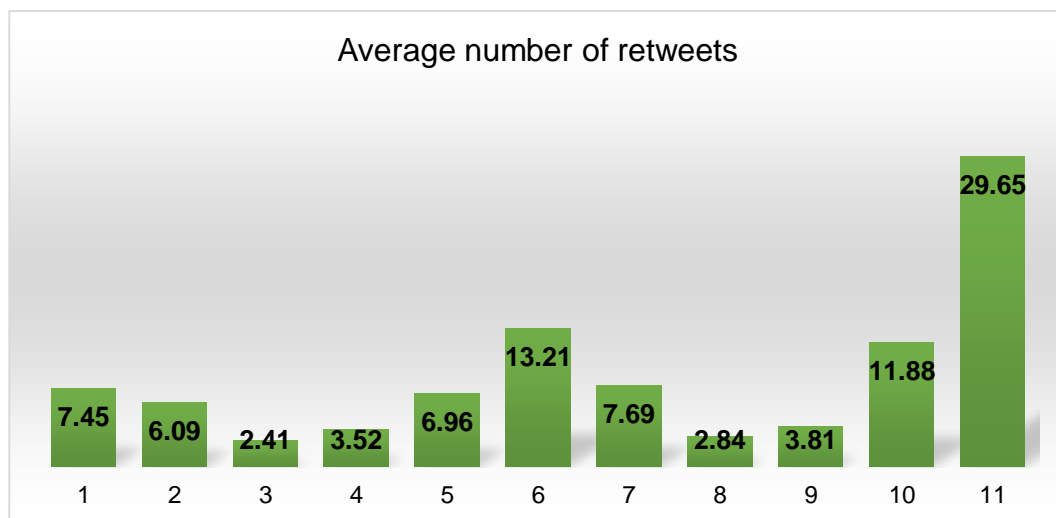

Fig. 8 *Levels of Influence of the Different Participants in Tweets related to "Obama"*

It is, however, interesting to see that when people-related tweets are of focus (refer to Figure 7 and Figure 8), the results present a very different picture. Mainstream media, journalists, and commercial organizations no longer garnered the most retweets, but celebrities emerged to be the one (and clearly many more than the other types of participants). This unveils the content-dependent (event vs. people) influence of the different participants in the news

dissemination on Twitter. Another point worth noting is that regardless of whether the event-related or people-related tweets were concerned, the retweets garnered by the non-commercial participants remained low.

3.3 Analysis of retweet distribution

To gain further insights, we also examined the types of users/participants who retweeted the tweets posted by the different users/participants. Figures 9-12 below show the analysis results.

Fig. 9 "Protest" and "Square" – Types of Users Who Retweeted in Each Category

Legends: 1- Major news agencies; 2- Radio and TV stations; 3- Other news agencies; 4-News aggregator; 5- Journalists (affiliated); 6- Journalists (independent); 7- Blogging associations; 8- Independent bloggers; 9- Non-commercial participants; 10- Commercial organizations; 11- Celebrities
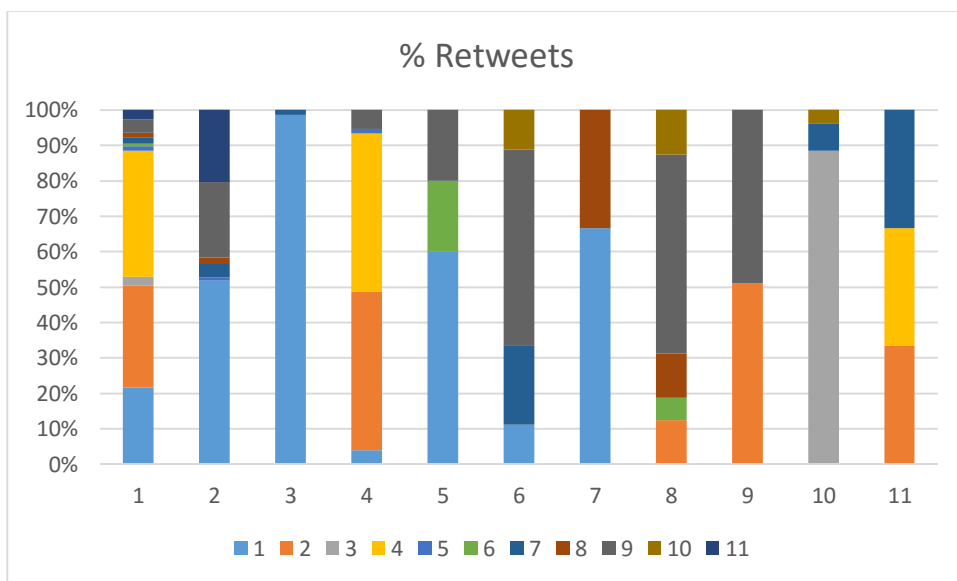
Fig. 10 "Russia" and "Troops" – Types of Users Who Retweeted in Each Category

Previously, it was found that five types of participants consistently attracted the most retweets in the keyword set "Protest" and "square", and the keyword set "Russia" and "troops" are major news agencies, radio and TV stations, affiliated journalists, independent journalists, and commercial organizations. From Figures 9-10, more than half of the tweets regarding "Protest" and "square", and "Russia" and "troops" by independent journalists were retweeted by non-commercial participants. Non-commercial participants were also the most active participant in retweeting the tweets about "Russia" and "troops" by affiliated journalists. However, they were secondary to major news agencies in retweeting the tweets regarding "Protest" and "square" by affiliated journalists. Nevertheless, these findings show the overall importance of non-commercial participants in retweeting the event-related tweets by individual journalists, again demonstrating their high involvement in the news dissemination.

As aforementioned, most of the tweets regarding "Protest" and "square" by affiliated journalists were retweeted by major news agencies. Major news agencies are also important participants in retweeting the tweets regarding "Protest" and "square" by other major news

agencies (third place after news aggregator and radio and TV stations), radio and TV stations, and commercial organizations. Overall, these findings show the importance of major news agencies in retweeting the tweets regarding "Protest" and "square" by organization-based participants, depicting a "reinforcing" influence build-up among the "elite" participants.

Finally, while most of the tweets regarding "Russia" and "troops" by major news agencies were retweeted by other major news agencies, most of the tweets regarding "Russia" and "troops" by radio and TV stations were retweeted by other radio and TV stations, and most of the tweets regarding "Russia" and "troops" by commercial organizations were retweeted by non-commercial participants and other commercial organizations. These findings signal the importance of the same types organization-based participants in retweeting the tweets regarding "Russia" and "troops".
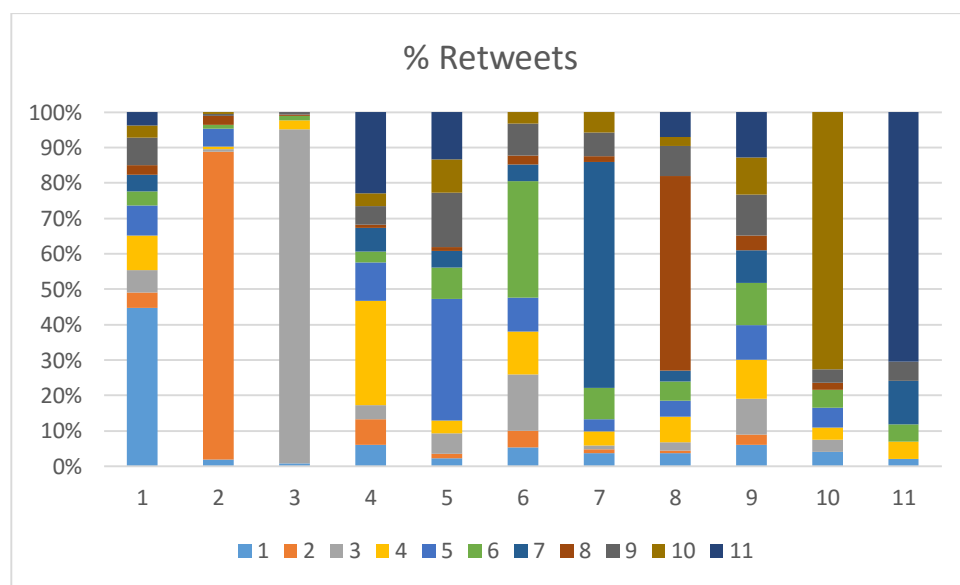
Fig. 11 "Putin" – Types of Users Who Retweeted in Each Category

Legends: 1- Major news agencies; 2- Radio and TV stations; 3- Other news agencies; 4-News aggregator; 5- Journalists (affiliated); 6- Journalists (independent); 7- Blogging associations; 8- Independent bloggers; 9- Non-commercial participants; 10- Commercial organizations; 11- Celebrities
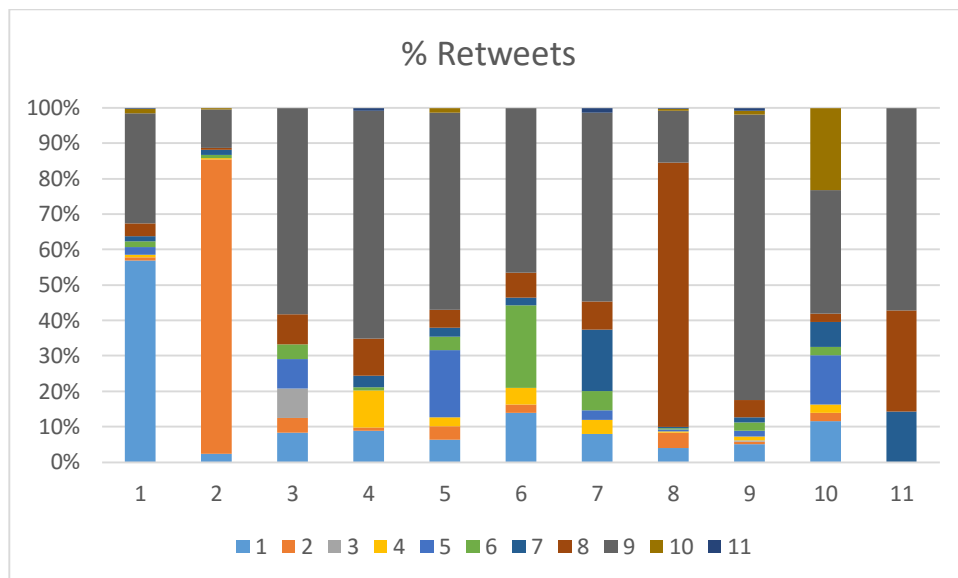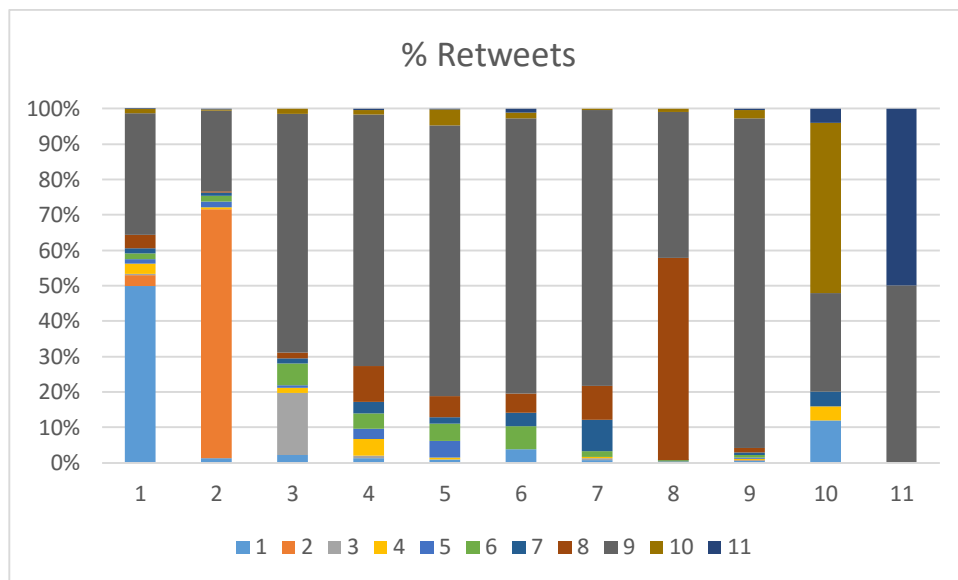
Fig. 12 "Obama" – Types of Users Who Retweeted in Each Category

It was also previously found that the participants who consistently attracted the most retweets regarding the keywords "Putin" or "Obama" were the celebrities. From Figures 11-12, we could see that while most the celebrities' tweets about Putin was retweeted by the celebrities themselves, the celebrities' tweets about Obama was partly retweeted by the celebrities themselves and partly retweeted by non-commercial participants. Hence, while it is interesting to see the reinforcement effect of people-related tweets by the celebrities, the involvements of non-commercial participants in propagating the celebrities' people-related tweets remains notably salient.

4. Discussion and Conclusion

The open and interactive nature of social media such as Twitter, in contract to their conventional media counterparts that are closed and authoritative, has led to a belief that their use for news dissemination may challenge the role of conventional news media. This seems a

natural and reasonable expectation. However, our study highlights that whether this holds would depend on whether it is the "involvement" or the "influence" that is of concern.

Specifically, by analyzing tweet data during the Ukraine's conflict, our analyses unveil the following insights: 1) indeed non-commercial participants dominated the news tweeting landscape by being the most active and posting the most tweets; 2) however, when retweets that indicate influence were examined, "elite" participants including journalists, professional associations and commercial organizations took the crown; 3) there is an exceptional case– for tweets focusing on popular political figures (Obama, Putin), celebrities who are non-mass media garnered the most retweets. Furthermore, when we examined one level deeper into who retweeted the tweets posted by the different types of participants, again the active involvements of non-commercial participants could be seen almost everywhere. In addition, we found a reinforcing tendency of "elite" participants in retweeting the tweets posted by their same kinds to some extents.

By affording these insights, this research helps deepen our understanding of the nature and role of social media, in particular Twitter in news dissemination. Specifically, the potential impact of Twitter in changing the established authority structures of news dissemination may be less than what is being expected. Although the state of involvements of the different participants is true to the conceived nature of social media (i.e., grassroots and non-commercial participants take the central stage), the elite participants such as mainstream media and journalists garnered the highest retweets and thus were the most influential in news dissemination.

There are two limitations in this research that need to be recognized. First, we only focused on an important news event, i.e., Ukraine conflict. Future research may examine other events to assess the generalizability of our findings. Second, we only examined one area whereby

the influence of the different types of participants could potentially vary, i.e., by considering

tweets related to key political figures in contrast to those related to the event itself. Future

research may try to identify other plausible areas wherein the levels of involvement and

influence of the participants also differ.

Notwithstanding these limitations, our research contributes towards the extant research

on the use of social media in news dissemination by providing a clearer understanding in this

regard. The user/participant types and the associated heuristic categorization rules we developed

may also be employed in relevant future research. We hope our research can serve as a

foundation for subsequent work in this area.

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Study 2: The Building Blocks of a Cloud Strategy: Evidence from Three SaaS Providers

The Building Blocks of a Cloud Strategy: Evidence from Three SaaS Providers

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With all the hype about how easy it is to jump to the cloud, and master the art of offering application software via the cloud, it is hardly surprising that many firms have approached the cloud without a clear strategy in mind, which has resulted in numerous downfalls. Analyzing three firms on the point of deciding to offer cloud-based application software, we show how the decision to utilize the cloud is informed by the characteristics of the firm's respective industry, as well as by the existing stock of their internal systems and processes (also known as its design capital). These two dimensions comprise five building blocks that largely determine the unfolding of a cloud strategy. The five blocks include the turbulence, concentration and growth that characterize a firm's industry, a firm's option value (i.e. the breadth of a firm's opportunities afforded by its design capital), and the expected cost or effort entailed in exercising the opportunities embedded in that design capital (also known as its technical debt). Most importantly, our case analysis reveals two additional blocks related to customers' perceptions and concerns with the cloud-based SaaS offering. These include the criticality of security optimization and the demand for software customization in the firm's offering. We argue that firms wishing to offer cloud-based application software need to consider these seven blocks in order to develop a successful cloud-based SaaS strategy.

Keywords: software as a service (SaaS), cloud-based SaaS strategy, industry analysis, digital capital, criticality of security optimization, software customization demand

Introduction

Cloud computing refers to an on-demand network service that allows individual users or businesses to access configurable resources. It can also be defined as an on-demand delivery model enabling the synchronized delivery of computing resources (such as applications, storage, servers, networks, and services) (Bento & Bento, 2011). As it stands, there are three cloud computing delivery models: software as a service (SaaS), as in Salesforce.com and Google apps, delivering applications to end users over a network; platform as a service (PaaS), as in the Google app engine and Microsoft Azure, deploying applications to a cloud; and infrastructure as a service (IaaS), as in the Amazon Elastic Compute Cloud, renting storage, processing, and network capacity to host applications. Of the three, the SaaS model has gained the greatest momentum, given its economically efficient foundations and ability to satisfy user preferences for the ubiquitous availability of data and applications (August, Niculescu, & Shin, 2014).

