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Research-in-progress

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Abstract

Organisations and its leadership team are confronted with the challenge of emerging digital economy, fast-changing innovations, globalisation and pandemics such as Covid-19. Organisations need to alter its business models to counter these effects, hence being strategically agile. Among the most prominent solutions proposed by various authors are a set of capabilities, such as strategic sensitivity, resource fluidity and leadership unity in organisational settings. In this research, we are proposing the Dynamic Cloud Capability (DCC) Framework which aims to help organisations realize an IT/IS strategy enabling them to improve Strategic Agility. DCC builds upon Dynamic IT Capability theory. We will be using a quantitative survey-based approach that involves IT SMEs in Australia, to investigate the effect of DCC on Resource Fluidity and Strategic Agility. This is a research in progress article, which intends to outline the literature review, theoretical underpinning, research methodology and expected results.

Keywords Strategic Agility, Organisation Capabilities, Dynamic Cloud Capability, Business Model Innovation, Strategic Goals.

1   Introduction

Businesses are facing disruptive effect, due to emerging digital economy, technological innovations and globalisation. Businesses need to adapt its business logic to counter these external effects. A business that does not adapt to these threats faces loss of business, missed opportunities and diminishing profits (Pal & Pantaleo 2005). Hence, to survive changing external effects businesses must possess Strategic Agility. Where Strategic Agility is defined "as a firm's ability to think and act in unique ways leading to the development of new business models and continual innovation" (Adler 2012).

Taking an example of a well know and established organisation Nokia. Nokia was the number one mobile phone vendor during the late '90s and early 2000 (Vaynerchuk et al. 2018). Eventually, technological advances swept away its long-standing business model and profitability. It was marked by the launch of the iPhone in 2007 and later by the release of Android-powered phones (Vaynerchuk et al. 2018). What Nokia needed in this situation could have been a set of organisational capabilities. Organisation capabilities, such as Resource Fluidity, Strategic Sensitivity, and Leadership Unity to strategically adapt to these changes and hence improve its business model (Doz and Kosonen 2010). However based on inductive reasoning, Nokia failed to change two key elements of its Business Model, it's Value Proposition, the mobile phone and it's Key Partnership with Symbian operating system to the technically advanced trends such as Android Phones and iPhone.

It is evident from the literature findings that organisations need to adapt to its business environment, but these adaptations have to be aligned with organisation's business model (Adler 2012; Battistella et al. 2017; Doz and Kosonen 2010). Moreover, every organisation although it realizes or not, has a core business logic by which it generates profits. This core logic is referred to as the business model, which relates its product or service offered to the customer known as Value Proposition to various internal business building blocks such as Key Resources, Key Activities and Key Partnerships (Osterwalder, Pigneur & Clark 2013, p. 14). A Business Model can be formally defined as "the rationale of how an organisation creates, delivers, and captures value" (Osterwalder, Pigneur & Clark 2013, p. 14).

As an organisation grows from a start-up to an established organisation with sizable internal and external resources, its business model gets established and to an extent becomes rigid (Doz and Kosonen 2010). Hence making it difficult to adapt to the changing business environment. Additionally, business success creates a blind spot to the disruptive developments in the business environment (Doz and Kosonen 2010). This is what happened to some successful organisations which persisted in its established practices and suffered a loss of market share.

In this research, we explore the effect of Cloud technological capabilities on Strategic Agility. Cloud is being referred to as an essential digital capability with its inherent technological advantages such as flexibility, speed of implementation, the illusion of infinite resources and pay-as-you-go model (Fox et al. 2009). Hence, this study intends to investigate the IS strategy of implementing cloud and its technological capabilities. It would be worthwhile to take an example a small start-up accounting firm called Xero, which was able to expand itself beyond its boundaries by developing a cloud platform of its accounting software (Gregersen 2020).

To study the effect of cloud technology, we are proposing Dynamic Cloud Capability which extends Dynamic IT capability theory (Bharadwaj 2000; Wu Xiaobo et al. 2006). Dynamic Cloud Capability aims to help organisations realize an IT/IS strategy which enables organisations to adapt to the changing business environment.

This paper was guided by the research question, what are the effects of the cloud's technological capabilities on Strategic Agility of an organisation? Therefore, this paper presents how Dynamic Cloud Capability effects Resource Fluidity and Strategic Agility using a quantitative research methodology. The rest of the paper is organized as; the next section outlines the literature review and the theoretical underpinning. Followed by a brief about the cloud's effects on organisation capabilities and business models. Next, we outline how the Dynamic Cloud Capability framework is developed. Further, we look at research methodology. Finally, the expected results and the conclusion.

