**Book Section:**
Narayan, S, Sidhu, JS orcid.org/0000-0001-9773-7559, Baden-Fuller, C et al. (1 more author) (2020) Examining CEOs' business model schemas: A cognitive mapping of differences between industry insiders and outsiders. In: Sund, K, Galavan, R and Bogers, M, (eds.) New Horizons in Managerial and Organizational Cognition. New Horizons in Managerial and Organizational Cognition, 4 . Emerald , pp. 15-37. ISBN 9781839820632

https://doi.org/10.1108/S2397-521020200000004003

# Examining CEOs' Business Model Schemas: A Cognitive Mapping of Differences between Industry Insiders and Outsiders

*Somendra Narayan[1], Jatinder Sidhu[2], Charles Baden-Fuller[3], and Henk Volberda[4]*

## ABSTRACT

At the level of a cognitive schema, a business model is a mental map of a firm's value-creating, value-delivering and value-capturing activities and the linkages between them. An important question in the study of business models as cognitive schemas is whether and how schemas differ across industry actors and whether the differences are connected to the variation observed in actual business models in the industry. This chapter examines, in particular, the ways in which business model schemas of industry insiders differ from those of industry outsiders. Using data from interviews with chief executive officers (CEOs) of 30 legal-tech firms, we graphically construct and analyze the CEOs' schemas of important causal interdependencies between their firms' activities. The analysis shows systematic differences between insiders and outsider CEOs' schemas. We theorize that these differences underlie insider and outsider CEOs' distinct approaches to opportunity recognition, expertise perception, and value framing, and have consequences for actual business model evolution in the industry.

**Keywords:** *Cognitive schemas; industry insiders and outsiders; opportunity recognition; value framing; business model evolution; dyadic and triadic business models*

[1] NEOMA Business School, France; narayan.somendra@gmail.com
[2] Leeds University Business School, University of Leeds, United Kingdom
[3] Cass Business School, City University of London, United Kingdom
[4] Amsterdam Business School, University of Amsterdam, the Netherlands

## INTRODUCTION

Research on business models (BMs) has provided important insights into the different components of BMs (Baden-Fuller & Haefliger, 2013; Casadesus-Masanell & Ricart, 2010; Rosca, Arnold, & Bendul, 2017; Smith, Binns, & Tushman, 2010; Teece, 2010; Zott, Amit, & Massa, 2011; Volberda, Van Den Bosch, & Heij, 2018). Research has, furthermore, revealed that managerial cognition plays a crucial role in the conception of new BMs as well as the evolution and innovation in existing ones (Aspara, Lamberg, Laukia, & Tikkanen, 2013; Baden-Fuller & Morgan, 2010; Chesbrough, 2010; Martins et al., 2015; Tikkanen et al., 2005). However, we do not yet have much understanding of what influence a manager's formative cognitive experiences (Sidhu et al., 2020), such as, experiences gained through one's professional background, have on their BM schemas.

Over time, managers develop a professional cognitive lens that they view the world through. The lens is molded by the effects of their education as well as their engagement with a specific industry (Sutcliffe & Huber, 1998), and may thus reflect commonly held beliefs in the industry about relevant business activities, potential business opportunities, and networks of value creation (Helfat & Peteraf, 2015; Tikkanen et al., 2005). The lens functions as a perceptual filter, shaping a manager's understanding of industry recipes, relationships between pertinent concepts, and the expected payoffs from different actions. The lens's selective exposure to certain kinds of ideas and information contributes to the development of individual-level heuristic logics, that is, cognitive shortcuts that codify real-world business interdependencies into simplified mental maps of the business. These BM schemas encapsulate managers' theories regarding their business world (Fiske & Taylor, 2013; Martins, Rindova, & Greenbaum, 2015).

In this chapter, we examine whether the BM schemas of managers from inside an industry differ from those of managers new to an industry. A priori, one would expect to observe differences, because as newcomers to an industry transfer, modify and integrate knowledge across activity domains, using processes of generative cognition, they may organize their understandings about a firm's value-creating activities and exchanges in ways new to the focal industry (cf. Martins et al., 2015). To determine the extent and nature of differences between BM schemas of industry insiders and outsiders, we used data from interviews with chief executive officers (CEOs) of 30 legal-tech firms to construct and analyze graphical representations of their schemas. The examination revealed systematic differences in business model comprehensiveness, connectedness, focus, and depth of understanding. Furthermore, these differences appeared to find manifestation in CEOs' opportunity recognition, value framing, and expertise assessment processes.