From the perspective of application software providers, the SaaS model offers the obvious benefit of liberating them from the traditional low-level tasks involved in setting up IT infrastructures and deploying applications to client machines (Geetha, Kanagamathanmohan, & Paul, 2014). Providers are thus able to scale their investment with a view to growing their businesses, (Shayan, Ghotb, & Suganda, 2013) focusing on innovation and creating business value (Padhy & Patra, 2013). Accordingly, cloud computing has been associated with other benefits that arise due to offering a controlled interface, a virtual business environment, increased addressability and traceability, and rapid elasticity and scalability (Iyer & Henderson, 2010).

It is easy to understand why application software providers face increasing pressure to jump into the cloud and exchange their on-site application software for cloud-based solutions.

However, the unfortunate reality is that most of the promised benefits have turned out to be a triumph of hype over reality. A 2013 *Forbes* article noted many firms are following a "no-strategy" approach in moving to the cloud, leading more often to failure than success; (Peters, 2013) for example, Adobe's Creative Cloud product line has been impeded by the skepticism of customers not yet ready to move to subscription-based services; concerns include file recovery in the event of a subscription lapse, and the need for more-tailored offerings for photography enthusiasts (Vance, 2013).

As we aim to show here, there is a clear need for business managers to better understand the fundamental underpinnings of a successful cloud-based SaaS strategy (henceforth cloud strategy), which is defined as a "set of decisions required to create and deploy a network-based, information-service-delivery strategy that results in both cost savings and organizational agility" (Iyer & Henderson, 2010, p. 117). A successful cloud strategy must encompass some of the key elements distinguishing a broader DBS. These elements include a series of higher-order dimensions relating to the characteristics of a firm's respective industry and its existing stock of internal technological capabilities. Moreover, we show that complementing these dimensions with certain attributes of cloud technology related to the actual application software leads to the formation of distinct cloud strategies.

Components

A DBS can broadly be understood as the means through which a firm engages in any category of IT activity; the strategic nature of this engagement implies the "dynamic synchronization between business and IT to gain competitive advantage" (Mithas, Tafti, & Mitchell, 2013, p. 513). Recent studies have identified more specific elements of a DBS,

examples of which include a firm's digital strategic posture (Mithas et al., 2013) and the design-based dimension of a DBS (Woodard, Ramasubbu, Tschang, & Sambamurthy, 2013)

The digital strategic posture is defined as a firm's degree of engagement in a particular digital business practice relative to the industry norm (Mithas et al., 2013). The degree to which a firm chooses to diverge from or converge on the industry norm in its ongoing DBS is influenced by the interaction between its current digital strategic posture and three key elements of its industry environment: turbulence, concentration, and growth (Mithas et al., 2013). These elements are defined as follows: Industry turbulence is the rate at which a firm enters and exits an industry; concentration is the extent of competitive rivalry in an industry; and growth is the rate of increase in demand for the industry's output (Mithas et al., 2013). Mithas et al. (2013) proposed that strong industry turbulence, low industry concentration, and low industry growth influence firms to develop DBS that diverge from industry norms due to intense competition and the fact such norms are less reliable guides of future success (Mithas et al., 2013). In contrast, the same authors argue that low industry turbulence, high industry concentration, and high industry growth influence firms to develop DBS that converge on industry norms, as these norms are reliable indicators of the possible success of particular strategic moves (Mithas et al., 2013).

As opposed to looking at external factors, Woodard et al. (2013) proposed the design-based logic of a DBS that examines a firm's internal systems and processes, or its "design capital." Design capital includes the firm's option value, or the breadth of opportunities afforded by its internal systems and processes, and technical debt, or expected cost or effort to exercise those opportunities (Woodard et al., 2013) Woodard et al. (2013) further proposed that a DBS should aim to manage the levels of option value and technical debt associated with a firm's design capital toward the ideal state of high-quality design capital characterized by high option

value and low technical debt. This ideal state allows a firm to seize a range of market opportunities and respond to competitors' actions with speed and scale (Woodard et al., 2013)

Although a digital strategy is not synonymous with a cloud strategy, insights from these higher-level frameworks arguably serve as a useful foundation for better understanding how firms approach the cloud. This conviction stems from the fact that a cloud strategy is inherently embedded in a broader digital strategy, and also from the fact that the industry environment and a firm's internal capabilities are the main determinants of a firm's competitive strategy (Mithas et al., 2013; Woodard et al., 2013). We draw empirical support for this insight by analyzing recent strategic decisions to offer cloud-based application software made by three firms.

Case Analysis

All three firms are located in the same European country but operate in different industries. Firm 1 is a telecommunications provider; Firm 2 is a small engineering-simulation-software provider; and Firm 3 is a mid-size company specializing in customer relationship management (CRM) software. While it may take a while before one can conclude whether these companies' cloud strategies will ultimately be successful or not, by synthesizing the analyses of the three at the point they made their decisions, we contribute to both researcher and practitioner understanding of the different parameters firms must take into account when unfolding a cloud strategy.

Major telecommunications provider. Firm 1 is a large telecommunication provider serving both residential and business customers. The telecommunication industry is characterized by a high degree of industry turbulence, where there are frequent entries and exits of firms from different industries (such as those in the mobile applications industry offering customers cheaper alternatives for long-distance calls), high industry concentration (generally,

only a few telecommunication providers compete in a given country, three in the country where

Firm 1 operates), and high industry growth (demand for improved connectivity and speed are

constantly increasing). In this environment, it is not immediately clear whether a firm's DBS

should diverge from or converge on the telecommunications industry norm, supplementing

traditional offerings (such as voice calls and data offerings) with relatively nontraditional

arrangements (such as mobile payments) by collaborating with firms in other industries (such as

financial services).

An assessment of Firm 1's internal systems and processes (digital capital) positions the

firm in the debt-constrained design capital state, or high option value and high technical debt

(Woodard et al., 2013) While its telecommunication infrastructure appears to give it plenty of

options for entering the cloud business, significant investment is needed to make it IaaS-ready, as

reported from Firm 1, "We thoroughly discussed with [our] cloud architects … about the IaaS.

Their response was positive, but it would be very expensive … " In such a debt-constrained state,

depending on the level of its resource munificence, the firm will need to either abandon the

option or reduce its debt (Woodard et al., 2013) Debt-constrained firms with access to abundant

resources, as with Firm 1, can afford to reduce their debt without abandoning their strategic

options.

Considering other cloud-computing delivery models besides IaaS, Firm 1 decided to

invest in developing its own cloud infrastructure, as well as new business models offering

various SaaS -based products to end users (in this case, business users) instead of offering IaaS-

based products to application service providers. Leveraging its current position as a trusted

telecommunications provider and the well-known data-protection policy of the country in which

it operates, Firm 1 targets enterprises operating in high security-loss environments with highly

critical SaaS security optimization. The main value proposition Firm 1 offers to these enterprises is the security of their data, as the data does not leave the country (the cloud farms are located in the country where Firm 1 operates), and the security of their data processing, as the SaaS -based products will be hosted locally by Firm 1 itself.

Part of Firm 1's initiative is to collaborate with a CRM software provider to provide CRM SaaS to business customers. It is important to note that besides the existing enterprises the focal CRM provider serves, the immediate target customers of Firm 1 are mid- and large-size financial enterprises in the country that are current subscribers to its telecommunications network. These financial enterprises are working in high security-loss environments and are likely to suffer major economic losses if the CRM system is subject to security attacks (August et al., 2014).

However, the specific nature of the CRM SaaS, which supports multi-tenancy with high parameterization or customization, is technically very complex and can be very expensive. According to the firm's CRM corporate collaborators, their CRM software does not support multi-tenancy, because each client (tenant) tends to require system parameterization; that is, " … customers that buy the CRM software usually demand a customized system according to their business processes and therefore the support of multi-tenancy with high parameterization is technically very complex and expensive" (excerpt from our communication with a business development manager in Firm 1). This situation is a good example of how a firm's digital capital is intertwined with its client's technical needs, in this case, support for multi-tenancy with high parameterization. Having access to technical resources, Firm 1 is able to find a secure cost-effective solution to the multi-tenancy challenge of providing highly customized systems by

deploying multiple software instances for different tenants at a single server; the client can thus achieve software customization while still enjoying the benefits of a cloud-based service.

As it turned out, Firm 1 decided to diverge from the industry norm; instead of offering the usual telecommunication infrastructure-related offerings, it aimed to offer SaaS to business customers, thus altering its position in the current industry ecosystem from being a telecommunications provider to SaaS provider. Its new position as a SaaS provider will enable Firm 1 to enjoy multiple benefits " … as it enables vertical selling opportunities in addition to the license fees such as iPads [rental] and voice and data subscriptions … " (excerpt from an internal Firm 1 report). At the moment, " … the infrastructure to host the SaaS is an ongoing work and expected to be available by early 2016 … there is [still] a high business interest to start this SaaS project … within the next year" (excerpt from our communication with a business development manager in Firm 1).

Engineering-simulation-software provider. Our second case is a small provider of engineering simulation software specializing in computational fluid dynamics and multiphase flow heat transfers. Its software is sold globally and used mainly by research organizations and companies in the oil and gas industry, nuclear engineering, renewable energies, microfluidics, and advanced materials science (hereafter referred to as "client companies"). The client companies' use of this advanced software is limited by their access to computing power; only a few clients have the computational resources (parallel computers or clusters) required to run very demanding simulations, thus shrinking the size of the engineering simulation software market and contributing to low industry growth.

The competition for this already small market is fierce and dominated by two large companies, thus characterized by high industry concentration. "Unlike [the] commodity

[software] market, the engineering simulation [software] market is highly oriented toward a " …

dominant design. This means the incumbents try to make their competitors obsolete by locking

their customers into their software logic [and algorithms] … " (excerpt from an internal Firm 2

report). Although the software logic and algorithm may not be the most efficient (or even the

most appropriate), client companies will incur high switching costs if they change from one

software provider to another due to organizational latency, training, know-how transfer, and

learning curves. This is a strong indication of low industry turbulence, as it is difficult for firms

from different sectors to enter and exit the industry. To sustain itself in this small yet highly

competitive market, Firm 2 also offers consultancy services. In this environment of low

turbulence, high concentration, and low growth, it is not immediately clear whether its DBS

should converge on or diverge from the engineering simulation industry norm, implying (for

small providers) the need to heavily supplement their software offerings with consultancy

services. However, Firm 2 recognizes that providing a consultancy service is not as scalable as

its software offering and thus (although it is the industry norm) may not be a sustainable strategy

in the long run. As the founder of Firm 2 said in an interview with us, "[The consultancy service]

is very labor intensive." Hence, the tendency is to follow a business strategy that diverges from

the industry norm.

In terms of its digital capital, Firm 2 is in the low-quality design capital state, or low

option value and high technical debt (Woodard et al., 2013) Such a firm, depending on its level

of resource abundance and technical capability, can aim to either reduce its technical debt or

create different value options (Woodard et al., 2013) By default, Firm 2 is constrained by a lack

of resources but at the same time enjoys a strong relationship with academic stakeholders. As the

founder of Firm 2 told us, "We are working closely with a research institute in a local

university," thus enabling Firm 2 to exit a low-quality state by increasing its technical capabilities.

Since the market is small, not very adaptable, and dominated by two large companies, Firm 2 is considering (with the aid of its academic contacts) deploying its software as a cloud computing hosted service. Firm 2 also reported "Companies on the edge of starting engineering simulation activities are not willing to invest in IT infrastructure acquisition and long term maintenance contracts. They rather [tend to] spread [their] investment over time, much like any other operation consumable. Furthermore yearly software license fees constitute a financial burden, especially when the software vendor enjoys a quasi-monopoly situation. [In this context] cloud computing appears … [to be] a real alternative answer to engineering needs … " (excerpt from an internal Firm 2 report). Since the engineering data is not sensitive and the simulation process need not be performed in a highly secure environment, the cloud-hosted SaaS solution seems to be a viable way for Firm 2 to compete with the dominant players in the current market and help increase its market share.

Firm 2 realized the high switching costs associated with its product offering implies the decision as to which simulation software to adopt is in the hands of client companies' top managers, who may not be familiar with algorithms and simulation-software logics. For their engineers to use inefficient software on daily basis could thus be frustrating. With a Web-based cloud-computing hosted service, Firm 2 is able to invite these engineers to test their software during a free trial period, without having to access or use their companies' own computational resources. Firm 2's aim is to allow the engineers who are the real users of the simulation software to use it and test its efficiency and accuracy in a cloud environment, hoping they can then convince their top management to switch to Firm 2's software.

The switching cost from on-premise software to a cloud-computing hosted service is marginal. Moreover, since the cloud-based simulation software is meant to allow virtually anyone to perform highly demanding engineering simulations, with no infrastructure prerequisites, Firm 2 intends to increase its share of the target market beyond that of the large companies with computational resources in place. Firm 2 is currently working with a cloud broker and a cloud infrastructure provider to implement its cloud-based solution and bring its software to the cloud. Firm 2 intends to " … use it exactly in the same way as planned: it will lock new customers by offering them trial access without software installation … " (excerpt from an internal Firm 2 report).

CRM software provider. Firm 3 is a mid-size software company specializing in CRM software. Firm 3 reports "[The CRM software] is available as fat client: it has iPhone and iPad applications and also has a Web front-end. This allows customers to flexibly use the front-end that is most suitable for their processes. [For example], sales personnel can use the iPad version to be fully mobile while being with the customer, so a call center agent can use the fat client perfectly optimized for his tasks … " (excerpt from a from an internal Firm 3 report). Our analysis of Firm 3's industry environment is as follows. The CRM software industry is characterized by low industry turbulence (where firms' entries and exits from different industries are less frequent), high industry concentration (few well-known CRM software providers), and high industry growth (increased demand for CRM software, especially from small- and mid-size companies). In this environment, the literature predicts Firm 3's DBS should converge on the industry norm, because it is relatively easy to clearly determine the optimal level of IT investment and its potential for success (Mithas et al., 2013). The industry norm for firms like Firm 3 that offer on-premise CRM software is to supplement this traditional offering with the

SaaS version of CRM software. As our conceptual framework would predict, Firm 3 indeed views cloud computing as a new opportunity that could extend its business and thus plans to provide the SaaS version of its CRM software, offering it alongside the on-premises version. Firm 3 says, "As the current [on-premises] CRM version already fulfils the main characteristics of online access with multiple devices, no local data storage, and scalability, the private offering can mainly be seen as a marketing enhancement … " (excerpt from an internal Firm 3 report).

Our own assessment of Firm 3's internal systems and processes (digital capital) positions Firm 3 in the debt-constraint design capital state sector (high option value and high technical debt (Woodard et al., 2013). A significant investment is required to produce the SaaS version of the software, and there is internal Firm 3 concern about going in this direction, as the following excerpt from a Firm 3 report indicates: "The question of whether the CRM [software] should be offered in the cloud or not is omnipresent. This dilemma involves various factors. As [the company] is not a big software producer, this dilemma needs to be taken seriously, as [the required] financial investment can hardly be covered in case of a failure." In such a debt-constrained state, Firm 3 should either abandon the option or reduce its debt, depending on the level of its resource munificence (Woodard et al., 2013) Firm 3 recognized that the significant resources needed to develop the SaaS version of its software is a strategic necessity, as it said in an internal report " … there is not only the question whether it is worth to invest into a cloud solution, but also whether it is possible for [the company] to survive in the long run without a cloud solution … " As noted earlier, the current industry norm is for CRM software providers to offer a cloud solution, "… the topic is brought up [in the company] as the customers start asking for it" (excerpt from a Firm 3 email memo).

Understanding an aggressive move to compete with the big providers of CRM SaaS

would be quite difficult and most likely lead to a price war, Firm 3 sought to identify a number of unique selling propositions that were difficult for its competitors to imitate before moving to the cloud. Specifically, it saw a regional advantage, a legal advantage (storing customers' data according to country-specific-laws), and a know-how advantage (about a specific security algorithm). These unique selling propositions stem from the fact that the business users who work with client data are in high-security-loss environments and face considerable economic loss if the CRM system would suffer a security attack (August et al., 2014), as well as from the fact that Firm 3 has already built significant levels of personal trust with its clients.

Firm 3 mainly serves customers in its home country and a customer base consisting mainly of large organizations in various industries, especially in the retail, pharmaceutical, and insurance sectors. With selling propositions in mind, Firm 3 decided against a public cloud offering, as it saw a number of constraints that would disrupt its existing business model, beyond even its in-depth, personal relationships with all of its customers. Shifting to a public cloud offering would also imply a cultural change within the company that would be difficult to achieve. Firm 3 opted instead for a private cloud solution, as it would be largely compatible with its existing personalized services. This new offering might attract new customers that do not want to operate the application themselves but do want their own private application. The only constraint in this case was the lack of a data center where the application could be hosted. As running such a data center is not its core business, Firm 3 decided to outsource the task to a well-known provider that could ensure the scalability and, more important, the security demanded by its customers.

Insights

Analyzing these cases, we reached two main conclusions. First, in addition to the five building blocks related to the external environment and a firms' broader internal digital capabilities, all three firms had to account for certain requirements of their customers with respect to cloud technology before deciding how to approach them with a cloud-based SaaS offering. In particular, we found customers' requirements involving software security and customization are the two main attributes that determine a firm's decision to change its on-premise software to cloud-based SaaS. The criticality of security optimization depends on whether target users are working in high- or low-security-loss environments (August et al., 2014), whereas the importance of software customization depends on the type of software being offered.

