Dynamics in cloud computing characteristics and affordances

– Master's Thesis –

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1. Abstract

The aim of this thesis is to understand the role cloud computing, and specifically Software as a Service plays, post-adoption, in the constantly shifting business ecosystems. This dynamic interaction is considered important to define, as it can benefit enterprises that want to implement Software as a Service solutions.

The research started with building an understanding of fundamental characteristics of the cloud phenomenon and weaving a theoretical framework around the concept of affordances. Moving forward, a literature review was created in order to outline the academic trends surrounding Software as a Service and identify the knowledge gap. With the help of inductive, qualitative research methods and strategies, data was collected and analyzed with the purpose of discovering emerging patterns. With an impressive number of recurring themes, cloud computing characteristics and organizational features were observed to be combining within the company studied, generating the affordances of cloud computing within the organization.

With a number of five affordances discovered, this is believed to be extending the existing academic work previously done in this area and showing organizations how modern technologies can be used to enable the achievement of their goals.

2. Introduction

The benefits of cloud computing are obvious for many organizations, with both the private and the public sector being highly influenced by it (Willcocks, Venters, & Whitely, 2014). With the maturity increasing in both cloud users and cloud providers, an across-the-board decrease in cloud challenges can be observed. Unlike 2016, when the concerns surrounding resources and expertise were some of the most widespread, in 2017 security, spend, and expertise were tied for the largest downside (Weins, 2017).

From a corporate perspective, the cloud has been rising and transforming from something to take into consideration to something that can be used, and finally into something that may help transform the business altogether (Willcocks, Venters, & Whitely, 2014). What cloud platforms enable are new, complex business models while coordinating more globally-based integration networks than many of the analysts predicted (Columbus, 2017). This, combined with Software as a Service adoption increasing in the mid-sized and small businesses, has made leading researchers adjust their forecasts upwards. And while best measurement of any forecast could be argued to be revenue (Columbus, 2017), it therefore becomes an important exercise to try and understand what companies can expect when attempting to invest in cloud solutions.

This study takes a particular look at two aspects, with the purpose of defining the relationship between the two. Firstly, the phenomenon of cloud computing is analyzed and defined in its' current state. With the help of studies such as Moving to the Cloud Corporation (Willcocks, Venters, & Whitely, 2014), the characteristics of cloud computing are outlined with a specific focus on Software as a Service. A thorough review of cloud literature was also conducted to observe the predominant themes within the field and understand where a significant contribution can be added. Secondly, a theoretical framework was built with a view to understand the impact Software as a Service brings to organizations. With the support of groundbreaking papers such as Information Technology and the Changing Fabric of Organization (Zammuto, Griffith, Majchrzak, Dougherty, & Faraj, 2007), an affordance lens is developed, with the purpose of understanding the organizational features impacted by the development of cloud solutions. These

two aspects, analyzed together through data collection, can lead to an answer for the research question this paper brings forward.

> *What are the affordances generated within organizations through the adoption of Software as a Service?*

This question will help determine how business leaders need to think when adopting cloud solutions to ensure they make the most out of the tools provided to them.

2.1 Delimitation

This thesis aims at exploring the affordances generated by the adoption of cloud computing to satisfy organizational features and needs of the modern company. The cloud technology studied will be mainly Software as a Service applications, with the other forms of cloud computing such as Platform as a Service and Infrastructure as a Service featuring episodically. In regards to the size and nature of the organizations, the study best applies to large companies with well-established business divisions, where the effects of technological adoption can be studied on a larger, well-defined scale. The analysis of the business operating in the financial sector will be conceptualized as an analysis of customer-facing business, without focusing specifically on the particular field of finance or investing. In doing so, a general perspective will be kept, with the understanding of the impact Software as a Service becoming applicable on a wide-range of companies with a similar business model.

3. Literature review

To fully assess the effects of cloud computing as a whole and particularly the way it impacts organizations, it is needed to thoroughly analyze the existent literature around the phenomenon. The reason for this is twofold. First of all, by researching papers revolving around a particular set of key words or concepts, one can be certain that previous authors have not already covered the said topic. It is important for this research paper to bring a unique contribution to the field, and not merely repeat existent work. Secondly, the existent literature can provide a starting point. Established, industry defining papers, can help build a structure of knowledge and concepts that can further support new findings by subsequent researchers.

Our research question and base can easily be deconstructed in variables to be analyzed. Those are the notion of cloud computing and software as a service (SaaS) in particular, and the organizational entity with the processes it takes part in and structure. This paper adopts a modern approach to the matter, analyzing the effects in both directions. This leads to an application of different perspectives, with each of the variables taking the role of dependent and independent variable in relation to each other. The effect of having such a dynamic approach is that there is a need of applying the latest concepts from the industry into the mix, from papers firmly in touch with current technological advancements and business approaches.

3.1 Cloud computing

In the last few years, cloud computing has seen itself evolve in the eyes of the corporate world – from something to be noted towards something useful and finally into the current perception of a resource that may help radically transform a business (Willcocks, Venters, & Whitely, 2014).

When researching cloud computing, it can be easily noticed that most contemporary papers tend to focus on technological aspects of the cloud and certain security concerns developing from the adoption of this new technology. Those aspects are well covered in articles on security concerns (Ryan, 2011), technical details (Armbrust, et al., 2009) and cloud computing as utility (Buyyaa, et al., 2009).

Cloud computing brings real consequences to organizations, not all of which are wholly or well understood. This, combined with a constant increase in hype and expectations from the business users makes understanding the phenomenon all the more important so that it can be exploited to its full potential.

It is considered no one does this better than Willcocks, Venters, and Whitley in the industry-defining work from 2014 – "Moving to the Cloud Corporation. *How to face the challenges and harness the potential of cloud computing* ". Consisting of a survey of over 1000 businesses and executives, the book focuses on the management perspective on cloud technology. The authors set to establish a benchmark of adoption at the 2013/2014 stage, focusing on the learning curve regarding adoption as well as, maybe more importantly, knowledge on the exploitation of the massive potential of inherent cloud computing.

While most previous papers that explore this facet of cloud computing have focused on its cost-cutting capacity, Willcocks et al., emphasize the shift that needs to happen as users become more influential in the adoption process. They see that cost reduction needs to transform into return of investment, finer control perceived as flexibility into business operations, and technological sophistication into means of supporting the customer journey.

Through the adoption of cloud computing solutions, it is argued that boundaries of companies will be extended outside the organizational "firewall", facilitating innovation through new collaborative engagements (Willcocks, Venters, & Whitely, 2014). This will result in a dynamic interaction between the cloud providers and business entities in themselves, all with the purpose of driving better results through the adoption and understanding of the new technology.

For the first time, we could witness a deviation of industry from the traditional path of pacing plans according to what is technologically and economically possible. The new models would entail that demand for an application is what defines the technological range to be used for achieving results (Willcocks, Venters, & Whitely, 2014).

To fully understand cloud computing, we need to look at its characteristics, service models, and deployment models. One of the best definitions comes from the United States National Institute

for Standards and Technology, or NIST, that has since become one of the standards for defining cloud services.

> *"Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction." (Mell & Grance, 2011).*

The five characteristics of cloud computing are on-demand self-service, broad network access, resource pooling, rapid elasticity and measured service. Throughout the paper they will constantly be referred to as the pillars of cloud computing, enabling the concepts to be addressed in relation to the organization. From a service deployment perspective, there are private clouds, community clouds, public clouds and hybrid clouds.

For the purpose of this research paper, a look will be taken at Software as a Service as the next step in the development of a service based perspective on computing, dependent on innovation in a shared form of technology to provide simplicity, scalability, and efficiency (Willcocks, Venters, & Whitley, 2011). Although, broadly, cloud computing can refer to any of its applications – Software as a Service, Platform as a Service and Infrastructure as a Service – in this research the focus has been placed on the cloud computing form with the largest rate of adoption, that is significantly easier to implement in almost any type of industry, Software as a Service.

Software as a Service can be defined simply as a software application available through the internet. It is widely regarded as the most mature of the service models and amounts to the largest part of cloud usage worldwide (Willcocks, Venters, & Whitely, 2014). SaaS applications are made available from various client devices through either web browsers or a program interface (Mell & Grance, 2011), making them broadly accessible to most types of organizations.

3.2 Existing literature

To understand the best way to bring a contribution to the field of Computer Science and Organizational Structure, it was mandatory that an extensive review of the existing, recent literature was undergone. Therefore, an exploration was made into the research work that refers to, and even uses as a starting point the paper that is somewhat a cornerstone for cloud computing: Marston et al. Cloud Computing: The Business Perspective (2011).

It was then proceeded in compiling the highest regarded works and determine what their scope and findings are. In the end, a list of 21 research papers that underline the main focus of the academic community of the last few years regarding cloud computing, was created. With the employment of modern cloud solutions still gaining on Gartner's hype curve (Fenn & LeHong), it came as no surprise to find that many of the articles are still focused on understanding adoption from a technological perspective.

Literature	Focus of paper	Research areas	Method
Security in cloud computing: Opportunities and challenges (Ali, Khan, & Vasilakos, 2015)	The security issues arising due to the nature of cloud computing	Computer Science	Survey
Integration of hybrid wireless networks in cloud services oriented enterprise information systems (Li, Xu, Wang, & Wang, 2012)	Presents a hybrid wireless network integration scheme in cloud services-based enterprise information systems	Computer Science	Action research
A critical review of cloud computing: researching desires and realities (Venters & Whitley, 2012)	This paper provides a framework within which to locate existing and future research on cloud computing.	Computer Science; Information Science & Library Science; Business & Economics	Archival research

The usage and adoption of cloud computing by small and medium businesses (Gupta, Seetharaman, & Raj, 2013)	Focuses on the perceived inclination of micro and small businesses toward cloud computing and the benefits reaped from this.	Information Science & Library Science	Survey
Opportunities and risks of SaaS: Findings from a survey of IT executives (Benlian & Hess, 2011)	The study analyzes the opportunities and risks associated with adopting SaaS as perceived by IT executives at adopter and non-adopter firms.	Computer Science; Operations Research & Management Science	Survey
Leveraging the capabilities of service-oriented decision support systems: Putting analytics and big data in cloud (Demirkan & Delen, 2013)	This article contributes new knowledge in service science by tying the information technology strategy perspectives to the database and design science perspectives for a broader audience.	Computer Science; Operations Research & Management Science	Archival research
Assessing the determinants of cloud computing adoption: An analysis of the manufacturing and services sectors (Oliveira, Thomas, & Espadanal, 2014)	The study aims at assessing the determinants that influence the adoption of cloud computing	Computer Science; Information Science & Library Science; Business & Economics	Survey
An exploratory study to understand the critical factors affecting the decision to adopt cloud computing in Taiwan hospital (Lian, Yen, & Wang, 2014)	The purpose of this study is to investigate the critical factors that will affect the decision to adopt cloud computing technology in developing countries, specifically in Taiwan's hospital industry.	Information Science & Library Science	Survey
Cloud manufacturing service platform for small- and medium-sized enterprises.	In order to address the key problems faced by small- and medium-sized enterprises (SMEs), the study	Automation & Control Systems; Engineering	Case study

(Huang, Li, Yin, & Zhao, 2013)	analyzed solutions and shortcomings.		
An empirical investigation of end-users' switching toward cloud computing: A two factor theory perspective (Park & Ryoo, 2013)	This study attempts to explore the switching factors (i.e. switching enablers and switching inhibitors) and to empirically examine the relationships between those and users' intention to switch to cloud services	Psychology, Multidisciplinary	Survey
The Business Intelligence as a Service in the Cloud (Chang, The business intelligence as a service in the cloud., 2014)	In this paper, an alternative service is proposed which uses the elastic capacities of Cloud Computing to escape the limitations of the desktop and produce accurate results more rapidly	Computer Science	Case study
Examining cloud computing adoption intention, pricing mechanism, and deployment model (Hsu, Ray, & Li-Hsieh, 2014)	The study uses the technology-organization-environment (TOE) framework of innovation diffusion theory to develop a cloud service adoption model that deals with not only adoption intention, but also pricing mechanisms and deployment models.	Information Science & Library Science	Survey
Combining QoS prediction and customer satisfaction estimation to solve cloud service trustworthiness evaluation problems (Ding, Yang, Zhang, Liang, & Xia, 2014)	The proposed framework considers how to improve the accuracy of QoS value prediction on quantitative trustworthy attributes, as well as how to estimate the customer satisfaction of target cloud service by taking advantages of the perception ratings on qualitative attributes.	Computer Science	Experiment

A survey on virtual machine migration and server consolidation frameworks for cloud data centers (Ahmad, et al., 2015)	This paper reviews state-of-the-art bandwidth optimization schemes, server consolidation frameworks, DVFS-enabled power optimization, and storage optimization methods over WAN links.	Computer Science	Survey
Cloud computing and education: A state-of-the-art survey (González-Martínez, Bote-Lorenzo, Gómez-Sánchez, & Cano-Parra, 2015)	The survey identifies and analyzes the advantages and risks that the use of cloud computing may have for the main stakeholders in education, which can be useful to identify the scenarios in which the use of cloud computing in an educational context may have significant advantages.	Computer Science; Education & Educational Research	Survey
Cloud computing adoption framework: A security framework for business clouds (Chang, Kuo, & Ramachandran, Cloud computing adoption framework: A security framework for business clouds., 2016)	This article presents a cloud computing adoption framework (CCAF) security suitable for business clouds.	Computer Science	Experiment
Drivers and inhibitors of SaaS adoption in Korea (Lee, Chae, & Cho, 2013)	Analyzing the inhibitors and drivers of cloud computing adoption in the Korean markets.	Information Science & Library Science	Grounded theory
Management Innovation and Adoption of Emerging Technologies: The Case of Cloud Computing (Khanagha, Volberda, Sidhu, & Oshri, 2013)	Examines the effect of management innovation on a firm's ability to effectively adopt an emerging core technology.	Business & Economics	Case study

Cloud computing: A value creation model (Chou, 2015)	An analysis of the risk and value components inside cloud computing practice through a value creation model.	Computer Science	Grounded theory
Towards Achieving Data Security with the Cloud Computing Adoption Framework (Chang & Ramachandran, 2016)	This paper explains the overview, rationale and components in the Cloud Computing Adoption Framework to protect data security.	Computer Science	Experiment
Understanding determinants of cloud computing adoption using an integrated TAM-TOE model (Gangwar, Date, & Ramaswamy, 2015)	This study integrates two of the information technology adoption models to improve predictive power of resulting model.	Computer Science	Survey

Table 1

Analyzing table 1, it becomes clear that the academic community and companies alike are still trying to understand when cloud solutions can and should be adopted. A strong focus is channeled towards the bottlenecks that appear when going through such a process. One of the main concerns of organizations can be traced to the security aspects of cloud computing and the challenges presented by potential downtime caused by errors, updates or simply a lack of education in making the most out of the systems. Another big focus is attributed to understanding how the innovations are transforming the IT departments across organizations. Although this aspect covers an important part of understanding the transformation that organizational structure goes through, it is considerably off focus. IT plays a major role in companies from a functional perspective. However, the aspects that were analyzed within this paper were the structural changes that appear in the business–focused departments within a company, something that can further influence results from a perspective beyond cost-cutting.