This chapter discusses the variations in insider and outsider CEOs' BM schemas in detail. Notably, it highlights that outsiders' BM schemas incline them towards product-driven BMs, whereas insiders' partnership-centered schemas result in matchmaking or platform BMs. Furthermore, outsider CEOs show an inclination to focus more on value creation through broad offerings, while insiders focus on establishing competitive superiority in a niche market. While both insiders and outsiders claim to simplify their customers' legal tasks and processes, the trajectories they adopt are distinct. Outsider executives are likely to prioritize innovation-driven and/or market-driven BMs, while executives with extensive legal experience tend to prioritize automation to replace repetitive human tasks. Outsiders also lay disproportionate focus on cost-saving as a value proposition, when compared with industry insiders.

One important message conveyed by this chapter is that despite the shortcomings of being an outsider, such as, lack of industry acumen and deficient social networks (Tibau & Debackere, 2008), outsider CEOs have comprehensive BM schemas. These comprehensive schemas, arising arguably from the incorporation of extra-industry knowledge to organize understanding of value-creation in the focal industry, underlie observable BM evolution. Overall, by studying individual level differences in the BM schemas of CEOs from inside and outside the industry, this chapter bridges research on strategic cognition with BM research (see also, Martins et al., 2015). In this regard, it highlights the value of outsider executives for BM innovation.

The remainder of the chapter is organized as follows. We start by discussing the industry context, followed by a review of the relevant literature. We then discuss the data and methods we used for cognitive mapping of BM schemas. Next, we report the results of our analysis. We conclude by discussing the contributions of our research.

## RESEARCH CONTEXT AND THE LITERATURE

Many industries and professions, over the past decades, have had to contemplate and implement drastic business model change to compete in a business environment dominated by technological evolution. Constant access to a global marketplace of products, services, as well as information has transformed how both customers and businesses conceptualize themselves and their interaction with each other. Case in point, until recently, the legal industry had largely resisted major changes in their generations old business models. However, recent industry reports indicate an emerging gap, with up to 55% of traditional law firms no longer meeting the expectations of their customers (Altman Weil, 2017; Deloitte, 2016). In 2016, while 28% of the investigated in-house legal teams already replaced some form of previously human tasks by technology, 77% had plans to either begin or increase the use of cutting edge technology in their operations (Deloitte, 2016). The coming-of-age of artificial intelligence and the increasing pressure on lawyers to do more for less means that the top management in the legal industry face an imminent need to innovate their business models (Altman Weil, 2017). Foremost, such changes in the central logic of longstanding industries and professions as result of the digital revolution require a re-conceptualization of managers' cognitive models of the value drivers in a firm's business environment and the interdependencies among them.

### Business Models: Cognitive Representations of Complex Activity Systems

At their core, business models are managerial cognitive schemas codifying the complex set of activities forming a firm's network of value creation, capture and delivery into simplified managerial heuristics (Schneckenberg, Velamuri, & Comberg, 2019; Teece, 2010). When viewed holistically, these schemas provide an insight into an individual's cognitive lens – their mind's eye (Furnari, 2015). Executives perceive their business environment through their own personal

cognitive lenses, by categorizing real-life information (situational cases) into existing cognitive categories (concepts and relationships) (Aversa, Haefliger, & Rossi, 2015). From this cognitive perspective, a business model is a managers' mental representation of the complex system of real-life activities that interlink drivers of value creation (Baden-Fuller & Morgan, 2010).

These processes of perceptual cognition and conceptual categorization reduce cognitive load associated with decision-making by organizing learning processes and simplifying recall of existing knowledge (Martins et al., 2015). However, this reduction of cognitive load has significant cost in terms of loss of objectivity in decision-making (Grégoire, Barr, & Shepherd, 2010). As executives' perception as well as processing of new information are defined by their personal cognitive schema of their business model (Clarke & Mackaness, 2001; Furnari, 2015), so is the rationale underlying their executive decisions (Schneckenberg et al., 2019). As distinct executives have their own distinct perception of reality, their cognition has a deep impact on executive decisions and organizational performance (Thomas & Porac, 2002). Each individual has a unique view of reality based on their knowledge and beliefs regarding causal interdependencies in their environment (Tikkanen et al., 2005). In the context of business models, this probably entails that managers conceptualize different schemas of interdependencies in their business environment, based on the understanding of cause-effect relationships between the different components, elements, and actors in their business model (Dutton & Jackson, 1987). Firstly, the cognitive framework employed by an executive to understand and explain their business not only guides the search for opportunities and threats in the business environment, but also provides a framework for the categorization of observed information (Grégoire et al., 2010). Secondly, an individual's mental understanding of their business model lends structure to their framing of the value propositions as well as influence the variety of value propositions in their pitch for their business

