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Digital Government Strategy Derivation: A Matter of Design

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Abstract

Government organisations worldwide are adopting digital strategies to enhance service delivery, gain efficiencies and meet the evolving and growing expectations of business and society in a digital world. Yet, current academic literature fails to provide a framework for digital government strategy derivation to harness the benefits of recent digital advances. We employed the case study methodology to examine the way two government organisations approached digital strategy derivation. We propose an adapted, design-led innovation (DLI) framework to aid digital government strategy derivation, and explore its applicability by retrospectively mapping the activities undertaken by the case organisations in deriving a digital strategy to the adapted framework. Our study finds that public organisations may iterate through the quadrants in the adapted DLI framework to formulate a digital strategy, underpinned by a clear value proposition that is identified through reframing situations. This research will enrich e-government literature, and guide digital government strategy derivation.

Keywords

Digital government strategy development, design-led innovation, case study

1 INTRODUCTION

In recent years, the phenomenon of 'digital' has transformed government, business and society with the emergence of disruptive technologies and platforms such as social media, mobile technology, cloud computing, big data and analytics capabilities and the internet of things (Brown and Sikes 2012; Gartner 2015). The data gathered from participants in our broader study led to the assertion that the term 'digital' refers to recent technological advances, as well as changes to social and economic phenomena that are enabled by and result from the widespread use of recent digital technologies and platforms (D'Cruz et al. 2017; D'Cruz et al. 2015). The affordances of digital technologies and consequent changes in citizen expectations and behaviour have prompted government organisations worldwide to introduce digital government strategies to enhance service delivery, meet the changing and growing expectations of citizens and businesses, and gain efficiencies (Dilmegani et al. 2014).

Various studies explore aspects of public sector digital transformation including the use of social media and microblogging platforms to better engage with citizens and provide greater transparency (Alam and Lucas 2011; Bertot et al. 2010; Mossberger et al. 2013), and data sharing across government agencies and with private organisations (Welch et al. 2016). Nonetheless, there appears to be limited academic literature to guide practitioners in developing digital government strategies that harness the benefits of recent digital advances. While various e-government stage models exist relating to public sector transformation, as DeBrí and Bannister (2015) argue, these models typically comprise stages that are aspirational and prescriptive with limited empirical grounding. Further, these models often imply that entities need to move through a particular linear set of stages to enhance e-government maturity. However, technological advances may render such models irrelevant over time due to the need to transition through specific stages of growth. Further, such models do not recognise emerging opportunities for government entities to engage in radical innovation or operate in a fundamentally different manner, for example, by integrating with third-party systems to allow citizens and businesses to meet statutory reporting obligations as a by-product of their natural activities. Additionally, as DeBrí and Bannister (2015, p. 2226) highlight, government entities may have different functions, roles and structures, and thereby follow distinctive strategic paths. Andersen and Henriksen (2006) also highlight the need for e-government strategies to have a greater activity and customer centric focus than a technology focus. To address these gaps, we explore the following research question through a review of literature and empirical evidence gathered from a multiple-case study of two government organisations in Australia: *How can a design-led innovation (DLI) approach based on design thinking be applied in the digital government strategy development process?* Exploring specific tools and techniques to foster design thinking, and ways to effectively organise teams to achieve intended strategic outcomes are beyond the scope of this paper. Government organisations appear increasingly open to apply methodologies based on design thinking in the formulation of digital strategies as evidenced by the recent rollout of the Service NSW One Stop Shop initiative (The Customer Experience Company, 2017). Dilmegani et al. (2014) indicate that \$1 trillion in value could be realised globally each year through public sector digital transformation. However, as Waller and Weerakkody (2016, p.1) reveal, "the expectations for digital technology applied to government and public administration have not been realised – by a very large margin", highlighting the study's significance.