One of the papers that come close to shaping the way businesses can navigate the cloud solution adoption is Demirkan and Delen (2013) with “Leveraging the capabilities of service-oriented

decision support systems: Putting analytics and big data in cloud". It falls, however, short of moving towards the business perspective of the cloud by ultimately focusing on "tying the information technology strategy perspectives to the database and design science perspectives for a broader audience" (Demirkan & Delen, 2013).

The gap in literature currently lies with the understanding of how companies can make the most out of the possibilities cloud computing affords. With most of the existing research focused on the adoption and initial phases of adding cloud computing to an organization's setup, it was considered to be paramount to move further into analyzing how such technologies can achieve maturity in a company. By going off the explored roadmap of adopting cloud computing and into the areas of shaping the organizational structure and work flow, a deeper understanding can be gained on what are the steps organizations can focus on to fully reap the benefits of their newly implemented systems.

4. Theoretical Framework

4.1 Introduction

In this chapter a series of phenomenon will be outlined which, together with their definitions and a literature review, will help build on existing theories for this particular study. This section serves the purpose to demonstrate an understanding of concepts and theories that define the industry on which the thesis will focus.

The main goal of a theoretical framework is that of limiting the scope of the relevant data by zooming in on certain variables and building the specific viewpoint or the framework itself. The researcher will use this in analyzing and interpreting the data to be gathered. This process also facilitates the building of knowledge around certain themes and variables in this area by validating or challenging theoretical assumptions (USC Libraries, 2017).

One of the growing trends, increasingly developing in the social and behavioral sciences is perceiving and attempting to understand research problems from an interdisciplinary point of

view (Frodeman, 2010). To do so, researchers should not rely exclusively on the theories in the particular discipline investigated, but to think about how an issue might be supported by theories developed in other disciplines (Frodeman, 2010). The growing trend of interdisciplinary research is something that will apply to this thesis as well, with the main phenomenon to be studied being cloud computing and software as a service. Its impact on business was perceived through the lens of affordances, a concept stemming originally from biology and later introduced in IT, used in this paper as support to the post-adoption understanding of cloud solutions.

4.2 The affordance lens

To fully understand the changes occurring within organizations through the adoption of technologies, relevant literature has been analyzed. Thus, a particular lens has been built to give a clear perspective and further define the shifts that will occur as cloud computing becomes the new norm in todays' business world.

Galbraith (1973, 1977) suggested that decision-making uncertainty could be narrowed by decreasing the amount of essential information by the provision of slack resources, by buffering, or by increasing an organization's capacity to process information. The contingency theory debate regarding the relative merit of technology versus size and environment as determinants of organizational structure led to substantial research on the relationship between technology and organizational form and function in the 1960s and 1970s.

The relationship between technology and organizations is something that has been widely investigated throughout the past decades, something that has decreased in volume over the last years, strangely enough, while technology has doubled its capacity every two years, according to Moore's Law (1997). While the interest in the relationship between technology and organization declined in this field, ITs penetration of everyday life, and the organizational ecosystem increased dramatically.

For the purpose of this research, it has been decided to build as a reference point in understanding organizational transformation, the work of Zammuto et al. (2007). In capturing the relationship between technology and the new forms of organizations, they apply the term of

affordances, outlining that new combinations of organizational features and technology constantly create new possibilities that influence the transformation of organizations both as form, and function.

Affordances will be used as a bridging concept that emerges from the intersection of IT systems and organization systems. Using affordances as a lens suggests that although IT characteristics and organizational features may exist independently, their value in explaining organizational form and function comes from the way in which they combine. Theorizing about affordances ideally would define them using both IT and organization science language to explain how their combined features interact to create new affordances for organizing (Zammuto, Griffith, Majchrzak, Dougherty, & Faraj, 2007).

As pillars in defining affordances within organizations and the adoption of technology, a reference was made to three concepts that can be observed as areas of interest when analyzing changes in the "fabric" of modern organizations. This was accomplished by cross-examining the works of both Zammuto et al. (2007) and Willcocks et al. (2014) A specific focus has been placed on understanding the stimulation of growth and innovation, the ambidextrous organization and the service dominant logic of cloud computing. Cloud computing has the potential to bring a tremendous impact to organizations after adoption. These concepts will give us a good starting point for researching it and establishing what the affordances created within the cloud organization are.

By having a perspective on organizations and informational systems, studies can explore how affordances emerge, transform, and evolve organizational form and function in new ways. Such research has the potential to bring organization science concepts and theories into a world where IT represents an important thread in the fabric of the organization. By examining the organization through a combination of components, researchers have begun to understand how different actors within and across enterprises define the critical components of organizing, be they knowledge-related, physical, software or other resource based components. By thoroughly examining the processes and results stemming from the combinational mechanism and, further, how businesses and IT accommodate and support these groupings, new theories surrounding

organizational agility can be established (Zammuto, Griffith, Majchrzak, Dougherty, & Faraj, 2007).

For organizations, the ability to be agile will result in either a development of new products, new processes and innovation or it will lead to the evolution of existing structures without a need for radical change. Regardless of the choice made, it is highly important to comprehend that forms of organizing that allow for innovation within the organization itself and find ways to include customers and providers in collaborations are essential. The presence of affordances makes many new processes and structures possible already, with the future promising to facilitate opportunities further (Zammuto, Griffith, Majchrzak, Dougherty, & Faraj, 2007).

Looking at previous works, the innovations brought to the organizational structure have been documented to a certain extent, analyzing the impact cloud solutions are bringing. Using the affordance perspective while analyzing those works reveals what can be speculated as being a certain set of affordances already partially defined through the description of growth and innovation, the ambidextrous character of organizations and a shift towards the service dominant logic. The following section aims to outline those affordances and analyze the perspective generated through past works of research.

4.2.1 Stimulating growth and innovation

As of 2013, innovation still had a low priority on the corporate agenda especially in regards to cloud computing. At this point, the top rated business objective revolved around cost efficiency, scalability, rapid deployment, security and clearing complexity (Willcocks, Venters, & Whitely, 2014). A McKinsey report from 2013 records that when approaching new system architectures, leading enterprises now have a cloud-first mentality, trying to understand what can be achieved through different types of cloud solutions rather than considering off the shelf solutions or in-house development (Manyika, et al., 2013).

The achievement of innovation by using Software as a Service has been regarded as a process consisting of two steps: the adoption of the solutions and the innovation based on the newly established systems (Willcocks, Venters, & Whitely, 2014). Although organizations might seek

to achieve success merely through the adoption of cloud computing, they are more likely to realize the potential further from innovations *enabled* by the cloud. After the adoption has been finalized, the innovation brought by cloud computing manifests itself on a variety of different levels: IT operational innovation, innovation of business processes and even market innovations (Willcocks, Venters, & Whitely, 2014). A common recurrence in many cases, the trajectory innovation takes within enterprises that employ the cloud is likely to be cumulative. It is typical for it to start mainly with operational innovations in IT and then gather pace over time throughout business process and market innovations. This happens as organizational capabilities adapt to the new technological solutions available to them (Willcocks, Venters, & Whitely, 2014).

With the advantages of lowering costs featuring highly for executives, 2014 studies pointed to the fact that only about half of the business leaders appreciated the cloud solutions as an innovation opportunity to gain access and manage to implement the best business applications quickly (Willcocks, Venters, & Whitely, 2014). This extended to the perception of the cloud as supporting the transition to a distributed virtual organization, with the focus shifting away from the IT capacity and onto the way in which the business can be transformed. As of 2014, “Moving to the cloud corporation” by Willcocks et al. pointed out that studies were still unclear whether organizations possessed the motivation or indeed skills to take advantage of the cloud opportunities, with the adoption-focused mindset and hype influence still determining the extent to which executives can truly innovate.

With cloud services providing a certain flexibility, the risk perception around innovation has been subject to change. The risk profile of new projects and processes, brought by requirements in increased capital, diminished and the ideas became easier to attempt, with any unsuccessful experiment being simple to decommission (Willcocks, Venters, & Whitely, 2014).

Faced with a potential data explosion, the past problems of information usage optimization the companies have always had could become exponentially more complicated. This matter brings to attention the fact that companies need to renounce the old habits of merely straightjacketing the increases in data with an increase in technology capacity. What needs to happen instead is a

reinvention of the businesses with a digital mindset first, with strategic operations and actions being guided through business analytics (Nanterme & Campbell, 2011).

Cloud computing is seen as a spring of new opportunities within organizations. One of the ways in which it delivers on that perception is through the greater value-added from analytics, allowing enterprises to gather, store and easily access the ever-increasing amounts of data. Through traditional, in-house functions, this data would be unmanageable, whereas, with the new systems, it can be used to forecast the changes in the business climate better and drive the innovation needed to not only survive, but develop (Willcocks, Venters, & Whitely, 2014). In 2013, analytics were seen as one of the significant drivers of IT investment over the next five years (Luftman, Zadeh, & Derksen, 2013). With the recent focus towards big data, it can be safely concluded that the anticipated shift was correct.

When it comes to innovation, low friction and the potential for experimentation are crucial. With these factors supported by some of the attributes of cloud computing, the risk profiles afforded have changed, providing extensive support for innovation and driving the likelihood of Software as a Service adoption higher for prepared organizations. However, other factors can prove to be problematic. One of those is the operational maturity of organizations required by the cloud, where existing internal capabilities do not provide the ability for the enterprise to, for example, be responsive in real-time (Willcocks, Venters, & Whitely, 2014).

Another problematic area arises in creating collaborative innovation within the organization. Although the cloud helps increase focus on customer needs along the supply chain while supporting experimentation, it is also one of the areas where it can lead to decreased motivation in adoption. This aspect arises primarily through the extended emphasis on cutting costs as well as human resource reduction. Innovation implementation might also suffer despite its potential in automating the marketplace and provisioning through infrastructure and services. It is seen as an area where especially IT departments need to focus on acquiring a higher business orientation as well as new skills in understanding and fine-tuning the cloud systems to the company's requirements. The customer-facing users will also need to evolve their practices to support the

innovation available to them through the cloud. They need to learn how to exploit the business possibilities newly-created (Willcocks, Venters, & Whitely, 2014).

In order to understand innovation through cloud computing and how it will impact companies, Brynjolfsson, Hofmann, and Jordan (2010) approach it through the utility model of electricity and its innovation. This is quickly found to be inadequate through the complexity of cloud computing. With the pace of innovation within cloud computing and the applications it enables, it cannot achieve the plug-and-play simplicity brought on by electricity. They underline, however, that the strength of cloud computing lies somewhere else: its ability to act as a catalyst for more innovation. It is also stressed that firms are simply replacing their existing corporate resources with cloud computing while changing nothing else in their organization, are likely to miss fully reaping the benefits of implementing the new technology (Brynjolfsson, Hofmann, & Jordan, 2010).

The distinctive features of cloud computing offer many potential opportunities for business innovation. They serve primarily to change the risk profile of business innovations to the extent that it is now increasingly possible to specify new business processes and their associated required service levels, experiment with them for a short time, and either disband them if they are unsuccessful or rapidly scale them if they have potential. The innovation plan becomes relatively easy to define from a business executive perspective but harder to act on: testing the capability, navigating the hype, find the right applications and learn how to exploit the innovation for business purposes (Willcocks, Venters, & Whitely, 2014).

Considering all these aspects, Willcocks et al. (2014) found it more likely that a hybrid scenario will come into play. Full cloud computing adoption and the evolution of businesses around those capabilities could take at least ten years. With the first five years imagined for suppliers to continue and develop their tools to match the needs of organizations, the industry will start to see change and innovation happening as business owners learn to exploit the opportunities presented to them beyond a cost, speed and scalability perspective.

4.2.2 The ambidextrous organization

Research has been discussing the existence of ambidextrous organizations as early as 2004 with the discovery of companies that had been successful at both exploiting the present and exploring the future. One of the ways to do it is by separating their exploratory units and their traditional, exploitative ones. This allows for different processes, structures, and cultures to function at the same time while still maintaining links across units. One of the features of ambidextrous organizations is that they can find a way to bring radical, disruptive change while pursuing incremental gains (O'Reilly III & Tushman, 2004).

Having a more modern approach, Willcocks, Venters, & Whitely describe organizational ambidexterity as a balancing act between adaptability and alignment. A brief description of the two in this context represents adaptability as the agile change and innovating agent, while the alignment focuses on leveraging, exploiting, and maximizing capabilities and resources.

Within the ambidextrous organization, innovation through cloud computing is represented on three different levels, defining the support of the new technology as both an aligning and adaptable force. Cost control and the easy trialability of SaaS provides the element of incremental innovation sought for by the standard processes in the organization. The improved business processes and well-defined elasticity provide architectural innovation, a feature that also acts on increasing mobility and usability. Adaptability to disruption manifests itself in radical innovation brought by cloud computing, offering organizational units an opportunity to alter their business services radically, in a bid to remain relevant through innovation and collaboration beyond the traditional boundaries of the organization (Willcocks, Venters, & Whitely, 2014).

The balancing act between adaptability and alignment is a difficult one, demanding the remodeling of skills for executives charged with investing in incremental practices while researching innovative models that may have the potential to limit their role in the future.

When talking about ambidextrous organizations, one of the most important lessons is the need for senior teams and managers that possess the ability to understand and attentive to the needs of businesses operating in various areas. By combining different attributes of strict cost cutters and

open-minded entrepreneurs while maintaining some degree of objectivity required to make difficult decisions, such managers are an essential and rare breed (O'Reilly III & Tushman, 2004).