(Baden-Fuller & Mangematin, 2013). Third, an individual's cognitive biases influence their perception of their own abilities and expertise as well as their assessment of organizational capabilities and the need for expertise acquisition (Das & Teng, 1999; Kaplan, 2011; Tripsas & Gavetti, 2000). Fourth, the drivers of change prioritized by an executive when evolving and redesigning their business model are a product of the individual's past professional experiences and their perception of extant business interdependencies (Eggers & Kaplan, 2009). Above factors taken together, an executive's cognition play a crucial role in the development of a firm's business model value network.

Chesbrough and Rosenbloom (2002) state that business models are 'focusing device' that connect technological evolution with economic value. While both technological evolution and economic value creation are observable real world activities, the focusing referred to in this definition takes place at the level of an individual executive's cognition, before being implemented tangibly (Baden-Fuller & Morgan, 2010). In their review of the business model literature, Tikkanen et al. (2005), differentiate between the cognitive and material aspects of business models. Building on this, Doz & Kosonen (2010) distinguish between the objective versus the subjective elements of business models. Here, the objective elements represent the interdependent relation between the firm's business model and the internal as well as external actors engaged in it. This includes, the firm, its internal units and departments, customers, external partners, as well as other stakeholders. On the other hand, the subjective elements of a business model are the nodes and links in its cognitive representation in the minds of managers. Teece (2010) proposes a purposive classification of these subjective elements in three categories, namely value creation, value capture, and value delivery.

At the core of these each of these business model elements, connecting them with each other, is the firm's value proposition. Martins et al. (2015) elaborate how managers develop novel value propositions using a combination of various processes of generative cognition. Their article highlights that managers use their existing cause-effect beliefs as ingredients in analogical and combinative cognitive processes while designing novel propositions of value. This idea is in accordance with Casadesus-Masanell and Ricart (2010) who view business models as reflections of managerial interpretations and choices. More recently Schneckenberg, Velamuri, & Comberg (2019) have identified six cognitive processes that influence managerial reasoning in the development of their business model schemas. These include processes of dominant logic used for deductive reasoning – namely, analogical transfer, learned heuristics – as well as emerging logic (inductive reasoning), including problem sensing, considering adaptation, intuitional insights, integrating customer perceptions. In combination with these (and potentially more) cognitive processes, a manager's mental schema of their business model lends them a cognitive framework to develop heuristics for strategic activities. In the next section, we discusses the content and structure of the business model cognitive schemas (mental heuristics and biases as well as associated causal networks) and review the literature on the cognitive underpinnings of these crucial business model activities.

**Heuristic Patterns and Network Structure in Cognitive Schemas**

Cognitive mapping has been used by strategy scholars to plot the knowledge structures of executives engaged in decision making (Axelrod, 1976; Clarke & Mackaness, 2001; Furnari, 2015; Nadkarni & Narayanan, 2007). Cognitive schemas, acting as frameworks for perception and interpretation of novel information, influence strategic outcomes in three ways (Dutton, Fahey, & Narayanan, 1983). Firstly, an individual's cognition influences scanning, i.e. identifying new

information and determining its relevance (Forbes, 1999; Thomas, Clark, & Gioia, 1993). Second, diagnosis, i.e., an individual's existing knowledge/belief regarding cause-effect relationships in the real world influences their assessment and categorization of observed information (Dutton et al., 1983). And finally, an individual's cognitive schema is the base for their identification of and prioritization among choices of alternatives for any given strategic decision (Bromiley & Rau, 2016; Kaplan, 2011). In tandem, these three effects of differences among individual managerial cognition, dictate variance in strategic action, such as customer identification and market opportunity recognition, framing of value propositions, the perception of in-house expertise and knowledge acquisition, business model evolution, and the choice of business model type (dyadic product/dyadic solution/triadic matchmaking platform) (Baden-Fuller, Giudici, & Haefliger, 2017; Kaplan, 2011; Tikkanen et al., 2005; Vergne & Depeyre, 2016).