In this paper, we adapt the DLI framework proposed by Bucolo et al. (2012), based on design thinking, for use in the context of digital government strategy derivation. Brown (2008, p. 86) defines design thinking as "a discipline that uses the designer's sensibility and methods to match people's needs with what is technologically feasible and what a viable business strategy can convert into customer value and market opportunity". Design thinking is particularly suited as it may offer a customer-centric approach to develop strategy (Brown 2008). Current literature indicates that design thinking may play an imperative role in the creation and ongoing evolution of an entity's business model and strategy (Matthews and Wrigley 2011; Matthews et al. 2013). According to Matthews et al. (2013, p. 3), design thinking "is the dominant (abductive) thinking style required to undertake a design led innovation approach". Abductive thinking refers to "the logic of what might be" rather than inductive or deductive logic i.e. what is or should be respectively (Martin 2009, p. 26). We believe the application of an adapted DLI framework to be apposite in digital government strategy derivation as it allows entities to follow a distinct strategic path and derive strategy based on unique opportunities or value propositions identified by reframing situations to discover what is possible in complex and dynamic environments. The adapted DLI framework allows entities to embrace new ways of conceptualising 'value' and possibilities, and is not restrictive (unlike e-government stage models which often require entities to journey through sequential, incremental stages of growth). While there have been preliminary attempts to apply the DLI framework in digital strategy derivation (Price et al. 2014), to our

knowledge, this is the first academic study that explores the role of an adapted DLI framework in the digital strategy development process within the public sector.

The contribution of this paper is to firstly, identify limitations of the DLI framework to propose an adapted framework for use in digital government strategy derivation. Additionally, this paper demonstrates the applicability of the adapted framework in the digital government strategy development process, by retrospectively mapping the approach undertaken by two public sector case organisations in deriving a digital strategy, to the adapted framework. This will advance current knowledge on approaches to digital government strategy derivation, provide opportunities for further academic research and offer guidance to government practitioners.

The current paper is structured as follows. Firstly, we briefly explore the existing literature in three areas: digital strategy, design thinking and DLI, and public sector digital transformation, and propose an adapted DLI framework for use in digital strategy derivation within public-sector organisations. Secondly, we discuss the adopted approach and methods used in our study, and ways in which research quality and ethics were assured. Thirdly, we map the approach undertaken by two government agencies in Australia to develop a digital strategy, to the adapted DLI framework, to demonstrate the application of the framework. We conclude by discussing the study's contributions and limitations.

2 LITERATURE REVIEW

The following literature review explores the concepts of digital strategy, design thinking and DLI, and digital transformation in the public sector.

2.1 Digital Strategy

Peppard and Ward (2016) assert that 'digital' encompasses both IT, hardware and software, and Information Systems (IS), the way in which entities "increasingly utilizing technology, gather, process, store, use and disseminate information" (Peppard and Ward 2016, p. 3). We adopt a broader view of the phenomenon and claim that 'digital' encompasses recent technological advances, and the consequent social and economic changes (D'Cruz et al. 2017; D'Cruz et al. 2015). We argue that 'digital', in the current context, is facilitated by Web 2.0 principles and practices outlined by O'Reilly (2007) such as leveraging "the long tail", innovating by integrating services, ensuring software interoperability, providing software as services developed iteratively and incrementally, providing "rich user experiences", and encouraging user participation. These practices and recent technological advances have transformed citizen expectations and behaviour, the way in which they work, transact, and interact with each other and with business and government (D'Cruz et al. 2017; D'Cruz et al. 2015). As Keen and Williams (2013, p. 644) argue, the notion of 'value' is increasingly determined by customers and is "a function of the choice space", which is constantly altering and growing as organisations exploit dynamic "ecocomplexes of relationships" to provide "new dimensions of value".

Bharadwaj et al. (2013, p. 472) claim that a digital business strategy is an "organizational strategy formulated and executed by leveraging digital resources to create differential value". While traditional IT strategies may be functional-level strategies, an entity's 'digital strategy' may be positioned alongside and necessarily drives, evolves or transforms its business model through digital assets and capabilities (D'Cruz et al. 2017). We acknowledge that recent technological advances have disrupted the way entities operate, compete, create and/or appropriate value, and the notion of what constitutes 'value', prompting the need for new business models, evolving and dynamic strategies, and new ways of deriving strategy in a digital world. Digital strategies may focus on the customer experience, operations, or holistically, the business model (D'Cruz et al. 2017; D'Cruz et al. 2015). Nonetheless, scholarly literature on the process of formulating digital strategies particularly in the IS discipline is sparse, warranting further interdisciplinary research. Price et al. (2014) indicate a role for design thinking and DLI in the digital strategy derivation process. The next section explores these concepts.