The problem of large enterprises is found in the strong inertia of their operations. The immense number of once successful organizations that have been through difficult times or gone out of business underline how tough it is to break out of a routine, especially if the processes comprising said routine are profitable. The findings of O'Reilly III & Tushman (2004) were meant to provide a guideline to how an established company can renew itself through the creation of innovative products and processes, doing so without having to destroy or even revolutionize its traditional business. Their research found that building an ambidextrous organization is not an easy task, but the structure of the concept, the combination of organizational separation with senior team integration, is not challenging to understand.

4.2.3 Service dominant logic of cloud computing

Cloud computing gives businesses the possibility to focus on the tasks needed to be performed, not how they are going to be performed. In recent years, the traditional goods dominant logic has been challenged and replaced in many instances by the alternative of a service-dominant logic. This suggests that the intrinsic value of a product is always only generated by the user of the technology, leading to an exchange based on a service provided to support the creation of value rather than goods. Cloud systems become cloud services in the perspective of company leaders with the offering not revolving around the value added but rather on the value propositions that the customer can generate through the service (Willcocks, Venters, & Whitely, 2014). Cloud services, therefore, become a platform for users to benefit from by transforming the possibilities into deeds, processes, and performance.

An important characteristic of service-dominant logic is efficiency. This however, represents not just a feature of technology but also the practicality of how the technology is put to use. Efficiency must, therefore, be evaluated by the businesses based on their usage of the service. It

should also take into account the different hidden costs associated with cloud solutions. Some of those include the cost of changing services in case demands change drastically while the company is locked-in as well as the costs of contract management with the cloud provider (Willcocks, Venters, & Whitely, 2014).

Possibly the unique feature of cloud computing of it being seen as a service is the prospect for innovation that it offers, to some extent ratifying Nicholas Carr´s argument that "IT does not matter" (2003). This comes from a service perspective that allows organizations to focus much more on what they need without having to consider whether their IT function has the necessary skills, hardware or resources to execute on their plans.

Although an emerging technology might have a set of characteristics meant to be used in a certain way, it is when employed by a group of people that its actual form and function can be understood. The effect of the technology on organizations can therefore only be understood as a whole comprised of the intended use and the actual use (Willcocks, Venters, & Whitely, 2014).

Cloud services and innovation can be understood as a development of two branches according to Willcocks et al. (2014). Firstly, there are the technological innovations such as virtualization, high-performance networks, and data-centered automation. Secondly, there is the emphasis on service-based perspectives, which shifts attention from the management of technology assets to consideration of customer value deriving from the use of technology services. Therefore, it is unlikely that cloud computing long term benefits will be restricted to simply saving costs. Enterprises that adopt cloud computing will have the potential to innovate their business processes through a combination of computing trends.

It will all come down to the inventiveness and the creativity of the client and the service providers to configure the characteristics that will enable the business to do things in a different way in order to innovate. Moreover, this method will rely on a process of cooperative, commercial process in which two or more organizations work together in a shared enterprise towards common goals (Willcocks, Venters, & Whitely, 2014). Initially, outsourcing mainly focused on reducing costs, and slow, unproductive relationships between service providers and

customers were not uncommon. It goes without saying that this limited the amount of innovation that would arise drastically. This lead to a slow realization by outsourcing organizations that there is a strong connection between the amount of collaboration and innovation across organizations.

Recent developments in Software as a Service might render IT and computing power as an invisible utility, something that is shaped in such a way that companies do not have to invest further resources. Time and energy can move away from the technical information of how things work and towards more important aspects like reaching their goals. Reducing the costs and time of configuring applications leading to simplifying the process of integrating new technologies into the business process will drastically transform businesses (Brynjolfsson, Hofmann, & Jordan, 2010).

5. Methodology

5.1 Introduction

The methodology section has the goal of describing the rationale for the application of specific procedures or techniques in identifying, selecting, and analyzing the information applied to understanding the research problem. This allows the reader to critically evaluate the overall validity and reliability of the study (Kallet, 2004). The methodology section of a research paper is built around two underlying questions: How was the data collected or generated? How was the data analyzed?

To put efforts into context and provide a logical explanation for the structure of the research, this chapter will define the methodology used. At the end of this section, a clear explanation of the processes underwent has been defined to explain the way the thesis was conducted. For a structured approach, the thesis methods were defined by using the “research onion” (Saunders, Philip, & Adrian, 2009) and its categories in order to graphically explain the process as seen in Figure 1:

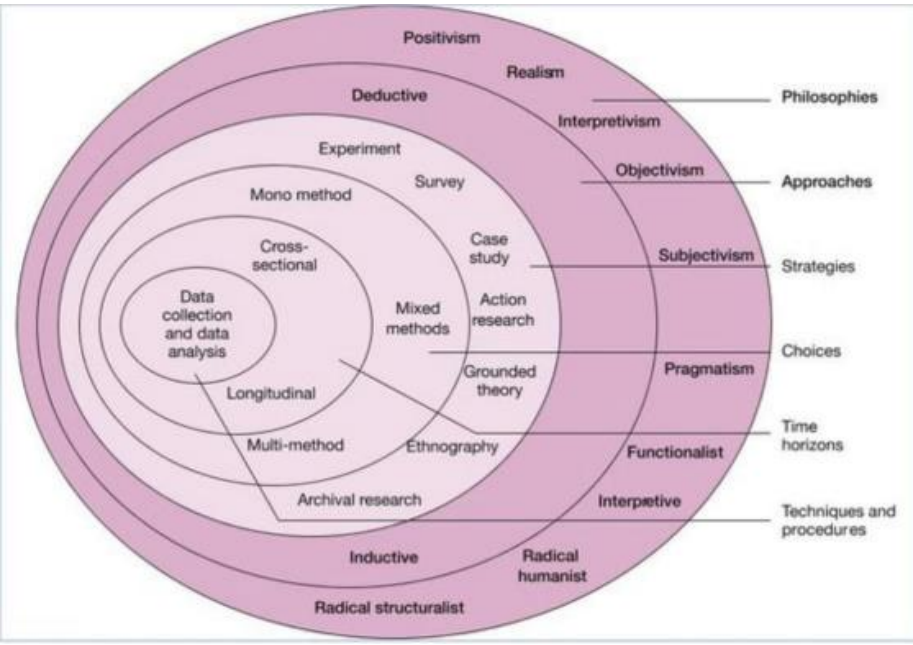

Figure 1

5.1 Research philosophy

Starting with the first layer and analyzing the philosophy of the paper, it was written under the mark of interpretivism. Also known as the interpretivist philosophy, it is defined by the researcher interpreting elements of the study, therefore integrating the human interest into the study. As Myers explains *"interpretive researchers assume that access to reality (given or socially constructed) is only through social constructions such as language, consciousness, shared meanings, and instruments"* (Myers, 2008). By using the interpretivist approach, it becomes necessary that the researcher studies and takes into consideration the differences between people. Focusing on meaning, interpretivism studies can make use of multiple methods in studying different facets of a topic (Saunders, Lewis, & Thornhill, 2012). Interpretivism is

focused on the naturalistic approach in data collecting, with methods such as interviews and observations used, leading to meanings emerging towards the end of the research process.

Through interpretivism, cross-area implications of Software as a Service can be studied in organizations in depth. The primary data generated in studies with an interpretivist approach has potentially a high level of validity, with the researcher collecting it on his own and making sure it is trustworthy and honest.

5.2 Research approach

With the theory of affordances being an inductive one, starting from a premise, collecting data and aiming at establishing new theory from the emerging findings, it will be assessed how it can be used to analyze the phenomenon of cloud computing and observe emerging patterns within the studied case. This happens because, regarding information technology uses of the affordance lens, there are already established characteristics of cloud computing that can be analyzed and interpreted through the way they impact the organizational features. This means that inductive research methods were used to establish and interpret the ways in which Software as a Service has impacted not only the costs within the company analyzed but entire segments of the business operation.

The inductive approach reflects into the data collection methods used. Interviews have been conducted to gain primary data that was used to determine patterns and regularities. This has led to a formulation of affordances that can apply in certain situations, bringing a contribution to the field through the theories speculated.

5.3 Research strategy

Having a largely inductive approach to the study, with the purpose of developing new theories or, in this case, affordances, the research strategy will be twofold. First of all, a case study will be conducted, with the purpose of going in depth into understanding a particular situation. In this case, the analysis will be a vertical one, with the focus on exploring the way business-focused

departments collaborate and integrate within the bigger picture, in the context of adopting cloud computing solutions.

5.3.1 Case study

The case study described in the paper is that of a global financial institution, employing hundreds of people and having a considerable turnover. The company has a history of over 20 years on the market with different fluctuations in business levels happening throughout the years. The company was chosen largely because of its forward-thinking attitude in conducting business and being a fast adopter of new technologies and the multitude of teams that collaborate in reaching results. Another important factor was the access to first party data, with the author working with the company for two years before the research. The analysis revolved primarily around the marketing division of the business, the department focused on acquiring new clients and reaching out to make sure the existing ones are retained as customers. For legal and privacy reasons, the name of the company will not be divulged.

One significant advantage of the case study is that as a research strategy, it involves multiple sources and techniques to gather data. It is determined in advance by the researcher what evidence is to be collected and what techniques for analysis are to be used with the data. The techniques then focus on understanding the information gathered, observing recurring situations and generating new theories. Qualitative data is a fundamental element in building an understanding of the phenomenon, trying to outline the repeated ideas, concepts or items that can be afterward coded and grouped into similar categories, further leading to the generation of theory.

5.3.2 Software as a Service tools

To provide a context for the data collected and to better understand the results, this section has the purpose of explaining the tools used by the informants and understanding what their role is supposed to be in the company.

Sprinklr markets itself as the most complete social media management platform for an enterprise. Headquartered in New York and servicing clients such as Nike, McDonald's, Microsoft and half of Fortune 50, Sprinklr is one of the big players in social media marketing management with 1100 employees in 10 countries. The way Sprinklr is used in the company is a modular one. As a software as a service solution, Sprinklr offers an extensive range of segments companies can add depending on their focus within social media. With a possibility to invest in organic media tools, paid media platforms and even social listening, community management and asset managers, Sprinklr is an extensive solution. If an organization desires to do so, they could cover their entire social media efforts. The company studied uses Sprinklr as a post management tool for social media with support in community management and listening for brand mentions. On a year by year contract, Sprinklr also provides weekly meetings in order to prepare the company to use the software to its fullest.

Smartly.io, could be said, is on a different spectrum compared to Sprinklr. Offering a specifically targeted paid advertising solution for social media, the Finnish start-up will help companies automate and optimize their ad campaigns. With the possibility to create a huge number of campaigns and provide automated rotations, Smartly is an interesting tool allowing for impressive quantitative increases for the companies they support. The organization studied has started using Smartly for the past six months at first on a testing basis and continuing on a pay-as-you-use type of contract. This means the advertising tool charges a small percentage of the paid media budget for their support, something that makes it appealing for both large and small companies, with the costs being adaptable.

The Brand Portal is a solution meant to produce expert campaigns without the use of specialists offered by Papirfly. Working with brands such as Citi, Credit Suisse, P&G and Rolls Royce, the brand portal guarantees a brand consistency coupled with cost and time reduction. The Employer Brand Portal in its full name is a modular solution with the possibility of acting as a guidebook for the brand, a storage unit, and the production segment, allowing companies to produce and adapt their materials. With the payment not depending on the volume of production, the Brand Portal appeals to large enterprises, saving more as they use it. It is easy to learn how to use,

making it friendly for all corporate users, not only graphic designers. With simple modules integrated and easy, centralized work-mindset enabled, the Brand Portal has deeply impacted the flow, quality and quantity of production in the company studied. Having users with different access levels also eliminates redundancy and possible overlapping in tasks, while the brand is aligned through guidelines and structures.

5.4 Research choices

The approach to data collection is a qualitative one and is widely based on two methods. One of them will be revolving around the experience accumulated in working for the company for the past two years and arises passively throughout the paper, without focusing attention on it. The main risk in doing so is that the perception can be a subjective one, leading to a degree of data distortion. However, having an extensive experience within the same business environment will provide better insights into the history of affordances created within the company, supporting the interpretivist approach to this paper. This further leads to patterns becoming more evident, and conclusions are drawn with an extended period of observations as a timeline.

Secondly, supported by the first person perspective expanding it, interviews were conducted. This allowed the thesis to gain a broad perspective into the interlinking parts of business. Four interviews with employees, on different levels, within various departments, in customer-facing roles, provided a qualitative point of view towards the affordances generated in the workflow between different stakeholders.

5.5 Time horizons

The dual approach to data collection in the research choices leads to the time horizons having a cross-sectional perspective. Although first-hand observations of working in the company for the past years might seem to provide a longitudinal character to the thesis, the observations made are based on certain points in time and are not influenced by any gradual evolution. The phenomenon could be observed through a cross-sectional perspective as a result of the high pace

of adoption in recent years and a relatively short timeline for doing so. This leads to software as a service making a quick impact on company structure and business results.

Cross-sectional research is primarily used to determine the number of cases a certain occurrence appears in (Mann, 2003). The cross-sectional perspective will be gained from the current state of affairs in the business flow defined through interviews done as recently as April. This is meant to provide an up to date assessment of the evolution, something that can potentially project theories further into the future.

5.6 Data collection

To better understand the techniques and procedures this section outlines the data collection methods, further explaining their purpose. This brings clarity to both the range of application of the generated knowledge and the limitations invariably created by different factors in the data collection process. The study involves an extensive range of qualitative information, something essential in inductive research. Although it lacks the precise, cold, hard facts of quantitative research, qualitative data is nuanced, detailed and much more contextual.

Qualitative data is conceptually concerned with understanding certain behaviors or phenomenon from the perspective of the informant. Methodologically, the data can be collected through interviews and unstructured observations, and it is afterward analyzed and categorized in different themes by researchers (McLeod, 2008). Although it has the advantage of requiring fewer subjects, qualitative research can be time-consuming in analyzing the data and sorting through it in order to align it across respondents.

Primary data, used in primary research is the type of data that the investigator sets out to collect by himself. Some examples of primary data are surveys, interviews, observations (Driscoll & Brizee, 2010). This paper relies on the qualitative side of primary data, with a focus on case study interviews and observations made by the researcher over a period of time within the organization where the interviewed subjects came from.