The structure of an individual's mental representation of their business model can be summarized and interpreted using four key network characteristics with precedent in literature, comprehensiveness – the size of their cognitive schema network (Calori, Johnson, & Sarnin, 1994; Clarke & Mackaness, 2001), complexity – the average degree of connectedness of the nodes for any given schema (Calori et al., 1994; Furnari, 2015), centrality– the extent to which the causal assertions in a cognitive schema are distributed across varied aspects of the business (K Carley & Palmquist, 1992; Eden, Ackermann, & Cropper, 1992; Nadkarni & Narayanan, 2007), and causal network density – the ratio of causal links in a schematic network to the maximum possible links for the given number of nodes. These structural features of a cognitive representation have critical effects on heuristics and biases employed in individual-level decision making.

For instance, the availability heuristic refers a cognitive shortcut that entails overvaluing the information conveniently available to oneself. Extant knowledge structures, thus, restricts the

scope of top management executives' causal assertions in organizational settings. Rooted in the differences between objective reality and executives' perception of the reality, this bias is reduced as the variety and connectedness of concepts in a cognitive maps increases. Increased comprehensiveness and complexity in cognitive maps enables managers to use a greater number of categories and relationships to categorize information extracted from real world scenarios (Bogner & Barr, 2000) (Bogner and Barr, 2000). Comprehensive and complex cognitive schemas provide a greater initial set of causal assertions and thus reduce the negative effects of the availability heuristic on executive decision making. Individuals engage in cognitive processes such as environmental scanning, diagnosis, and choice of alternatives using their individual cognitive representations of reality. An executive with a narrow view of the value independencies in their business model is likely to have limited perception of opportunities and threats in their business environment. Previous research has elaborated further upon the effect of a complex and comprehensive understanding of the business model on managers' performance. Complex cognitive maps have been found to enable rapid response to priority situations, greater flexibility in decision making, increased creativity in business model design, and implementation of novel business model elements (Rodan & Galunic, 2004). Further, increased cognitive complexity also improves an executives' absorptive capacity, enhancing acquisition of industry acumen, resulting in a positive feedback loop (Cohen & Levinthal, 1990).

Further, an executives' focus in their business model cognitive schema is an important determinant of executive decision making and strategic action. A cognitive schema indicates a high degree of centrality (or monofocality) if the causal relations therein are structured around one central concept or are distributed along multiple key concepts (Nadkarni & Narayanan, 2007). Such a characteristic network of perceived causal links in the business environment in likely to

have a bearing on the scanning of the business environment, diagnosis of the key issues, as well as choices of alternatives to address these issues. Previous literature has made a distinction between core concepts and peripheral concepts in a cognitive schema. While both kinds of concepts are results of long-term learning, elaboration, and feedback processes (Prahalad & Bettis, 1986), they play distinct roles in managerial decision making. In the processes of sensing opportunities, seizing them, and reconfiguring the firm's existing business model to achieve these goals, core (central) concepts play a more important role than peripheral concepts.

This emphasis on central concepts in a large number of cognitive processes is called perceptual salience. Perceptual salience is driven by the prominence of concepts and relations in an executives' past experiences. This creates a preference among executives for ideas and value chain linkages that are eye-catching and easy to discern for them (Kahneman & Tversky, 1982). When an individual has extensive experience in a context, they are more likely to have salient concepts that are associated with their specific role within the business ecosystem. While this ability to rapidly identify of opportunities and threats in an individual's surroundings is an essential cognitive mechanism useful for the allocation of attentional resources, in the context of decision-making, it may manifest in the form of the salience bias. Owing to the focus on a few central concepts, executives with focused cognitive schemas are susceptible to cognitive inertia (Carley & Palmquist, 1992). This cognitive inertia – a tendency for endurance of links in a cognitive schema once formed – may lead executives to unwittingly ignore viable business opportunities, limit the scope for the framing for value propositions, and restrict trajectories of business model evolution. A lower degree of focus on a manager's cognitive map of their business model makes it likely that the manager would consider a diverse perspective in executive search and decision-making processes. As managers routinely prioritize information which they consider most relevant

and leave out other potentially fruitful information, they narrow down the firm's scope of business opportunity scanning as well as their choices of alternatives.