2.2 Design Thinking and Design-Led Innovation

Johansson-Sköldberg et al. (2013) distinguish between 'designerly thinking' (i.e. linking of academic theory and practice in the design discourse and discipline), and 'design thinking' (where designers' methods are incorporated in the management discourse); and identify three sub-discourses of design thinking in the management discipline: (1) the design practice and methodologies to innovate as championed by IDEO, a design firm (Brown 2008), (2) design thinking as a required skill for managers to approach ill-defined managerial problems (Dunne and Martin 2006; Martin 2009), and (3) design thinking as a subset of management theory where managers are perceived as both, designers and decision makers (Boland and Collopy 2004). The DLI framework underpinned by

design thinking prompts entities to formulate a vision for the organisation “based on deep customer insights and expanded through customer and stakeholder engagements, with the outcomes being mapped to all aspects of the [organisation]... to enable the vision to be achieved” (Bucolo and Wrigley 2014, p. 243). ‘Design-led’ refers to “the tools and approaches which enable design thinking to be embedded as a cultural transformation” within an organisation (Bucolo and Wrigley 2014, p. 243). Figure 1 shows the DLI framework proposed by Bucolo et al. (2012) as adapted for use in this study. The horizontal axis in the original DLI framework proposed by Bucolo et al. (2012) represents a continuum between operational and strategic activities. We argue that observations and insights relate to and have implications for both, an entity’s operations, as well as strategy and brand development. For instance, if observations and insights reveal that citizens significantly value the privacy of their health information, then this may impose a design constraint in developing a health department’s digital strategy (e.g. the agency may choose not to transition the storage of patient health information to the cloud due to reputational risks that possible security breaches may present to the agency’s brand). Thus, we omitted this continuum between operational and strategic activities in the adapted framework because the manner in which it was represented was thought to be misleading, as it appears to imply that observations and insights primarily relate to operational activities, whilst strategy and brand relate mainly to the strategic end of the continuum. Additionally, while the vertical axis in the original framework represented the internal and external dimensions, in digital strategy derivation, this divide is not necessarily applicable as an entity’s digital strategy may solely have an internal focus (e.g. on operations). Besides, the framework presented by Bucolo et al. (2012) implies that an entity’s brand is primarily external facing. However, we argue that ‘internal branding’ (Mahnert and Torres 2007) and an organisational culture that supports the digital vision and intended transformation are equally important.

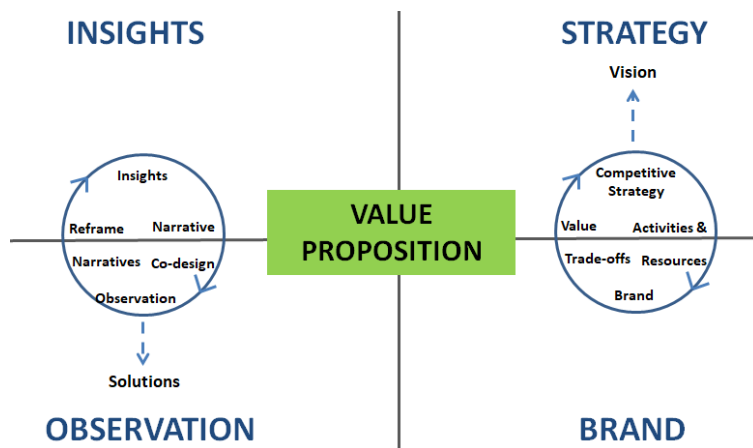


Figure 1: The DLI Framework for Digital Strategy Derivation Adapted from Bucolo et al. (2012)

The framework shown in Figure 1 comprises four non-linear stages (Observation, Insights, Strategy and Brand) that an entity may navigate through iteratively. In the *Observation* stage, the practitioner observes and/or engages with clients and other stakeholders to acquire deep insights, and may employ techniques such as persona development and customer journey mapping. Through reframing the situation during the *Insights* stage, latent customer needs are identified, and new meaning is produced (Townson 2014). As Schön (1983, p. 356) states, “When a practitioner becomes aware of his frames, he also becomes aware of the possibility of alternative ways of framing the reality of his practice”. The insights gleaned are then socialised through narratives e.g. storytelling (Bucolo et al. 2012). This process may be carried out iteratively until a clear opportunity or value proposition is identified, which shapes and/or is shaped by an entity’s *strategy* and *brand*. In the context of the public sector, we define ‘competitive’ strategy as a strategy that administers and implements government policy in a way that provides value to stakeholders through cost savings or greater benefit. Bucolo et al. (2012) conceive a brand as messages or promises to external customers. While an entity may aim to establish a certain brand, we acknowledge that brands evolve and are socially constructed as internal and external stakeholders (such as employees, customers, and partners) engage with the organisation in ever-changing environments. Evaluating the value proposition against the entity’s strategy and brand for congruence or possible adaptation allows the entity to “move beyond product only innovations and into business level innovation” (Bucolo and Wrigley 2012, p. 2). We envision that public organisations can employ the adapted DLI framework to derive digital strategies by iteratively navigating through the quadrants in Figure 1 to develop and refine the value proposition with stakeholders. As the next

section on public sector digital transformation demonstrates, existing academic literature fails to guide practitioners in formulating digital strategies by conceiving new possibilities and value propositions.