Second, we found the three firms developed three different strategies in terms of utilizing the cloud to compete in their industries, as well as their value propositions. In our empirical examples, Firm 1 can be seen as an innovator, Firm 2 as a disruptor, and Firm 3 as an optimizer. We define innovators as firms offering cloud-based application software to create new revenue streams by moving into an adjacent ecosystem or marketplace. In the course of this extension and transformation, innovators often have a chance to combine elements of the value propositions and value chains that were previously unrelated, and so increase their competitive advantage (Berman, Kesterson-Townes, Marshall, & Srivathsa, 2012). The cloud is not only a technology that enables businesses to embrace opportunities for innovation (Berman et al., 2012), it also serves as a catalyst for business-model transformation.

Unlike innovator strategies, companies classified as having disruptive strategies share the perception that cloud-based application software offerings can generate completely different value chains. We define disruptors as firms that either radically reformulate customer value

propositions or generate new customer needs in their current ecosystems. Disruptors have the potential to capture inimitable competitive advantage by creating disruptive mechanisms in existing markets or industries. Such firms typically provide customers with what they either were unaware of or did not realize they needed. While businesses using this model face greater risk, they also tend to gain higher rewards. Cloud computing enables the radical transformation of existing markets or industries by enabling businesses to be more agile and adopt technology-integrated business strategies in place of technology strategies based on business strategies (Berman et al., 2012).

We define optimizers as firms drawing advantage from cloud computing to improve their existing customer value propositions within their existing ecosystems. Optimizers can expand their value propositions by offering enhanced products and services, improved customer experience, and/or more extensive channel-delivery options (Berman et al., 2012); they also tend to be more risk-averse than innovators and disruptors. By supporting fast experimental implementation of new application software offerings without need for substantial upfront costs, cloud computing drives improvement across an optimizer's value propositions and value chains.

Important to note is that adopted strategies are contingent on the configuration of the focal firms with respect to the initial five building blocks, as well as the remaining two blocks related to their target clients' requirements of the application software through the cloud. The figure here outlines the seven building blocks that largely determine whether a firm should use cloud computing to innovate, disrupt, or optimize its business model. The first five are derived from the two frameworks of DBS we discussed earlier, namely those of digital strategic posture and design-based logic of DBS (Mithas et al., 2013; Woodard et al., 2013). The remaining two, or the criticality of security optimization and demand for software customization, emerge from

the cases and refer to clients' requirements with respect to a cloud-based SaaS offering. These two attributes of the software appear to complement the broader categories of a firm's industry environments and digital capital.
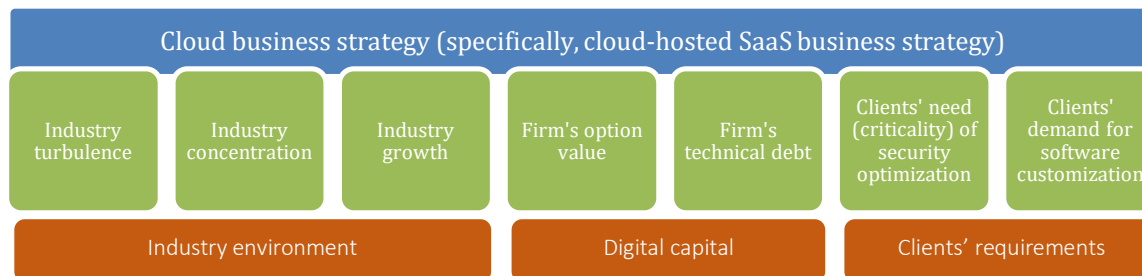
Figure 1: The building blocks of a cloud strategy

The first three building blocks, which we categorize as the characteristics of the industry in which a firm operates, include the degree of turbulence, concentration, and growth rate of the industry (Mithas et al., 2013). It has been established that high (low) industry turbulence, low (high) industry concentration, and low (high) industry growth would influence a firm to develop a DBS that diverges from (converges to) industry norms (Mithas et al., 2013). In our three empirical examples, we observed two scenarios. In one, Firm 3 operates in an industry with low turbulence, high industry concentration, and high industry growth, and so has designed a DBS that converges to the industry norm to optimize its existing software offering by adding a SaaS version of the software. Firm 3 imitates what happens in its industry without much innovation or attempt to disrupt industry norms. In the other, Firm 1 operates in an industry distinguished by high turbulence, high concentration, and high growth, whereas Firm 2 is in an industry characterized by low turbulence, high concentration, and low growth. For these two firms, it is not immediately clear whether they should diverge from or converge on their respective industry norms with regard to developing cloud-related strategies.

The next two building blocks—option value and technical debt—refer to firms' design capital (in terms of internal systems and processes) (Woodard et al., 2013). While Firm 1 is in the debt-constrained design capital state (high option value and high technical debt), Firm 2 is in the low-quality design capital state (low option value and high technical debt(Woodard et al., 2013).), but its close relationships with local academic institutions and researchers enables it to escape a low-quality state by accessing the technical capabilities it needs from these institutions. Leveraging its current position as a trusted telecommunication provider and the well-regarded data-protection policy of the country in which it operates, Firm 1 decided to invest considerable resources to innovate and alter its position in its industry ecosystem, from telecommunications infrastructure provider to SaaS provider specializing in servicing business users in high-security-loss environments, meaning Firm 1 is diverging from its industry norm.

Unlike Firm 1, which also diverges from its industry's norm, Firm 2 hopes it will disrupt the operations of the current industry players by offering SaaS for engineering simulation instead of innovating by establishing a new revenue stream through a cloud-based offering. It considers this a radical solution that will allow it to disrupt the current top-down nature of its clients' decision making about engineering-simulation software, and thus break through the dominant market players. By offering a Web-based cloud-computing hosted service, Firm 2 can invite its potential customers' engineers—the ultimate users of its software—to test it during a free trial period without them needing to access or use their own companies' computational resources; it hopes these engineers will then convince top management in their organizations to adopt its software.

There are two main reasons for this apparent difference in the strategies of Firm 1and Firm 2. First, engineering-related data for simulation purposes does not need security

optimization; neither the storage nor the processing of the data has to be fully secured. This makes it easy for Firm 2 to disrupt the market by inviting the engineers who they hope will be their software's ultimate users to test it by uploading engineering-related data to the cloud, avoiding having to access or use their organizations' own computational resources to test the software. It would be difficult to disrupt the current market through a free trial of a Web-based cloud-computing-hosted service if demand for data-security optimization was high. And second, the software offered by Firm 2 need not cater to users' demand for software customization. Engineering-simulation software has a specific logic and algorithms that are relevant for each engineer using it. A less-critical security optimization and a low demand for software customization ultimately drive Firm 2's attempt to grow its market share by adopting a disruptive cloud strategy.

Even though the attributes of the industry environment seem to be the main driver of Firm 3's cloud strategy, our analysis of its clients' demand for security optimization and customization complete its detailed plan. Considering the high potential risk to customers' data and the high demand for software customization, Firm 3 decided to offer a private cloud-based application software solution. Unlike Firm 1, Firm 3 is in a state of debt-constrained design capital (high option value and high technical debt). However, Firm 3 cannot invest as much in infrastructure and know-how as Firm 1. Investing aggressively to acquire necessary infrastructure and know-how, Firm 1 is able to deploy multiple software operations for different tenants on a single server, enabling it to offer customization while still being able to pursue the cost benefits of multiple tenancy. With only limited resources to invest, Firm 3 continues to seek to collaborate with a well-known cloud infrastructure provider to offer its customization services

through a private cloud-based system, thus optimizing rather than innovating in terms of its cloud offering.

The table here outlines the seven building blocks of a cloud strategy and the resultant strategies adopted by the three firms in our study. Note there can be other combinations of the seven building blocks than those we cover here, nor is it our aim to present all possible combinations; for instance, we anticipate having distinct structural characteristics (such as a start-up firm without an existing customer base, as in our empirical examples) would most likely lead to distinct configurations in our scheme. In this respect, any future study that would examine how startup companies strategize their cloud-based SaaS offerings according to our framework would complement our findings.

	Firm 1 (Innovating strategy)	Firm 2 (Disrupting strategy)	Firm 3 (Optimizing strategy)
1. Industry turbulence	High	Low	Low
2. Industry concentration	High	High	High
3. Industry growth	High	Low	High
4. Option value	High	Low	High
5. Technical debt	High	High	High
6. Criticality of software security optimization	High	Low	High
7. Demand for software customization	High	Low	High

Table 1: The building blocks of cloud business strategy and the resultant strategies as evidenced in the three cases

Conclusion

Our main aim here is to assist researchers and practitioners in utilizing the building blocks identified as essential ingredients for analyzing a firm's cloud strategy. We thus provide an overarching framework consisting of seven building blocks encompassing the characteristics of the firm's industry environment, internal digital capabilities, and target clients' requirements

for the particular cloud-based offering. These blocks ultimately determine how firms embark on a cloud-based SaaS strategy.

While significant challenges exist for firms offering application software through the cloud, we find it important to start right and better understand the main building blocks of such an endeavor. Innovation, optimization, and disruptive strategies represent possible ways for firms to leverage the cloud to advance their value propositions. It is important to highlight we do not advocate any one approach as superior to the others; rather, the strategies identified here should be viewed as a viable aftermath of a firm's industry characteristics (turbulence, concentration, and growth), stock of digital capital (option value and technical debt), and clients' requirements for the cloud-based SaaS offering (criticality of security optimization and software customization).

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Study 3: 'Demystifying' Empire Building within Information Systems Projects: A Path Dependency Perspective

'Demystifying' Empire Building within Information Systems Projects: A Path Dependency Perspective

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Abstract

Empire building practices, characterized as partisan activities engaged by oneself to increase one's power and influence within organizations, often culminate in decreased operating performance and reduced firm value. While empire building is a well-explored concept in corporate governance and finance literatures, the existence of such practices and their implications on new IS projects remains unclear. To this end, our study sets out to reveal empire building practices within IS projects through an in-depth case study that tracks the planning of a new project management system for a multinational real-estate company over a period of four years. The project ultimately failed due to empire building practices that permeate the entire duration of the system planning phase. Through the case study, we discovered two distinct modes of empire building, which we theorize as reductionist and expansionist empire building. We further uncovered ten mechanisms underlying the empire building practices in the case company, five each for reductionist and expansionist empire

building respectively. Lastly, we draw on the path dependence theory as a conceptual lens to extrapolate reductionist and expansionist empire building as efforts of human agencies to reinforce or break and create organizational paths.

INTRODUCTION

Prior literature is saturated with examples of *Information Systems* (IS) being exploited as an instrument for amassing and perpetuating one's power (e.g., Backhouse et al. 2006; Jasperson et al. 2002; Keen 1981; Levina and Vaast 2008; Silva and Backhouse 2003; Smith et al. 2010). By introducing novel channels for steering the flow of information within organizations, IS has been acknowledged for granting select individuals with better or exclusive access to informational resources within organizations (Markus 1983). By altering communication patterns and work arrangements within organizations, IS can displace conventional structures of authority and control, thereby shaping the abilities of affected employees to acquire power (Allen et al. 2013; Bloom et al. 2014; Davidson 2006; Keen 1981; Markus and Robey 1988). The power shifting properties of IS are best exemplified by Knights and Murray's (2000) investigation of the Actuaries division in Pensco, a company specializing in alternative asset custodian services for retirement accounts. Knights and Murray (2000) discovered that the Actuaries division, in an attempt to safeguard their dominant position in the company, tailored market analyses to be skewed in favor of the development of a 'core contract' module in a newly planned pension management system, which was devised for the purpose of supporting a whole new range of pension products. By gaining control over the 'core contract' module legitimately, the Actuaries division was able to solidify its strategic position within the company.

Since IS embodies the potential to nurture the growth of power within organizations, system implementation often translates into an intense political affair, where implementers must recognize and contend with internal politics (Jasperson et al. 2002; Keen 1981; Krotov et al. 2011; Markus 1983; Sabherwal and Grover 2010; Sillince and Mouakket 1997; Silva and Backhouse 2003; Wilson and Howcroft 2005). Whereas IS projects can benefit proponents as a means for power acquisition, they can also succumb to counter-implementation measures undertaken by opponents

desperate to maintain the *status quo*, often as early as in the system planning phase (Brightman 1988; Krotov et al. 2011; Thomas 2002). Opponents of a newly planned system may counter-implement it by expanding the scope and complexity of the system to render it difficult, if not impossible, to attain its intended mission. Other counter-implementation measures may include the diversion of required resources away from the planning phase, culminating in protracted delays that may eventually cripple system implementation. There are also individuals who would try to usurp control during the planning phase by modifying the design of the system to amplify or reinforce the personal benefits they stand to gain from its implementation (Brightman 1988). Conceivably, power play within IS projects could be devastating for organizations through the introduction of enduring human agency problems that are cemented in implemented systems.

Yet, in spite of considerable progress being made in recognizing human agency problems within IS projects (Markus 1983), there is a paucity of studies that have endeavored to shed light on how power play manifests within IS projects and the mechanisms employed by human agents to triumph in such power play. To this end, we draw parallels with contemporary research in corporate governance and finance that investigates *Empire Building* (EB) practices within organizations, which, in the context of IS projects, essentially refers to the manipulation of the system implementation process to further one's power and influence within organizations.

To unravel how EB practices unfold within IS projects, we conducted an in-depth case study of the planning of a Project Management System (PMS[10]) in a multinational real-estate company over the period of four years spanning from January 2009 to November 2012. We concentrated our investigative efforts on the IS planning phase because any attempt at EB through IS often

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[10] A project management system consists of applications that assist in: (1) planning, organizing, and managing resource; (2) developing resource estimates; (3) scheduling and managing budgets; (4) controlling costs; (5) allocating resources; (6) facilitating communication, collaboration and decision-making, as well as; (7) storing project documentation (Cooke-Davies et al. 2009; Griffith et al. 2014).

originates in the planning phase as it is much harder to alter the trajectory of the system implementation process afterwards. As is apparent from the Pensco case described earlier, the Actuaries division started early by influencing and establishing their legitimacy over the specifications of the new pension management systems. While the Sales and Marketing division voiced their disagreement over certain specifications later on, it was already too late for them to influence the system implementation process (Knights and Murray 2000).

Because EB is an understudied topic within the IS discipline, we subscribe to the grounded theory methodology for data collection and analysis. Through our case analysis, we discovered two distinct modes of EB practices, which we label as *reductionist* and *expansionist* EB. Reductionist EB was guided by a calculated attempt to influence the planning of the PMS in ways that aids the empire builder's retention of domain knowledge supremacy in real-estate projects, which in turn strengthens his/her already dominant position within the company. The focal actor, the Contract Manager from the Operations Department, sought to downgrade the function of PMS to that of a mere documentation and reporting tool for real-estate projects. In contrast, expansionist EB was conceived as a premediated effort to influence the planning of the PMS in ways that magnify the empire builder's scope of influence within the company. The focal actor, the Chief Information Officer (CIO) from the IT Department, strived to enlarge the scope of the PMS and enforced system ubiquity by integrating the PMS with legacy systems within the company, which were under the purview of the IT Department. Additionally, we uncovered five mechanisms each that underlie reductionist and expansionist EB respectively. Additionally, we contend that reductionist and expansionist EB, when seen through the lens of the path dependency theory, resemble efforts of human agencies to reinforce or break and create organizational paths.

Our study contributes to the extant literature on several fronts. First, departing from past studies of EB which are very much focused on the impact of such practices on corporate governance and firm performance, we uncovered a series of underlying mechanisms that are employed by reductionist and expansionist empire builders to triumph in power play within IS projects. These insights add depth and richness to an intricate understanding of how EB practices unfold when planning for new IS. Second, our study attests to the validity of the path dependency perspective as a conceptual lens for theorizing EB practices within IS projects. Through the aforementioned underlying mechanisms, it is evident that the reductionist EB pursues a strategy aimed at reinforcing a prevailing organizational path whereas the expansionist EB's strategy is targeted at breaking this organizational path while simultaneously, creating a new one. Third, our study distinguishes the resource base of the reductionist empire builder from that of his expansionist counterpart in supporting the pursuit of their respective EB strategies. Specifically, we revealed that the reductionist empire builder drew on the alliances and social network that he has cultivated over time whereas the expansionist empire builder tended to exercise power via hierarchical authority and control over resource allocation. Fourth, our case analysis demonstrates that EB may not necessarily be detrimental to organizations despite the existence of self-interest. While the reductionist empire builder was motivated to shape the system implementation process in ways that reinforce his jurisdiction over core business processes within the company, the expansionist empire builder leaned towards full integration of the PMS with existing legacy systems, which in turn could contribute to better oversight of all systems operating within the company. Fifth, while earlier works have advocated the enactment of corporate governance structures to thwart EB practices, this study points to the presence of *annulment effects* whenever opposing EB practices are in play. This could be attributed to the unique context of IS-related EB

under investigation, a phenomenon distinct from financial-related EB examined in the broader literature. While the level and type of investment can be easily monitored, deliberate modification of IS design to reflect the interests of an empire builder would be much more difficult to detect. Finally, this study advances our knowledge of the causes of IS failure by drawing attention to the planning phase of a new IS as a plausible origin for system failure, a phase often overlooked within extant literature. If an empire builder succeeds in imposing his/her will during the planning phase of a new IS, it is inevitable that the implemented system will only serve to further the empire builder's agenda within his/her organization.