One of the characteristics that are considered an advantage when doing primary research is that the investigator gathers data that is particular to the problem in the study. This helps save time in analyzing data that would otherwise be broader. Another aspect of primary data is the collection of information being done by the researcher itself. This eliminates doubts about the quality and the validity of the data. A third advantage is a possibility of obtaining more data if an analysis of the original batch signals a need for an in-depth approach to certain aspects or even broadening the entire scope.

Using primary data in research involves collecting data about a certain field directly from the real world. One way to do that is through interviews, an excellent method for learning in depth information either from a single individual or a small group. The interviewed subjects are usually selected for their status within that area, their position in the company and their knowledge about the topic in question.

For this paper, primarily face to face interviews were conducted, as well as a small number of phone interviews. In the face to face interviews, a relaxed setting was created with the purpose of relaxing the mood and opening the conversation. One of the benefits of doing interviews in person is the possibility to adapt the questioning based on the answers received. The decision to modify the structure of the interview can also be made on account of certain non-verbal signals observed during the process. This leads to a semi-structured form of interviewing, combining a pre-determined list of open questions with the interviewer's opportunity to explore certain themes or responses further.

Phone interviews were used to contact a subject in Asia, working in a regional office of the same company. In the modern world, this form of research becomes a necessity since companies are operating on different continents and their Software as a Service systems are employed across the board, regardless of the region. In the case of this research, it led to a semi-structured interview, very similar to the face to face situation, the only disadvantage being the inability to read non-verbal signals other than the tone of voice.

Observations are a primary research method that involves watching people over a period of time and analyzing the way they interact with each other and with different tools within the business ecosystem of the company. Observations are highly regarded in every scientific field and seen as a very useful method of gathering information (Driscoll & Brizee, 2010).

Researcher observations are also employed in the paper, with the author having spent two years working within the company and having been in contact with multiple stakeholders within the business division. This will help round off the data gathered and provide a holistic perspective of the different moving elements within the marketing department. In doing so, context will be provided for the usage of the interviews, with the pre-set questions and the analysis of the answers directed towards the area of interest.

5.6.1 Procedure

In establishing the ways data has been gathered and measured, this section sets up a carefully laid out platform for the results to be generated and analyzed. With the focus of data collection being semi-structured interviews and unstructured observations it was important to define a correlation between the phenomenon studied, the theories employed and the information generated. For that correlation to be clear, it is considered necessary to explain why the participants in the study were selected and how their experience relates to the thesis scope.

For the data collection, the interviews were recorded on a smartphone in order to make sure all the information was captured. After the interviews had been completed, all the sound files were transcribed ad verbum with the exception of the interview with Joyce. Due to the Singaporean English presenting difficulties in understanding, the transcription was done as an edited transcription. Such a transcription has the characteristics of staying true the nature of the data while being able to omit some of the sentences. One of the important aspects of being able to perform an edited transcription is that of being familiar with the content of the audio and capturing the essence as opposed to a word to word approach (eTranscription, 2013). With all the interviews transcribed, the files were uploaded into a new project in the coding program Nvivo, as sources. The interviews can also be found in appendix 1.

In order to find and categorize emerging patterns within all interviews, different nodes were created. A node is a "bucket" into which qualitative data can be gathered that makes it easier to bring evidence of repeating themes. Although there is a possibility of creating nodes automatically through text queries, because of the complex nature of the data and the possibility of interviewer text being coded, it was decided to code the interviews manually. This means that going through the transcriptions line by line, different sections or constructions were attributed to either a set of predetermined nodes. If the information discovered within the text was, however, new, nodes were added to match a recurring pattern. In proceeding this way, not only was there a more controlled process in structuring the results, but also new developments emerged that were not observed initially without pre-assuming any of the nodes outside the hypotheses that were set out to be tested. With the study having a widely inductive approach, some of the new patterns emerging from the interviews could be predicted or understood immediately under the interviews while others were more complex. By observing recurring themes that were not initially unaccounted for, new or updated affordances were created.

5.6.2 The participants

An often recommended avenue for exploratory research, semi-structured interviews were employed in this paper. Being guided by a set of open questions, the interviews serve as the main primary data collection method, with unstructured observations following. In choosing this kind of set up, the informants were enabled to elaborate on the questions as well as allowing the interviewer to delve and probe into emerging themes (Corbin & Strauss, 2008). During the interviews, brief dialogues unfolded around certain questions from the interview guide. By using this method, an opportunity was created to gain additional insights and understanding about the affordances set up within the company by the adoption of Software as a Service.

There were four interviews conducted with four informants from the organization's marketing department. The interviews were done in a casual setting, lasting up to eighteen minutes. Three of them were performed face to face while the fourth was conducted over the phone, with a representative of one of the regional branches in Asia.

The main characteristics of all the informants are that they are all deeply engaged in working with Software as a Service, and they have different functions within the studied company. The last aspect is a critical one because it will help in defining the use of the same platforms from various perspectives. An overview of the informants can be observed in table 2 while the interview guide can be found in appendix 1. The ad-verbum transcripts of the four interviews can also be found in appendix 1.

	Martin	Marius	Marie	Joyce
Years in the company	1.2	2	1	2
Position	Digital Optimization Associate, Paid Media	Student Assistant Social Media Acquisition	Graphic Designer within the Brand and Content Department	Paid media lead overseeing the social media
Country	Denmark	Denmark	Denmark	Singapore
Software as a Service tools used	Smarlty, Sprinklr, Adobe Analytics, Double Click, Google analytics, Omniture	Sprinklr, Smartly, Brand Portal	Brand Portal, Adobe creative cloud	Sprinklr, Brand Portal, Facebook Business Manager

Table 2

Martin is working in the Copenhagen office, within the Paid Media team. His role is revolving around paid media and search, setting up pay per click, social media as well as SEO and display advertising. With many tasks on his plate, he is focusing on social media, particularly on Facebook advertising and the way the spending can be optimized on this channel in order to get the best results.

For that purpose, Martin uses a tool called Smartly in order to set up the campaigns and different analytics tools such as Omniture and Google analytics to measure the results. In order to be able to track various campaigns from setting them up to measuring achievements, he uses a tool called Double Click, adding tags and tracking characteristics to specific ads. On an organizational scale, Martin's role is a strategic one, with his focus being relatively limited in producing content and extensive in tracking results, optimizing strategies and campaigns and understanding how the objectives can be reached.

Working exclusively with social media marketing is Marius, a student assistant within the Brand and Content department in the Copenhagen office. Marius works on planning, executing and optimizing digital marketing campaigns for the company on both a global and local scale. Until recently, he had a role in designing creatives as well, something that has recently been moved to a different section of the team. On a weekly basis, Marius focuses on both organic and paid social media campaigns, connecting with many stakeholders to ensure their execution. The tool he works with in managing organic social media and community management is called Sprinklr, while for paid advertising Marius uses Smartly. On an organizational scale, his role is a complex one, with elements of both production and strategy definition being part of Marius's job description. With the ability and obligation of setting up campaign plans, he also needs to execute on the content to be included in executing those strategies. In some ways he can be considered a jack of all trades, being able to adapt his work to what is needed, depending on the strategic direction of the department.

One of the graphic designers within the Brand and Content department is Marie, focusing on delivering creatives for all types of digital marketing ranging from banners, videos, animations to social media creatives and graphics interchange formats (GIF). Marie works with most of the stakeholders in the marketing division both in the headquarters and in the regions, especially since in the past year all content production has been brought in-house. She uses the Brand Portal in order to store, distribute and even create global or localized content. That is the only Software as a Service Marie uses, as most of her creative work is designed and executed in specialized, offline tools such as Photoshop, Illustrator, and video editors. On the organizational scale,

Marie's role is that of executing on content campaigns and, besides connecting with all the inside stakeholders in need of materials, she is also communicating with the regional managers.

Joyce works as a paid media lead, overseeing the social media strategy execution in Singapore. On a day to day basis, she is involved with the smooth running of paid media campaigns both online and offline. She has had organic social media attributions as early as 2016, something that was explored through her interview, mainly considering her use of Sprinklr. In 2017, Joyce focuses on working exclusively with paid media, similar to Martin's role but on a local basis. She also uses the brand portal and online tools such as the Facebook Business Manager. On the organizational scale, Joyce works in the Singapore office, executing on the local strategy with material and knowledge support arriving from the headquarters. The role requires collaboration with the main offices in order to make sure creatives are adapted to the regional requirements both visually and compliance-wise.

5.7 Data analysis

The interview topics were focused on how the company works, how it used to work before the implementation of current Software as a Service tools, and the impact it had on different organizational factors. The interview started with getting a perspective on the responsibilities the informants possess within the business division. Gradually the questions built up towards uncovering details about the differences software as a service makes in their work at different levels. By analyzing various key performance indicators, the goal setting impact, implementation and evaluation stages, tactics and objectives, the questioning focused on observing the affordances created through Software as a Service integration in different levels of business.

With the informants' approval, the interviews were recorded with a smartphone. The main purpose was to avoid suggesting or manipulating how the informants should answer the questions, aiming at an unbiased perspective. Instead, they were encouraged to come up with concrete examples and personal stories. It is also important to note that none of the participants knew the questions in advance, their only direction being that the interviews will take a deep interest in the tools they use in their work.

The data analysis was made through coding supported by NVivo 11. Here, all interviews were uploaded after transcription were analyzed by aggregating concepts into categories. Those were narrowed down to eleven recurring categories that helped selectively code the data into nodes, further detailing the emerging themes encountered during the interview as seen in chapter 6, table 4.

Nvivo is a software tool provided by QSR International that aims at supporting the analysis of qualitative or unstructured data, recognizing that researchers consider this type of information key to richer insights. As a researcher, it is important not only to collect the information but the manage it properly. All the data was organized through this tool for an easier way of connecting dots.

5.8 Research quality

In the case of using semi-structured interviews, there have been identified a number of data quality issues related to reliability, validity, generalizability and different forms of bias (Saunders, Philip, & Adrian, 2009).

Validity refers to "the extent to which the researcher gains access to their participants' knowledge and experience, and is able to infer a meaning that the participant intended from the language that was used by this person" (Saunders, Philip, & Adrian, 2009, p. 327). It is possible to reach high validity in qualitative research, by carefully discussing topics from various angles (Saunders, Philip, & Adrian, 2009). By avoiding issues regarding validity, it is reliability and generalization that need to be taken into account.

When conducting semi-structured interviews, reliability can come into question because of the lack of standardization. Reliability is highly connected to whether alternative researches would be able to find similar information and to biases (Saunders, Philip, & Adrian, 2009). This could become an issue, as the data collected is not necessarily "intended to be repeatable since they reflect reality at the time they were collected, in a situation which may be subject to change" (Saunders, Philip, & Adrian, 2009, p. 327).

One of the aspects that can occur in relation to qualitative studies are biases, particularly the ones between interviewer and interviewee (Saunders, Philip, & Adrian, 2009). Interviewer bias incurs when the interviewer's non-verbal behavior creates a bias for the interviewee in the way he answers the questions. In order to avoid it, the researcher must be aware of his own opinions and thoughts regarding the subject matter. In this paper, the interviewer used non-leading and open-ended questions (Saunders, Philip, & Adrian, 2009). Additionally, it was acted with caution to avoid observer error, as only one person was conducting the interviews. This required attention towards minimizing the risk of asking questions to force answers in different ways. Thus, by implementing a high degree of structure in the way interviews were scheduled, it was consistently sought to minimize the threat of the observer error on reliability (Saunders, Philip, & Adrian, 2009).

Qualitative research through semi-structured interviews is typically not a choice to be used to make statistical generalizations, especially when based on a small and unrepresentative number of cases. When adopting a case study strategy, this is often the case (Saunders, Philip, & Adrian, 2009). Although the case company presented in the paper is unlikely unique in regards to this research, with a classic business-oriented structure potentially being representative for all similar situations, the size of the sample used for research removes the ability to generalize (Saunders, Philip, & Adrian, 2009). In accordance with that observation, it is not claimed that the affordances observed are of particular salience or exhaustive descriptions for all the Software as a Service affordances that impact businesses post adoption.

6. Findings

6.1 Introduction

With the methodology and measurement setup defined, this chapter aims at clearly defining the results of data collection. It will be structured in two main parts, with a focus on presenting firstly, an analysis of the affordances defined in Information Technology and the Changing Fabric of Organization (Zammuto, Griffith, Majchrzak, Dougherty, & Faraj, 2007). This will

determine the current status of applicability of what is an almost ten-year-old incursion into the possibilities new technology offers. Secondly, this chapter will look for evidence in the data that new affordances are emerging as a result of the much faster development, unforeseen in the 2007 paper, of the technological possibilities.

Patterns have been identified that will emerge through the analysis done. Within this chapter, they will be compiled into themes and further defined.

6.2 Correlation between level in organization and references

With each interview generating anywhere between thirteen and thirty-five references to be coded preliminary conclusions can be drawn based on the relevant data recovered. These would point out to where in the organizational structure more changes are occurring that can be further disseminated. As it can be seen in table 3, there is a clear rift to be observed in results.

	Martin	Marius	Marie	Joyce
Nodes defined	8	10	9	8
References used in nodes	34	14	35	13

Table 3

With both Martin and Marie having a considerably higher number of node-defining references it can be assumed that it is a factor connecting back to their involvement with multiple stakeholders inside the company through Software as a Service. This can be traced to the various ways in which interactions within the enterprise impact their work. However, it can be observed that although the number of references is higher, the number of nodes is comparable, with the number of themes recurring in each interview not deviating from nine. This signals that, although, on the execution side where fewer stakeholders are involved, the impact of cloud

services still exists. It may not be as fully defining for the position as for the ones working with multiple stakeholders. However, its presence is still noticed.

6.3 Nodes

The next element of analysis comes through the number of occurrences coming from each node. As mentioned previously, some of the themes such as flexible product and service creation, virtual collaboration, and mass collaboration, were predetermined. They were set up as the primary nodes, with the rest of the results coming from the analysis of the text. The nodes found can be seen in table 4.