2.3 Public Sector Digital Transformation

Peppard and Ward (2016) assert that 'digital government' is merely a new label for 'e-government'. Carter and Bélanger (2005, p. 5) describe e-government as "the use of information technology to enable and improve the efficiency with which government services are provided to citizens, employees, businesses and agencies". We position 'digital government' as a reconceptualization of 'e-government' in the digital era, enabled by greater integration within the ecosystems of government, and between government and the ecosystems of business, intermediaries and citizens, accompanied by a supporting business model, process and cultural transformation. While traditional e-government strategies may seek to merely digitise existing processes (e.g. disseminate information through the internet rather than through conventional methods, or provide web forms as opposed to paper forms), in line with our broad view of 'digital', we reserve the term 'digital government' to refer to new digitally-enabled ways of operating, implementing and administering policy, and/or engaging or providing government services that meet or surpass evolving community and business expectations in a digital world. In this context, we find existing e-government stage models such as that proposed by Layne and Lee (2001) to be inadequate given the affordances of new waves of technology. The model's four stages of e-government maturity entail: (1) cataloguing (classifying information and disseminating it through the web), (2) transaction (integrating systems to facilitate web transactions), (3) vertical integration (integrating systems across the different levels of government), and (4) horizontal integration (integrating systems across different government functions) (Layne and Lee 2001). Such models do not acknowledge emerging opportunities for governments to operate in a fundamentally different manner e.g. by integrating with the ecosystems of business and society such that government agencies may implement and administer policy by integrating with third-party systems (banking systems, business software etc.) thereby allowing the community to meet legal obligations as a by-product of their natural activities and interact with government via their natural systems. This may transform the business model of public organisations and intermediaries. Similarly, Larsson (2011) calls for a reconceptualisation of existing e-Government stage models to consider the complexity and ambiguity that public organisations face in a digital world. Existing academic literature thus fails to adequately guide government practitioners in deriving digital strategies based on new conceptions of 'value', prompting the need for this research. We now discuss the approach adopted to conduct this study.

3 RESEARCH APPROACH

The purpose of our broader study was to understand conceptions of digital strategy and approaches to digital strategy development, and subsequently propose a framework that entities may employ to develop digital strategies. We initially primarily employed an inductive, bottom-up approach of inquiry, through semi-structured interviews and document analysis, to elicit conceptions of digital strategy and understand the way in which digital strategy development was approached (although latter interview questions were based on literature). Subsequently, we proposed an adapted DLI framework employing deductive reasoning, and explored the applicability of the adapted DLI framework in digital government strategy derivation, by mapping the activities undertaken by two government case organisations in formulating a digital strategy (based on the empirical evidence initially gathered), to the adapted framework. This paper focuses on the latter and reports findings from mapping the case organisations' approach in deriving a digital strategy to the adapted framework. The case study methodology was selected as the most appropriate approach as this research is exploratory, examining the contemporary phenomenon of digital strategies within specific organisational contexts. The unit of analysis is 'digital strategy'. The following sub-sections discuss the research design including case and participant selection and overview, choice of data collection and analysis methods, and the way that research quality and ethics were assured.

3.1 Case and Participant Selection and Overview

A Federal Government Department (Case 1) and a State Government Department (Case 2) in Australia were selected to participate in the case study based on criterion and convenience sampling techniques (Liamputtong and Ezzy 2005). The two case organisations represented different levels of government (State vs. Federal), were responsible for different functions, had a different scale of responsibility and served different (non-mutually exclusive) client groups. The within case sampling of participants for semi-structured interviews comprised a triangulated sampling strategy of criterion-based, convenience and opportunistic sampling (Liamputtong and Ezzy 2005). Participants with experience in developing

and/or implementing a digital strategy were selected to provide different perspectives (e.g. a business/IT perspective, middle management/senior executive perspective).