The remainder of this paper is organized as follows: In the next section, we give an overview of extant literature on EB, the bulk of which stems from contemporary research conducted in the areas of corporate governance and finance. Next, we outline our methodology and present our case company. This is then followed by a detailed case analysis of EB practices that unfolded in the planning phase of a new IS for the company. Finally, we discuss our interpretations of these EB practices from a path dependency perspective before concluding with the implications of our findings for theory and practice.

CONTEMPORARY RESEARCH ON EMPIRE BUILDING: AN OVERVIEW

Since our study subscribed to the grounded theory methodology, we do not begin with an extensive review of extant literature, but rather, weave in the literature in connection to theoretical concepts and themes that emerge from our empirical evidence in order to develop a cohesive theory of empire building, which constitutes the centerpiece of our story (Strong and Volkoff 2010; Urquhart and Fernandez 2006). Still, in this section, we will offer an overview of contemporary research into empire building in order to provide a theoretical point of department for this study.

The concept of ***Empire Building*** (EB) originates from the seminal work of Berle and Means (1933), who were the first to explore the separation between ownership and corporate governance within organizations. Mueller (1969) subsequently built on Berle-Means' (1933) work to formulate the notion of EB (Berle and Means 1991). Much of the existing literature on EB focuses on the motivation behind mergers and acquisitions as well as the managers who execute them (Gammelgaard 1999; Harford et al. 2012; Schweizer 2005; Trautwein 1990). Specifically, past studies have alluded to the self-gratifying behavior of these managers (Trautwein 1990) and that this self-gratification may take the form of profit or power gains (Gammelgaard 1999; Mueller 1969; Pfeffer 1993; Pfeffer and Salancik 2003; Ravenscraft and Scherer 1987; Salancik and Pfeffer 1974). Particularly, Gammelgaard (1999) noted that managers, who exhibit EB behaviors, are not necessarily driven by economic gain, but rather, could be motivated by an innate desire to fulfill personal ambitions. In this sense, EB can be construed as a form of suboptimal behavior that can erode the value of a firm by suppressing operational performance (Hope and Thomas 2008; Trautwein 1990).

Managers are able to utilize their positions for partisan gain on multiple levels within organizations (Li 2009). Because EB emphasizes self-gratifying behaviors on the part of managers, it is often framed as *managerial EB* to place emphasis on the role of the actor: managers who attempt to maximize their utility at the expense of shareholders' interests (Aliberti and Green 1999). For this reason, EB is often associated with human agency problems, accentuating the conflict between personal and organizational objectives (Chen et al. 2008; Eisdorfer et al. 2015; Hope and Thomas 2008; Jensen 1986).

To date, Li (2009) is the only study to apply EB as a conceptual lens for investigating IS-related phenomena. Li (2009) examined how appropriate governance mechanisms can be enacted

to prevent managers from engaging in IT investments that are personally beneficial but inefficient from firms' standpoint. Corporate governance mechanisms (e.g., monitoring mechanisms and optimal compensation schemes) have been also proposed within corporate governance and finance literatures as a form of deterrence against managerial EB (Aggarwal and Samwick 2006; Chen et al. 2008; Du et al. 2014; Gammelgaard 1999; Hope and Thomas 2008; Hughes et al. 2003; Jensen 1986; Kumar and Rabinovitch 2013).

Similar to Li (2009), this study applies EB as a conceptual lens to explain how power play can shape the evolution of IS projects. We define IS-related EB as the exploitation of IS projects as a means to augment one's political base (Sabherwal and Grover 2010). Given that control over IS translates into power over information flows within organizations (Hill and Phan 1991), the ability to steer the planning of new IS is desirable from the viewpoint of an empire builder as it guarantees that the implemented system will further his/her own personal agenda. Moreover, since the relationship between people and technology is socially constructed in that the latter is an artifact instrumented by the former (Dunn et al. 1997; Harvey and Chrisman 1998), we contend that an intricate understanding of EB practices can be invaluable in disentangling tensions among varying partisan interests invested into newly planned IS projects. While maintaining close ties to the extant literature on EB, this study endeavors to not only expose how IS-related EB practices unfold in reality, but also uncovers the supportive mechanisms for enacting such practices.

METHODOLOGY

We conducted an in-depth case study to explore EB practices during the planning phase of a new IS. Due to the dreath of research into EB within the IS discipline, we subscribe to grounded theory as our analytical lens in accordance with guidelines put forth by Urquhart et al. (2010): "Grounded theory is a qualitative research method that seeks to develop theory that is grounded in

data systematically gathered and analyzed" (p. 357). Consistent with the grounded theory methodology, our case study adheres to the principles of emergence by which systematic generation and theorization of data provides meaning and relevance to the phenomenon under consideration (Charmaz 2013; Corbin and Strauss 2014; Glaser and Strauss 1967; Gregory et al. 2013; Gregory et al. 2015). The case study was conducted at the site of a multinational real estate company that shelved the implementation of a Project Management System (PMS) after spending almost four years of time and wasting a tremendous amount of resources to plan for the system. Over the duration of four years, excluding staff salaries, travel, and overhead costs, the company incurred over USD $30.9 million in direct software, hardware, licenses, and consultation costs as well as USD $410,000 in outsourcing fees and USD $3.4 million in expenses as part of an initial arrangement with the company's joint-ventures to develop the system. The project ultimately ended in failure due to predominant EB practices discovered through our data analysis. In the next section, we offer an overview of the case company in order to illuminate the rationale behind our data collection and analysis procedures.

Field Site

GPM (a pseudonym to ensure confidentiality) is a multinational real-estate company specializing in mega-construction projects (e.g., airports, bridges, civil infrastructures, high-rise buildings, roads and small cities) in Asia, America, Europe and the Middle East. As of January 2009, GPM was managing 17 mega construction projects with a total net worth of around USD $23 billion. Three additional construction projects had been approved by the operations department, but were waiting for the legal department to finalize contractual terms and conditions. To monitor the progress of these mega-construction projects, GPM was relying on a combination of emails and legacy document management systems. Information about the projects was

fragmented and executive reports as well as invoices had to be generated manually. To resolve the issues of fragmented information as well as the manual generation of reports and invoices, the company decided, in January 2009, to develop and implement a *Project Management System* (PMS). As envisioned by the Vice Chairman (VC):

> *"GPM is managing 17 [existing] mega [real estate] projects ... in various locations around the world ... GPM needs only two pillars. We need a dedicated qualifed team and a state of the art [PMS]."*

The same vision was espoused by the GPM Chief Executive Officer (CEO), who remarked:

> *"GPM is desperate for two things to achieve its vision. The first is an over-qualified team and the second is a state-of-the-art IT application and system, the PMS, to manage mega projects and attract new clients."*

Initially, it was decided by the top management during a meeting in the Chairman's office that the PMS project will be outsourced to a sister company with expertise in developing technological solutions. The VC stated:

> "*We have agreed at the chairman's office to have [BETA Company (pseudonym)], a sister company specialized in IT service and outsourcing, be a part of our GPM team and to help us with all GPM IT initiatives including building a state of the art data center ... PMS will be part of all GPM proposals."*

As illustrated in the quote below, the CEO of the sister company convinced GPM's top management that BETA Company was "*the right company at the right time*" for developing the PMS. He focused on the main advantages of the partnership between GPM and BETA:

> *"The partnership provides immediate utilization of the best technology, practices and project management solutions. It acts fast and independently in providing services to our valued customers and also provides easy access with creditability (personal) to big players in the market. It represents the opportunity to provide captive market needs and enter local markets, thus allowing GPM to penetrate into new markets ... The scope in this proposal covers software and hardware and also covers all domains from coordination to setting up/installation, configuring, testing and launching of the PMS. Additionally, it covers the required orientation needed for the respective personnel in the form of trainings."*

In March 2009, two months after the decision to outsource the development of the PMS to the sister company, GPM hired a new Chief Information Officer (CIO), who immediately argued

against outsourcing a strategic initiative. Specifically, the CIO detailed five risk areas that may culminate from outsourcing the PMS project to the sister company:

> *"1. Total dependence/exit barriers refer to the complete reliance that the organization has on an outsourcing GPM and the problems that arise when the outsourcing relationship ends.*
>
> *2. Physical IS security concerns the organization's loss of control over physical security, since security is now the responsibility of the outsourcing at GPM. By outsourcing, the organization gives up control over physical access to its system, location of the system, and the frequency and location of system backups.*
>
> *3. Legal consequences involve the lack of a fiduciary relationship between the organization and the outsourcing GPM and the increase in liability that may arise during the creation of an outsourcing relationship.*
>
> *4. Logical IS security risks take into account the loss of confidentiality and privacy an organization experiences when it hires an outsourcing GPM.*
>
> *5. Human resource issues result from the change in employee skill sets that an organization experiences when it chooses to outsource and the possible negative consequences caused by this shift in employee skill sets."*

The CIO further added:

> *"GPM is not a project. It needs to own and control its data. PMS is part of GPM's core business. It's against the best practices, common practices, and even logic to outsource in this manner. There are too many examples of major failures stemming from outsourcing of core business matters. We would have to look no further than the Bank of American technology outsourcing project to cite a reason for not outsourcing core business functions."*

By expressing the aforementioned concerns to the VC and the CEO, the CIO was able to persuade GPM's top management to put a stop to their outsourcing plan, deciding instead to develop the PMS internally. This decision in turn, lays the seed for an enduring struggle, between two empire builders within GPM, over the developmental direction of the PMS due to the system's foreseeable impact on pre-existing power structures within the company. For this reason, the case of the PMS project in GPM serves an ideal field site for a deeper scrutiny of EB practices within IS projects.

Data Collection

Data collection took place between January 2009 and November 2012, spanning the entire planning phase of the PMS project. Data was gathered via a combination of primary and secondary sources covering a wide range of materials, which include but are not limited to interviews, observations, archival records, meeting minutes and physical artifacts. Appendix A gives a detailed breakdown of the data sources we draw on and the type of data extracted from each of these sources.

Over the period of data collection, we not only elicited information pertaining to the PMS project, but we also created a repository to archive any documentation that aids in reconstructing the evolution of the project across time. Fields notes were taken of all observations made through attendance at project meetings and informal conversations. We were also granted open access to *all* actors involved in the PMS project together with *all* email correspondences and documentation exchanged among them (see Appendix A), thereby enabling us to accumulate an extensive corpus of primary and secondary data related to the project. Interviews were conducted with the actors involved in the PMS project (see Table 1) throughout the data collection period. We interviewed and observed these actors in a diversity of hierarchical positions and across various departments (see Appendix B for original and revised organization structures) in order to establish a comprehensive oversight of decision making logics pertinent to the PMS project. Interviews ranged from 15 minutes to 4 hours, adhering to no formal protocol. Interviews were designed to obtain information about informants' role in the PMS project or their interpretation of project documentation. All interviews were digitally recorded and transcribed. Additionally, we triangulated data gathered from formal interviews with information elicited through engaging informants in casual conversations regarding the evolution of the PMS project.

Table 1: List of Informants Interviewed

Informant	Role and Responsibilities in PMS Project
Vice Chairman (VC)	Member of the board and potential PMS user
Chief Executive Officer (CEO) **(report to Vice-chairman)**	Chair of the steering committee and potential PMS user
Deputy-CEO Administration[11] **(report to the CEO)**	Potential PMS power user (business intelligence and finance modules)
Deputy-CEO Operations[12] **(report to the CEO)**	Potential PMS power user (all modules)
Chief Operations Officer (COO) **(used to report to the CEO until a Deputy-CEO of Operations was hired)**	Chair of the project management committee, member of the steering committee and potential PMS power user (business intelligence and project status modules)
Chief Information Officer (CIO) **(report to the Deputy-CEO of Administration)**	Member of the steering committee as well as supervisor of 3rd and 4th PMS project manager
Chief Administration Officer (CAO) **(report to the Deputy-CEO of Administration)**	Potential PMS power user (business intelligence and human resource modules), member of the steering committee in charge of one of the GPM overseas offices and supporter of the CIO recruitment campaign to search for PMS manager
Contract Manager[13] **(report to the COO)**	Supervisor of 1st and 2nd PMS project manager
PMS Project Managers **(4 of them; each consecutive project manager was a replacement of the previous project manager)**	Managing the project and chair of the PMS technical committee
Team of Employees from 3 Joint-Venture Companies (JVs[14])	Providers of advice and resources as and when needed
Directors and Engineers at 19 Real-Estate Project Sites **(report to the COO)**	Power PMS users (use and update all modules) providing insights into system development plans
IT Team **(report to the CIO)**	Supporting the PMS technically (hardware, installations, providing/managing software licenses)

Data Analysis and Coding Process

Consistent with the grounded theory methodology, data was gathered and analyzed iteratively in that materials (e.g., field notes, interview transcripts and project documentation) were coded as and when available and these codes in turn, steered subsequent data collection efforts. Through this process of continuous reflection, we were able to guarantee mutual informativity

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[11] Used to be Deputy-CEO overseeing the administration and operations
[12] New position in the company created midway through the PMS project
[13] Promoted to Director of Contracts and Document Controls
[14] JV1 operates 81 offices worldwide, offering construction management, program/project management, and consulting services; JV2 operates 100 offices worldwide, providing consultation services and technical resources for managing mega construction projects, and; JV3 supplies clients with valuation, research, quantity surveyance and cost consultancy services among others.

between data collection and analysis. Furthermore, an iterative data collection and analysis strategy is conducive for theoretical sampling by allowing us to isolate informants within the company, who were or became knowledgeable about the PMS project as it evolved.

To ensure inter-rater reliability, three authors independently coded materials collected in the first year. The entire research team then convened to discuss the coding scheme. Upon reaching a consensus, materials collected in the second and third year of the case study were coded by one of the authors. As the project progressed, fresh codes were incorporated into the coding scheme when necessary. Prior to the inclusion of a fresh code into the coding scheme, its label and meaning was always deliberated at a full seating of the research team to ensure consistency in its interpretation and utilization. Materials collected in the final year of the case study, and after the conclusion of the PMS project, was coded by a separate author for cross-validation purposes. At this juncture, every member of the research team was familiar with the PMS project and no new codes emerged from the data analysis.

Our coding process adhered to the guidelines prescribed by Corbin and Strauss (2014) as well as Urquhart et al. (2010) in developing grounded theory. Specifically, we began with *open coding* to arrive at descriptive labels of core issues raised by informants about the PMS project, followed by *axial coding* to discover interdependencies among the core issues before finally ending with *selective coding*, which involves migrating the open and axial codes to theoretical themes (Charmaz 2013; Corbin and Strauss 1990; Urquhart 1997). This inductive approach not only aids in uncovering distinct EB practices and their interplay over the course of the PMS project, but it is instrumental in helping us to pinpoint the corresponding actors engaging in these practices.

In open coding, we attached descriptive labels to every piece of material to denote the motives and behaviors of actors involved in the PMS project as well as emergent events related to

the project. Where plausible, these labels were taken from words or phrases mentioned by the informants and, at times, included conceptual terminologies from extant literature on EB such as power, control, data, information and access. Altogether, 41 open codes were developed to cover the spectrum of concepts as they relate to the case study.

Table 2: Illustration of Open and Axial Coding		
Text Passage	**Open (normal font) and Axial Codes (*italic bold font*)**	**Emerging Theoretical Themes [Selective Coding]**
[Contract Manager's email to CEO, CIO and COO]: "… [PMS] is purely files and templates … not technical coding and programming … the PMS contains confidential information about the project status, risks, complaints, proposals, invoices, and more. The nature of the information renders it necessary for the PMS to remain under the contract department in operations division … and can only be properly secured by the operations team. Any information leakage to our clients or our competitors might harm GPM … it is my opinion that linking the PMS to the SharePoint also leads to information leakage since the IT team has full access to the data."	Data access (exclusive), securing data, prevent integration, system downgrade, domain knowledge supremacy *Framing*	Two themes emerged from selective coding: *reductionist* and *expansionist* EB. Comparing these codes passages to other texts about EB, we could unravel the motives and behaviors of the two empire builders. The reductionist empire builder's (Contract Manager) motive is to maintain domain knowledge supremacy; whereas the expansionist empire builder's (CIO) motive is to assimilate all real-estate project related information and make it accessible to stakeholders within the company, and while doing so, acquires ownership of this information
[CIO's speech during the annual gathering event]: "Our [IT Department] philosophy is to liberate [GPM] from the constraints of technology: We want to enable [GPM] to make business decisions supported by technology. Future business decisions will be determined by the integrated system technology, which will be accessed from [GPM] SharePoint or a simple link, My [GPM].com … project managers and executives will be able to access live data through the SharePoint and PMS business intelligence using any device, laptop, iPad, or smart phone …"	IT department vision and mission, Data access, Integration and system excellence, Sharing / leveraging information, Transparency *Reframing*	The axial codes, ***framing*** and ***reframing***, reflect the first EB mechanism employed by each of these empire builders on their attempt to gain control of the PMS project. While the Contract Manager was watering down the scope of the project in order to reinforce pre-existing power structure within the company, the CIO was reframing the project to expand its scope and put in place a new power structure within the company.

