

Towards Achieving Ambidexterity: An Exploratory Study of Australian CIOs

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Abstract

This Research-in-Progress paper explores the recommendations which enable the CIO to overcome the barriers to creating an Ambidextrous IS Function; one which is able to balance exploratory activities (involving the use of emerging technologies) and exploitative activities (including the operation of traditional systems) to support the organization in achieving strategic advantage. The extant literature identifies that the CIO experiences significant challenges in creating an Ambidextrous IS Function which supports the organization in achieving strategic advantage; providing significant impetus for this study which utilizes the theory of Ambidexterity to identify the recommendations to overcome the barriers to creating an Ambidextrous IS Function. The analysis of the data from semi-structured interviews with 10 Australian CIOs identifies 7 recommendations to overcome the 8 barriers to the CIO creating an Ambidextrous IS Function which is able to support the organization in achieving strategic advantage.

Keywords

Chief Information Officer, Ambidexterity, Recommendations, Strategic Advantage, IS Leadership.

INTRODUCTION

The relevance of the CIO, and their ability to create an Ambidextrous IS Function which effectively supports the organisation in achieving strategic advantage, has been challenged by academics and practitioners (King 2011; Rothfeder and Driscoll 1990). The role of the CIO is one of dynamism; the role has changed rapidly over the last 30 years (Chun and Mooney 2009; Fortino 2008; King 2011) and further changes are expected. The rapid pace of change has resulted in a role which embodies considerable ambiguity (Peppard et al. 2011). While multiple attempts have been made to define the role (Grover et al. 1993; Ives and Olson 1981; Stephens et al. 1992), the core CIO skills (Martin 1982; Wu et al. 2004), as well as the critical success factors (CSFs) (Martin 1982), these attempts have experienced limited success in developing a theory which exhibits the elements of cumulative tradition, clarity, parsimony and theoretical glue (Metcalf 2004). Despite this, CIOs are increasingly expected to create an IS Function which supports the organization in achieving strategic advantage. However, the assertion has been made that the CIO still runs an IS Function which offers little value and is highly resource intensive (Earl and Feeny 1994); this is reflected in the variety of CIO reporting structures (Banker et al. 2011), with many CIOs still regularly reporting to the CFO (Harris 2011). Thus it is critical to investigate the enactment process, the process by which the CIO can create an Ambidextrous IS Function, thus increasing the effectiveness of their IS Function in supporting the organisation in achieving strategic advantage.

Existing tools, techniques and methodologies are of limited use to CIOs attempting to create an Ambidextrous IS Function which supports the organisation in achieving strategic advantage when placed in a dynamic and uncertain environment. The CIO's environment is dynamic and uncertain; reflecting the changing internal and external environment consisting of fluctuating internal customer needs as well as rapidly changing technology (Berman and Korsten 2010; I.B.M. 2009; Patten et al. 2009). Further examination of the internal and external

environment yields an identification of a variety of trends and disruptive innovations (Christensen and Overdorf 2000) in areas such as mobile (Vodafone 2012), social and online marketing (Xiang and Gretzel 2010), cloud (Youseff et al. 2008), business intelligence (Chen et al. 2012) and information security (Finne 2000). Multi-disciplinary methodologies, tools and techniques including risk management controls such as SOX (Damianides 2005) and project management methodologies such as those described in PMBOK (Schwalbe 2000) have been developed and can assist CIOs in controlling situations of expected change. However, such methodologies, tools and techniques are of limited effectiveness in responding to the general uncertainty which emanates from the environment surrounding the CIO; they are of limited assistance when “unexpected change occurs” (Patten et al. 2009).