Case Organisation 1 is a large Australian Federal Government Agency that is iteratively developing a digital strategy in response to the Australian Government's mandate for public sector digital transformation, and changing citizen and business expectations in a digital world. Participant 1 is a Senior IT Executive responsible for implementing large transactional and digital technology solutions. Participant 2 is a Senior Director responsible for ensuring the organisation has the appropriate systems, capabilities and processes in place to send digital correspondence to clients. Participant 3 is a Senior Director who was involved in developing the initial draft of the entity's digital service strategy. Participant 4 is a Senior Director who works closely with staff in the Digital Transformation Agency to ensure alignment of the Department's digital service strategy with the whole-of-government digital transformation. The formulation of the digital strategy in Case Organisation 2, a State Government Department, was prompted by the introduction of the State Government's ICT transformation program. Only one interview was conducted in Case Organisation 2, as Participant 5, a Senior Business Analyst, primarily developed the entity's digital strategy by engaging with internal business and IT stakeholders. The next section explores the data collection and analysis methods employed.

3.2 Data Collection and Analysis

Semi-structured interviews and documentation were the two main data collection methods employed. An interview protocol ensured that specific aspects of the phenomenon were explored in congruence with the broader study's research questions, whilst allowing for spontaneous and probing interview questions. We grouped interview questions into three parts: (1) to gather information to allow participants' responses to be contextualised (e.g. *In what ways have you been involved in developing and/or implementing a digital strategy within your organisation?*); (2) to explore participants' conceptions of the phenomenon and the way digital strategy derivation was experienced (e.g. *What approach does your organisation employ to develop a digital strategy?*); and (3) to elicit participants' views on relevant concepts presented in literature (e.g. interview questions were posed to some participants around the applicability of design thinking to the digital strategy development process, and supporting material outlining a specific Design Thinking Process was provided). Interviews ranged from 40 minutes to an hour in duration and were audio recorded. Additionally, the digital strategy of Case Organisation 2 was shared with the authors, which was used to substantiate evidence from the interview and further extend understanding of the phenomenon.

Thematic analysis was adopted as it is highly compatible with the chosen data collection methods. Audio-recorded interviews were transcribed, interview transcripts cleansed of identifiable participant information, and imported into NVivo (Version 11) for coding. While the coding process was predominantly "data-driven" as opposed to being "theory-driven" (Braun and Clarke 2006), it was influenced to some extent by the preliminary literature review conducted and the consequent research questions identified. Descriptive coding and sub-coding, and in vivo coding (Saldaña 2009) were employed to analyse the interview data and the digital strategy document from Case Organisation 2. Pattern coding (Saldaña 2009) was then employed to generate overarching themes from the initial codes. The next section discusses the ways we ensured research quality and ethics.

3.3 Research Quality and Ethics

Yin (2003) outlines four criteria to assess research quality in case studies: construct validity, internal validity, external validity and reliability. However, as Venkatesh, Brown and Bala (2013) state, some scholars argue different criteria should be applied to assess research quality in studies employing quantitative versus qualitative methods. We adopted the four criteria proposed by Guba (as cited in Shenton 2004), credibility, transferability, dependability, and confirmability, to ensure research rigour using qualitative data collection methods. Credibility was improved by ensuring that various conceptions of the phenomenon were adequately represented. Purposive sampling of participants, the use of well-established data collection and analysis methods, investigator reflexivity, data triangulation, and the reporting and acceptance of findings at academic forums enhanced credibility. Transferability is facilitated by providing contextual information about the cases and participants, which then allow readers to decide the extent to which findings may be transferrable to other contexts (Lincoln and Guba 1985; Shenton 2004). Dependability was ensured by comprehensively describing and justifying the study's approach including methodological decisions and choices relating to the data gathering and analysis methods, by ensuring traceability of the research process, and through the triangulation of methods and conceptions from various participants. Confirmability was enhanced by ensuring researcher reflexivity and triangulation (Liamputtong 2013). Ethics approval was obtained prior to data collection. We did not aim to gather sensitive or defamatory information and any

conditions specified by target organisations were followed. We now explore our findings from applying the adapted DLI framework to digital strategy derivation in two government agencies.

4 FINDINGS AND DISCUSSION

The subsections that follow discuss the findings from retrospectively mapping the approach taken by a Federal Government Department and a State Government Department in Australia in developing their digital strategy, to the adapted DLI framework.