Name	Sources	References	Created On
Alignment in operations	4	15	11-Apr-17 16:42
Automated operations	4	6	11-Apr-17 17:41
Customized support	2	3	11-Apr-17 18:50
Enabler of exponential growth	4	14	11-Apr-17 16:41
Fast innovation	2	6	11-Apr-17 18:52
Flexible product and service creation	3	9	11-Apr-17 15:32
Mass collaboration	3	3	11-Apr-17 15:33
Modularity	4	11	11-Apr-17 16:45
SaaS as utility	2	6	11-Apr-17 16:40
Simplify work	4	17	11-Apr-17 17:39
Solution integration	1	2	11-Apr-17 18:46
Virtual collaboration	2	4	11-Apr-17 15:32

Table 4

The table presents an overview of the nodes with a detailing of the number of interviews were they were mentioned in addition to the number of references made in each situation. For a better understanding of predominant themes, a graphical interpretation was generated in Nvivo 11. This shows the nodes compared by number of items coded and can be observed in figure 2.

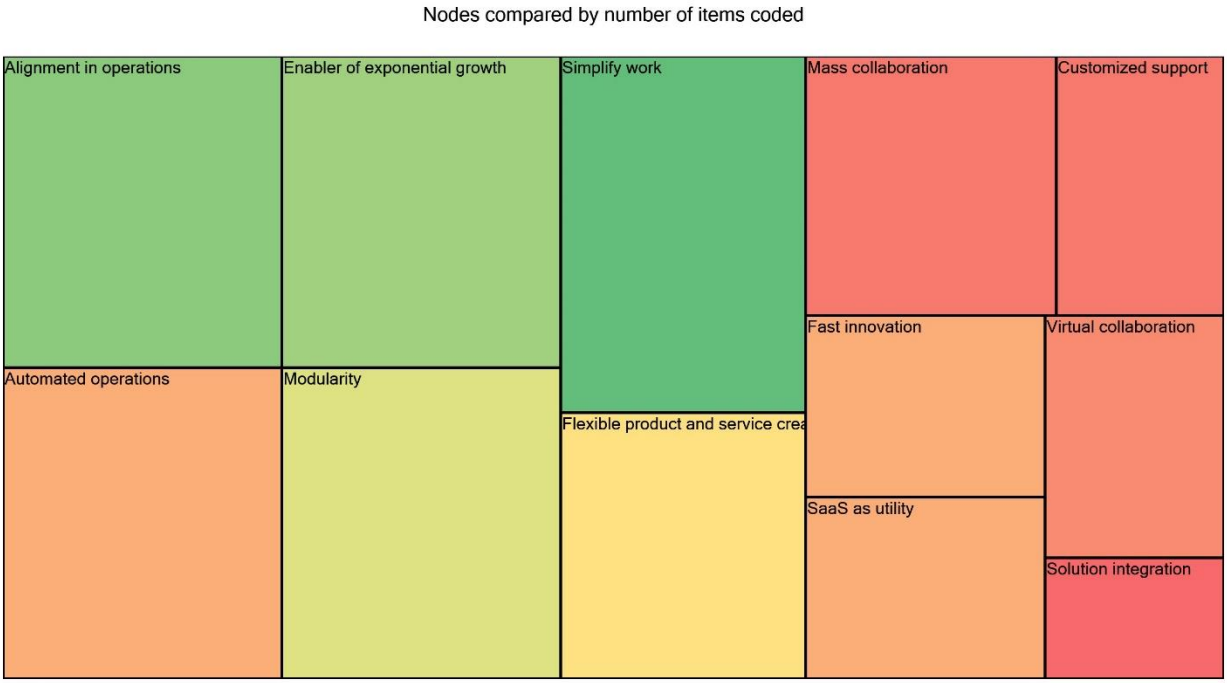

Figure 2

This clearly defines a predominance in themes such as work simplifying and enabling growth as well as alignment in operations and modularity. Mass collaboration, virtual collaboration, and solution integration, however, occupy a secondary plane as revealed by the discussion with informants. However, this does not mean their presence is not as significant as it will be shown in a detailed analysis. It is often the case that different sides of the organization can perceive the same phenomenon using different words or constructions, something that can lead to a misclassification or the need to modify the themes analyzed. This can be done by either removing certain themes altogether or updating and combining different nodes in order to achieve a recurring, company-wide available affordance.

6.4 Relation between the nodes

Having previously looked at the themes occurring throughout the interviews, observing their frequency and sources, what came in focus next was the relationships created between the nodes using the cluster analysis method provided by Nvivo 11. It is a tool meant to help users see

patterns in the data. An exploratory technique used to visualize recurring themes, the cluster analysis groups nodes or sources that share similar words or constructions (About cluster analysis, 2015).

There are multiple ways to visualize a cluster map and for this paper a horizontal dendrogram, a tree diagram, was chosen. A horizontal branching diagram clusters together similar items while the different ones are further apart. It was selected because it is an optimal way to compare pairs of items (About cluster analysis, 2015). In order to create the clusters themselves, it was considered opting for word similarity in nodes which creates a virtual table where the columns are different words that appear in the text of the nodes. The cells of the table represent the number of times the column's word appears in the row's node (Cluster analysis diagrams generation, 2016). The table is then visualized as a tree diagram in which the relations are defined as seen in figure 3.

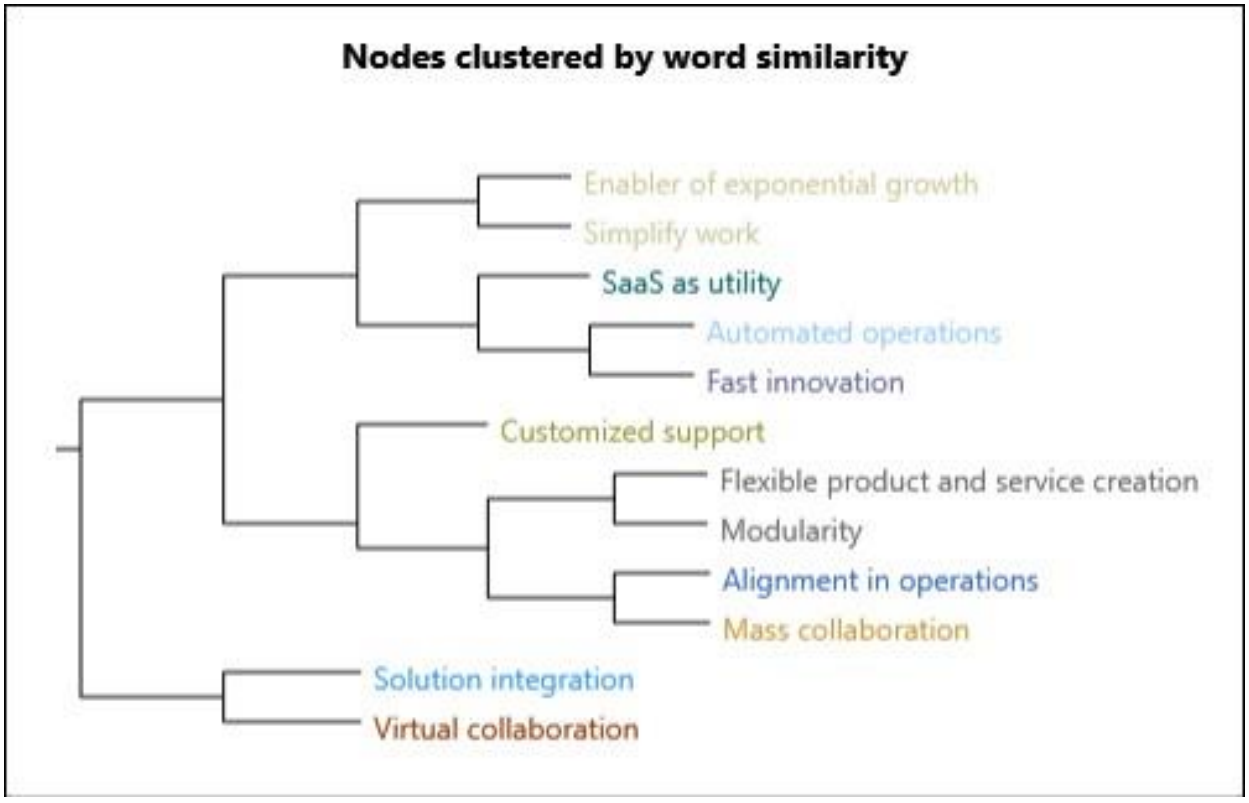

Figure 3

The cluster analysis also uses a coefficient to determine the similarity of samples, and Nvivo provides three choices to be made. In this case, Sørensen's index was used, being known for retaining sensitivity in more heterogeneous data (McCune & Grace, 2002).

Looking at the diagram, a number of nodes combinations become apparent, with three large branches and six small groups to be analyzed. Software as a Service will be investigated under the following aspects:

- Enabling growth and simplifying work;
- Cloud services as a utility;
- Automating operations and bringing fast innovation;
- Modularity and flexibility in product creation;
- Alignment in operations and mass collaboration;
- Solution integration and virtual collaboration;

It can be observed that parts of the nodes are built up and defined by the informants as characteristics of Software as a Service. These are the clear descriptions of the tools used and how they behave compared to their selling points. Another key aspect observed throughout the interviews is the organizational features that need to be covered through different practices in all modern companies. By analyzing the features and analyzing the connections, it became apparent which of the needs of the company are satisfied by the usage of Software as a Service and how the characteristics of cloud computing have been interpreted through actions, within organizations, in order to reach their potential.

By analyzing the connections between the emerging patterns, the impact each Software as a Service feature brings to different levels in the company could be established. This was accomplished by analyzing the six grouped combinations by frequency, sources and finally the important segments extracted directly from the interviews, in order to better define the results.

6.4.1 Enabling growth and simplifying work

As observed in table 4, both enabling growth and simplifying work nodes were some of the most referenced throughout the interviews, with all informants mentioning them in one form or another to different extents. As percentages of the interviews themselves, we see an interesting correlation with the two nodes corresponding almost identically throughout the data as seen in figure 4.

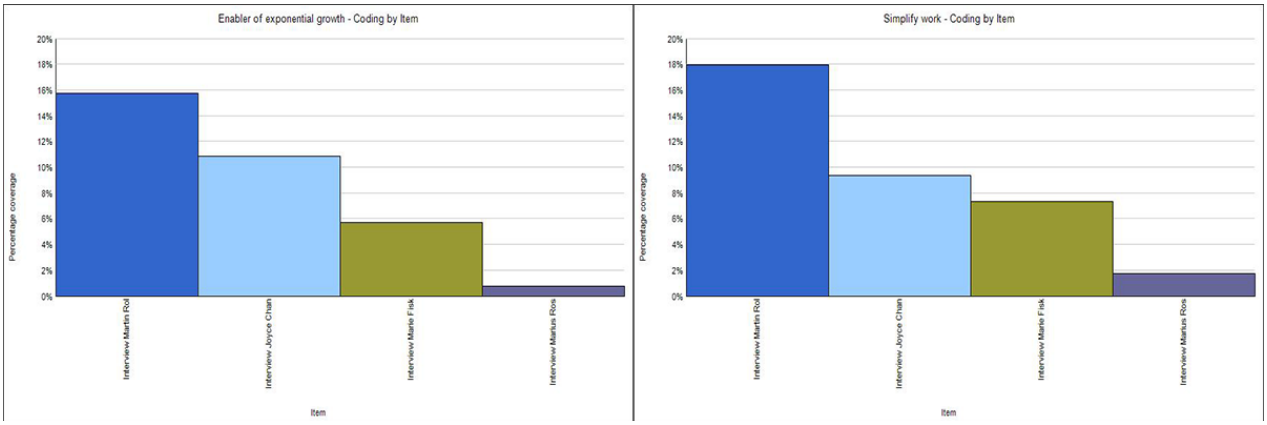

Figure 4

This clearly signals a tendency of placing the same amount of importance on the two themes by each of the informants. Analyzing the passages themselves, it can be seen that the references to enabling growth and to simplifying work are often mentioned together almost in a complementing way.

Looking at Martin's interview, the one referencing both themes to the greatest extent, we notice similar constructions in defining each of them. In mentioning Smartly, he states that *"the reasons why we started collaborating with them it is actually that the work load (...) increased rapidly and we saw the possibility of teaming up with them and using their Software application"*. This segment signals the adoption of Software as a Service almost as a requirement in order to enable growing to the desired levels. This then becomes increasingly relevant when coupled with him mentioning that *"by using the Smartly interface you are capable of setting up new initiatives faster and more efficient as well as adding a few dimensions to it."* From the way he is phrasing

the information it can be assumed that to some degree one of them enables the other, by simplifying work, the organization is able to enable growth.

The observation becomes certain when looking at the way Joyce describes the new found possibilities of Sprinklr. She mentions how "*Sprinklr has helped make the process easier for us and having a one stop channel where we have the ease to do everything in one dashboard*", something that has led to being *"more active on SM channels and we are not on SM just to be there like many brands, with empty pages which become useless"*.

Even in Marius's data, where the two themes appear to the lowest percentage of the entire interview, we observe how the work is becoming simpler has transformed into more work being done that has led to more funds being allocated to his department. He mentions *that "the main selling point of software as a service is their cross-social media platform so you can manage more platforms in one go"* leading further down the line to a situation where *"from the upper management, we have gotten more funding."*

At a production level, this trend becomes even more compelling, with the quantitative work Marie does, changing drastically. Therefore, because things have simplified thanks to the Brand Portal and the mindset is that *"everyone can do it once you learn it"* the production has been developed to a degree where she informs that *"we have, for the same amount of time and money made 10 times more".*

With work simplifying being one of the key features advertised and indeed enabled by Software as a Service solutions, it came as no surprise to see the theme throughout the interviews. Companies are constantly looking to increase the pace at which they grow, both qualitatively and quantitatively. This becomes a perfect example where the organizational need is supported through the technological capabilities of Software as a Service and the way in which companies are using it.

With references coming across the board, in all sources, it can be presumed that the two highly interconnected themes are found, to a different extent and importance, at all levels of the organization.

6.4.2 Automating operations and bringing fast innovation

One of the features of Software as a Service constantly being mentioned throughout the interviews is the quick update pace at which the systems operate. With the basic operations of digital marketing being afforded directly by the channels themselves, such is the case with Google, Facebook, Twitter, Software as a Service providers are looking to differentiate and add value to the experience of using their tools to manage those different tasks. This is where various services are looking into different algorithms and instruments in order to make the switch to their product more appealing.

