MANAGEMENT OF INNOVATIONS IN ORGANISATIONAL NETWORKS: FOCUS ON CAPABILITIES
(Work in progress - Case study of power grid transformation)

Abstract

The study examines the capabilities of inter- and intra-organisational networks purposely created by a large organisation for managing innovation in its broader organisational ecosystem. The focus is on collaborative capabilities developed and used by the central electricity network actor, the natural monopoly in the Western Australian power market, and their industry partners. This collaboration becomes crucial for driving the efficiencies of core services and identifying the substitute services which challenge the business models of incumbent grid companies demanded by shifting consumer and societal expectations. The context of this study represents tensions between ambitions to innovate, dictated by the market forces on one side, and barriers to innovate posed by the monopolistic nature of the organization on the other side. We intend to identify collaborative capabilities that allow network actors to work around these tensions. The study contributes to the Industrial Marketing and Purchasing literature on innovation in networks and provides a managerial contribution on overcoming barriers to innovate posed by natural monopolies.

Keywords: Collaboration, Innovation, Networks, Ecosystem, Transformation, Grid.

Introduction

The creation of economic value is the primary consideration in management practice decision making (Drucker, 1993). The literature puts forward arguments that the challenging and risky nature of innovation requires organizational and inter-organisational collaboration of various actors in an ecosystem (Pattinson and Johnston, 2015, Schmidt et al., 2018). Companies can no longer conceive and develop their innovations in isolation but must learn to co-create them with a broader, dynamic and non-zero-sum ecosystem (Shuen and Sieber, 2009). Collaboration with a firm's ecosystem, including customers, suppliers, industry participants, regulator and owner, can yield tremendous competitive advantage and boost a company's bottom line (Planko, 2018). While the ability to successfully implement innovation is crucial to address uprising competition, some public utilities have historically been in a position of natural monopoly. These monopolies face structural, regulatory and cultural barriers in their business model to create value (Deloitte and Electricity Network Australia, 2017). It is hypothesized that those challenges could be more effectively overcome by leveraging their strategic nets, since multi-actor collaboration permits strategizing at the network level to create value, identifying new resource dimensions and further developing business relationships (Gadde et al., 2003). Recent studies have demonstrated how a strategic net can align firms' profit-seeking goals, corporate social responsibilities and enable the economic development of communities (Schepis et al., 2017). While previous studies have applied the concept of strategic nets to a number of problem-solving and value creation objectives such as product development, few studies have considered the co-orchestrated net pursuing a large-scale goal such as

industry transformation. Furthermore, few studies explore the role of the lead actor in influencing others through nets in a monopolistic economic environment. This study adds to the existing literature on strategic nets by providing insights on how the leader of the strategic net uses collaborative arrangements with its ecosystem to manage innovation, co-create and share value. The paper is set out as follows. An overview of the literature is first provided, followed by the research design. An outline of the case study background then explains the industry context and challenges. Preliminary findings and discussion are offered before the final section, which provides the limitations and future direction.

Literature review

The start of the fourth industrial revolution is seeing the accelerated adoption of disruptive technologies (Schwab, 2017), many firms use external sources of knowledge through open innovation processes to increase their innovation potential (Chesbrough, 2003, Chesbrough, 2011). Open innovation processes outperform closed innovations that firms develop internally (Chesbrough and Brunswicker, 2014, Hosseini et al., 2017). Many scholars acknowledge the importance of collaboration between large firms and small-medium entreprises (Jang et al., 2017). One of the key factors of successful collaboration is firms' collaborative capability and organisational capabilities which have been studied by several theoretical fields, such as the resource-based view of the firm (Wernerfelt, 1984), dynamic capability view (Helfat and Peteraf, 2003, Teece et al., 1997), the competence-based view (Prahalad and Hamel, 1990) and industrial networks (Möller and Rajala, 2007). The power industry around the world is implementing transformational changes and innovation capability is considered a decisive factor in improving organizational performance in the change context (Tamayo-Torres et al., 2016). As a subset of innovation capabilities, dynamic capabilities are a company's strategic ability to combine inside and outside competences to address volatile environments and periods of rapid change (Teece et al., 1997). The collaborative capabilities framework assumes that an organization's basic competencies should be used to create short-term competitive positions that can be developed into longer-term competitive advantage (Hosseini et al., 2017). The study therefore focuses on network capability as a strategic option providing an ability to proactively manage business stakeholders to fulfill the growth and revival ambitions of the incumbent. Academics have sometimes considered stakeholders as an ecosystems (Moore, 1993, Dhanaraj and Parkhe, 2006, Iansiti and Levien, 2004). The theory relating to intentionally designed strategic networks, within an ecosystem, constructed for attaining specific business goals, emerged in 2003 (Möller and Halinen, 2017). Early research focused on understanding the types of strategic nets and their capabilities (Möller and Rajala, 2007), clusters of innovation (Engel and Del-Palacio, 2009), the orchestration of actors