4.1 Case 1 – An Australian Federal Government Department

Digital transformation within the agency supports and is supported by a broader business transformation entailing cultural and business process change. While the organisation did not intentionally adopt the adapted DLI framework in deriving their digital strategy, the entity's approach may be conceptually mapped to the framework as shown in Figure 2. Note that aspects of the strategy have been omitted to protect the identity of the organisation.

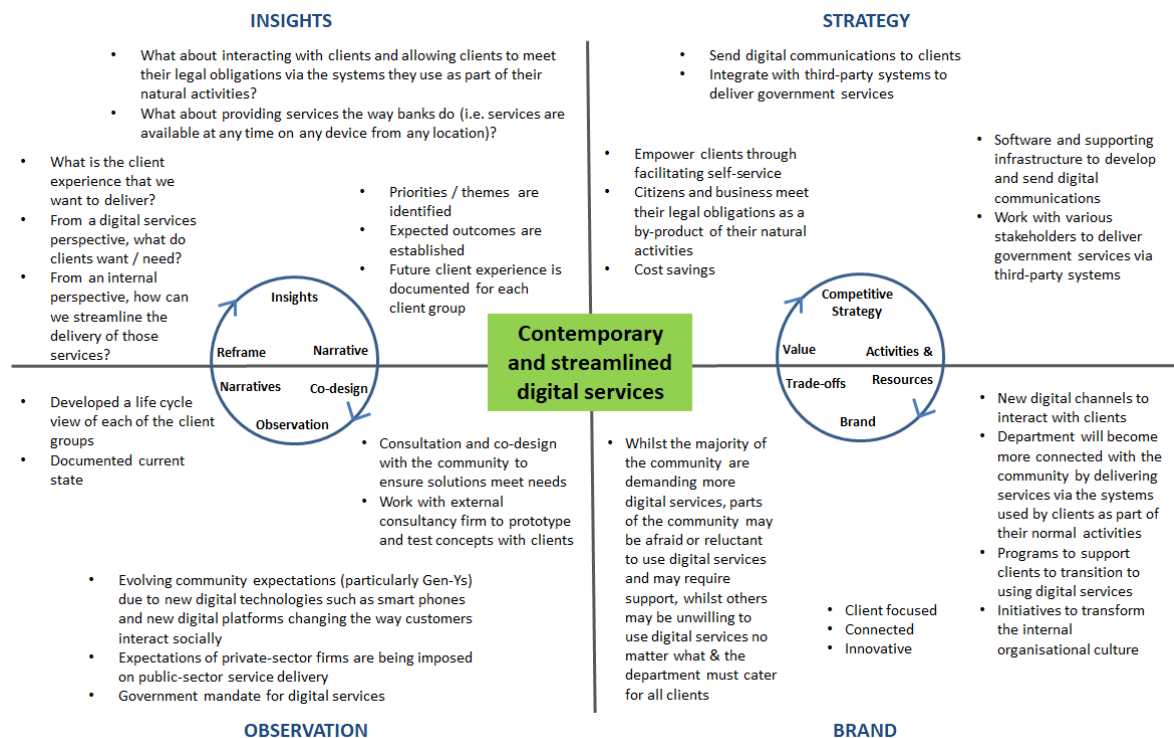


Figure 2: Case 1 – Digital Strategy Derivation Process mapped to the Adapted DLI Framework

The **observations** that prompted the need for a digital strategy included evolving community expectations, particularly from the tech-savvy Generation Y demographic; expectations of private-sector organisations being imposed on public sector service delivery; and, a government mandate for digital services. Participant 2 outlines the reasons for digital strategy adoption: “... *basically the government had mandated that... any business [transactional services]... with more than 50,000 transactions per annum needs to be in a digital way... And as consumers... with the onset of things like... smart phones and digital platforms and interacting in a very different way socially... that's one of the key underlying drivers from a community expectation perspective...*” The Agency adopted a lifecycle view of each client group to understand the various stages at which clients interact with the Department and how these interactions may be enhanced. Reframing appears to have been achieved by exploring several questions as shown in Figure 2 (e.g. What is the client experience the organisation should aim to deliver for each client group?). This led to numerous **insights** such as providing citizens access to government services at anytime from anywhere on any device, and allowing citizens and businesses to interact with government and meet their legal obligations using their natural systems. Participant 4 outlines a fundamental shift in thinking during subsequent iterations of developing the digital strategy: “... *Now we are trying to talk about different ways of doing things digitally... whether we provide [a] direct service to the community, ... engage [third-party] software [providers or]... integrate services with third party systems, trying to understand the opportunities that*”