Figure 5 shows a distribution of the two themes throughout the interviews with automated operations being a constant feature while fast innovation being mentioned by the two informants working in the main office of the company with social media.

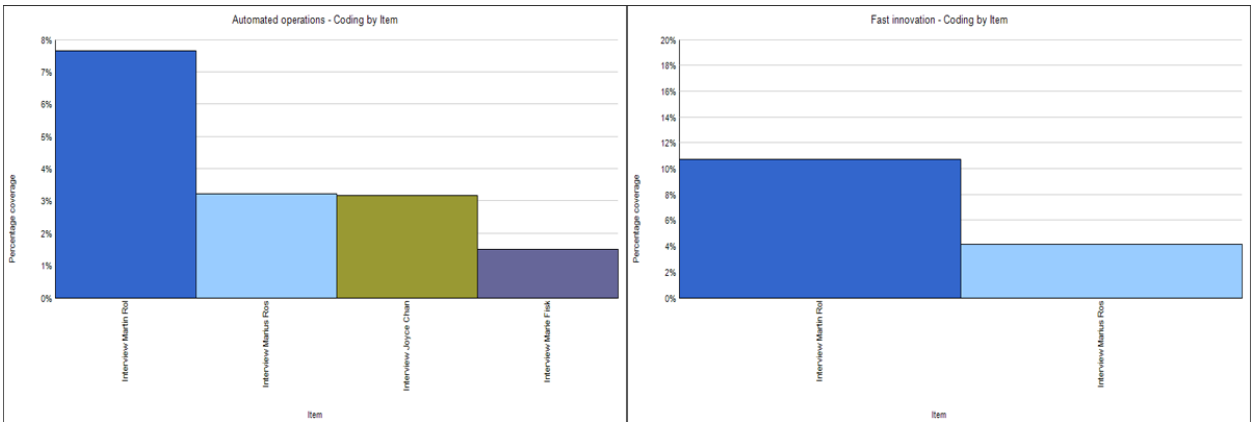

Figure 5

Martin's position, a highly demanding one within the enterprise, requires him to operate as the bridging person between different departments. He needs to coordinate with social media, paid media and pay per click operations in order to make sure everything is running smoothly. This was one of the main reasons for, when realizing the increasing quantity of operations, pushing for the adoption of the Smartly system. In doing so, much of the optimizing work, at least in one of the areas he works with, was transferred to the algorithms and automation Smartly provides, something clear in the passage *"the reasons why we started collaborating with them it is actually that the workload and the demand for automation increased rapidly."* This could explain why his interview has this as a focus, being mentioned on three different occasions. When describing the operations through the Software as a Service system, he mentions how it allowed the department *"to be more agile and more flexible and automate a lot of the advertisement on Facebook, so I am using that quite a lot."* Although he sees the value the system brings, Martin mentions however that the automation is the reason, and it is not the program itself in that he is able to *"get additional features in smartly but that is not the primary reason for improving the performance per se. That is basically being capable of automating better"*. From this point he starts explaining how the automation is just one of the recent developments in the field, with different innovations of systems keeping him focused on what they are able to do: *"in 2 months' time maybe we have a better software offering out there and then we will change to take that so it is"*. In Martin's opinion, although the innovation didn't come in the form of new operations, they came in the form of adapting in doing the same operations with fewer resources:

> *"However, the organization was changed after the implementation of the system, and when we had the system, it allowed us to adapt to the new changes faster and also some of the features there were quite good at improving and getting more efficient after changing the organization." – Martin Roland Knudsen*

It is a similar case in Marius's work, where the value is seen for the automated solutions. He mentions that it took a toll especially on the optimization features and *"instead of us manually going in and optimizing based on different numbers, they actually have added more optimization*

features." When it comes to automation, a business organization needs the latest developments from the channels they market on to be implemented and Software as a Service, in Marius's opinion is at the front of innovation:

> *The updates are quite frequent when it comes to these things. Especially with social media that can change something and break the entire system if you don't update in time and software as a service allows us to get the updates behind the scenes. – Marius Rosand*

It is precisely the strategic work done within social media by both Martin and Marius that it is believed to bring out the value they see for the fast-adapting tools to be implemented. It is an important aspect of the cloud services, and it acts as a catalyst for other affordances as well.

Although innovation is not perceived as strongly for the other two informants, the process automation is still considered an important factor. Joyce sees the value brought by automated tracking, with *"the good thing about Sprinklr being that it tracks each post and campaign individually, automatically versus us doing it manually."* Meanwhile, Marie finds the Brand Portal a helpful addition in automatically aligning the campaign work within the regions: *"if it is just for the campaign they would use the tools within the banner editor and change details to the local regions."*

With automation being a relatively new feature in the business ecosystem, it is easy to see why the marketing department has been a keen user. With the automation support, marketing becomes a more personalized 1:1 targeted platform. This makes the overall communication stronger and allows an increased focus towards the quality of the campaigns and messaging. It is a feature that allows marketers to add more personal touches to campaigns on mass-communication channels by collecting data on the customer's interests and goals (Patel & Puri, 2016).

Further connecting characteristics of cloud computing with the affordances they create within the company, the relationship between automation and innovation stands as further proof to that.

Although the informants see both the automation of the marketing process and the fast adoption of innovation through Software as a Service updates as cloud characteristics, they can be considered organizational features as well. Processes automated within the organization are stemming from modern day innovations in technology and companies are allowed the comfort of spending fewer resources on producing the same results or keeping the resources constant while the results are increasing. On the other hand, automation has led to an increase in the time companies have, affording them the time to look beyond their current operations and into how they can approach the future.

6.4.3 Cloud services as utilities

With six references from two different sources, as observed in the visualization in table 4, cloud services as utility is a specific theme. It stands by itself without a directly correlating theme such as the previous examples. While being distantly connected to automating operations and fast innovations by the informants, Software as a Service functioning as utility is perhaps a narrowly observed impact of cloud services on business processes.

The utility term refers in this segment to the utility services such as electricity, telephone services or waterworks. It is not an unfamiliar concept in the business or technical world and has the potential of becoming a mainstream concept in the near future. The idea of a seemingly inexhaustible offer of storage, computing, and fast network connectivity aims at becoming the norm for organizations, much like electricity (O'Donnell, 2016).

In this study, cloud service as utility is mentioned by the informants working most with high production, multiple stakeholders, and strategies, as seen in figure 6. This can be presumed to be a sign that it is a feature that renders cloud computing almost invisible in order to allow business managers the time to focus on strategic choices or high quality of execution.

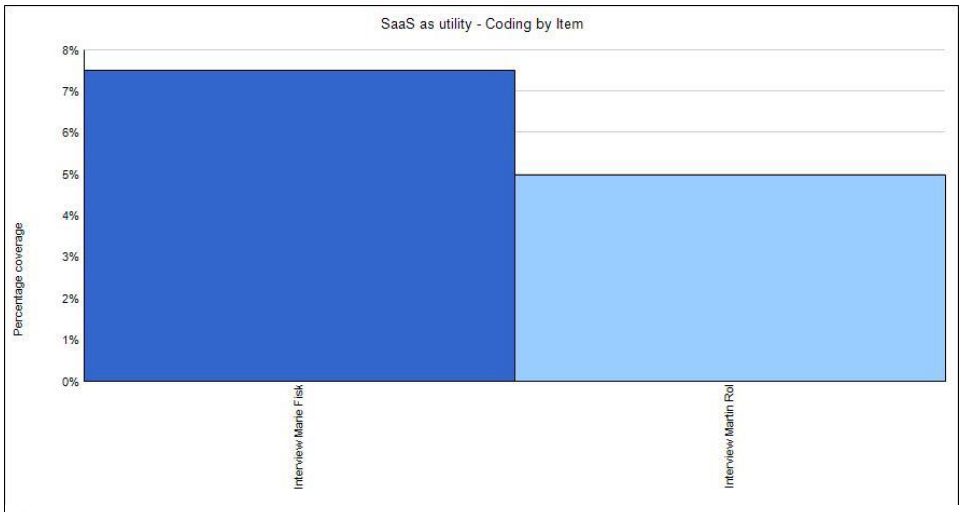

Figure 6

This becomes evident in Martin's interview, where he mentions that with the new systems, *"the same person is capable of doing more and when the same person is capable of doing more, you have more time to maintain and take care of individual campaigns and make it more granular and that simply lead to better results"*. Marie also sees the value of the Brand Portal in her work in that *"the quality has improved in the sense that we have the same look and feel of the brand everywhere."* In her perspective, not only has the focus on quality increased, it has led to another characteristic of utility: allowing for expensive operations at affordable pricing transitioning into a higher production at the same price.

> *Even though we spend more money on advertising and getting the banners out there, we save much on not having to buy them from ad agencies. We have invested the money saved into greater exposure. – Marie Fisker*

With the cloud service characteristic of making computing affordable and wide-spread, functioning as a utility leads to the observation of particular affordances generated within the organizations. With companies aiming at rendering information technology invisible to the business side of the enterprise, computing solutions that require less maintenance, lower down times and smaller costs become a permanent must-have for any expanding organizations that want to keep up with innovation. The organizational features afforded however by Software as a

Service functioning as a utility are mostly connected to the IT department. With a focus shift from the computing power itself, to the way in which it can be optimized and integrated, this department needs to be completely rethought in the light of new innovations.

Although it seems to be the solution, Software as a Service functioning as a utility within the company is not without drawbacks. One of the problems with cloud computing as a utility is that it cannot achieve the plug-and-play simplicity of electricity. This was seen by Brynjolfsson, Hofmann, and Jordanis (2010) as being caused by the rapid innovation cycles, both within cloud computing, and in many applications and business models enabled by it, happening at such a fast pace.

6.4.4 Modularity and flexibility in product creation

Some of the highly mentioned themes within the interviews are the modularity of Software as a Service and the flexibility it provides in product creation. Smartly is one of the solutions presented that focuses on one feature, paid social media advertising, something that allows them to concentrate on improving it. Sprinklr and the Brand Portal used by the company, however, allow for buying specific modules depending on what the company intends to focus on. For Sprinklr, the studied company purchased the organic management tool for social media while the Brand Portal acts as a storage platform and editing tool for banners and print ads. Therefore, the modularity is mostly experienced by the organization members that can influence business decision making through their daily work, seeing what can improve productivity leading to a shift in focus on different areas. This is seen for the informants with Marius and Marie providing the most references to the themes, Martin being third and Joyce only being marginally influenced by the cycle as observed in figure 7. Flexibility, on the other hand, is referenced mostly by Marie, followed by Martin and Joyce.

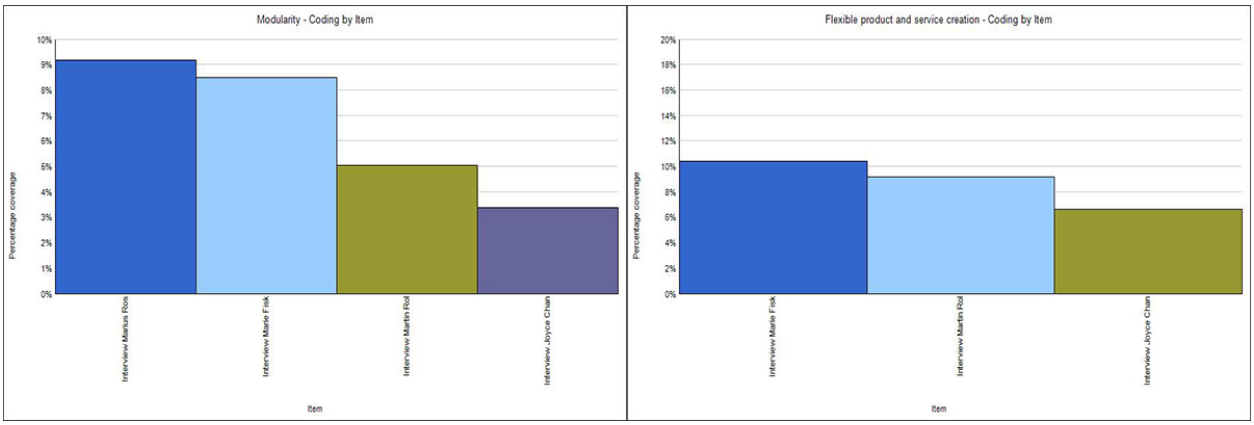

Figure 7

Modularity is a feature highly appreciated in cloud solutions, allowing for fast switching and quick adoption when needed, considering the service is already contracted and it is only a matter of adding new features to it. It is an aspect clearly defined by Marie mentioning that *"as we evolve, maybe we will find other useful tools to use but right now it is just those tools that we have."* Although poor decisions were made in the beginning in terms of modularity, she outlines how easy it is to switch to the right tools.

> *We also bought the print editor addition and we realized we never use it so now we are planning on changing it to have so we could have a social media editor instead so you could add the different settings for social creatives and have a knowledge bank of messages per campaign and it would be easier to do social messages. – Marie Fisker*

Marius's interview presents a different side of modularity with a possibility for users to integrate different features from different companies bringing a lot of flexibility in how operations are managed. In talking about Smartly he says it *"can't handle organic posts but Sprinklr could potentially handle the paid posts but it costs more money."* In his opinion, this has some side effects in terms of alignment of operations with workers becoming confused by the constant switch of systems and interfaces.

In terms of flexibility in product creation, Marie presents a series of good points regarding the impact the Brand Portal brought to the company. She mentions it *"started as a tool to share*

materials and now it is so much more than that. It is very customizable and switches are very easy". It has even allowed for most of the operations to be *"pulled back to HQ. The local teams are very small now. It impacted the local teams"*. In his reference of flexibility in product creation, Martin says the adoption of Smartly has allowed the company to be *"more agile and more flexible and automate a lot of the advertisement."* With the results increasing, he saw how that actually meant *"we revised our strategy on Facebook in December and set up I would say a rock solid strategy for starting 2017"*.

Carefully reviewing all the interviews, we can observe the connection between modularity, a characteristic of cloud computing and flexibility, an organizational feature most sought after in today's fast-paced business environment. With company focus changing fast, Software as a Service solutions being able to make specific parts of their product available is seen as a distinct advantage over other solutions that appear more rigid. This seems to afford organizations the flexibility to adapt fast to the changing business conditions with their focus being supported by the right services at the right time.