types and the role of intermediaries in co-managed innovations (Cantù et al., 2015), and how changes in strategic network resources influence the success of innovation networks (Purchase et al., 2014). More recent research focused on the challenges firms face in influencing their strategic nets (Schepis et al., 2017). The concept of ecosystem might even substitute for the industry performance analysis (Teece, 2014). However, limited knowledge exists on how to orchestrate or coordinate interlinked networks. We also have limited knowledge in the competition and collaboration between ecosystems. Furthermore, the ability to capture value, and how this value is appropriated among actors of strategic nets, remains a theoretical gap in the literature.

Research design

The research philosophy for this study is based on critical realism (Bhaskar, 2008). The case focuses on the transformation of the electricity industry in Western Australia (WA). Its uniqueness is in the presence of a natural monopolist orchestrating the purposefully created strategic net. To explore the research problems, a single-case study (Yin, 2014) was preferred given the suitability of the approach to the business context and the ability to capture a detailed understanding of net processes, structures and dynamic inter-organizational interactions (Dubois and Araujo, 2007, Halinen and Törnroos, 2005). The single case approach offers applicability to several network phenomena involving both intra and inter-organizational collaboration on product and process innovation (Tsai, 2001). The single case study approach also offers the opportunity to study the unique industrial context that features innovative business-to-business interactions set against ongoing political and cultural tensions faced by a state-owned enterprise. This methodological approach further aligns with the critical realist perspective of the research as it allows for thoughtful, in-depth research that explores the causal meaning and helps shape theoretical frameworks (Easton, 2010) and developing causal explanations of complex events (Dobson, 2001, Easton, 2010, Harrison and Easton, 2004). The contribution of this study is in unraveling the challenges associated with entrenched natural monopolies transitioning towards a competitive market, within a growing and increasingly complex ecosystem. A qualitative method incorporating appropriately rigorous ethical processes (Anyan, 2013, Kallio et al., 2016, Beverland and Lindgreen, 2010, Cohen and Crabtree, 2006) was selected. Data collection consisted of semi-structured interviews and an analysis of secondary data sources. The in-depth interviews were conducted with respondents from a variety of prominent organizations within the WA electricity industry to provide an understanding of the network context and identify potential focal innovation projects. A snowball referring approach allowed the identification of further relevant participants. Industry and corporate information such as reports, websites, brochures, and media articles were

also examined to provide triangulation. All original individual and company names have been anonymized. An abductive analysis is being followed where the theoretical framework evolves simultaneously and interactively with empirical observations (Dubois and Gibbert, 2010). This process of systematic combining involves retaining, revising, removing and adding elements throughout the comparative process (Dubois and Gadde, 2002). Thematic analysis using both Nvivo and Leximancer software identified codes and develop themes throughout the interviews and secondary documents, placing emphasis on participant-generated meaning.

Case study background

This section provides some industry context to the case study and the societal implications of the power industry transformation. The industry transformation affects all electricity consumers. At an industry level, the incumbent electricity utilities, particularly those shifting from their monopolistic, stable and predictable situation are now confronting competition from alternative energy services. The greatest threat from distributed generation development in WA, where sun generated energy is easily captured all year round, is the acceleration of the adoption of solar PV by customers. This trend reinforces the integrated-utility "death spiral" (Simshauser and Nelson, 2012). Consumers with solar panels produce their own energy, therefore buying less energy from the grid, increasing costs to the remaining grid customers and further promoting solar adoption and other grid alternatives. The speed of consumer's adoption of additional disruptive technologies such as batteries, electric cars, and electricity trading requires the incumbent grid operators to re-design their 80-years old operating models.