Further, densely-mapped cognitive schemas reduce the cognitive inertia inherent in decision making processes by facilitating a greater variety of alternatives (Dutton & Jackson, 1987). Firms led by executives with highly dense cognitive schemas have access to a greater depth of knowledge regarding a larger proportion of potential connection among the given concepts. These executives, characterized by greater extent of coverage of the causal network in a schema have experience with and are aware of deep and underlying issues in a domain. Such executives can identify potential market opportunities which address customers' key pain points. This also has a direct effect on strategic decision making and actions of these executives. Dense cognitive schemas facilitate more targeted scanning of environmental opportunities, and effective diagnosis leading to a bearing on the future trajectory of business model evolution. Dense cognitive representations reflect a variety among managerial perspectives and promote the consideration of new alternatives in the strategic decision making process (Hodgkinson, 1997). Overall, owing to the increased likelihood that real life information observed within the given domain has a suitable category to be employed in its interpretation, density of cognitive maps is helpful in environmental scanning within the domain. However, for scanning opportunities and threats beyond the domain, diagnosing industry-spanning issues, and making the choice of action from a wide range of alternatives, a dense cognitive schema isn't helpful. The effects of the density of business model schemas are thus limited by their comprehensiveness.

## DATA AND METHODS

This chapter explores the cognitive differences among insider/outsider executives based on a series of interviews from the legal-tech ecosystem and other publicly available data, such as industry reports, media reports, and firm annual reports. The interviews were conducted by Mary Jutten of the legal innovation organization, 'Evolve the Law' based in New York, USA. These interviews have been published as a part of a podcast series 'Evolve Law' with the support of the legal media website 'Above The Law'. This study has no direct association with the interviewers or the interviewees. This chapter builds on an analysis of the transcripts of the publicly broadcasted interviews (podcast) under a copyright fair use doctrine. The dataset includes 30 interviews, conducted between March 2016 and February 2017, with CEO/Founders of firms operating in the legal-tech sector. As part of data preparation for this study, these interviews were transcribed, coded for causal assertions along a number of conceptual themes, and transformed into business model cognitive schemas. The resultant business model cognitive schemas were then analyzed along their structure (characteristics of the value network) and content (recurring patterns underlying value creation/capture/delivery) to identify cognitive differences among executives owing to their professional background. Information required for developing these business models cognitive schemas can be retrieved from text or speech where top managers describe their business model. Thus, cognitive mapping has been used in a variety of fields as a simple yet reliable tool to understand the construction and accumulation of mental structures of knowledge and belief.

To improve internal validity, mapping and network analysis of executives' business model cognitive schemas is interpreted through thematic content analysis of the interview. As the aims of this chapter include the elucidation of the structure as well as content of cognitive differences

among individuals owing to their professional experience, the data was coded for a two-pronged analytic approach. For a detailed evaluation of the research design, Table I enumerates the primary methodological concerns associated with the cognitive mapping methodology (Nelson, Nadkarni, Narayanan, & Ghods, 2000) and their treatment in this study.

---

Insert Table I about here

---

Data on executives' individual level characteristics was retrieved from company websites, media publications, and social networking sites. Information regarding executives' age, educational and background, domain and tenure of previous work experience, tenure at current firm was retrieved from LinkedIn, among other sources. Top managers' educational background is categorized into six categories, humanities, business, economics, engineering/science, formal legal education, and law-related humanities education. Similar to the measurement of educational background, executives' functional background is also categorized into five categories, namely engineering, finance, general management, law, marketing. Table II provides an overview of key characteristics of the interviewed executives' and their firms. Executives were categorized as industry insiders if they had previously directly worked for either a law firm or as/for an in-house general counsel. This categorization is regardless of an individual's formal legal education or qualifications.

---

Insert Table II about here

---

**Mapping of Business Model Cognitive Schemas**

Business model cognitive schemas are typically mapped using qualitative information gathered by observing top managers explaining their company's business models (Furnari, 2015). Figure 1 illustrates this process using an example from the dataset.

---

Insert Figure 1 about here

---

As figure 1 illustrates, using this process of mental mapping, the interview transcripts were transformed into a graphical schema of the business model in four steps (cf., Barr, Stimpert, & Huff, 1992; Calori et al., 1994; Furnari, 2015). The first step after transcribing the interview is identifying causal statements in the transcription. This includes identifying assertions that the researcher considers to have an effect on other things. In step 2, concepts based on the identified causal statements were codified into a table where each row consists of a cause concept, an effect concept, and the type of relationship. Next, the core concepts are organized into theoretical categories of business model elements (step 3). For this purpose, this study employs an business model conceptualization with its process elements categorized as value creation, value delivery, and value capture (Chesbrough & Rosenbloom, 2002; Teece, 2010). This study maps these three elements around the firm's value proposition. Moreover, we also distinguish between value creation for the direct client and value creation for the end user in the mapping. Thus, step 3 adds theoretical categorization to each conceptual relationship observed in the data. In the last step (step 4), the executive's cognitive map is developed using a network analysis software, UCINET. This software visualizes the cognitive schema as a network map. Every causal statement reflects a relation, the cause-effect relation, which is visualized in the schematic network. Moreover, this

visualization shows the organization of each concept into the conceptual business model categories.