As the core category of EB practices emerged, we initiated axial coding to explore the mechanisms underlying these practices and to formulate concise explanations of what EB mechanisms are and the way they are deployed by empire builders. More precisely, our axial coding focused on the causal, intervening and contextual conditions facilitating EB practices within IS projects (Strauss and Corbin 1998), as well as the mechanisms employed by empire builders to harness these conditions. In the final stage of selective coding, we compare and contrast

the open and axial codes in order to further refine our classification and derive theoretical themes (Strauss and Corbin 1998), thereby transcending to a more abstract level of conceptualizing the empirical evidence (Urquhart et al. 2010). Table 2 depicts examples of coded passages, including their respective open and axial codes.

From Table 2, it is clear that the selective coding process yielded two distinct modes of EB, which we termed as the *reductionist* and *expansionist* EB. Reductionist EB was practiced by the Contract Manager of GPM whereas expansionist EB was pursued by the CIO of the company. Definitions for both modes of EB are given in Table 3 below.

Table 3: Two Modes of Empire Building	
Mode of Empire Building	**Definition**
Expansionist	Actions of expansionist empire builder are characterized by efforts to acquire ownership of crucial information resources by gaining control of systems through integration and the governance of access right to integrated systems
Reductionist	Actions of reductionist empire builder are characterized by efforts to either diminish the added value of a newly planned IS or disrupt the project as much as possible in order to preserve status quo

Validity of Methodological Procedures

Responding to growing interest in the application of the grounded theory methodology within the IS discipline, Urquhart et al. (2010) advanced a series of five guidelines for conducting grounded theory research in relation to IS phenomena (see Table 4). Urquhart et al. (2010) further applied these guidelines to the assessment of three published grounded theory studies within the IS discipline to demonstrate their validity. For this reason, we have strived to adhere to these five guidelines in our case study. Table 4 explicates our efforts at aligning our methodological procedures with those five guidelines advocated by Urquhart et al. (2010).

Table 4: Comparison of Methodological Procedures to Urquhart et al.'s (2010) Five Guidelines of Grounded Theory Studies		
Guideline	**Description** **[as summarized from Urquhart et al. (2010)]**	**Methodological Procedure for Our Study** **(Adheres to the principle by ...)**
Constant Comparison	"Constant comparison is the process of constantly comparing instances of data labelled	Systematically comparing and contrasting empirical materials being analyzed against

	as a particular category with other instances of data in the same category. Constant comparison contributes to the development of theory by exposing the analytic properties of the codes and categories to rigorous scrutiny. This guideline for data analysis encourages researchers to be both rigorous and theoretical."	codes which have already emerged from previous coding exercises
Iterative Conceptualization	"This guideline suggests that researchers should increase the level of abstraction and relate categories to each other through a process of iterative conceptualization. In grounded theory, this is done using theoretical coding. The relationships between categories can be of many different types, not just causal. Theoretical coding contributes to an understanding of relationships between the concepts or factors of a theory. Theoretical memos are also very important to the development of theoretical coding and the whole process of iterative conceptualization."	Drawing connections among open and axial codes such that we can disentangle interdependencies and relationships among the multiplicity of motives, behaviors and events related to the PMS project
Theoretical Sampling	"This guideline stresses the importance of deciding on analytic grounds where to sample from next in the study. Theoretical sampling helps to ensure the comprehensive nature of the theory, and ensures that the developing theory is truly grounded in the data."	Following an iterative interview strategy whereby preliminary themes derived in earlier segments of the study were utilized to isolate informants within the company, who were or became knowledgeable about the PMS project as it evolved
Scaling Up	"This guideline suggests how a researcher might counter what is said to be a common problem in grounded theory viz. the production of a low level theory, which is then hard to relate to the broader literature. Scaling up is the process of grouping higher-level categories into broader themes. Scaling up contributes to the generalizability of the theory."	Visualizing a hierarchy of codes (nodes) during our data analysis (via Nvivo software) in which empirical evidence was coded based on differentiation between child nodes and more abstract parent nodes
Theoretical Integration	"This guideline helps the researcher deal with what we think is an obligation of the grounded theorist – theoretical integration. Theoretical integration means relating the theory to other theories in the same or similar field. It is the process of comparing the substantive theory generated with other, previously developed, theories. This principle contributes to theoretical integration in the discipline and could help in the generation of formal theories."	Referencing extant literature in migrating open and axial codes to theoretical themes centered on reductionist and expansionist modes of EB

CASE ANALYSIS

Our case analysis is centered on GPM's decision to insource the development of the PMS and the events that transpired thereafter. From our case analysis, we were able to discern a series of nineteen key events that unfolded following the cancellation of the outsourcing plan, beginning

with the initial planning phase of the PMS by the Operations department [which then moved to the IT department and then back again to the Operations department] and concluding with the eventual failure of the project. Our case analysis delves into these nineteen events and the actors driving them, paying particular attention to the EB efforts of two focal actors: the Contract Manager and the CIO. An appreciation of these key events will not only equip readers with background knowledge of the PMS project, the focus of our case analysis, but it will also yield insights into the decision making process of different actors and the actions they have undertaken to shape the occurrence of these events. The chronological timeline of the nineteen key events, which unfolded following the cancellation of the PMS outsourcing plan, are briefly summarized in Table 5 below.

Table 5: Timeline of Key Events		
Event Label	**Dates**	**Event**
A	April 2009	The Operations Department, which oversees the core business processes related to the management of real-estate projects, is leading the PMS project.
B	June 2009	The Contract Manager became the Single Point of Contact (SPOC) for all project-related activities within GPM.
C	October 2009	The Contract Manager was promoted to the Director of Contracts and Document Controls and tasked with overseeing the PMS project and four sections of personnel in the Operations Department.
D	November 2009	Project re-scoping from PMS to Intelligent Document Management System (IDMS).
E	January 2010	CIO completed PMS History Report – documenting the progress of PMS project.
F	February 2010	Recruitment campaign, organized by the Contract Manager, for PMS project team. In the meantime, the CIO engaged an external consultant to conduct a PMS gap analysis.
G	May 2010	The PMS project manager (hereby referred to as the 1st PMS project manager), who was outsourced from a Joint Venture (JV) Company, resigned. Within the next few days, the JV transferred another person to GPM to be the 2nd PMS project manager.
H	June 2010	Project re-scoping from IDMS to Intelligent Executive Report (IER). In the meantime, the CIO sent an email to the COO, which was also copied to the CEO, about PMS project status and failures.
I	June 2010	The CIO presented the gap analysis report, which was produced by the consultant, to the CEO.
J	August 2010	PMS project ownership was transferred from the Operations Department to the IT Department. The CIO obtained an approval from the CEO to establish a new section in the IT Department, which was called IS Planning and Strategy together with a new PMS sub-section under this new section. The CIO had weekly meetings with the CEO; bypassing his direct supervisor, the Deputy-CEO. The CIO ran recruitment campaign to hire a PMS project manager.

K	September 2010	A new Director of IS Planning and Strategy joins the IT Department. The CIO tasked him with overseeing the PMS project. The CIO then instituted four committees: (1) a steering committee to maintain consistent top management support throughout the project; chaired by the CEO and consisted of the CIO, Chief Administration Officer (also Head of Human Resource Department), Chief Legal Officer, COO, Chief Strategy Officer and Director of Building Information Modeling from the Operations Department; (2) key users committee to evaluate the project and provide recommendations; chaired by the CIO and comprising 5 key users from the HQ and 17 key users from the projects sites; (3) technical committee to deal with the tender process; chaired by the CIO and comprising 5 key users from the HQ and 4 key users from the projects sites, as well as; (4) project management committee to deal with system development and implementation, including training and support; chaired by the CIO and comprising all PMS project members.
L	October 2010	A new hire, Chief Service Officer (CSO), established a small IT unit in the Operations Department, with the help of three JV companies, to manage the PMS project. The Contract Manager proposed to buy off-the-shelf software instead of developing the PMS internally; he recommended PMS Delta (pseudonym).
M	November 2010	The CEO confirmed that the ownership of the PMS project lies with the IT Department and not the Operations Department.
N	January 2011	The four committees instituted by the CIO decided to purchase an off-the-shelf PMS solution; called PMS Gamma (pseudonym).
O	February 2011	The CSO was fired. The Legal department was finalizing PMS Gamma contract, terms and conditions
P	June 2010 to February 2011	The CIO organized standing monthly meetings with the CEO to discuss updates regarding the PMS project.
Q	March 2011	The Operations Department took the lead again in the PMS project.
R	May 2011	GPM signed with Delta Technology, a PMS vendor chosen by Operations department, which started installation of the software in three out of 19 possible real-estate project sites. The CIO collected information from key users, who raised objection to PMS Delta.
S	November 2012	Contract with Delta PMS vendor was cancelled and the PMS project was put on hold indefinitely.

A Tale of Two Empire Builders

Our case analysis revealed two distinct modes of EB, which we theorize as *reductionist* and *expansionist* EB. These two forms of EB were exhibited by two focal actors: the Contract Manager (Reductionist EB) and the CIO (Expansionist EB). The remainder of this section is devoted to a detailed overview of the EB efforts expended by these two actors.

Reductionist Empire Builder: The Contract Manager from the Operations Department

The Contract Manager from the Operations Department exemplifies what we associate with a reductionist empire builder. Actions of the Contract Manager were motivated by a desire to *monopolize information of real-estate projects and retain knowledge supremacy with an ultimate*

aim of solidifying his own position within GPM. For this reason, the Contract Manager embarks on a series of measures devised to either downgrade the function of the PMS or disrupt its planning in order to preserve status quo within the company.

For a long time, the Contract Manager had been dictating the way information of real-estate projects was presented to GPM's parent companies, Board of Directors (BoD), CEO and senior executives. To justify his monopoly over real-estate project information, the Contract Manager claimed that the material was sensitive and must be managed by a single credible source with extensive knowledge in contracts and strong communication skills in dealing with clients. The Contract Manager positioned himself as a Single Point of Contact (SPOC) of real-estate projects through several means. First, he acquired full knowledge of all real-estate projects by attending all project-related events, including the BoD quarterly meetings. Second, information on real-estate projects (e.g., blueprints, invoices, project status as well as marketing and risk data) was stored on the Contract Manager's personal computer. The Contract Manager was hence able to decree who had access to what kind of information. Through selective sharing of real-estate project information, the Contract Manager constrained others' ability to make informed decisions and maneuvered himself into becoming the sole decision maker for project-related decisions. In essence, the Contract Manager's strategy emphasizes control over information flows and he framed the requirements of the PMS in a manner that legitimized his contemporary authority over real-estate projects.

Soon after the PMS outsourcing plan was cancelled, the Contract Manager tried to convince the CEO and D-CEO that the PMS project belonged to the Operations department. He presented the following scenario to the CEO and D-CEO:

> "*[PMS] is purely files and templates ... not technical coding and programming ... PMS contains confidential information about the project status, risks, complaints, proposals,*

invoices, and more. Those kinds of information have to be remained in operations department, any information leakage to our clients or our competitors might harm GPM."

In response to the Contract Manager's presentation above, the D-CEO proposed to move the PMS project to the Operations Department, which would then assume the costs and oversight of the project. The Head of the Operations Department (COO) agreed after being persuaded by the contract manager that a Joint Venture (JV) Company already possessed an in-house PMS, which could easily be adapted for GPM.

Right after gaining control of the PMS project, the Contract Manager brought in a project manager, two technical personnel, and two non-technical experts from the JV Company. At this time, the CIO, after a thorough investigation of the JV Company, concluded that it did not possess an in-house PMS as declared by the Contract Manager and that the project manager from the company was ignorant about how such a system might function. The CIO brought this to the attention of the CEO, but the COO convinced the CEO that the concerns were unfounded. The COO sent the following email:

> *"[CIO] and [contract manager], this matter is now put to bed. The man [the PMS project manager] shall be mobilized from the JV .... He will bring along with him the complete knowledge, systems and knowhow .... First version was about the PMS, next version about the SharePoint, the third version more unrelated to PMS technical details and the final version, which is completely changed, is about developing an executive reports using the SharePoint. According to the operations this shall help [GPM] share and present the project status reports to the clients. [the PMS project manager] shall be mobilized without any further delay."*

This 'turbulence' over the PMS project led the CEO to send the following email in June 2009:

> *"... to avoid misleading our clients and to protect GPM reputations; [the contract manager] is the SPOC for all [PMS] project updates, manpower management, assigning rates, and invoices"*

Besides officially becoming a Single Point of Contact (SPOC) for the PMS project, the Contract Manager was promoted to the Director of Contracts and Document Controls in October 2009. As the Director of Contracts and Document Controls, the Contract Manager was responsible

for: (1) preparing and reviewing project and business contracts; (2) controlling costs and keeping construction projects on track; (3) analyzing bids and proposals to certify that the specifications of binding agreements with clients, vendors, and employees are legal and comply with company policy; (4) monitoring projects from start to completion to ensure that work is completed on time and within budget; (5) managing project documentation for accuracy, quality and integrity, as well as; (6) overseeing the PMS project and four sections of personnel in the Operations department. These events capture the <u>first instance</u> of the Contract Manager's EB efforts.

In November 2009, after receiving numerous complaints from the CIO about unclear project scope, the Contract Manager re-scoped the PMS project and relabeled it as an Intelligent Document Management System (IDMS). He proclaimed that the IDMS would be an advanced Internet-based collaborative solution enabling all parties on a real-estate project to communicate and share project documents in a secured environment. Based on the re-scoping of the PMS project, the Contract Manager requested for and was successful in being allocated extra funding for the project due to the change in scope. In February 2010, the Contract Manager organized a recruitment campaign for the IDMS, and was able to coopt more internal staff into the PMS project (as opposed to bringing in people from the JV Company). These events encapsulate the <u>second instance</u> of the Contract Manager's EB efforts.

According to the reports and weekly meeting minutes in the IT Department, a few engineers had experimented with an early version of the IDMS by trying to save files and images, but the system lacked the necessary features, tutorials and training support. Several engineers complained to the CEO that it was not feasible to treat the IDMS as an effective project management software. In May 2010, the Contract Manager re-scoped the PMS project again and relabeled it as Intelligent Executive Report (IER), a reporting system employing templates to display live status of real-

estate projects. During one of the weekly executive meetings chaired by the CEO and attended by all senior executives (i.e., D-CEO, Chief Administration Officer who is also Head of Human Resource Department, Chief Legal Officer, COO and Chief Strategy Officer), the COO and the Contract Manager argued and persuaded the executives that the purpose of the IER is to deliver live updates about real-estate projects and that a technical writer, newly recruited by the Operations Department, would assist in finalizing the report templates. The Contract Manager presented a few images of the IER. The CEO and executives were convinced by the presentation, and the CEO asked for a weekly project status report. The successful re-scoping and relabeling of the PMS project mark the third instance of the Contract Manager's EB efforts.

In June 2010, several weeks after the abovementioned executive meeting, the PMS project manager, whom the Contract Manager brought in from the JV Company, decided to resign abruptly, citing personal reasons. According to the CIO and several others in the IT Department, he left due to the relentless change in scope for the PMS project. Within a few days of his departure, the Contract Manager and the JV Company were able to replace him with a new PMS project manager, who was formally transferred from the latter to GPM and became an official employee. Shortly after this PMS project manager began working in GPM, the Contract Manager started to worry about the new hire's technical abilities. Nevertheless, he recruited more people into the PMS team. During this time, the CIO aggressively tried to pursue a case against the Contract Manager, which we will elaborate in the next section. Finally, in August 2010, the ownership of the PMS project was transferred from the Operations Department to the IT Department after the CIO delivered a gap analysis report of the PMS project, which was produced by an external consultant, to the CEO.