Focusing on the enactment process, the process by which an Ambidextrous IS Function is created, which is overseen by and the responsibility of the CIO, will provide CIOs with recommendations to overcome the barriers they experience when creating an Ambidextrous IS Function; thus increasing their own and their IS Function’s effectiveness in supporting an organisation in achieving strategic advantage. It has been identified that “Renaissance CIOs” are often required to balance competing and conflicting priorities which stem from exploring emerging technologies as well as from exploiting traditional systems to support the organization in achieving strategic advantage (Spitze and Lee 2012). Ambidexterity is a multidisciplinary theory which has been associated with reconciling these tensions and improving the performance of IS managers and the organization (Raisch and Birkinshaw 2008; Vidgen et al. 2011). Thus this study has adopted the theoretical lens of Ambidexterity to explore the performance of CIOs with respect to their ability to create an IS Function which supports the organization in achieving strategic advantage. While there has been an examination of CIO leadership in the context of Ambidexterity (Chen et al. 2010), there has been scant attention paid to identifying the additional factors affecting CIO Ambidexterity and there has been limited examination of the recommendations to overcome the barriers to the CIO creating an Ambidextrous IS Function.

This paper builds on prior research conducted by the authors which has identified the barriers to CIOs creating an Ambidextrous IS Function and aims to identify the associated recommendations to overcome the barriers which have been previously identified, thus assisting the CIO in creating an Ambidextrous IS Function which supports the organization in achieving strategic advantage; balancing the exploration of emerging technologies and the exploitation of traditional systems. Analysing the data obtained from semi-structured interviews with 10 Australian CIOs resulted in the identification of 7 recommendations to overcome the 8 barriers previously identified.

THEORETICAL GROUNDING

IS Leadership

This study is motivated by the complex, evolutionary, pressured and tense role of the CIO and the need to provide CIOs with the guidance and recommendations to overcome the barriers they experience in creating an Ambidextrous IS Function which supports the organisation in achieving strategic advantage.

The role of the CIO has become more complicated and less definitive due to its evolutionary nature. The role of the CIO has changed over time (Chun and Mooney 2009) from a data processing manager (Martin 1982) to a “manager of IS” (Ives and Olson 1981) to an “executive” (Stephens et al. 1992) and further role changes are anticipated (Reich and Nelson 2003). Extant literature has provided definitions of the CIO which span the full dichotomy from technocrat to business leader and frequently includes both dichotomous perspectives (Ives and Olson 1981; Stephens et al. 1992), resulting in the CIO fulfilling multiple roles. The role is predicted to change in the future as IT personnel become increasingly more business-centric and thus the focus of this research is not to determine the role of the CIO, but rather to focus on how the CIO and their IS Function can adapt to the only constant; change (Reich and Nelson 2003).

Peppard et al., (2010) identified four reasons for the complexity of the CIO role; the unclear distinction between corporate and business unit CIOs, the inconsistent use of the IT director and CIO titles, the mismatch between expectations and performance metrics and the outdated view of the CIO role (Peppard et al. 2011). Thus, while there is no consensus over a single role of the CIO, there is consensus that the CIO needs to be able to fulfil multiple roles simultaneously. CEOs are expecting the level of complexity to increase over the next five years and are viewing the role of the CIO and their IS Function as critical to mitigating the “Complexity Gap” and harnessing the power of complexity (Berman and Korsten 2010). The CIO has been given a mandate to create an IS Function which leverages, transform, expands and pioneers technology while also “keeping the lights on” (IBM 2011; Peppard 2010).

The role of the CIO is pressured as the CIO is frequently required to be a transformational leader (Muller 2011). However, cost control and productivity are at the top of the CEO’s mind (CIO.com 2012). CIOs are being asked

to continually “re-imagine IT” when creating an IS Function, however their budgets have remained flat (Christy and Goasduff 2011). This pressure has been indicated by the higher turnover rates of CIOs compared to other CxO roles as well as a tense relationship with the CEO and a lack of credibility with the executive team (Rothfeder and Driscoll 1990). The CIO’s role is also one of tension and this is largely due to the multi-faceted nature of the role. The role of the CIO is strategic, however executives are often unaware of the real value of IS Function (EIU 2010; Ragowsky and Gefen 2009). The CIO must also deal with competing values (Enns et al. 2011) resulting in tension due to the various implicit assumptions that are made by an organization about the IS Function and the CIO (Kaarst-Brown 2005).