---

Insert Figure 2 about here

---

Figure 2 provides an illustration of a business model cognitive map. The BM cognitive map in figure 2 reflects the manager's understanding of their business model. Here, the circular nodes represent causal concepts, square nodes represent effect concepts and consequently each relationship represents a causal assertion as perceived by the interviewed executive. An illustrative case elaborating the mapping of the cognitive schema is also provided in appendix A.

**Network Analysis and Contextual Interpretation of Cognitive Schemas**

The cognitive schemas mapped following the above mentioned steps are subsequently analyzed as networks in order to reveal key insights regarding the structure of the business model. The results are interpreted with the context of the thematic analysis of the interview responses for improved internal validity.

The comprehensiveness, centrality, connectedness, and density of a cognitive map is calculated using methods commonly adopted in network science strategic cognition literature (Furnari, 2015; Nadkarni & Narayanan, 2007). Network comprehensiveness is measured as the number of nodes (N) in a network, i.e., the number of concepts in a given cognitive schema in relation to the other cognitive schemas in the sample (Nadkarni & Narayanan, 2007). Network connectedness is measured as the average number of edges connected to each node in a given network (E/N), i.e. the number of linkages in the map divided by the total number of concepts in the map (Nadkarni & Narayanan, 2007). This ratio reflects the connectedness of concepts in the cognitive schema and thus its degree of complexity (Calori et al., 1994). Density of the schematic

network is a ratio of the number of edges to the maximum possible number of edges in a network with N nodes ($E/E_{max}$) (Kathleen Carley & Palmquist, 1992). This can be calculated (in network analysis for simple graphs) using the following formula; $D = 2 * \frac{(E-N+1)}{N(N-3)+2}$. The degree centrality of any node is the number of links incident upon it, i.e., the total number of relationships that a concept has (Valente, Coronges, Lakon, & Costenbader, 2008). As an indicator of the overall focus in a business model cognitive schema, this study takes the product of the number of nodes with degree centrality greater than three and the highest degree of any given node in the schema. This measure reflects the cognitive map's centralization and prioritization of one concept over others. Using the number of nodes with high degree centrality a certain concept is associated with, the cognitive maps were also classified into two categories; singular-focus business models and distributed-focus business models (Pokorny et al., 2018). For the analysis of the difference of means of the network characteristics among outsider and insider executives this study uses Walsh's two sample t-test as well as logistical regression using generalized linear models.

In interpreting the results of the network analysis, content analysis of the cognitive maps was used to compare and categorize a wide range of causal statements by insider and outsider along a number of themes. Subsequent to the identification of causal concepts and relationships in the interview data, the statement was coded along theoretically salient themes at the individual case level. These themes are centered around four key executive processes of opportunity identification, value framing, expertise acquisition, and business model evolution. Further, the business models in each of the schemas were coded based on the number of value creators and the direction of the value flow into core theoretical business model types including dyadic product, dyadic solutions, triadic match-making, triadic multisided (see Baden-Fuller et al., 2017). This was

followed by a cross-case analysis, wherein the emerging patterns from thematic analysis were used to summarize the main themes of differences between industry insiders and outsiders.

The reliability of the coding was ensured through independent rating of the interview data by the doctoral candidate as well as a master student familiar with the dataset. Both the coders engaged, in parallel, in the identification of causal statements, their cause and effect components, and the nature of the relationship between the concepts. While the final decisions on the coding approach and rating of empirical data were taken by the doctoral candidate, frequent discussions over the coding of causal statements occurred until the researchers reached consensus on the key codes.

## RESULTS AND DISCUSSION

The analysis of the executives' cognitive schemas resulted in the identification of key differences in the content as well as structure of the mental representations of their business models. As the primary mode of analysis, the network characteristics of these business model cognitive schemas, such as comprehensiveness, complexity, centrality, and density were compared across industry insider versus industry outsider executives. A summary of the findings of this schematic network analysis is provided in table III.