Not long after the ownership of the PMS project was transferred to the IT Department, a new hire joined the Operations Department. A new Chief Service Officer (CSO) was recruited to service and handle clients of large real-estate projects, essentially muscling in on some of the managerial responsibilities of the COO. The COO was displeased with the new arrangement because the CSO did not report to him, but rather, directly to the D-CEO. The Contract Manager notified the CSO about the importance of the recently 'lost' PMS project from the Operations Department. Because the CSO was aware of the COO's unhappiness over the division of authority within the Operations Department (see Appendix B), he was eager to prove his self-worth to the department. In October 2010, the CSO sent the following email to the CEO, GPM executive chiefs, construction site managers, and the Contract Manager, with the subject line '*PMS Re-Alignment*'. In this email, the CSO referred to an official letter signed by the CEO titled the '*Set-Up of PMS Committees*':

> *"Good morning all, I refer to 'Setup of PMS Committees'. Having now had the opportunity to review the various report documents and held discussions with key parties on the subject of ERP and PMS, I propose to realign the PMS Committee ... In development of the systems, policies, and procedures, it is key to have input from all areas of the business and as so I ask each [department] to nominate one representative who can best represent his department's interests ...forming a PMS technical committee that shall meet on a weekly basis ..."*

The CSO assigned himself as the manager of the PMS project with the Contract Manager as his deputy. From October to November 2010, the CSO approached several JV companies to provide human resources to support the PMS project. His gambit paid off – three JV companies decided to collaborate on the PMS project. During this time, the IT Department and the Legal Department were finalizing a contract with a PMS vendor (Gamma) chosen by the former. The CSO and Contract Manager however, tried to persuade the CEO to transfer the PMS project to the Operations Department and reject the proposed contract with Gamma vendor. The CSO and Contract Manager, through the technical committee, ordered a halt to the proposed Gamma PMS

and opted to switch to a separate PMS vendor, but they failed. The CSO kept trying to wrestle control of the PMS project from the IT Department until the CEO stepped in with a reply to one of the CSO's email:

> *"Good morning [CSO], the use of some language in your e-mail like, despite your wish…etc, is where I based my statement on. In any case I have no hang up on who to attend. Please work it between you and [CIO] and ensure that the item of disagreements is clearly identified and different points of views are clearly reflected…I do not wish to spend too much time on the technicality unnecessarily …"*

In February 2011, the CSO was fired. It is interesting to note here that the Contract Manager was able to mobilize someone higher than him in the organizational hierarchy in his attempt to gain control of the PMS project. Although the Contract Manager failed, the result of this endeavor was that the PMS project was placed on hold for a few months until further direction from the CEO. These events reflect the <u>fourth instance</u> of the Contract Manager's EB efforts.

Not surprisingly, the Contract Manager plotted once more to gain control over the PMS project through another higher ranked individual, the COO. We found evidence of such influence through the inclusion of the Contract Manager's outlook signature at the bottom of numerous emails sent by the COO. As the IT Department was finalizing a contract with its chosen PMS vendor, the COO convinced the CEO to transfer the PMS project and its project manager, who was residing in the IT Department, to the Operations Department. The COO claimed it was the only way to acquire new mega real-estate projects. Because the Operations Department was receiving an escalating number of complaints from existing clients about poorly-managed real-estate projects, the COO contended that it would be difficult to acquire new clients with such '*reputation*'. The COO stressed that the only way to pacify existing clients and acquire new ones was for the Operations Department to officially take control of the PMS project. The COO will then instruct the project manager to explain the PMS to clients and assure them that the system

would significantly enhance the manageability of real-estate projects. The CEO agreed. The CIO emailed his response that IT Department would provide full support, but zero involvement:

> *"We will support anyone who needs help, but we will never get involved in an organized failure"*

The Operations Department was now in the driver's seat and the Contract Manager was appointed to take charge of the PMS project yet again. In March 2011, the Contract Manager initiated communications with a potential PMS vendor (Delta). According to the Contract Manager, only simple training and installation would be necessary before the PMS from Delta vendor was ready to be deployed. The CIO documented and warned the CEO that Delta vendor, as chosen by the Contract Manager, was too small to handle the USD $29 billion project. The CIO emailed Delta vendor's balance sheet to the CEO and copied the Chief Legal Officer in the message. Nonetheless, the CEO approved the contract with Delta vendor, eliminating the CIO from the planning of the PMS project. The CIO directed his team to provide full support when asked, but not to be proactive in terms of their participation in the PMS project. He further instructed the team to document everything, copy him in all their emails, and accept no verbal request. The signing of the contract with Delta vendor in May 2011 represents the <u>fifth instance</u> of the contract manager's EB efforts. Delta vendor's PMS was subsequently installed in three pilot sites (out of 19 possible real-estate project sites). Because of numerous user complaints in the three pilot sites, the installation of the Delta PMS for the other sites was halted. Eventually, in November 2012, GPM cancelled the PMS project altogether. Without the PMS, the Contract Manager resumed his role as the Single Point of Contact (SPOC) for real-estate project information. This is the <u>final outcome</u> of his empire building efforts. Although the Contract Manager's bid to gain control of the PMS to maintain information monopoly and knowledge supremacy over real-estate

projects were unsuccessful, he was undeniably successful in derailing the implementation of the PMS, which might have threatened his position within the company.

Expansionist Empire Builder: The CIO from the IT Department

In comparison to the Contract Manager, the CIO can be characterized as an expansionist empire builder in that his actions were motivated by a desire to *align the PMS project with best business practices with an ultimate aim of expanding his sphere of influence* within GPM. The CIO was a new hire at the time GPM entered the planning phase of the PMS. The PMS was intended to be fully integrated with two legacy systems within GPM that were already under the purview of the IT Department, namely the company's Enterprise Resource Planning (ERP) system and Knowledge Management (KM) portal. The CIO thus viewed PMS as an opportunity to extend his influence within GPM by realigning the PMS project with best business practices in an effort to amplify its scope and promote its success. When the PMS project was assigned to the Operations Department, the CIO countered:

> *"PMS is a complicated application, requiring integration with other applications and also requires IT teams."*

The CIO shared his application roadmap, including the PMS, with all executives in GPM. However, the D-CEO (the CIO's direct supervisor) rejected the proposal:

> *"... support the operations by providing hardware and supporting application... as required ... PMS is a core application... let the operations manage the PMS ..."*

The CIO maintained his surveillance of the PMS project by: (1) getting regular updates from an IT staff who was supporting the PMS team and the Director of Building Information Modeling (who was dissatisfied with the Contract Manager), both of whom were stationed in the Operations Department, as well as; (2) visiting and soliciting feedback about the PMS project from internal users and clients.

In January 2010, with assistance from the Director of Building Information Modelling, the CIO crafted a report to document the failure history of the PMS, which was titled '*PMS Puzzle*'. In February 2010, the CIO engaged an external consultant to conduct a gap analysis of the PMS project. In early June 2010, the CIO sent an aggressive email to the COO, copying the CEO, about failures in the PMS project:

> *"... The scope of the new JV system (PMS, IDMS, PMIS) is still not clear to me –Operations can't explain what they've done so far or what's next ... I have many concerns and we need to 'work as one team' to address these challenges ... The facts are that there are many missing functionalities and gaps in the current systems and there is a lack of experience among the current PMS team, none of the them have any experience with PMS ... History has shown that with the first generation JV PMS by JV, we can refer to the 'Systems Map' to see that the project failed to deliver. Similarly, with the second-generation project, the contract manager's team also failed to deliver. So, we can now refer to the attached report by one of the well-known PMS experts, the gap analysis report, which basically advocates against the PMS..."*

Around mid-June 2010, the CIO, without involving the D-CEO, expressed his concerns to the CEO by presenting the latter with the gap analysis report produced by the external consultant. The CIO commented that he felt that the D-CEO was obstructing his best intention to assume control of the PMS project. The CIO explained that the current PMS application, developed by the Operations Department and the JV Company, was ill-equipped to manage mega-construction projects. The CIO also stated that real-estate project site managers, as internal users of the PMS, were not active in the design of the system and were desperate for updates on the project status. The CEO subsequently decided to move the ownership of PMS project from the Operations Department to the IT Department:

> *"You have my full support. What I don't see though is timeline for all these ... Are you going to have a temporary fix then solid? ... Please do whatever necessary ... and let me know how"*

These events encapsulate the first instance of the CIO's EB efforts.

Upon hiring a PMS project manager, the CIO instituted four committees: (1) a steering committee to maintain consistent top management support throughout the project; chaired by the

CEO and consisted of the CIO, Chief Administration Officer (also Head of Human Resource Department), Chief Legal Officer, COO, Chief Strategy Officer and Director of Building Information Modeling from the Operations Department; (2) key users committee to evaluate the project and provide recommendations; chaired by the CIO and comprising 5 key users from the HQ and 17 key users from the projects sites; (3) technical committee to deal with the tender process; chaired by the CIO and comprising 5 key users from the HQ and 4 key users from the projects sites, as well as; (4) project management committee to deal with system development and implementation, including training and support; chaired by the CIO and comprising all PMS project members. These four committees were set up to expand the appeal of PMS to other departments within the company as well as to the real-estate project sites. In particular, the expansion into the real-estate project sites allowed the CIO to communicate with power users in the form of engineers and site project directors. This in turn bolstered the influence of the CIO and endowed him with the ability to have up-to-date status of real-estate projects. From participation in steering committee meetings, the CIO was also able to learn about the monthly executive meetings between the CEO and the VC. In short, through the institution of these four committees, the CIO gained unprecedented access to vital pieces of information needed to sustain his control of the PMS project.

In addition, the CIO arranged frequent monthly meetings with the CEO to discuss updates pertaining the PMS project. In doing so, the CIO continued to bypass his immediate superior, the D-CEO. To further streamline the flow of information, others were occasionally invited to attend the status update meetings with the CEO. While attendance varied, the CIO and CEO attended every meeting. The ability to bypass his direct supervisor, the D-CEO, marks the second instance of the CIO's EB efforts.

In October 2010, the CIO was surprised to receive an email from the CSO, notifying him of the latter's intention to lead the PMS project with the Contract Manager as his deputy. He responded:

"Hi [CSO], I believe that 'many things got lost in translations'

1. Your plan and the terminologies that was mentioned in your email were used in late 70s. We're Adapting Information Systems Concepts; let me know if you need more details!

2. Technology team will not waste their time in an initiative that lacks scope, roadmap, and un-balanced team.

3. Why do you think that you can lead the project?

- Simple formula: Non-Information Systems Expert Leads Information Systems Initiatives = Failure

I believe that the Technology Team explained that it's more complicated than the way you're describing below...

'PMS, ERP, Pro Ser ERP, BI, Portal, and DMS = We need make them as a one family...'

4. A Way Forward: Please Share your Department Strategy, if you can develop one, & I'll make sure that we align it with Technology Strategy ... Let's not waste Time and Resources"

Between October and November 2010, it seemed as though there were two PMS teams 'running' in parallel until the CEO decided to put a stop to the situation by moving the PMS project from the IT Department to the Operations Department with an assertive email. A few months later, the CSO was fired, and the CEO sent the following email to the CIO:

"If you have not heard already we let [CSO] go this AM according to plan. For the time being we will not replace the position until we have more working meetings with your team and the projects to' buy in" on the systems we wish to roll out that are already in progressed development phases."

In early November 2010, the CIO decided to purchase a PMS package and integrate it with existing systems of GPM. Four months later, after several meetings, demos and evaluations, the final decision was made to purchase a PMS from Gamma vendor. The decision was approved by all four committees. The legal department finalized the contract and forwarded it to the CEO for

his final endorsement. In March 2011, just before the contract was signed, the COO managed to convince the CEO that it was vital for the PMS project to be transferred to the Operations Department. The Contract Manager proposed to purchase the PMS from another vendor and his intention was leaked to the CIO by the Director of Building Information Modeling from the Operations Department in the following email:

> *"This is the e-mail I received today regarding introducing a new document control system (PMS) ... it includes an invitation to present Delta to GPM, and a few of the clients ... the CEO might attend ... according to my research, Delta is a small vendor and with no references ... It is my perception that Delta will not be able to help GPM ... I'll forward all the facts about Delta, including the balance sheet and organizational structure ..."*

The CIO utilized this information to raise his objection to purchase the Delta PMS to the CEO. He was unsuccessful. In May 2011, the CEO signed a contract with Delta vendor chosen by the Contract Manager. The CIO eventually left the company. As mentioned in the preceding section, the Delta PMS turned out to be a total flop and the CEO was compelled to halt its installation and scrapped the entire project. The contract manager thus retained his original role as the Single Point of Contact (SPOC) for all real-estate projects.

THEORIZING EMPIRE BUILDING AS PATH DEPENDENCIES

Figure 1 provides a visual chronology of the underlying EB mechanisms employed by the CIO and the Contract Manager in wrestling for control over the PMS project. The EB mechanisms exercised by the Contract Manager are displayed above the temporal axis whereas those utilized by the CIO are shown below. Letters corresponding to events listed in Table 5 are also portrayed on the temporal axis. The chronological overlap of certain EB mechanisms indicates that the actors were working on the same PMS project, but towards different ends and employing different, or even contradicting, means.

As we aim to illustrate in this section, reductionist EB practice can be broken down into five main mechanisms, namely those of Framing, Legitimizing, Re-Scoping, Disrupting and Derailing. In contrast, expansionist EB practice can be delineated into five other mechanisms: Reframing, Creating, Rewiring, Hastening and Coopting. Table 6 offers details on the ten EB mechanisms, as well as a comparison of the exercise of power and system preferences for the two distinct modes of EB. Each of these EB modes is characterized by a distinctive exercise of power. Whereas the Contract Manager, as a reductionist empire builder, drew power from mobilizing his cultivated alliances and social networks, the CIO, as an expansionist empire builder, relied on power derived from hierarchical authority and control over resource allocation. Moreover, while the intended outcome of the Contract Manager can be inferred to be a simplification of the PMS to match pre-existing power structures within GPM, the intended outcome for the CIO can be seen to resemble a system that is much more extensive than originally envisioned. In other words, the existing system can be deemed to be an acceptable baseline for the Contract Manager, but there is no fallback option for the CIO. We next provide our theorization of the EB mechanisms underlying reductionist and expansionist EB.
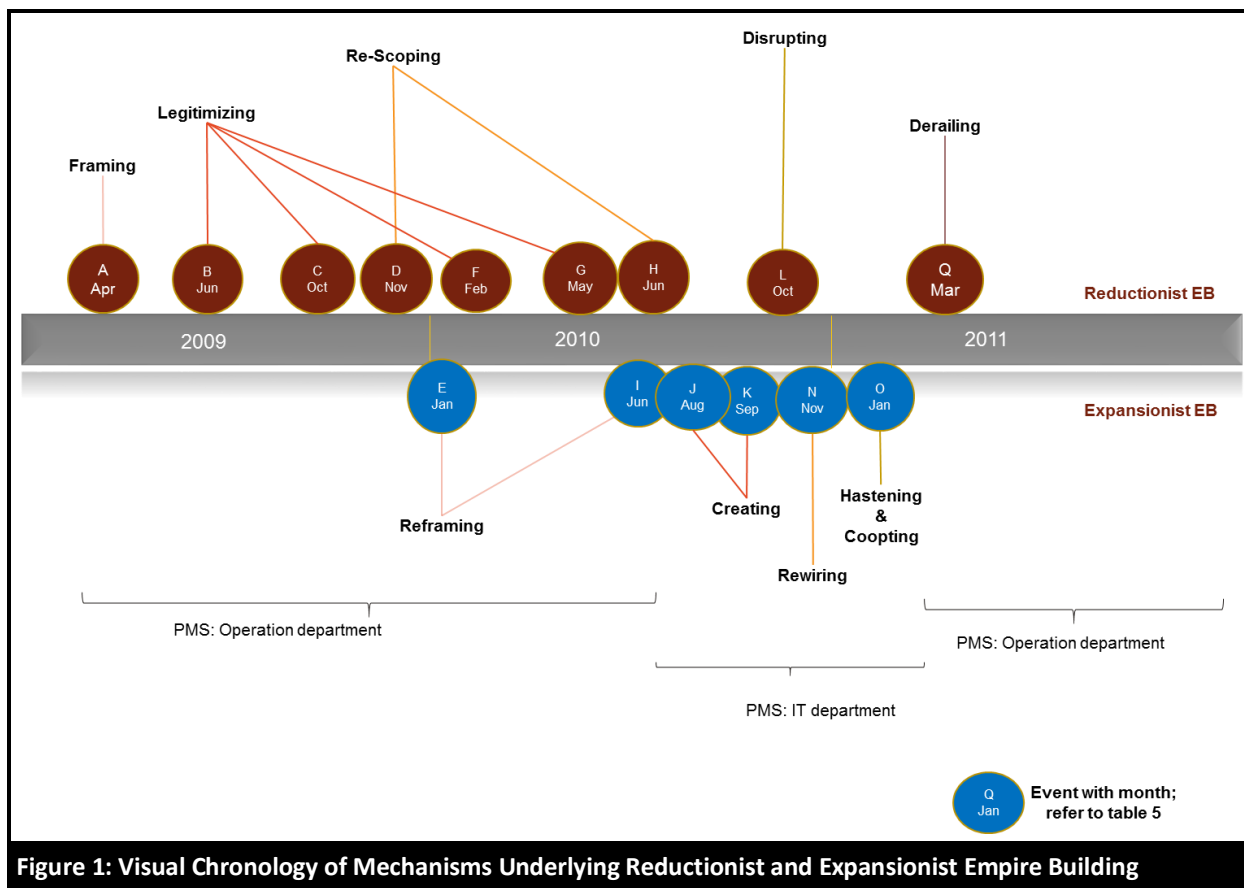
Figure 1: Visual Chronology of Mechanisms Underlying Reductionist and Expansionist Empire Building

Mechanisms Underlying Reductionist Empire Building

As noted earlier, the actions of the Contract Manager are targeted at monopolizing real-estate project information and retaining knowledge supremacy within GPM. He justified his actions by accentuating the sensitivity of materials related to real-estate projects and his own qualifications regarding project management. Specifically, we identified five mechanisms employed by the Contract Manager in pursuit of his reductionist EB strategy.

<u>*Reductionist EB Mechanism 1: Framing*</u>. The first reductionist EB mechanism employed by the Contract Manager was to ***frame system implementation according to prevalent business practices***. Because the PMS would contain confidential real-estate project information, the Contract Manager asserted that the PMS project should be controlled by the Operations Department since they had, all along, been the ones managing such confidential information.