The perceptions that the CIO role is complex, evolutionary, pressured and tense, coupled with the view that CIO success is a rarity (Spitze and Lee 2012) indicates that CIOs experience significant challenges when attempting to create an Ambidextrous IS Function which supports the organisation in achieving strategic advantage. Specifically, it is imperative that CIOs are able to create an Ambidextrous IS Function which is able to balance the competing and conflicting priorities of being able to explore emerging technologies while also exploiting traditional systems.

Ambidexterity

The literature has established that the CIO has many roles and responsibilities which are determined by the various assumptions made by the organization (Kaarst-Brown 2005) and these are often diametrically opposed. To maintain their relevance and generate the level exploration required by the organization, it is imperative that the CIO and the IS Function have the capacity and capability to balance competing and conflicting exploratory and exploitative priorities. Ambidexterity is a framework which enables CIOs to simultaneously explore emerging technologies while also exploiting traditional systems, resolving the tensions that result from balancing these two diametrically opposed priorities. Thus it is a useful perspective and framework to use when exploring the recommendations to overcome the barriers to the CIO creating an Ambidextrous IS Function.

Ambidexterity is a multi-disciplinary concept which has been studied in organizational learning, technological innovation, organization adaptation, strategic management and organization design (Raisch and Birkinshaw 2008) but has received scant attention with respect to the CIO and their interaction with their IS Function (Mom et al. 2007);. Specifically, Ambidexterity has been examined in the context of CIO leadership where the CIO balances supply side leadership, which focuses on exploiting existing IT skills to support known business needs, while also conducting demand side leadership which focus on exploring new IT-enabled opportunities that result in Competitive Advantage (Chen et al. 2010). A staged maturity model was proposed by which CIOs are only able to become demand-side leaders once they have become effective supply-side leaders, concluding that CIOs must be able to “keep the lights on” and exploit traditional systems effectively before they can create an IS Function which engages in exploration (Chen et al. 2010). While the factors which lead to individual and organization Ambidexterity have been researched, there has been little examination of the recommendations to overcome the barriers to the CIO creating an Ambidextrous IS Function which supports the organization in achieving strategic advantage.

RESEARCH CONTEXT AND METHODOLOGY

While there has been an extensive analysis of the role and skills of the CIO and the skills that “Renaissance CIOs” need to possess (Spitze and Lee 2012), there has been scant attention paid to the barriers to the CIO creating an Ambidextrous IS Function which explores emerging technologies while also exploiting traditional systems to support the organization in achieving strategic advantage, as well as the recommendations to overcome the associated barriers. Specifically, this paper will investigate the question; what are the recommendations to overcome the barriers to the CIO creating an Ambidextrous IS Function which supports the organization in achieving strategic advantage. Thus, the enactment process, the process of creating the Ambidextrous IS Function, is the unit of analysis (Trochim 2006). CIOs were interviewed, as leaders of the IS Function, to provide insights into this process as well as the recommendations to overcome the barriers that CIOs experience in creating an Ambidextrous IS Function.

A qualitative approach was adopted to explore the recommendations to overcome the barriers to the CIO creating an Ambidextrous IS Function due to the need to obtain rich data which encompasses a nuanced description of the recommendations which support the organization in balancing the activities of exploring emerging technologies as well as exploiting traditional systems (Yin 2010). Ten Australia CIOs from a range of industries took part in semi-structured interviews to identify the recommendations to overcome the barriers to the CIO creating an Ambidextrous IS Function. The adoption of the theoretical lens of Ambidexterity complemented the use of the thematic coding in the identification of the recommendations.

The semi-structured interview technique was adopted as the primary method for data collection, with additional documentary evidence, such as strategy documentation, being obtained where appropriate. This approach enabled the interviewers to balance the need for rigor and consistency in responses (Trauth and O'Connor 1991), which is associated with structured interviews, while also engaging the elite interviewee, the CIO, through follow up questions and unstructured components (Oppenheim 1992). Despite the significant advantages of the semi-structured interview, there are also potential “pitfalls and problems” associated with the technique which can be minimized and mitigated through the use of the Dramaturgical Model when conducting participant selection, interviews and validating interview data (Myers and Newman 2007). The 10 Australian CIOs were selected as an expert sample, using the expert selection criteria of having at least five years management experience, involved in at least one Community of Practice relevant to CIOs and being the head of an IS Function of more than 8 staff. The interviews averaged 1hr and 15 minutes in length with no interview being shorter in duration than 45 minutes and the longest interview running for 2 hours (Table 1). While Australian CIOs may be perceived as “able pragmatists” who mainly work in SME businesses and have a more intimate relationship with the CEO than their global peers, they still, like their global peers, are required to balance competing and conflicting priorities (IBM 2009).