2   Literature Review

Strategic Agility has gained interest both from industry and academia, with several authors contributing to the literature in recent years (Arbussa et al. 2017; Bouwman et al. 2018; Doz and Kosonen 2010). Among the most prominent solutions proposed by various authors are a set of capabilities an organisation should possess to respond to variations in the business environment. Doz

and Kosonen (2010) were some early researchers who developed a set of capabilities which combined achieves Strategic Agility. Subsequently, other authors extended the theory and proposed a similar research approach to address Strategic Agility using organisation capabilities (Adler 2012; Arbussa et al. 2017; Battistella et al. 2017). The most prominent capabilities discussed in the literature are Resource Fluidity, Strategic Sensitivity and Leadership Unity. Where organization capability could be defined as a set of management practices, processes, and actions (Adler 2012).

While most authors suggested capabilities, Bouwman et al. (2018) introduced the concept of continuous Stress testing to achieve Strategic Agility. However Stress testing organization's strategy continuously is not only a resource-consuming process, but it also might as well not lead to innovative ideas of improving Strategic Agility. Loss & Crave (2011) uses collaborative networks that enable partnership with an organisation within the network to improve Strategic Agility. Apart from management practices, technology as well plays an important role in enabling Strategic Agility. Kidd (2013) describes how Social Networking technology can be used to foster resilient business models. Figure 2 identifies a big picture of approaches to achieving Strategic Agility from literature sources (Arbussa et al. 2017; Battistella et al. 2017; Bouwman et al. 2018; Doz and Kosonen 2010; Loss and Crave 2011; Malhotra 2005).
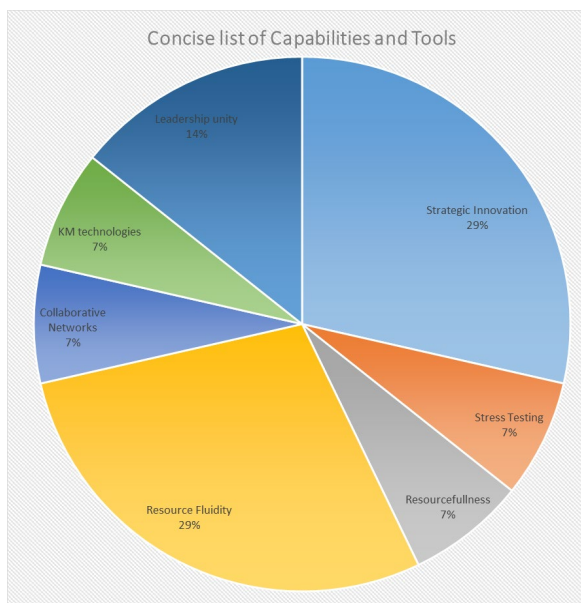

Figure 2 Approaches to Strategic Agility (% reflecting references approximate)

2.1 Linking organization capabilities and Resource-Based View

Taking a deeper look at the literature, the organization capabilities and resources play a vital role in realizing Strategic Agility. Interestingly, it is worth noting that most of the theories discussed here could be related to the Resource-Based View (RBV) theory. According to RBV theory, firms foster prolonged advantage by using resources and capabilities. Additionally, RBV suggests firms compete based on heterogeneous resources and the differences of resources is responsible for performance variability (Barney 1991). Furthermore, Barney elaborates on a firm's resources as comprising of "assets, capabilities, organisational processes, attributes, information, knowledge, etc." Implying a minimal distinction between resources and capabilities (Barney 1991; Wang and Ahmed 2007). Thinking laterally, since most authors hint at capabilities and resources as positively impacting strategic agility, the literature presented here could broadly be grouped under the umbrella of RBV theory. It could also be argued that technologies by themselves cannot have a positive impact on Strategic Agility. Rather it is how technology is used and how it adds new capabilities and resources to an organization improving Strategic Agility. Hence based on this argument our focus will be on RBV based theories and not on techniques like stress testing, KM technologies and collaborative networks.

2.2 Cloud's effect on Capabilities and Business Models

The cloud plays a critical role in realizing highly customizable and flexible Information Systems. The key characteristics of cloud which makes it an ideal candidate technology to study in this research context are listed below:

1. "The illusion of infinite computing resources available on-demand, thereby eliminating the need for Cloud Computing users to plan far ahead for provisioning.

2. The elimination of an up-front commitment by Cloud users, thereby allowing companies to start small and increase hardware resources only when there is an increase in their needs.

3. The ability to pay for use of computing resources on a short-term basis as needed and release them as needed, thereby rewarding conservation by letting machines and storage go when they are no longer useful" (Armbrust et al. 2009).