Reductionist EB Mechanism 2: Legitimizing. Next, the second reductionist EB mechanism employed by the Contract Manager was to ***legitimize contemporary roles in system implementation***. Besides officially becoming a Single Point of Contact (SPOC) for the PMS project, the Contract Manager was promoted to the Director of Contracts and Document Controls in October 2009. By maneuvering himself to become the Director of Contracts and Document Controls, he was automatically responsible for, among other things, overseeing the PMS project and four sections of personnel in Operations Department.

Reductionist EB Mechanism 3: Re-Scoping. The third reductionist EB mechanism employed by the Contract Manager was to ***re-scope system implementation based on personal competencies***. In November 2009, after receiving numerous complaints from the CIO about unclear project scope, the Contract Manager re-scoped the PMS project and relabeled it as an Intelligent Document Management System (IDMS). At the same time, he was successful in obtaining extra funding for the PMS project due to the change in scope. When several engineers complained to the CEO that it was not feasible to utilize the IDMS for project management, the Contract Manager re-scoped the PMS project again in May 2010 and relabeled it as Intelligent Executive Report (IER), a reporting system that employed templates to deliver live updates on the status of real-estate projects. The Contract Manager then successfully convinced the senior executives to recruit a technical writer for the Operations Department in order to craft these templates. The successful re-scoping (and relabeling) of the PMS project fortifies the Contract Manager's reductionist EB strategy.

Reductionist EB Mechanism 4: Disrupting. The fourth reductionist EB mechanism was employed by the Contract Manager after the ownership of the PMS project was transferred from the Operations Department to the IT Department. The Contract Manager deliberately ***disrupted***

system implementation to await favorable conditions. Not long after the Operations Department lost ownership of the PMS project to the IT Department, a newly hired Chief Service Officer (CSO) joined the Operations Department. Because the CSO was tasked with serving and handling clients of large real-estate projects, he essentially took over certain responsibilities of the COO. Moreover, the CSO reported directly to the D-CEO and not the COO, which intensified the latter's displeasure with the arrangement. Exploiting the tension between the COO and the CSO, the Contract Manager notified the CSO about the importance of losing the PMS project to the IT Department. Desperate to carve out a space for himself within the Operations Department, the CSO embarked on a mission to retrieve the PMS project, assigning himself as the manager of the project with the Contract Manager as his deputy. The CSO engaged in numerous bids to regain control of the PMS project, which include interfering with the signing of a contract to purchase an off-the-shelf PMS from a vendor chosen by the IT Department. Although all these attempts failed and the CSO was later fired from the company, the contract manager managed to disrupt system implementation for a few months.

> *__Reductionist EB Mechanism 5: Derailing__*. The fifth and final reductionist EB mechanism employed by the Contract Manager was to *derail system implementation through intentional suboptimal decisions*. As the IT department was finalizing a contract with its chosen PMS vendor, the company was steadily losing business and encountering difficulties in acquiring new clients due to its 'reputation' of poorly managed real-estate projects. The Contract Manager convinced the COO that the only way to turn the situation around was to for the Operations Department to regain control of the PMS project. The COO in turn, persuaded the CEO to transfer the PMS project and its project manager, who was residing in the IT Department, to the Operations Department, claiming that this was the only way to salvage the business. The CEO consented. The

Operations Department was now in the lead again and the Contract Manager was re-appointed to head the PMS project. This time, the Contract Manager purposely selected an incompatible PMS vendor that culminated in an even more chaotic situation and the PMS project was eventually cancelled as a consequence. Without the PMS, the contract manager resumed his original role as the Single Point of Contact (SPOC) of the real-estate project information. Irrefutably, the Contract Manager was successful in derailing the implementation of the PMS, which might have eroded his power base within the company.

Mechanisms Underlying Expansionist Empire Building

Contrary to the Contract Manager, the CIO, as a new hire within GPM, was anxious to expand his sphere of influence within the company through the PMS project. This subsection chronicles the five mechanisms employed by the CIO to realize his expansionist EB strategy.

Expansionist EB Mechanism 1: Reframing. One of the first expansionist EB mechanism employed by the CIO was to ***reframe system implementation according to desired business practices***. The CIO endeavored to incorporate extensive features into the PMS and integrate it with legacy systems within GPM, which are under the purview of the IT Department. When all systems and their corresponding backend data are 'owned' by the IT Department, the CIO can extend his personal influence within the company. It is important to note here the position of the CIO within the organizational hierarchy of GPM (see Figure B-1 in Appendix B). The CIO was excluded from weekly executive meetings chaired by the CEO and attended by the D-CEO, Chief Administration Officer (also Head of Human Resource Department), Chief Legal Officer, COO and Chief Strategy Officer. The CIO reported not to the CEO, but to the D-CEO instead. Gaining control to a mission-critical system in GPM would elevate the CIO's status within the company. Through the relentless efforts of the CIO to reframe the PMS project according to best business practices in managing

mega real-estate projects, the CEO decided to transfer the ownership of the project from the Operations Department to the IT Department.

__Expansionist EB Mechanism 2: Creating__. The second expansionist EB mechanism employed by the CIO was to ***create new institutional roles in system implementation.*** Soon after gaining control of the PMS project, the CIO instituted four committees that drafted in all executives involved in the PMS project. The establishment of these committees not only enforce shared ownership of the PMS project, but it also offers a readily accessible channel for the CIO to communicate with power users and solicit feedback on the progress of the project. In turn, these measures permit the CIO to maintain a tight grip on the evolution of the PMS project.

__Expansionist EB Mechanism 3: Rewiring__. The third expansionist EB mechanism employed by the CIO was to ***rewire information flows surrounding system implementation.*** The CIO organized regular monthly meetings with the CEO to update the latter on the progress of the PMS project and in the process, bypassed the D-CEO, his immediate superior. To further regulate the flow of information regarding the PMS projects, others were only invited to attend the status update meetings with the CEO on a need-to basis. The ability to avoid institutionalized lines of reporting was critical to the CIO's expansionist EB strategy.

__Expansionist EB Mechanisms 4 and 5: Hastening and Coopting__. The fourth and final expansionist EB mechanisms employed by the CIO were to ***hasten system implementation*** and ***coopt system implementation through integration with controlled systems***. These two mechanisms were best exemplified through a proposal that was drafted by the CIO and presented to the CEO. In the proposal, the CIO argued that due to considerable delays in the planning of the PMS project and the threat of more advanced technologies appearing on the market, it was much more optimal to purchase an off-the-shelf system from one of the leading PMS vendors instead of

trying to develop the system internally. Furthermore, the CIO reasoned that the purchased PMS had to be integrated with other mission-critical systems in GPM, which are currently managed by the IT Department. The proposal was well-received by the CEO. Unfortunately, before an agreement can be inked with the CIO's preferred PMS vendor, the Contract Manager succeeded in snatching the PMS project back from the IT Department and quickly proceeded to sign a contract with another PMS vendor, thereby eliminating the CIO from the planning.

Empire Building from Path Dependency Perspective

From our case analysis, it is apparent that the expansionist empire builder seeks to *break* the one-man monopoly over information flows within the organization and *create* a new power structure centered on control over fully integrated IS. Meanwhile, the beneficiary of the pre-existing power structure, the reductionist empire builder, sought to defend his advantageous position by attempting to gain control of the planning of the new IS in order to diminish the latter's added value and *reinforce* status quo within the organization. Each empire builder strategically manipulated self-reinforcing EB mechanisms to gain control over the planning of the new IS. The planning of the new IS can thus be construed as an organizational path that comprises a nexus of interconnected processes, people and information technologies. Accordingly, reductionist EB practices signify path-reinforcement processes whereas expansionist EB practices symbolize path-breaking and creation processes.

Extant literature on path dependency views a path as a historically conditioned trajectory of organizations (Sydow et al. 2009). Actors mobilize specific events from the past and promote self-reinforcing mechanisms in pursuit of their initiatives (Garud et al. 2010; Schreyögg and Sydow 2011; Sydow et al. 2009). To explain the emergence and subsequent dominance of a path, three stages are proposed: preformation, formation, and lock-in phases (Schreyögg and Sydow 2011;

Sydow et al. 2009). The preformation phase is characterized as a phase where choices cannot be predicted but are influenced by prior events (Schreyögg and Sydow 2011; Sydow et al. 2009): "Once a decision is made or an action taken, this choice may turn out to be a 'small event', which, often unintentionally, sets off a self-reinforcing process" (Schreyögg et al. 2011, pp. 323). Consequently, the moment of entering into the dynamics of a self-reinforcing process is the critical juncture that concludes the preformation phase and commences the formation phase (Schreyögg and Sydow 2011; Sydow et al. 2009).

In the context of our case study, the critical juncture that ended the preformation phase was the decision to insource the development of the PMS project. From this moment forth, our case analysis reveals a series of temporary lock-ins during the formation phase that was characterized by the ongoing 'battle' between the reductionist and expansionist empire builders to gain control of the planning of the new IS. Finally, the transition from the formation phase to the lock-in phase occurs when a path becomes fixed and the focal organization is unable to move to a new path (Vergne and Durand 2010). In our case study, the lock-in phase was triggered when the new IS initiative was cancelled, and the reductionist empire builder retained his monopoly over information flows within the organization.

Besides distinctions in self-reinforcing EB mechanisms (see Table 6), another differentiating characteristic between the reductionist and expansionist empire builders stems from their intended paths to lock-into. The intended path of the expansionist empire builder was to install a more encompassing and transparent IS within the organization. When confronted with challenges from the reductionist empire builder and faced with risks of losing control over the planning of the new IS, the expansionist empire builder opted to accelerate the system implementation process, which may not be detrimental to the organization despite the presence of self-interest. In contrast, the

intended path of the reductionist empire builder was to install a downgraded IS that does not threaten the pre-existing power structure within the organization. When confronted with challenges from the expansionist empire builder and faced with risks of losing control over the planning of the new IS, the reductionist empire builder strategically disrupted the system implementation process by altering the scope of the system twice and, when all else fails, intentionally settled for a vendor that was unable to deliver a compatible system. All these measures were devised to prevent the expansionist empire builder from breaking the current path of the organization. In the end, the expansionist empire builder could not break the current path of the organization in a timely manner. As the reductionist empire builder had exhausted the resources allocated to system implementation, the organization reverted back to its original path. Table 6 summarizes the path reinforcing, breaking and creating mechanisms in play for IS-related EB.

Table 6: Path Dependency Perspective of IS-Related Empire Building				
Path Dependency Attribute	Reductionist Empire Building [Path Reinforcement]		Expansionist Empire Building [Path Breaking and Creation]	
	Mechanism	Action	Mechanism	Action
	Framing system implementation according to prevalent business practices	Reductionist empire builders will *frame* newly planned IS in ways that match current business practices and preserve status quo.	*Reframing* system implementation according to desired business practices	Expansionist empire builders will *reframe* newly planned IS in ways that match desired business practices.
	Legitimizing contemporary roles in system implementation	Reductionist empire builders will leverage on newly planned IS to *legitimize* his institutional role within the organization.	*Creating* new institutional roles in system implementation	Expansionist empire builders will *create* new institutional roles for newly planned IS in order to expand the sphere of influence.
	Re-scoping system implementation based on personal competencies	Reductionist empire builders will *re-scope* newly planned IS in ways that draws on competencies they possessed.	*Rewiring* information flows surrounding system implementation	Expansionist empire builders will *rewire* information flows surrounding newly planned IS in order to moderate interactions among stakeholders.
	Disrupting system implementation to await favorable conditions	Reductionist empire builders will find ways to *disrupt* newly planned IS until favorable conditions manifest.	*Hastening* system implementation	Expansionist empire builders will *hasten* the implementation of newly planned IS to preempt unforeseeable disruptions.
	Derailing system implementation	Reductionist empire builders will derail newly planned IS by	*Coopting* system implementation	Expansionist empire builders will *coopt* newly planned IS

	through intentional suboptimal decisions	making suboptimal decisions about system implementation intentionally.	through integration with controlled systems	through integration with systems that are already under their control.
	Mostly exercised through cultivated alliances and social networks		Mostly exercised through hierarchical authority and/or resource allocation	
	Downgraded system similar in scale and scope to existing system with the latter serving as a fallback lock-in option		Comprehensive system with no fallback lock-in option	

CONCLUSIONS AND IMPLICATIONS

This study takes a concrete step towards 'demystifying' EB practices within IS projects. While previous EB studies (mostly revolving around financial-related contexts) have advocated corporate governance mechanisms to thwart EB practices, this study attests to the presence of annulment effects whenever opposing IS-related EB practices are in play. To this extent, we put forth two distinct modes of EB: reductionist and expansionist EB. Furthermore, we uncover ten mechanisms employed by empire builders to acquire power within IS projects, five each for the reductionist and expansionist EB. Empirical evidence is presented to substantiate each of these EB mechanisms and taken together, they are theorized as path dependent patterns of power structures within organizations. More importantly, our findings illuminate the process through which EB unfolds within IS projects. Though past studies are very much concentrated on the final outcome from EB practices, this study depicts a series of intertwining mechanisms employed by empire builders to surpass one another in acquiring power along a common organizational path. This additional insight adds depth and richness to our understanding of EB, a phenomenon that is far more sophisticated than what we were led to believe from previous research.

This study also advances our knowledge of the causes of IS failure by drawing attention to the planning phase of a new IS as a plausible origin for system failure, a phase often overlooked within extant literature. If an empire builder succeeds in enforcing his/her will during the system planning phase, the design of the new system will predominantly serve to cement his or her

interests within the organization. Even so, we do recognize that sometimes it might be preferable for organizations to allow empires to be built around the design of a newly planned IS instead of losing the system completely. Future research can investigate the trade-off between having a mission-critical system with a built-in empire versus forgoing an important system to prevent an empire from being formed. It will also be interesting to delve deeper into the fundamental question of how organizations can stay vigilant against EB practices in IS projects. Although contextual instances from our case study are not generalizable beyond the company, the path reinforcing, breaking and creating mechanisms, as abstracted from these instances (see Table 6), do offer a solid foundation for further inquiries into EB activities within IS projects.

Our study comes without a couple of limitations. First, it is a single case study with limits on the applicability of our empirical findings to other instantiations of IS-related EB. We therefore challenge researchers to replicate the study across other cases of IS-related EB. We are confident that the path reinforcing, breaking and creating mechanisms derived from our case analysis as well as the delineation between reductionist and expansionist modes of EB provide a robust theoretical lens for scrutinizing the formation of EB practices during the IS planning phase. Second, we cannot rule out the possibility that interviewed actors could have given us censored answers to safeguard their positions within the case company. Nevertheless, we have made every attempt to triangulate information elicited from interviews with secondary sources in the likes of archival records, documentation, emails, observations and even casual conversations.

For organizations, the reductionist and expansionist EB mechanisms presented in this study are useful for recognizing such practices *in situ*. More importantly, early detection of EB practices in the planning phase of a new IS can buy time for organizations to cope with the situation. From our case analysis, it appears that organizations should rethink whether EB practices could be

tolerated so long as it is not detrimental to the implementation of the new IS. Alternatively, organizations can also cut off the empire builder from his/her resource base (e.g., social network or hierarchical authority) to prevent EB practices from flourishing. Ironically, our empirical findings are likewise informative for empire builders. By knowing what works and what don't, an empire builder could be much more efficient in building or defending his/her empire. Through lessons learnt from the two empire builders in our case study, an empire builder can sharpen his/her instincts and formulate effective EB strategies. Ultimately, it is our sincere wish that empirical findings from this study can inform organizations in tackling EB practices in a purposeful fashion.