Table 1. Participant Interview Information

CIO #	Industry	Time (hr:min)	Background
1	Banking	0:45	<ul style="list-style-type: none"> 600 people are members of the CIO's department with 1,000 people delivering directly into the CIO's organisation
2	Education	1:00	<ul style="list-style-type: none"> Department of 24 people 9 years management experience in e-commerce sites
3	Health Care	2:00	<ul style="list-style-type: none"> 49 staff members, with 45 developers and 4 helpdesk History in online start-ups, membership of CIO Forums
4	Pharmaceutical	1:30	<ul style="list-style-type: none"> 9 people in the team; each person splits their time between support and projects
5	Education	1:30	<ul style="list-style-type: none"> ~200 people Regularly attends CIO forums
6	Infrastructure	1:15	<ul style="list-style-type: none"> 17 years senior leadership; 9 years as CIO Experience in 3 companies as CIO
7	Biomedical Development	1:15	<ul style="list-style-type: none"> CEO at a Research and Development company 20 years experience with this firm
8	Banking	1:00	<ul style="list-style-type: none"> CIO at various banks in Australia and overseas >25 years senior management experience
9	Health Care	1:15	<ul style="list-style-type: none"> Leads a team of 34 people CIO for a hospital for 15 years
10	Consumer Goods	1:00	<ul style="list-style-type: none"> 30 Employees in Australia >7 years in IS leadership positions

The interviews focused on the recommendations to overcome the corresponding barriers to the CIO creating an Ambidextrous IS Function. The interviews commenced by evaluating the extent to which the CIO's function was Ambidextrous; discussing the barriers which the CIOs encountered and/or recommendations to overcome these barriers. Where the CIO identified difficulty in creating an Ambidextrous IS Function, probing questions were asked to understand the reasons why the CIO experienced challenges in conducting explorative and/ or exploitative activities as well as eliciting the CIOs actions which enabled them to effectively engage in and balance explorative and/ or exploitative activities. The extent of engagement was validated by obtaining evidence and examples, while a snowballing technique, where barriers and recommendations identified in prior interviews

are inserted into subsequent interviews, was utilized to validate the barriers and recommendations identified. Specifically, towards the conclusion of later interviews, a list of previously identified barriers was discussed to confirm the barriers that had been identified in the interview and any other barriers that the CIO determined were worthy of discussion.

Thematic coding, using the methodology of data reduction, data display and conclusion drawing, was conducted to analyse the interview data, following the completion and transcription of the interviews. The barriers and recommendations to Ambidexterity were used as seed categories for the analysis in the initial phase of data reduction (Miles and Huberman 1994). The data was then displayed in NVivo by consolidating the data into tabular form and by the creation of a hierarchy of nodes. Following the discussion of the hierarchy amongst the researchers, the concept of Ambidexterity was decomposed into the composite bins of balanced and combined Ambidexterity. Conclusion drawing consisted of “noting the regularities, patterns, explanations, possible configurations, causal flows and propositions” (Miles and Huberman 1994). Although theoretical saturation was noted after the conclusion of the third interview, subsequent interviews were used to further explore the nuances and linkages between the barriers and recommendations identified (Guest et al. 2006).

FINDINGS AND ANALYSIS

The analysis of the interview data revealed 8 barriers to CIOs creating an Ambidextrous IS Function and 7 associated recommendations to overcome the corresponding barriers. The first 2 barriers relate to balancing exploration and exploitation in the desired manner (Balanced Ambidexterity) while the remainder are barriers to increasing the amount of exploration and exploitation that occurs in the IS Function (Combined Ambidexterity) (Cao et al. 2009).