---

Insert Table III about here

---

The results show that industry insider executives have a significantly lower network comprehensiveness in their business model cognitive schemas ($t = -1.96$, $b = -0.17$). This indicates a lower degree of differentiation among the concepts included in an insider executives' managerial cognitive schema. In other words, outsiders have a larger number of nodes/concepts in their mental

representation of their business models due to their experience with a wider range of concepts beyond the legal industry.

In addition to this, the results show that industry outsider executives have a significantly higher network complexity in their business model cognitive schemas. As the comparison of means of the average degree of connectedness (E/N) of the network indicates, outsiders have better connected nodes in their mental representations of their business models. They include a greater average number of links/relations connected to each node/concept in their business model cognitive schemas. Table III shows that there is a significantly lower average degree of connectedness of the concepts in an insider executives' managerial cognitive schema ($t = -2.11$, $b = -0.16$).

Further, the centrality in business model cognitive schema reflects the number of highly connected nodes in a cognitive schema. Results of the statistical analyses show that insiders have a higher number of nodes in their cognitive schemas which have a high degree of centrality compared to outsiders ($t = 1.82$, $b = 0.18$). This entails that outsiders are more likely to have multiple 'central nodes' – nodes which are connected to three or more links – in their cognitive schemas than insiders. In the context of business model cognitive schemas, this means that industry insiders are more likely to have a unifocal business model cognitive schemas – focusing on a single idea or concept as causally connected with a wide range of other value creation, capture and delivery concepts.

Lastly, the density of the business model cognitive schemas, that is the proportion of potential links in the value chain identified by the executive is significantly higher among insider executives ($t = 2.52$, $b = 0.20$). This entails that insider executives are able to recognize a greater number of relational links within a given number of conceptual nodes. In the context of business

model cognitive schemas, density of the schematic network may be interpreted as the depth of knowledge in an individual's field of focus.

In summary, the analysis of managers' cognitive maps of their business model indicates significant differences in their structure. Outsider executives develop more comprehensive as well as more complex schemas of their business model compared to insiders. Next, although insiders' BM cognitive schemas are smaller in size, they reflect deeper and more focused knowledge structures.

## Discussion and Implications

The results of the network analysis highlight that the schemas of industry insiders and outsiders differ along four dimensions – comprehensiveness, complexity, distribution of focus, and depth of understanding. In addition to the structure of their cognitive schemas of the interdependencies in their firm's business model the following discussion interprets these systematic differences with regards to the content. In the following section we discuss how owing to these differences, outsiders and insiders are likely to adopt different approaches to opportunity recognition, expertise assessment, value framing, and business model evolution.

### *Perception of Opportunities and Customer Identification*

Substantiating the results of the network analysis of the business model cognitive maps, the content analysis of the cognitive maps also indicates a systematic difference between the primary customers that are at the center of insiders' and outsiders' mental representation. Professional knowledge structures provide a framework for the cognitive processes of scanning, opportunity recognition, customer identification, and executives' understanding of their customers' specific needs. Content analysis of the business model cognitive schemas reveals that,

insiders' schemas are centered around personally experienced or observed problems, while outsiders use narratives built around the optimal utilization of technology.

Owing to their personal experience-driven BM schemas, insiders base their opportunity identification on potential customers and their needs. On the other hand, facing a lack of contextual knowledge, outsiders undergo a proactive exploration of their new industry of operation. Thus, outsiders executives adopt a balanced approach, combining customers' needs, their solutions, and the facilitating technology. While the former leads to a narrow-focused, denser business model schema, the latter results in a broader, more comprehensive schema. Owing to these unique professional experiences and distinct cognitive schemas, outsiders identify potential links in the value chain unlike insiders. For instance, while insiders tend to overlook non-lawyers as customers of legal-tech firms, outsiders are able to prioritize a range of non-legal customers. Although, an executives' previous industry experience facilitates targeting a wider range of customers within their professional domain.

*Expertise and Knowledge*

While a manager's cognitive schema of their business model provides the basic framework for decision making, they also indicate the nature and sources of value, in this case knowledge and expertise. The causal concepts in the links in the BM schema were analyzed to identify the sources of expertise and knowledge with reference to legal, technical, and cross-domain expertise of the executives' themselves, expertise available in-house at their firm, and the expertise that they acquired. Content analysis indicates that while systematic and planned acquisition of both legal and technical expertise is widely believed to be the ideal approach, it is seldom followed. Further, among the investigated firms, locus of expertise evident in the schemas is different for outsiders and insiders. Content analysis of the causal links in business model cognitive schemas show how

legal expertise is derived from reliance on executive's legal experience, executive's industry experience, external partnership for in legal expertise, inhouse team of attorneys, or network of attorneys. Similarly, executives derive technical expertise from reliance on executive's technical expertise, reliance on executive's entrepreneurial experience, in-house technology teams, and partner executive's technical expertise.