6.4.5 Alignment in operations and mass collaboration

In the study case presented, alignment in operations and mass collaboration are themes often countered, the primary reason for it being the nature of the company itself, the structure and the organizational flow. Being a global organization, with offices on different continents and different time zones, the company tries to achieve alignment in communication across the board, in order to position itself correctly as a brand.

With the interviews conducted, it is easy to observe that the mass collaboration aspect is a technical feature that enables the centralization of the brand when it comes to working with the regions. This results in bringing an element of alignment in operations as an advantage generated by the usage of the employed technology.

With a strong appearance in the users focused on the features of the Software as a Service systems, such as Martin and Joyce, mass collaboration appears predominantly in their interviews. The organizational implications are however seen across the board as seen in figure 8.

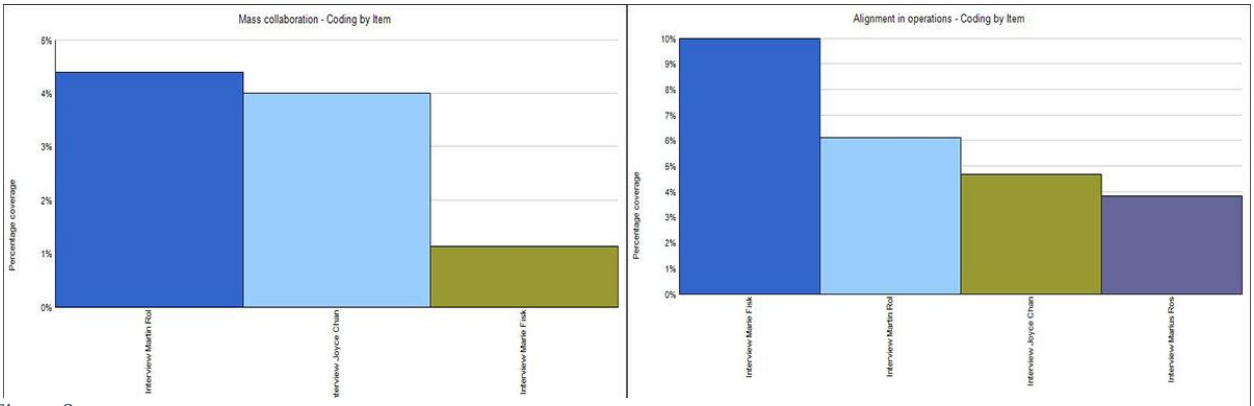

Figure 8

For Joyce, being able to collaborate together with the people in the headquarters made an immense difference in how they are able to transcend the distance and feel like part of the team in terms of consistency in content, allowing the Asian region to align. She says that using Sprinklr *"makes it easier to know what happens in the regions and it makes our content more consistent in terms of the pictures that we are using, what we are saying."*

The feature of mass collaboration is also described by Martin as bringing the teams working together around a single piece of software. Following the implementation of Smartly, he has observed that:

> *"We actually started using some of the cloud features where we are storing a lot of features in the cloud features, even in some of the meetings we would start out by having open the application and start out the meeting from what are the findings there, what do we have in the library, what's the learnings, what's the best case scenario and we are working a lot around the software."*
>
> *– Martin Roland Knudsen*

Although not observed directly by Marie, the mass collaboration feature seems to benefit the work she does throughout the creative process, making sure the regions are aligned on the matter, increasing the quality of their work and the perception of the brand as a whole. She mentions that *"the quality has improved in the sense that we have the same look and feel of the brand everywhere (...) It was a matter of wanting to have it more streamlined, better branding and paying less per banner"*. In Marie's field, this has brought a different type of decentralization, with the regions now able to adapt global materials into local ones. Not having to contribute on the creation part, but only on the adapting, the roles of the teams were reconsidered. When talking about the creative process, the graphic designer says that *"everything is pulled back to HQ. The local teams are very small now. It impacted the local teams"*. This was caused by the simplicity in collaborating with the main office through the Brand Portal. Regional worker's roles have drastically changed: *"Not having to have designer skills or things like that, everybody within the marketing team could do a whole series of banners."*

Although Marius sees benefits in the tools because his job involves working with multiple systems he also sees things as being misaligned to a certain extent. He would prefer *"if we had managed to replace two systems into one. I see then clear benefits because then we would all be speaking the same reporting language and we would rely on the same systems and we would save a lot of work"*. Joyce on the other hand only operates Sprinklr which sees her benefit on alignment to the global office. She is using *"the republish tool, making it easier to spread messages that align to local strategy from a global perspective."*

With the need for alignment being an organizational feature, continually increasing in importance as companies get bigger, it seems to be up to the managers to figure out how to use Software as a Service to centralize work. This means they need to learn how to make use of the numerous mass collaboration characteristics of cloud services at their disposal. The connection between what is required and the technology that enables it is well defined and, when done right, seems to have the ability to make work done in different geographical points seamless, regardless of the area the technology is enabled in.

6.4.6 Solution integration and virtual collaboration

Another theme recurrent throughout the interviews was that of the need for virtual collaboration within the company. It is a typical situation in businesses that operate in different parts of the globe. In the case studied it became apparent that in a headquarter to region direction there was a certain element of miscommunication in running operations. Regional managers rely on headquarter direction while at the same time the marketing activities need to be compliant with the rules of the region. This leads to a requirement for constant communication and in terms of collaborating, speaking the same software "language."

As seen in figure 9, virtual collaboration and solution integration is not something influencing all areas of the business. While both Joyce and Marie observe the impact of collaborating with one Software as a Service system, Marius needs to work through multiple solutions. This leads to a better perspective on misalignment and the importance of unity in designing the cloud solution matrix.

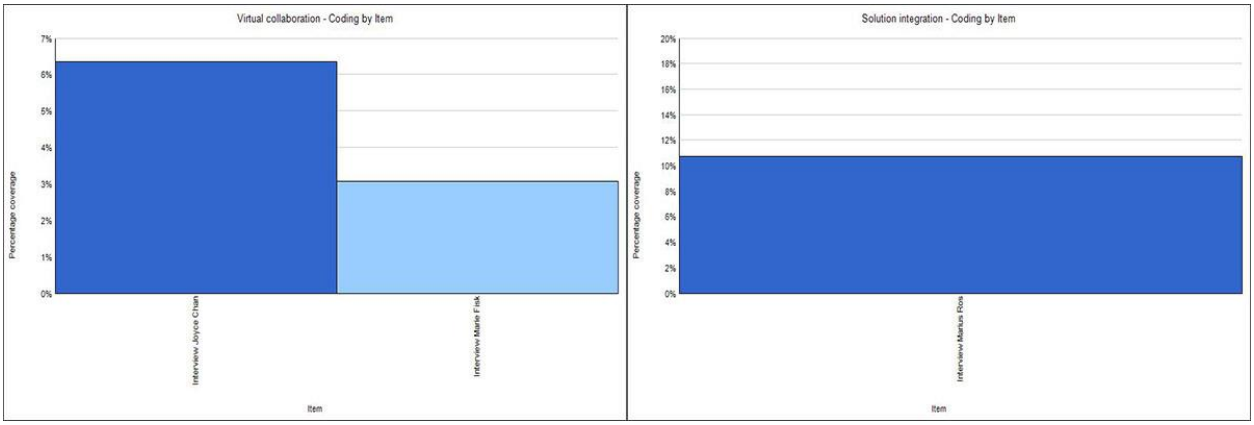

Figure 9

Joyce uses Sprinklr in order to manage her daily work, something that relies massively on what is done in the global office. With content being posted on global channels through Sprinklr, Joyce can go in the system, see what has been posted and decide whether she wants to use the same or if she wants to adapt the communication for the Asian market. From this perspective, she describes Sprinklr as *"a convenient communication tool for strategies down from a global*

point to a local level." With the adoption of Sprinklr almost a year ago, Joyce sees the value brought in the quality of their content as well as consistency in both messages and frequency.

> *"It makes it easier to know what happens in the regions and it makes our content more consistent in terms of the pictures that we are using, what we are saying."- Joyce Chang*

In a similar situation, Marie also benefits in producing content in collaboration with the regions by simply providing the tools needed in order to create their own materials. This reduces the strain of designers having to manually produce the same content with small variations while allowing for a consistent look since it is only one designer creating structure. Her description of the process underlines how easy it has become: *"when something is needed localized they would find logos and product images and everything as a database in the brand portal so they can access all the assets that are in there."* The autonomy it has created becomes evident with the usage of the term "they."

Although virtual collaboration works well within the same team and the same tool, it can be problematic across departments and Software as a Service solutions. Despite operating in the same areas sometimes, the programs might not integrate well with each other, something that leads to a discrepancy in understanding the same concepts while collaborating online. This is portrayed in Marius's interview, with him saying that *"we changed to a tool called Sprinklr where we bought half of the software, managing our organic posts and then we got a software called smartly for paid posts. We have two software for kind of doing the same thing. The difference is one does it for paid media and the other for organic"*. The reason more systems were adopted for similar operations is the fact that different teams operate within the same business spectrum and each of them is more comfortable with a different solution. While Paid Media prefers Smartly, the Social Media team works with Sprinklr, something that leads to reports looking different even though they focus on the same aspects. Marius's work is also impacted since he is the one reporting through both, with the defining passage for this aspect presented below:

> *"The amount of work went up for me, simply because we are using now two. We didn't completely replace the native business manager of facebook. We are still running sprinklr and we added smartly on top of that. We have three systems and it is working against itself in terms of simplicity. If we had managed to replace two systems into one. I see then clear benefits because then we would all be speaking the same reporting language and we would rely on the same systems and we would save a lot of work." – Marius Rosand*

This aspect stands testimony to the fact that the adoption of cloud computing has not yielded perfect results in all situations. There are facets of business that are yet to be completely adapted to the way in which cloud solutions need to be integrated. Solution integration appears to be an issue because of a lack of alignment in adoption. In the case studied, the IT department has not been included in the adoption process something that led to each team choosing to purchase the solution that worked in the best way for them, not necessarily the one that would align the best throughout.

Virtual collaboration is a feature most organizations depend on recently and in 2017 finds itself in a good spot. There are multiple solutions, cloud or traditionally based ones to support it. However, the multitude of options has yet to solve the issue of integrating multiple solutions, and that is something companies need to keep in mind when choosing their tools. It could be said that the affordance is there in terms of virtual collaboration, producing side-effects throughout the company when done improperly.

7. Discussion

7.1 Introduction

Described as the way to explain the symbiotic relationship between technology and organizations (Zammuto, Griffith, Majchrzak, Dougherty, & Faraj, 2007), the term of affordances had been initially developed by Gibson (1979) as a way of describing how people make use of objects through the possibilities afforded. Reshaped by Hutchby (2001) it is now widely perceived as

referring to affordances for the purpose they create in certain technologies practically rather than on a thought level.

This paper has focused on trying to understand both the organizational status and the Software as a Service landscape. By defining the way in which the two are combined, how organizations make use of Software as a Service on the one hand, and how the cloud solutions adapt themselves to the company needs, on the other hand, it was a goal to uncover new affordances created and bring a contribution to this field.

The discussion section will focus on interpreting the findings considering what was already known about the topic and explaining what the new insights and understandings are.

7.2 Software as a Service status

Cloud computing finds itself at an interesting point within the business ecosystem, transitioning from novelty technology towards a widely adopted tool. Moving on from its cost-cutting role of the late 2000s and early 2010s, cloud computing has matured into a reliable solution that has vastly impacted any doubters in organizations. The question companies had surrounding Software as a Service has changed from “why should I adopt it?” to “how am I going to make the most of it?” (Willcocks, Venters, & Whitley, 2011).

The company studied finds itself in the mid-to-large scale companies sector, and their adoption of cloud solutions is vast. Many departments make use of the Software as a Service tools they see fit, deciding for themselves what are the best solutions for their needs. In the marketing department, specifically in the Brand and Content division, the services used were both well-established solutions with hundreds of customers such as Sprinklr that charge high fees monthly and start-ups making a disruption in the field through innovative features and coming in at a much lower, pay-as-you-use cost scheme.

This type of selection process in regards to Software as a Service solution, based primarily on comfort or ease of use coming directly from the business unit using the software, seems to be flawed. It adds perhaps a new dimension to the desires framework Willcocks, Venters, &

Whitely (2014) propose, in compatibility. It becomes apparent how the different solutions, although tracking the same processes, present results in a variety of ways, leading to a series of overlapping numbers or even worse, presenting the same gaps. The lack of cohesions is underlined in the processes that involve communicating results in the company vertically, with additional efforts being required in order to present the data uniformly. This heterogeneous method of Software as a Service adoption can lead companies towards the phenomenon called shadow IT, a concept used to define the adoption of solutions without specific organizational approval by departments other than the IT department (Nelson, 2013).

The existing problems seem however to be outbalanced by the advantages cloud solutions create for the companies. With the competition increasing in this field, the companies offering Software as a Service solutions have consistently lowered the prices and adapted their cost model in order to reflect the rapidly changing technological environment (Donnelly, 2016). Instead of being locked in through long-term contracts, the company studied adopts solutions that can be instantly turned on or off depending on the needs in terms of both computing power or lowering the costs in a particular area of the business.

Software as a Service is almost seen as a utility, providing the tools needed by the company to perform almost invisible to the ones using them (Brynjolfsson, Hofmann, & Jordan, 2010). The manner in which these systems are used points to an explicit dependency on the solution itself, with the flexibility of switching providers seamlessly based on different criteria. The graphic design unit has chosen to use the Brand Portal for storage and mass-editing capabilities, and they would not be able to function properly without it. However, if the company providing the tools fails to adapt to innovation in the field of graphic design, if it starts lacking the ability to keep the business performance high, it will most likely be switched for one of the competitors.

Seamless updates are a feature highly valued in Software as a Service, something observed throughout the interviews. Current systems are praised for their swiftness in bringing the newest solutions for the companies at no extra cost and without any significant downtime during working hours. The fact that the updates are ubiquitous, with all users accessing the same version of the platform at all times, is a feature that permanently differentiates Software as a Service

from traditional software, installed on work computers. With the rapid advancements in technology and the multitude of competitors for cloud services, it has become a necessary exercise for providers to increase efforts in order to remain relevant.