Barriers to Ambidexterity

The authors' previous research identified 8 barriers to Ambidexterity which are summarized in Table 2

Table 2. Barriers to Ambidexterity

	Barrier	Description
Barriers to Balancing Explorative and Exploitative Activities (Balanced Ambidexterity)		
1	Critical Support Activities Dominate Project Work	The critical nature of support prevents the IS Function from achieving a balance between exploratory and exploitative activities.
2	Indirect Reporting	Not reporting to the Board of Directors, but through an intermediary such as the CFO, restricts the focus of the IS Function to a cost focus and inhibits it from balancing exploratory and exploitative activities in a way that supports the strategy of the organisation.
Barriers to Conducting Both Exploratory and Exploitative Activities (Combined Ambidexterity)		
3	The IS Function has a Lack of Credibility in the Organisation	The public nature of IS failure restricts its ability to become a trusted advisor in the organisation.
4	Imposition of a Vision by the Organisation	Imposing a vision on the CIO restricts the ability of the team to be fully engaged in conducting exploratory and exploitative activities.
5	The IS Function Requires Organisation Sponsorship for its Activities	The IS Function may identify technologies for the organisation, but does not have decision making power. Without organisation sponsorship, the ideas will not be explored or exploited.
6	Supply Side Constraints Restrict the Resource Capacity of the IS Function	Lack of resources including people, skilled personnel and funding restricts the IS Function from pursuing exploratory and exploitative activities simultaneously.
7	An Incongruent Outsourcing Relationship Exists when Transactional Outsourcing Vendors are Responsible for Strategic Activities	Outsourcing strategic capabilities to a vendor engaged in a transactional relationship, as well as not maintaining a trusted relationship with a flexible outsourcing provider, restricts the ability of the IS Function to conduct exploratory and exploitative activities effectively.
8	The IS Function has an Over-dependency on Key Individuals	Dependency on a person for exploration and for key systems support can restrict the ability of the IS Function to engage in exploration and

	exploitation effectively.
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Recommendations for Ambidexterity

Seven recommendations were identified to overcome the previously identified 8 barriers, with the first 3 recommendations relating to Balanced Ambidexterity, while the remainder are recommendations relating to Combined Ambidexterity (Cao et al. 2009), as illustrated in Figure 1.