technology gives us to eliminate the need for certain activities or to completely streamline the experience... it's no longer just about... turning that paper form as-is into an electronic format." Priorities for and expected outcomes from the digital strategy were established. The central value proposition appears to be the provision of contemporary and streamlined digital services. The Agency's digital **strategy** attempts to integrate government service delivery with the ecosystems of business and citizens to more seamlessly provide services, and empower citizens and business through self-service, a by-product of which may be cost savings. Necessary activities and resources imperative to the strategy include software and infrastructure to support sending digital communications to clients, as well as greater collaboration with external stakeholders, to integrate with and deliver government services through third-party systems. The activities and resources that allow the Agency to develop its **brand** include the provision of new digital channels for client communications, supporting clients to transition to digital services, integrating and connecting the Department with the ecosystems of citizens and business, and undertaking initiatives to transform the internal organisational culture. Thus, the digital strategy enables the Department to be perceived as a client-focused, connected and innovative organisation. A trade-off is that parts of the community may not be able or willing to use digital services. This is an iterative process where the Department's activities indicate that it continues to navigate through the various quadrants in Figure 2 (not necessarily sequentially) to refine its value proposition through new observations and insights, which have implications for its strategy and brand. Nonetheless, it should be noted that elements of the entity's digital strategy were derived based on non-discretionary government requirements or legislation, which may be considered design constraints and could limit the extent to which the adapted framework may be applied. The next section explores digital strategy derivation in a State Government agency.

4.2 Case 2 – An Australian State Government Department

The entity's approach to digital strategy derivation may be retrospectively, conceptually mapped to the adapted DLI framework as shown in Figure 3.

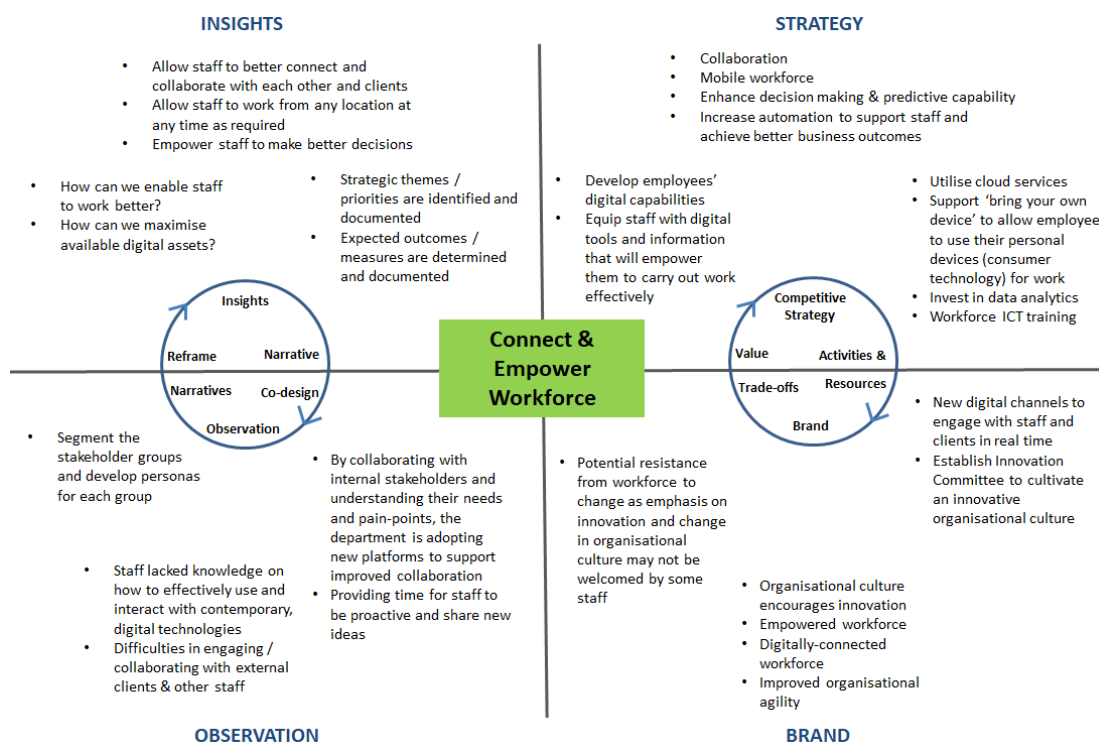


Figure 3: Case 2 – Digital Strategy Derivation Process mapped to the Adapted DLI Framework