Another cloud computing characteristic often mentioned in this study is the customer support functionality. The providers can now offer instant support right in the browser, being able to guide the users through the app experience. This type of assistance appears to be something that was essential to have, with most services evolving rapidly and users being in need of guidance towards the new features. It is also a good way for the service providers to make sure their updates have the desired impact, with the serviced companies being made aware and educated towards how those features can be used.

In late 2016 – early 2017, mobile access was the buzz-concept for access to the internet (Chaffey, 2017) and Software as a Service solutions were not the exception in adopting this. The services studied offer mobile apps for their users to access different capabilities on the go. However, in the company studied, the users rarely took advantage of this option, with most operations being handled in the office.

Finally, an important feature recognized in this paper was the automated operations Software as a Service solutions make available for companies. This is particularly relevant for the businesses that have a high production rate in terms of quantity as well as the ones having limited resources in producing the content or the operations they need. It is not a particularly new addition to the computing capabilities. However, by bringing automation in the browser, it makes the integration of different marketing channels easier. Because the marketing channels themselves are accessed through browsers, through open API features, they support seamless integration with the new solutions, allowing for the addition of new features.

7.3 Organizational features

Throughout the study, data collection has provided interesting information about the developments in business processes. This change in the organization is primarily caused and thoroughly supported, by technological progress. Some of the shifts and current needs would not have been possible had it not been for the software solutions to support the smooth transition process.

With a large focus on lowering costs, it is easy to understand why companies saw the cloud computing surge of the late 2000s as an immense opportunity. Following a trend in outsourcing work, the introduction of Software as a Service appears to have arrived at the perfect time in order to take the process to the next level. The decrease in operational costs and moving the computing power outside the company appears to have allowed organizations to focus on their business (Willcocks, Venters, & Whitely, 2014). This was primarily caused by neutralizing the complexity traditional software services brought through different types of costs: cost for the stationery software, on-boarding and education cost, maintenance cost, lock-in cost.

The company studied has been in the process of aligning operations, increasing production, switching focus fast and expanding execution throughout the regions where it operates. For the marketing department, this meant that some solutions were needed in order to match the overall goals of the organization.

Firstly, the company aimed at bringing the production in-house, closing the collaboration with third party content producers in order to lower costs and improve content alignment. With a mantra of reducing costs, this move appeared to be simplifying matters both in terms of production and of making sure the brand is propagated in a uniform manner across all regions the company operates in. The raising costs of agencies are a deciding factor in this situation. Although using an external company can bring a different perspective or expertise, it had proved to be an expensive exercise in recent times. What the company needed was the resources to create content cheaply, within the organization, without the traditional challenges of such operations: resource surplus. Resource surplus is something that surfaces when there is a lack of

flexibility in reallocation. This means different resources are locked into a certain set of tasks, and when there is a shift in focus, they become either redundant or carrying a hefty price-tag in order to re-train and re-purpose them. The need for flexibility of modern-day organizations could therefore only be covered in a cost-effective manner through a certain degree of flexibility in resource allocation. The resources, in this case, the services, need to be scalable in order to meet demand (Willcocks, Venters, & Whitely, 2014).

Another highly placed need discovered within the company was that of a solution for the increase in customization of digital marketing activities. In order to optimize campaigns and improve results, modern marketing channels require for an in-depth customization process to be in place so that messages are in tune with the different audiences they are directed towards (Kaye, 2014). In addition, audience touchpoints need to be structured in cycles. All these processes mean that production required to be massively increased compared to traditional forms of marketing. Whereas old marketing campaigns required a relatively small number of creatives, according to Marie, for a graphic designer, the production is now of hundreds or even thousands. To avoid redundancy in resources for the periods of inactivity, companies required the ability to increase production fast and cheap. Moreover, the need to increase production for different channels depending on campaigns meant that the corporation had to oscillate between the various tools with ease.

Automation of production had also been a requirement in the business. With mass-production being automated since the industrial revolution, creative work has been traditionally seen as a time-consuming process. With developments in business processes companies are now expected to produce and customize elements of their offer for clients. This naturally creates not only an increase in the amount of work but also a need for the optimization to be done fast. One good example within marketing is the particularities of advertising through social media channels. The networks are pushing for content to be presented in a valuable manner to the consumer, whether it contains information or ads. In addition, the content is required to be changed often to maintain relevance and adapt to the algorithms social networks employ to filter the information presented to their users. This creates a need for ads to be constantly generated and rotated depending on

such factors as frequency of unique users seeing them, time relevance of ad and increases in costs. It is a process that, if covered by an employee, would take a significant amount of resources. However, with the latest advancements in computing solutions, companies can now easily fine-tune automation depending on their needs for every campaign they run, within each channel.

Organizations do not appear restricted to one general solution chosen by the IT department to cover their problems anymore. Different departments make different choices in deciding the tools they are going to use. Although this causes problems in terms of collaboration between divisions, with the Software as a Service tools not always integrating perfectly with each other, it can be argued that what is lost in data synergy is gained in efficiency of work in the programs.

7.4 Affordances created

By studying the case company selected, analyzing both their needs in terms of business processes and the tools they use in order to cover those needs, a number of resulting affordances were defined. They surface at the crossing between the Software as a Service tools implemented and the way in which the organizations use them in order to profit, as observed in table 5.

Organizational needs	Technology	Affordances
automation of creation processes; acting in real time on algorithm changes	Automated scheduling tools, optimization services	Automated digital product and service creation
increasing production quantity; maintaining operational levels with lower resources	Mass production services with cloning capabilities. Drag and drop from the database type of services.	Wide range of production without resource redundancy.
alignment of operations; increase in quality across the	Online production platforms	Uniformity in process

board		outcomes
business focus; making decisions with the end-goal in mind rather than how to achieve it	Constantly updated tools; same platform provided everywhere.	Acting on the latest innovations
flexibility in changing focus; easily repurposing resources; lower lock-in risks	Modular, easily interchangeable services, flexibly contracted	Quickly adapting business direction

Table 5

The first affordance created by Software as a Service tools in companies is the automated digital product and service creation. It is a direct result of the constant need to adapt production to the latest requirements of digital channels, and it is afforded to organizations by the implementation of cloud computing services. These tools can be set up once and allowed to change and optimize processes with only fine-tuning being required once in a while to make sure everything works fine. Operations can be scheduled in advance, set to start, stop or switch depending on different business indicators. With narrow parameters being in place and algorithms being executed on in real-time, this has allowed business participants to take process optimization to great lengths.

Secondly, Software as a Service tools used within organizations have afforded a wide range of production capabilities without resource redundancy. Allowing companies to both increase production or maintain it with lower resources, drag-and-drop types of tools have created an almost assembly-line type of process for the digital age. The company studied has made use of this affordance in having an element of flexibility when it comes to production volume, expanding or contracting with little effort. Further customization of different marketing processes depending on types of audiences or the customer journey have also been afforded, with the messages conveyed feeling more accurate to their context rather than generic ads.

In addition, by managing to align operations, the company has increased the overall quality of communication. By acting on an online production platform, the operations have been centralized, and they can easily be adapted within the guidelines, maintaining a certain

uniformity in process outcome. It is seen as an important factor in making global brands feel the same wherever they are experienced. The quality is maintained at a high level because it does not depend anymore on the local capabilities of different regions, but more on the ability to transition the products towards the branches, with only small changes required.

In digital marketing, innovations happen fast, and companies need to act on them in order to maintain relevance. By using Software as a Service tools that are constantly updated at no cost, with all users operating on the same platform, organizations can shift their focus from how they can access the innovations towards how the business can make the most out of them. This affordance is based partly on the cloud computing as utility defined by Brynjolfsson, Hofmann, & Jordan (2010). Companies have the chance to focus on the innovation they can use to improve their products rather than the task of updating software manually or even searching for different providers. In case the tools used are not updated as fast as needed, organizations can now switch providers, with low lock-in costs being a characteristic of Software as a Service.

Finally, the need to be agile is something that business managers, especially in modern companies, constantly struggle with. With a constant need of reinventing entire brands, the potential of quickly adapting in new directions is an affordance organizations value highly. There are multiple reasons why the focus can change in a company's processes and having the ability to execute on the new plans swiftly is something that tools can finally cover. Modern cloud solutions are created as a corroboration of different modules, both as products and services, in order to customize their offering to fit their clients. A theme constant throughout the paper, the possibility to adapt the tools to their needs, makes Software as a Service tools the desired choice for business leaders.

Being defined as a result of organizational features and the technological capabilities they require, affordances become more than the sum of their components. By understanding how a company can unlock the possibilities Software as a Service presents, it becomes clear that affordances are a direct result of the way organizations use the emerging technologies to their advantage. This is important not only because it gives companies a clear edge over their

competitors, but also because the new systems provide much more than a tool they can use. They provide a platform for success.

8. Contributions

This chapter focuses on the knowledge this paper provides in addition to the existing theories. To achieve this, the findings have been analyzed compared to the literature review, trying to understand how the existing gap was covered and to what extent.

Throughout the literature review, it has been observed that the majority of recent papers focusing on the cloud have been angled towards certain areas of high interest for the companies adopting the new solutions. Whether they were referring to security concerns, technical details of adoption or even the utility of cloud computing, most of existing literature in 2017 was still focused on the early stages of Software as a Service in business. The gap in literature was therefore observed to be in how companies understand the technology and the steps they take in learning how to make the most out of the possibilities cloud computing affords. With the adoption of cloud computing going on for almost a decade, this paper focuses on bringing better clarity to the next steps for businesses.

What the study does differently compared to previous papers is to take an interpretative perspective on the actual use of Software as a Service. Building an understanding of how cloud solutions work and using the theory of affordance as a lens, it aimed at collecting qualitative data, analyzing and interpreting it in order to find the patterns that define the usage of the new technologies. It, therefore, became evident that there are consequences of cloud computing implementation in companies both on a structural and operational level. On a theoretical level, the cloud computing literature is extended through the analysis of realized benefits, post adoption features and a framework businesses need in order to take full advantage of the newly implemented systems. The paper also extends the Zammuto et. al affordances (2007) with five new additions to the five mentioned in “Information Technology and the Changing Fabric of Organization.”

By looking at the realized benefits of implementing cloud solutions as opposed to perceived advantages, a series of specific connections between technology and organization have been discovered, bringing the contribution to a practical level as well. The results of the study point to the fact that using Software as a Service includes, but also transcends, the already discovered benefits from existing cloud computing literature. With the adoption of such systems, companies implement technology that can improve efficiency, help increase volumes, align creative production and offer a sense of flexibility when it comes to shifts in the process. The identified affordances may be useful tools for explaining how Software as a Service impacts organizations and what can be expected when business-oriented departments seek to implement such solutions. It also serves as a caution to avoid the hype cloud solutions generate and try to understand matters from a practical perspective. The value Software as a Service creates is always value in a specific context, not stand-alone. Simply having people using new systems and technologies is not sufficient to bring a significant change in how organizations work. It is the way in which the people use the technology available to them that will ultimately shape the value introduced by the tools.

9. Conclusion

9.1 Limitations

Through the exploratory study presented in this paper, only a fragment of the affordances created was investigated in a specific company and departmental context. In order to improve general knowledge on the subject, a number of avenues have been presented as a possibility dive into and to investigate aspects that could not be approached in the current paper.

The first suggestion would be that of conducting a thorough approach to the Software as a Service providers. Gathering data from their side would make a bigger picture available that could bring forward a series of interesting aspects. By understanding how they design and build their products, the most critical needs seen in companies that could be covered can come to the surface. With that information available, researchers could pursue what could be the future

direction of affordances created by Software as a Service as seen from an informational technology perspective.

Secondly, a deeper approach could also be taken towards the business organizations that employ Software as a Service in their operations. By selecting a company of a different size or in another industry, researchers could build a more generally applicable theory, with a broader perspective in mind. This could be done by either testing the presented affordances against the realities of different organizations or simply conducting another inductive, interpretative study into discovering what the patterns are in those situations. This type of studies, expanding the knowledge could also be done within a similar organization to the one presented here, with the difference in approach referring to coverage. This paper focuses mainly on understanding the business operations of the marketing department, and although it is one of the most forward-thinking compartments of any organization, based on the cloud adoption in other areas, it can be presumed that there are more that use it. A closer look can be taken towards the sales departments, IT departments and even customer support, with almost any classic department presenting a change of yielding affordances to be studied.

Another aspect to be investigated by future research could be the level of affordance consistency through time. This could be uncovered through a longitudinal study as opposed to the cross-sectional perspective presented in this paper. By looking at an organization over time, researchers could discover how affordances are evolving in the context of evolving companies and technologies. Having such an understanding could prove to be highly valuable considering how fast modern technologies are advancing, while companies need to stay one step ahead in their adoption and usage levels.

9.2 Conclusion

With the Software as a Service solutions becoming widely available and approaching full maturity, business leaders and researchers are trying to understand the ways in which the technology is going to impact organizations. This paper was an interpretative take on the affordances generated by the implementation and use of cloud solutions, particularly Software as

a Service in organizations. The objective was to define how the technological capabilities and organizational features combine in order to generate patterns.

To reach the objectives, existing literature was studied with a view to define the phenomenon of cloud computing, the affordance theory was explained as the lens through which Software as a Service implementation was studied, and the gap was identified where a contribution could be brought. The methodology followed was that of the research onion (Saunders, Philip, & Adrian, 2009), something that helped structure a step by step approach to the data collection and analysis. With an interpretative research philosophy and an approach focused on discovering emerging patterns, the research strategy chosen was that of conducting a case study. This was carried out in a large company's business units. Qualitative data was gathered from interviews with different members of the marketing department, combined with the unstructured observations of the author in order to create a clear picture regarding the usage and impact of Software as a Service. The time horizon was a cross-sectional one, with the interview dates serving as the point in time analyzed.

By analyzing the data collected, a number of emerging themes were discovered, together with a set of relationships developing between them. This, in turn, led to an easy defining of cloud characteristics that were the most impactful and the organizational features that were supported by the developed processes. Departing from this point, a number of affordances were defined.

It is important to note that by doing a case study research, the results of the study are not generalizable. Although the business unit within the company is a relatively standard one, functioning under the general purpose of reaching the customers, it is accepted that different companies can have specific approaches to understanding affordances or even the adoption of cloud solutions. Such characteristics as the size of the enterprise, industry and even nuanced matters like internal company culture could bring a significant enough deviation for this study not to apply in their particular case.

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