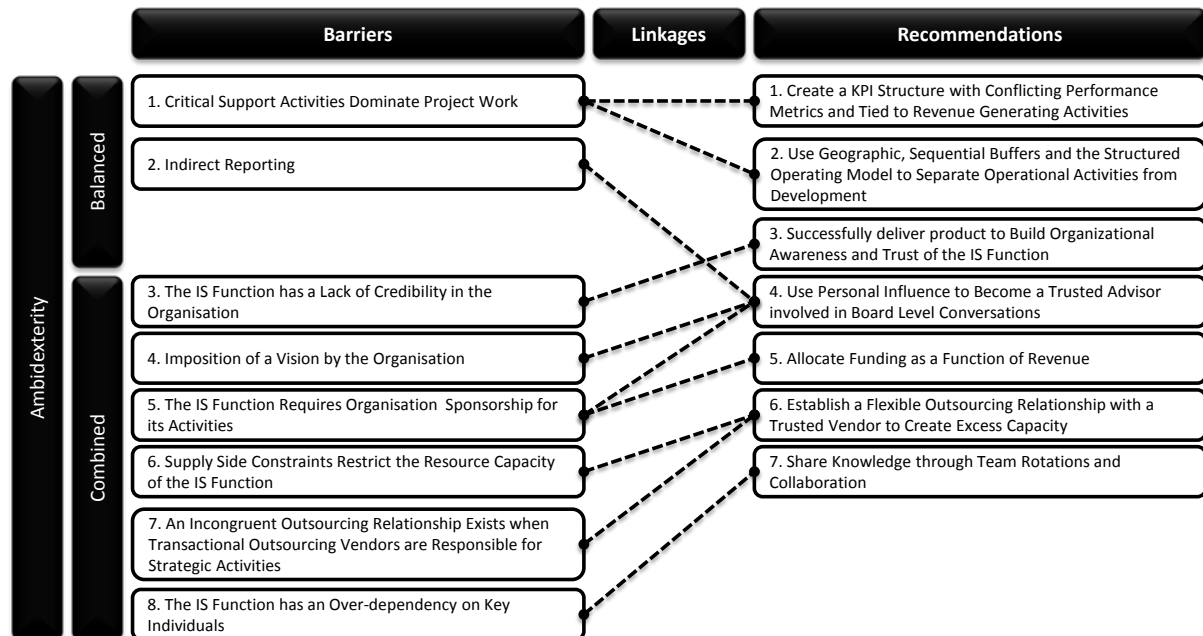


Figure 1: Overview of Recommendations

1. *Create a KPI Structure with Conflicting Performance Metrics and Tied to Revenue Generating Activities* is a recommendation which encompasses the use of KPI metrics to increase the ability of the IS Function to balance exploratory and exploitative activities. Specifically, this recommendation overcomes the barrier of *Critical Support Activities Dominate Project Work*. CIO 2 stated that when he created a “three pronged KPI structure consisting of responsiveness, flexibility and innovation with KPIs that naturally counter balance each other” [CIO2], with responsiveness relating to the ability to “respond to internal customer requests”, flexibility referring to “building infrastructure to make processes more effective” and innovation encompassing “the number of new ideas and experiments”, staff were “obliged” to explore emerging technologies as well as perform critical support activities [CIO 2].

2. *Use Geographic, Sequential Buffers and the Structured Operating Model to Separate Operational Activities from Development* encompasses the ability of the IS Function to balance exploratory and exploitative activities. This recommendation was also noted as a method to overcome the barrier of *Critical Support Activities Dominate Project Work*. CIO 3 utilized a geographic buffer, locating his IT Function in a different city to the organization and cited that this was “... one of the reasons why we get so much product out and are so successful as we do not get consumed [by the] strong personalities in the organization” [CIO 3]. CIO 1 and CIO 3 utilized the sequential buffer method on projects with one stage for exploration followed by another for exploitation. CIO 1 perceived “exploration as a means to an end” and thus found the staged model quite effective on a major infrastructure project where “the first twelve months were pure exploratory and then from that point we made certain decisions around how and with whom we wanted to execute [and] then it became a pure exploitation project.” [CIO 1]. CIO 1 also identified that when “I used to have more blended teams that did both project and operational support for certain portfolios, and we found that projects would suffer because operational teams couldn’t decide when they would have enough capacity to support project work. So we made quite a clear distinction between the delivery orientated teams versus the more operational orientated teams which enabled us to find the right balance between keeping the lights on and exploring” [CIO 1]

3. *Successfully deliver product to Build Organizational Awareness and Trust of the IS Function* is considered by CIO 8 as a critical recommendation to being able to explore and exploit effectively. CIO 8 determined that “...by sending deliverables back to [the business] and being able to provide them with the sort of functionality

they required, they start trusting us. That's how we've been able to build this trust. Then when we do go to them going 'Look guys, we want to do X', they'll sit down and have a conversation with you." [CIO 8]. Thus, successfully delivering product overcomes the barrier of *The IS Function has a Lack of Credibility in the Organisation* as *"IT, because of its very nature, because it touches the whole organisation tends to be highlighted more than other functions in cases of failure as the lack of delivery impacts the [whole] organisation."* [CIO 6]

4. *Use Personal Influence to Become a Trusted Advisor involved in Board Level Conversations* is the recommendation which assists in overcoming the barriers of *Indirect Reporting*, *Imposition of a Vision by the Organisation* and *the IS Function Requires Business Sponsorship for its Activities*, as by being involved in Board level conversations *"you are able to understand and be part of the organizational planning process as well as influence the understanding and the thinking of the Executive, the CEO and the Board. Because you've been there, you're in a much better position to explore and exploit [as] you're not second-guessing and you're not hearing it second or third hand such as from the CFO who is invariably focused on costs. I haven't worked with too many CFOs that really understand technology or who are even interested in technology, and the reason for IT reporting to CFOs is because it's a big ticket item. So the reason you report to the CFO is so there is more accountability, and they have the ability to rein in expenditure, not because CFOs have any understanding or any input or any willingness to assist the IS Function in conducting exploratory or exploitative activities"*. [CIO 6].