These technological characteristics of the cloud interact with the organisation's capabilities and as well with different Business models building blocks. Hence enabling organisations to become strategically agile.

Cloud has a profound effect on the Resource Fluidity of an SME. Where, Resource fluidity is an organization capability, defined as the internal ability to reconfigure key activities and redeploy resources in an organization (Doz and Kosonen 2010). This can be emphasized by relating to the case of SMEs, which by its inherent virtue are short of resources in the form of manpower, finances and technological advances. Cloud's IS/IT Capabilities summarized here plays a crucial role in realizing Strategic agility goals. Firstly, by relieving the SME's from investing in IS/IT resources using the pay as you go model. Secondly, the cloud enables SMEs to have the flexibility to grow and shrink IT/IS resources based on demand without incurring hardware costs. These key characteristics relate directly to the "Resource Fluidity" of an organisation.

It is worth noting that, the use of Cloud to address Strategic Agility is still an open area of research, with various authors remotely touching upon this topic. Another interesting aspect to look at how cloud effects business model's building blocks which in turn enables Strategic Agility. Koç et al present the idea of flexible computing resources and IS strategies by using cloud computing and service orientation (Koç et al. 2018). This is done by promoting capabilities to key activities, which is a business model building block. The purpose of CaaS is to capture and represent factors important to attain business services flexibility (Koç et al. 2018). While Chen et al. point out, SaaS emergence brings about Cloud CRM, which is comparatively more attractive than traditional CRM, hence saving by not investing in hardware and software(Chen et al. 2018). Customer Relationship is one of the Building blocks of Business Model, it could be argued the Cloud's technological capabilities has a direct impact on Business Models.

The insights from the literature hint at the influence of the cloud's attributes and related IT/IS resources affects Business Model building blocks. Hence, by inductive reasoning cloud's technological capabilities has a positive effect on Strategic Agility of an ICT firm. Therefore, in this research, we build upon RBV related theories in the IT domain to develop a framework called Dynamic Cloud Capability, which enables IT SME's to improve Strategic Agility.

3   Dynamic Cloud Capability framework

We developed the Dynamic Cloud Capability (DCC) framework with two key motives. Firstly, to have a framework which better matches up with characteristics of cloud technology and translates its characteristics to organization capability. Secondly to have a framework which enables quantitative analysis of the research problem in context. We used an integrated positivist and interpretive epistemological approach as outlined by Lee (1991) to develop the DCC framework. The DCC framework builds on various earlier studies starting with the Resource-Based View theory (Barney 1991) to the DITC theories outlined by various authors (Bharadwaj 2000; Li and Chan 2019; Wu Xiaobo et al. 2006; Xiao 2008; Xiao and Dasgupta 2009). Dynamic Cloud Capability is defined as the ability of an organization to create, integrate and dynamically reconfigure cloud-related IT/IS capabilities and resources in response to changing business environment. The main constructs under DCC are as follows:

- Cloud Human Resources: defined as cloud-related managerial and technical skills in IT/IS functional area.

- Cloud Intangible Resources: defined as the hidden benefits of cloud's technology which tacitly impacts an organisation's effectiveness.

- Cloud Configurability: defined as an organisation's ability to dynamically reconfigure cloud IT/IS resources to the changes in the business environment.

4   Research Model and the constructs

Part of the research model is derived using literature insights. The main constructs of the research model are Resource Fluidity, Strategic Agility and Dynamic Cloud Capability. The relationship between Resource Fluidity and Strategic Agility is evident from literature, while we are interested in exploring the effect of Dynamic Cloud Capability on other constructs. The relationship between Resource Fluidity and Strategic Agility is inferred from multiple sources. Strategic Agility can be seen as a multi-dimensional construct which consists of an interrelated set of capabilities. Moreover, Resource Fluidity is a capability which enhances Strategic Agility (Adler 2012; Arbussa et al. 2017; Doz and Kosonen 2010). Hence Resource Fluidity directly improves Strategic Agility.