Preliminary findings

Policy uncertainty

The adoption of the Paris Agreement by the Australian Government and 195 governments around the world confirmed a commitment to effective global action on climate change. In Australia, this is being implemented primarily via the decarbonising the power industry such as the decommissioning of the coal-fueled thermal power stations. However, Australia lacks a clear energy policy direction at the national level which exacerbates the uncertainties in the power industry and prevents major investment decisions. Despite Australian power companies communicating great innovation ambitions, the proposed investment in innovation by the WA grid represents less than 0.3% of the 2019 expenditure plan.

Chicken and egg of innovation and Regulation

Preliminary interviews revealed that the regulations in the industry pose certain limitations to the implementation of innovative solutions such as stand alone power systems and advanced metering. Indeed, there is a misalignment with the innovation projects being undertaken to serve customers, which would be disallowed

to earn revenue under the current regulatory framework. Fast-tracking the simple regulatory changes to keep up with innovation has started to be implemented (Australian Energy Market Commission, 2018). However, more complex changes, are not easy to fast track and the regulators' prudency prevails, requiring more trials and pilots to demonstrate both economic and community benefits and how safety and reliability risks are being managed. On the other hand, the decentralization and self-governance of prosumers dilute the concept of regulation. This decentralization, through distributed energy is accompanied by significant technical challenges that have the potential to affect the entire electricity system. The sharing of the high infrastructure costs could be left to the more vulnerable customers unable to generate their own electricity.

Net leadership

While the strategic activities of actors of the strategic nets are focused on influencing policy and regulatory changes, no single actor is seeking to control the industry's net. The incumbent grid has the ability to influence its value net, particularly as it has strong and established technical capabilities. Furthermore, the efforts of the incumbent over the last few years in understanding its customers, their demand patterns and their segmentation are providing strategic insight which starts being leveraged in its core business' strategy. The use and sharing of data also appear to be an essential enabler to process innovation. Successful examples of collaboration efforts achieving promising results, particularly in initiatives requiring minimum capital investment and where the actors are "complementors" (Nalebuff, 1996).

Discussions and conclusion

Regulation and policy have deep-rooted implications for the collaboration at strategic network level. The insights uncovered as to the reasons why innovation is difficult to implement in grid businesses provide managerial applications for natural monopolies. The research also produces practical recommendations for incumbent grid companies in repositioning themselves in the new customer-focused energy marketplace. In outlining the strategic processes and capabilities related to net formation and management, we provide insight into how actors engage at different stages of net development and suggest that net participation requires specific capabilities (Partanen and Möller, 2012). Further insights are also drawn on how actors align their diverse motivations to a common goal despite the dynamic and emerging environment (Mouzas and Naudé, 2007, Ritvala and Salmi, 2011, Lind, 2015). In recognizing the context-specific nature of management (Westerlund and Svahn, 2008), a complementary managerial implication relates to recognizing the power of strategic influence. Companies focusing on influencing at the industry net level must be able to adapt their activities to directly or indirectly cooperate with both complementary and competitive organisations. The strength of a firm's dynamic capabilities will help shape its new

business model design (Teece, 2018). The implications of co-opetition with antitrust is also a consideration (Gnyawali and Ryan Charleton, 2018, Jorde and Teece, 1990).

Limitations and future direction

In seeking to expand upon the previously narrow applications of the net concept to the challenges faced by natural monopolies, the study opens opportunities to further explore how the results could be generalizable and to investigate the temporal aspects through a longitudinal study. This context might apply to situations where actors confront radical change. A longitudinal perspective would open opportunities to incorporate relationship further developing or the net termination processes into the framework of dynamic capabilities (Barrales-Molina et al., 2014). Action research to assist the actors in improving their collaborative capabilities and solving problems (Denscombe, 2010) would further help practitioners.

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