Unlike Case Organisation 1, the Department's digital strategy has a strong internal focus. Two internal group 'innovation sessions' were held with relevant IT stakeholders in the Department to begin a conversation around digital, followed by brainstorming sessions to reflect on feedback from internal business clients and identify potential gaps that need to be addressed. Subsequently, one-on-one interviews were conducted with key internal staff in core business areas to explore their average day and identify potential gaps, opportunities and difficulties. This led to numerous **observations** including employees' lack of knowledge in effectively using contemporary technologies such as mobile

devices in their work, and difficulties in collaborating with each other and with external clients. As Participant 5 explains, *"we did a massive brainstorming session... the... responses that we got were things like 'We just want to know how to do stuff'... and there was a lot of feedback on things like collaboration... 'We write out a Word document, we email it to them, they write their bits and then they sign it and scan it and send it back'... It's not true collaboration"*. Various internal client groups were identified and personas were developed for each group to better understand their needs. By reframing observations, the Department derived **insights** by examining ways in which it can enable staff to work more effectively through maximising the use of available digital assets. Key insights were to enable staff to work from any location at any time as required and better connect and collaborate with each other and the Department's clients, and to empower employees to make informed decisions, which led to the identification of strategic themes/priorities and expected outcomes. The central value proposition appears to be to connect and empower the workforce through digital assets and capabilities. The digital strategy thus comprised key strategic themes, expected outcomes relating to each theme, and a roadmap comprising numerous initiatives to deliver the intended outcomes, informed by personas of the internal client groups. Participant 5 outlines the process followed to develop the digital strategy: *"Looking at both the feedback from the... innovation sessions... and the one-on-one interviews... I was able to break the information down into themes. Things like collaboration... and then looked at the outcome that those themes will provide... then I went backwards and looked at what initiatives would bring those outcomes"*. The **strategy** aims to improve collaboration, support a mobile workforce, enhance decision making and predictive capabilities, and increase automation. The key activities and resources underpinning the strategy include utilising cloud services, encouraging staff to bring their own devices to work, investments in data analytics and ICT training. By introducing new digital channels to better collaborate with colleagues and clients, and establishing an Innovation Committee, the Department is developing its **brand** as an agile and innovative organisation with a digitally-connected and empowered workforce.

5 CONCLUSION

Recent digital advances have profound implications for the way public organisations operate, engage with the community, create value and strategize. Our empirical research provides evidence of early attempts to achieve greater integration between government ecosystems and the ecosystems of business and society, and alludes to employees, citizens, partners and intermediaries emerging as co-creators of digital government strategy. Thus, conventional thinking and e-government stage models focused on moving through pre-defined, sequential stages of maturity appear inadequate. We begin to address this gap by proposing an adapted DLI framework to aid digital government strategy derivation, and explored the applicability of the adapted framework in two government departments by retrospectively mapping the activities undertaken by the agencies in formulating digital strategies, to the adapted framework. We found that entities may iterate through the four quadrants of the adapted framework to formulate a digital strategy underpinned by a distinct value proposition, although design constraints (e.g. elements of the strategy derived based on non-discretionary legislative and government requirements) may limit the extent to which the framework could be applied. The adapted framework thus guides practitioners in deriving digital government strategies by conceiving new value propositions, demonstrating the study's significance. Additionally, this paper provides numerous contributions to academia. Firstly, it positions 'digital government' as a reconceptualization of 'e-government' in a digital world, and proposes a useful framework for digital government strategy derivation. While further research is necessary to explore the applicability of our findings in other contexts to improve generalisability given the limited sample of two case organisations, this paper makes a useful contribution by drawing on the DLI framework from a reference discipline, adapting the DLI framework to suit digital strategy derivation in the public sector, and demonstrating the applicability of the adapted DLI framework in the digital strategy derivation process within two government organisations. Secondly, the need for greater cross-disciplinary and interdisciplinary research is evident to explore digital government strategy development in an increasingly connected, complex and uncertain digital world. Finally, explanatory or confirmatory research may be conducted to address the limitations of the current study e.g. by expanding the sample size or examining digital strategy derivation in different contexts.

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