The causal relationship between Dynamic Cloud Capability (DCC) and other main constructs can be anticipated using the following argument. As DCC derives from Dynamic IT capability (DITC) and DITC has a positive and direct impact on strategic agility (Djaja and Arief 2015). Hence by deductive reasoning, DCC mostly likely has a positive impact on Strategic Agility. On the other hand, Cloud characteristics by retroductive reasoning allow us to logically relate the effects of DCC as a moderator or directly effects Resource Fluidity. Where cloud characteristics are, "1. The illusion of infinite computing resources available on-demand, 2. Elimination of an up-front commitment, 3. Pay for use of computing resources" (Armbrust et al. 2009). Based on these arguments, the research model is shown in Figure 3.
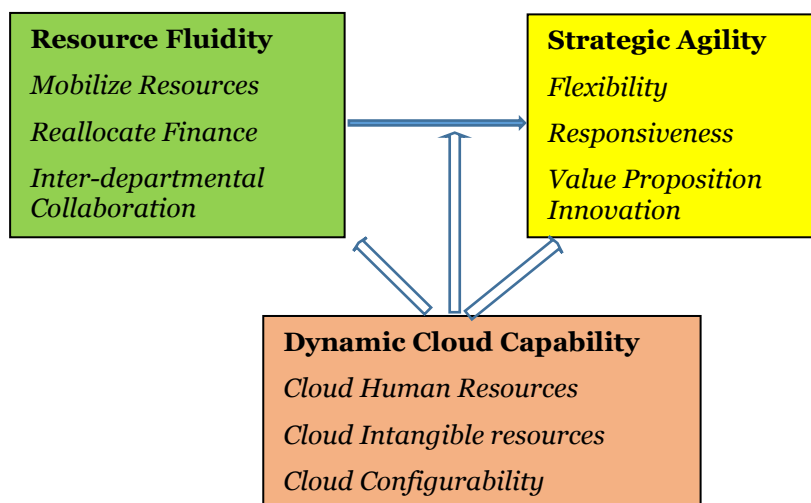

Figure 3 Research Model

5   Methodology

This research started with a detailed literature survey on Strategic Agility. From the literature review, we found that the research area of Strategic Agility is vastly unexplored and we have identified literature gaps. The research gap this paper addresses is about the use of cloud technology as a capability to improve Strategic Agility in IT SME. The problem could be appropriately approached quantitatively based on the statistical information gained from the Australian Bureau of Statistics (ABS) as our focus is on SMEs based in Australia. According to ABS, 23,249 IT SME's are active in Australia (Australian Bureau of Statistics 2020). Hence a quantitative study could be a valid approach based on the population size. Additionally, the constructs in the research model outlined earlier had quantitative scales in the literature which could be adapted to suit our research aims.

The quantitative scales for the constructs were developed by adapting and building upon prior research. Resource Fluidity was adapted from the validated scale based on the work done by Adler (2012). The Strategic Agility construct and its sub-constructs are adapted from validated scales (Martinez Sanchez et al. 2019; Rajaguru and Matanda 2013; Clauss 2017). While the scale for DCC builds upon the framework proposed in this research and the adaptation of scale developed by Xiao and Dasgupta (2009).

The target survey participants will be CIO's, CTO's, IT managers and IT architects working at IT SME's in Australia, which intend to adopt Cloud technology or are already using it. The target participants are chosen in such a way as the participants would have a clear understanding of the technology and organisational strategy. A list of IT SME's in Australia is collected from SME directories such as the SME Association of Australia. We are targeting over 225 responses based on the requirements of SEM analysis and population size.

6   Expected Results and Implications

The survey instrument was validated by academic experts and an initial check was done by postgraduate students. Additionally, a pilot survey was conducted and analysed to check scale reliability. We used Cronbach alpha to test the reliability of the scale, the results showed the reliability of constructs is in the range of 0.64 to 0.84. Cronbach alpha analysis helped validate the scale and helped us improve the scale by removing a few questions. Additionally, we intend to use SEM to analyse the causal relationship between constructs. We are in the process of collecting survey responses and once that is done, the analysis will be carried out. We anticipate that Dynamic Cloud Capability would have a positive impact on both Strategic Agility and Resource Fluidity. The foremost implication of the research would be in the form of Dynamic Cloud Capability Framework which SME's could use to improve strategic agility. Hence by adopting DCC framework SME's would be able to realise strategic goals such as overcoming the effects of the emerging digital economy, fast-changing innovations and exploiting anticipated opportunities. Although this research addresses SME's in Australia, the theory could easily be extended to larger organizations and beyond the borders of the country.

7   Conclusion

Emerging Cloud adoption is often engineering-oriented, while this research would provide an alternative perspective to SME's. This research would help realize how the cloud could be used as an organisational capability and hence benefit IT SME's by improving its response to disruptive effects and improve Strategic Agility. As part of this research in progress paper, we identified the research gap, proposed Dynamic Cloud Capability framework, formulated a quantitative approach, deduced a research model and outlined expected results. SME's can benefit from research findings and might find DCC framework useful. From a theoretical research point of view, this would be a unique study involving Australian SME's on the topic of Strategic Agility.

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