5. *Allocate Funding as a Function of Revenue* is critical to ensuring the IS Function has sufficient funds to conduct exploratory and exploitative activities and overcoming the barrier, *The IS Function Requires Business Sponsorship for its Activities*. The provision of funds as a function of revenue enables the IS Function to have the ability to conduct both exploratory and exploitative activities. CIO 2 indicated that the allocation of funding affects his ability to explore and exploit effectively as the *"my budget is largely a function of the revenue I can earn for the business and because the website for an online business is the primary source of revenue, that puts me in a very strong negotiating position when considering exploratory and exploitative projects."* [CIO 2].

6. *Establish a Flexible Outsourcing Relationship with a Trusted Vendor to Create Excess Capacity* refers to the ability of the IS Function to have the capacity to conduct exploratory and exploitative activities, overcoming the barrier *Supply Side Constraints Restrict the Resource Capacity of the IS Function* and *An Incongruent Outsourcing Relationship Exists when Transactional Outsourcing Vendors are Responsible for Strategic Activities*. If the relationship is not carefully established it can lead to poor performance as recalled by CIO 4, *"In the old days, I did have developers in the team. Then the organization took the decision that they would all be outsourced. Now I don't have the developers and the business gets disappointed when they need to explore a new concept"* [CIO 4]. Thus it is critical to establish a flexible relationship as a *"vendor which is too big is difficult to negotiate with curtails your ability to explore"* [CIO 10]. Thus, outsourcing appropriately and *"exploiting the [outsourcer's] expertise"* [CIO 6] enables CIO 2 to provide his onshore team *"[with] a lot of additional capacity for production work and conducting experiments."* [CIO 2].

7. *Share Knowledge through Team Rotations and Collaboration* enables the IS Function to simultaneously increase their exploration and exploitation of various technologies. The most common technique to share knowledge was to conduct continuous team rotations. CIO 2 identified that conducting team rotations allowed CIO 2 to overcome the barrier, *The IS Function has an Over-dependency on Key Individuals* *"...by rotating it around on a weekly basis, you can help people increase inter-team understanding and reduce key man risk."* [CIO 2]. CIO 3 also found that conducting team rotations decreases the *"ransom risk"* when members of the project attempt to retain key resources in their project teams and as result CIO 3 realized an increase in the tenure of his team when conducting rotations while CIO 7 found that through sharing knowledge, *"with someone else who is not directly involved in your project, you inevitably get cross-fertilization of ideas"*, which increases exploration.

CONCLUSION

This Research-in-Progress paper identifies the recommendations to overcome the associated barriers to the CIO creating an Ambidextrous IS Function, contributing to the extant literature on Ambidexterity and the CIO. Specifically this study identifies 7 recommendations to overcome the 8 corresponding barriers to creating an Ambidextrous IS Function which is capable of exploring emerging technologies, as well as exploiting traditional systems.

The study has implications for practitioners who can utilize the framework to conduct benchmarking exercises within their IS Function and share their insights regarding the barriers with their peers through CoPs. This research is currently in progress and our future research plans include: (1) conducting interviews with additional CIOs to confirm the presence of the barriers, recommendations and linkages, (2) exploring the nuances of the

barriers and recommendations with respect to the barriers and recommendations which specifically concern exploration and exploitation and (3) interpretive structured modelling to determine the nature of any dependencies within the barriers and recommendations identified.

It is envisaged that future research will result in the presentation of a more comprehensive and exhaustive list of barriers, recommendations and linkages, resulting in a more sophisticated framework to assist CIOs in exploring emerging technologies and exploiting traditional systems. The framework will thus establish a platform for the CIO to create an Ambidextrous IS Function which supports the organization in achieving strategic advantage.

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