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Appendix A: Detailed Breakdown of Data Sources

Data Source	Primary Data	Secondary Data
Human Resource Department	▪ 15 – 30 minutes meetings with the Head of HR Department to get feedback whenever there were personnel changes in the PMS project each and every time (i.e., why employees left the company, or were transferred to another department, or were promoted) ▪ 15 – 30 minutes meetings with the Head of HR Department and HR employees who attended PMS brainstorming sessions and meetings to solicit feedback about the brainstorming sessions and meetings	▪ Hierarchical and reporting structure within company ▪ Curriculum vitae of PMS project personnel ▪ Access to the Competence/Skills module in the ERP (in presence of HR employees)

IT Department	▪ Attended the following PMS project meetings titled:
	  1. Strategy for building PMS (observations during presentations)
	  2. Preparing GPM for PMS (observations during presentations)
	  3. Request-for-Proposal and Tendering (observations during presentations)
	  4. Project Charter (observations during presentations)
	  5. Competence Center (observations during presentations)
	  6. Who's afraid [of the PMS] (observations during presentations)
	  7. Technical evaluation (observations during presentations)
	  8. Financial evaluation (observations during presentations)
	  9. Presentations at the GPM, HQs, Sites, and Consultants
	  10. Questionnaires and interviews done by the IT Team for PMS
	  11. Risks and issues (observations during meetings)
	  12. Training plans and material (observations during meetings)
	  13. Emails – all emails related to PMS
	- 30 minutes – 1 hour meetings with the CIO and the IT team on an almost daily basis
		- Access to PMS project information comprising:
		  1. Knowledge & Research (documents, reports and presentation slides, including consultancy reports by Gartner and KPMG for example)
		  2. Strategy for building PMS (documents, reports)
		  3. Preparing GPM for PMS (documents, reports and presentation slides)
		  4. Request-for-Proposal and Tendering (documents, reports and presentation slides)
		  5. Project Charter (documents, reports and presentation slides)
		  6. Competence Center (documents, reports and presentation slides)
		  7. Who's afraid [of the PMS] (documents, reports and presentation slides)
		  8. Technical evaluation (documents, reports and presentation slides)
		  9. Financial evaluation (documents, reports and presentation slides)
		  10. Presentations at the GPM, HQs, Sites, and Consultants
		  11. Reports of the GPM, HQs, Sites, and Consultants
		  12. Letters and Memos
		  13. Meeting Minutes
		  14. Requirements specifications
		  15. Change of requests (meeting recaps and approval/rejected files)
		  16. Status and reports (weekly reports sent to PMS project members)
		  17. User guide (PDF, Word documents and PowerPoint slides)
		  18. Risks and issues (meeting minutes, reports and presentation slides)
		  19. Training plans and material (meeting minutes, reports and presentation slides)

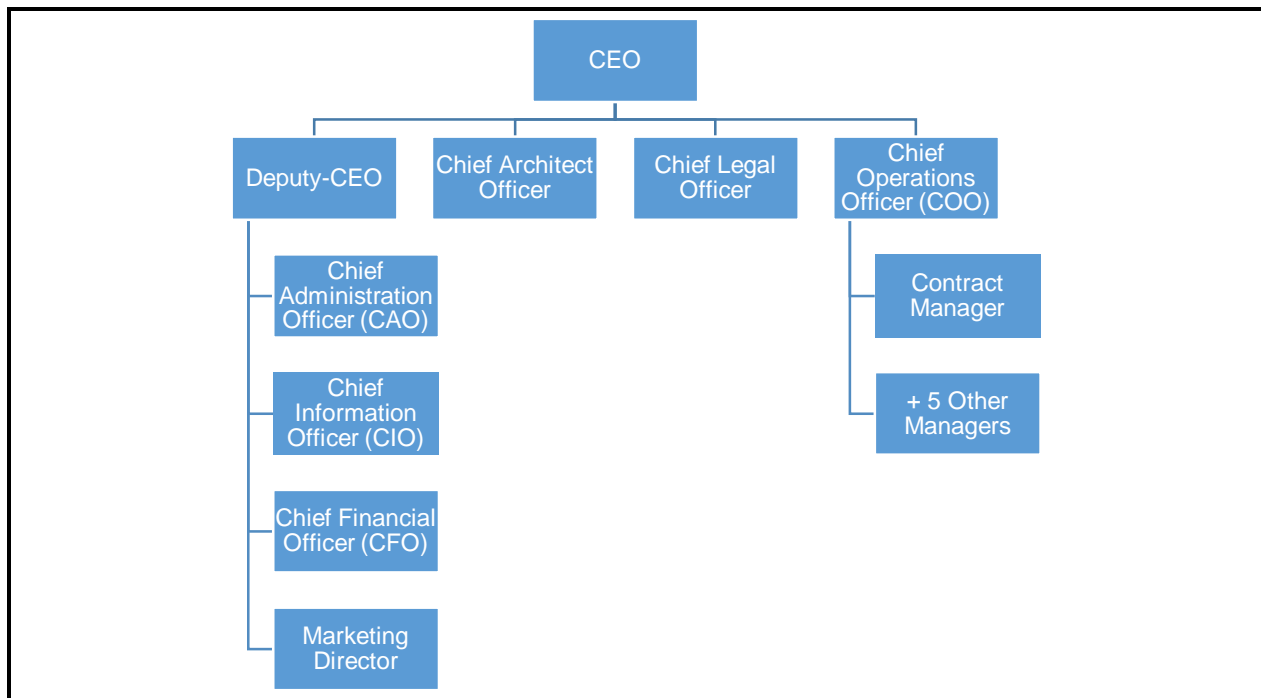|		
Marketing Department	- PMS marketing campaign and meetings (observations) - Feedback on results of PMS marketing campaigns (1 – 2 hours after each campaign)	- PMS marketing campaign reports (newsletters, posters and/or emails distributed in project sites and HQs to introduce the PMS initiative) - PMS Project survey

Operations Department	- Access to the Microsoft Outlook inboxes of the following PMS personnel:
	  1. First PMS manager (employee of Joint Venture (JV) company)
	  2. Second PMS manager (transferred from JV to GPM)
	  3. Chief Service Officer (access was granted after he left GPM)
	  4. Operation's D-CEO (access was granted after he left GPM)
	- Forwarded emails from Director of Building Information Modeling (BIM) to the CIO and IT team
	- Observations/informal interviews during:
	  1. Meetings between Operations Department and IT Department
	  2. Introductory session (IT orientation) to new operations team members (new joiners)
	  3. PMS meetings
	- Observations: Introductory session (IT orientation) to new operations team members (new joiners)
	- Attended the following meetings: Request-for-Proposal and Tendering (observation during presentations)
	- Presentations at the GPM, HQs, Sites, and Consultants
	- Training plans (observation during meetings)
	- 15 – 30 minutes meetings with contract manager on an almost daily basis
		- Access to PowerPoint presentation slides and meeting recap reports: Introductory session (IT orientation) to new operations team members (new joiners)
		- Request-for-Proposal and Tendering (documents, reports, presentations files)
		- Presentations at GPM, HQs, Sites and Consultants
		- Reports of GPM, HQs, Sites and Consultants
		- Letters and Memos
		- User guide (PDF, Word documents and PowerPoint slides)
		- Training plans and material (reports and presentation slides)
		- PMS: Minutes of meetings and meeting recap reports

PMS-related Committees	- Observations and informal discussions during:
	  1. Monthly meetings of the *Steering committee – deals with supports and consistency*
	  2. Weekly meetings of the *Key users committee – deals with evaluation and recommendation*
	  3. Weekly meetings of the *Technical committee – deals with the tender*
	  4. Bi-weekly meetings of the *Sites project managers committee – deals with development and implementation, inclusive of training and support*
		- Meeting minutes and presentation slides (PDF files) for:
		  1. Monthly meetings of the *Steering committee – deals with supports and consistency*
		  2. Weekly meetings of the *Key users committee – deals with evaluation and recommendation*
		  3. Weekly meetings of the *Technical committee – deals with the tender*
		  4. Bi-weekly meetings of the *Sites project managers committee – deals with development and implementation, inclusive of training and support*

Others	- Semi-structured and structured interviews with all personnel involved in the PMS projects across the departments and 17 construction project sites, including the Chairman, Vice-Chairman, CEO, D-CEOs, Chief Officers, PMS Project Managers, and Key Users in headquarters and project sites	

Appendix B[15]: Detailed Breakdown of Data Sources

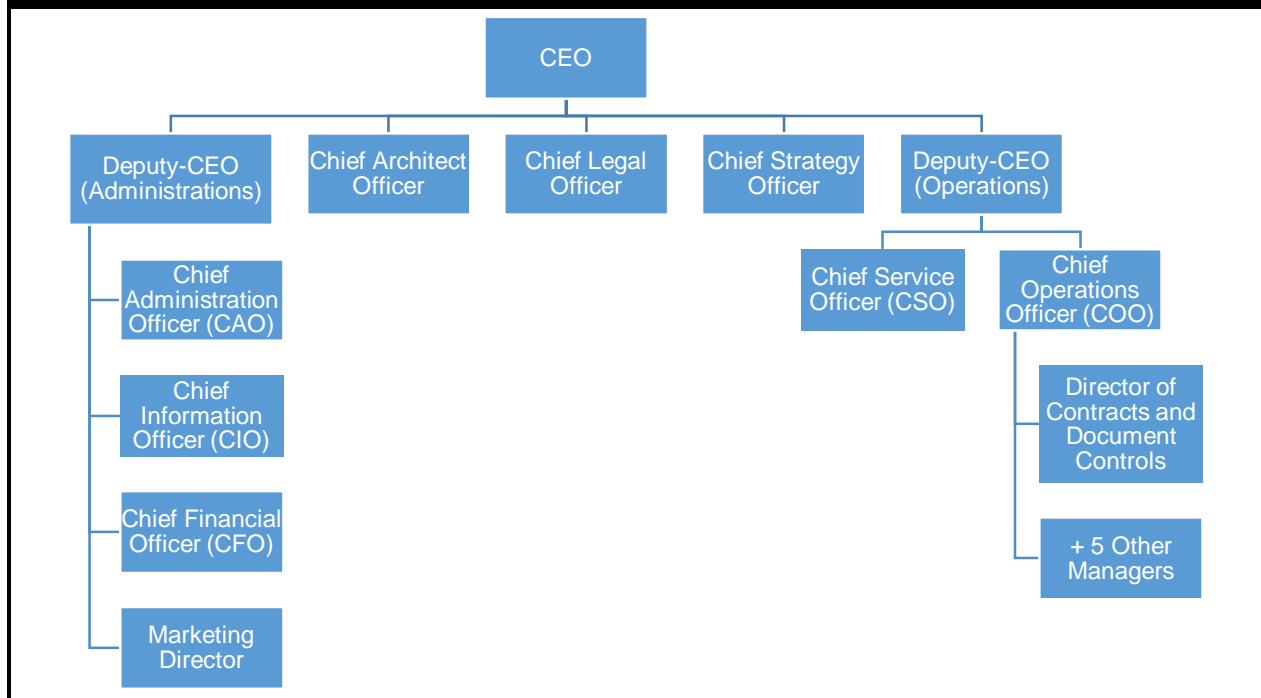**Figure B-1: Original Organization Structure**

Figure B-2: Revised Organization Structure [Approved in September 2010]

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[15] While Figure B-1 presents the organizational structure at the onset of the project in April 2009, Figure B-2 portrays the amended organization structure in September 2010 during the planning phase of the PMS project.

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Appendices

Appendix A: List of Publications and Authors Contributions

Title	Authors	*Keywords*	*Contributions by the author*	*Journal and Publication status*
Who are More Active and Influential on Twitter? An Investigation of the Ukraine's Conflict Episode	Hassan Aldarbesti, Deng Huijing, Juliana Sutanto, Chee Wei Phang	Twitter; News dissemination; Retweets; Mass media; Non-commercial organizations; Independent participants; Celebrities	Literature review, data collection, data analysis, writing of paper	Under review in – Information Systems Frontiers (2016)
The Building Blocks of a Cloud Strategy: Evidence from Three SaaS Providers	Hassan Aldarbesti, Juliana Sutanto, Lazaros Goutas	Software as a service (SaaS), cloud-based SaaS strategy, industry analysis, digital capital, security optimization, software customization demand	Literature review, study design, data analysis, writing of paper	Published - Communications of the ACM (2015)
'Demystifying' Empire Building within Information Systems projects: A Path Dependency Perspective	Hassan Aldarbesti, Chee-Wee Tan, Juliana Sutanto, Lazaros Goutas	Empire building, IS planning, power and influence, case study, path dependence, grounded theory	Literature review, study design, data collection, data analysis, writing of paper	Under review in – MISq (2016)
A Critical Examination of the Causes of Failed IS Implementation: A Review of the Literature on Power and Culture	Hassan Aldarbesti, Lazaros Goutas, Juliana Sutanto	IS implementation failure, power, politics, organizational culture complexity	Literature review, writing of paper	Paper presented at the Proceedings HCI International 2015; Los Angeles, CA (Published - *HCI in Business*. Springer International Publishing (2015))

Table 5: List of Publications and the Author Contribution

Appendix B: Curriculum Vitae

HASSAN ALDARBESTI

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PERSONAL INFORMATION

Married; Qatari; December 1970

MANAGERIAL AND TECHNICAL SUMMARY

Strategy, Sustainability and Competitive Advantage; Quality Assurance; Business Process; Applied Leadership & Management; Information Systems, "Diagnosing, Evaluating, Designing & Implementing Information Technology and Information Systems"; Management Systems; Negotiation Skills & Behaviors; Business Intelligence; Knowledge Management; Investment Environment (Stocks, Options, & Bonds).

EDUCATION

Ph.D., Department of Management, Technology and Economics, ETH, Zurich, Switzerland   *2013 – 2016*

M.S., Information Systems Technology; George Washington University, Washington, *DC*   *2001–2002*

B.S., Architectural Engineering, University of Miami, Coral Gables, *FL*   *1991–1995*

PROFESSIONAL & EXECUTIVE PROGRAMS

- Tackling the Challenges of Big Data, **MIT** professional education, November 4 – December 16, 2014 (20 hours)   2014
- Understanding Global Markets: Macroeconomics for Executives, **MIT** Sloan, **Boston**, MA, June 03-04, 2013
- Dynamics of Globalization, **MIT** Sloan, **Boston**, MA, June 05-06, 2013   2013
- Shaping Innovation Leaders, Kellogg Management School, **Northwestern** University, USA 1-8 June 2012   2012
- Strategy: Building and Sustaining Competitive Advantage, **Harvard** University, Boston, MA, USA; 6-11 June 2010   2010
- Investor Readiness Workshop (entrepreneurship), Qatar Science & Technology Park; Jan 19 – Feb 16 2009

- Developing Strategy for Value Creation, **London Business School**, *London*, UK, 28 September - 3 October 2008. *2008*
- Business Intelligence and Performance Management, Amsterdam, The *Netherlands*, 5-7 February, 2008, *2007*
- Introduction to Capital Markets & Compliance, NASD (National Association of Securities Dealers), April 15-19, 2007
- Services and E-Commerce, Booz/Allen/Hamilton, United States Agency for International Development, & **Department of States**, October 27-28, 2003. *2003*
- Using Balanced Scorecard to create strategy-focused organizations, Dr. Kaplan, *Harvard* Business School, Harvard University, October 19, 2003.
- Leveraging Knowledge in the 21st Century Organization, *Harvard* Business School, Harvard University, Boston, **USA** *2001*
- Engaging with the private sector - Strategy and System of Quality Control, Cambridge University, Cambridge, *UK*, July 22, 2003.
- Managerial Accounting and Finance. Singleton Associates, **Washington DC**, 25 May 2001. *1999*
- Internal Quality Auditing. Philadelphia Consulting Group LTD. 08-10 October 2000. *1995*
- Management Information Systems, Gulf Development Center. June 17 – July 01, 2000.
- Advanced, Web Creation & Design, Gulf Development Center - October 2-6, 1999.
- Creating a Learning Organization: In-Depth Understanding of Complex Business Relationships, **USTTI**, Washington DC and **Austin, TX**, *USA* –August 9-13, 1999.
- Professional seminar on Qatar's & GCC' Labor Law, Gulf Development Center - on December 2-10, 1995.

PROFESSIONAL EMPLOYMENTS

Qatar Computing Research Institute (Qatar Foundation)

Director, Strategy and Knowledge Management *April 2012 – To Present*

- *Strategy*: Oversee reporting and monitoring of organizational performance metrics and ensure the execution flows of the strategic planning; Assure the continued growth and success of the Institute through strategically designing the organization to accomplish its strategic plan; Responsible for creating the strategic culture necessary for the organization to accomplish its strategic objectives; Implement management controls and reporting procedures to ensure that the management team have up to date situational awareness of all core issues and operating data which leads to a better decision making. Creating, communicating, implementing, and sustaining strategic initiatives; Assessing and identify emerging trends and recommending new initiatives to grow the organization; Establishing and cultivating key community, government and organizational relationships;
- *Knowledge Management*: Develop the necessary systems, processes, and tools to better support the facilitation, collection, and sharing of knowledge. Ensure that information and experience is shared inside and outside, as appropriate, the organization with clients, partners, and stakeholders.
- *Management Systems*: Responsible for enhancing the internal organization processes that will allow QCRI to continue to grow and fulfill its mission.

- *Financial Management*: Provide overall financial oversight, monitoring, and business planning activities.
- *Operation*: Oversee risk management and legal activities: letters of agreement, contracts, leases, and other legal documents and agreements.

Diar & Barwa subsidiaries   *March 2009 – March 2012*

  Head of Strategy Office (CEO)

Qatar Financial Markets Authority (*QFMA*)   *April 2007 – March 2009*

  Executive Director, Information Systems & Technology

Doha Asian Games Organizing Committee (*DAGOC*)   *Sept. 2005 – April 2007*

  Director, Information Technology & Telecommunication

Ministry of Municipal affairs and Agriculture (*MMAA*)   *Nov. 1995– Sep 2005*

  Urban Planning Authority; Executive Director, Information Systems (CIO)   *March 2004 – Sep 2005*

  Minister's Office/Advisor; Information Technology Advisor   *Jan. 2003 – March 2004*

  Director of Geographical Information Center, & Acting IT Department Director   *July, 1997 – Jan. 2001*

  Head of Digital Mapping and Positioning Services Section, Center for Geographical Information systems.   *Jan. 1996 – June 1997*

SOFTWARE EXPERIENCE

Expert Choice, Adventures in Operations Management, SPSS, NVivo, AMOS, RStudio

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INTERESTS

Reading, Traveling, Sports, Horse-Riding, Diving, Playing Music, and Drawings.

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