Overall, while industry insiders predictably rely on their own legal expertise to drive their firm's business models, outsiders rely on their own past experiences for technical and/or entrepreneurial acumen. However, while outsiders acknowledge the limits of their legal expertise, lawyers executives (insiders) are likely to underestimate the expertise required for the technical and entrepreneurial aspects of their business. Other emergent drivers of cross-domain expertise in legal tech firms are the executive's own cross-domain expertise, executive's entrepreneurial acumen, technology-driven expertise acquisition, technology hosted network of legal experts.

*Framing of Value Proposition*

The next theoretical theme along which the cognitive maps were coded is the executive's framing of their firm's value proposition – indicating their diagnosis of and addresal for the market opportunity. There were four categories of value propositions emergent from the coding, task automation, cost saving, customer driven, workflow simplification. Among these insiders predominantly propose automation of redundant legal tasks as the primary driver of value for the customer. This is in accordance with the insiders' personal approach to motivating their business model, and is often shown to be a result of pain points identified by the executives themselves.

While outsiders consistently view value propositions from two different perspectives, encompassing customer centric and task centric value, insiders address their value propositions

differently. Insider executives focus on only one form of value and build on the same to provide a narrow yet powerful narrative. On the other hand, outsider executives tend to focus on multiple forms of value simultaneously (customer centric, task centric, technology centric, cost centric).

An individual's depth of previous understanding of the industry and its business interdependencies facilitate triadic relations and bidirectional dyadic relations among business actors as opposed to unidirectional dyadic models driven by technology push. When interpreted in light of Baden-Fuller et al's (2017) theoretical classification of business model types, the cognitive maps show that insiders are more likely to adopt triadic (multi-party) matchmaking platform type or dyadic (two-party) solution type business models. On the contrary, outsiders tend to perceive and explain their businesses in terms that signify a unidirectional dyadic product model.

Further, analysis shows that insiders and outsiders' business model cognitive schemas also evolve differently – revealing that in line with the preceding findings, insiders prioritize their personal motivation and experimentation as one of the main drivers of business model design. On the contrary, outsiders prioritize other outside-in factors in the evolution of their business models like access to data and the potential applications of digital resources. Outsiders also tend to highlight their lack of initial industry expertise, their learning orientation, and focus on the role of technological evolution in bringing about their business model.

## Conclusions

As the businesses are dynamic entities, undergoing continual reinterpretation and reconfiguration, these characteristics of the structure of executives' mental representation of the business model have an influence on the development of the content of the business model. An

executives' generative processes of cognition simply work with the ingredients emergent as a result of their perception. With distinct mental schemas of their business model, insiders and outsiders focus on different concepts and relationships when attempting to visualize novel links in the value chain. Rooted in distinct approaches to opportunity identification and expertise assessment, the value framing developed by executives with past experience in a relevant professional context systematically differs from that developed by outsiders. Further, this managerial perception of outward and inward opportunities and threats influences a firm's trajectory of business model evolution (or business model renewal). A summary of these findings is provided table IV.

---

Insert Table IV about here

---

This analysis of executive's cognitive schemas provides a response to Furnari's (2015) call for exploration of structural cognitive factors influencing the business model of a firm and Schneckenberg et al's (2019) appeal to identify cognitive processes of business model evolution in industry and dynamism specific contexts. This study both confirms and broadens the inquiry on how executives with distinct professional experiences differ in the way they perceive their firm's business models. Further, this study builds on and extends Martins et al's (2015) explanation of the generative processes of cognition underlying design of new business models. We see that industry insiders – executives with previous professional experience in the focal industry – have narrower, denser, and more centralized cognitive schemas of their business models. This is opposed to outsiders perceiving their business models in schematic networks that include a wider range of relatively sparsely connected concepts. To our surprise, we do not find any outlier executives who have both broad as well as dense schemas of their business model.

Firstly, this study empirically confirms that, at its core, the process of opportunity recognition in organizations is of a cognitive nature (Zagorac-Uremović & Marxt, 2018). The findings resonate with previous research suggesting that previous knowledge among executives and selective exposure to certain situations has a pivotal effect on perception of opportunities in their business environment (Grégoire et al., 2010; Thomas et al., 1993). Further, in showing that the identification of the focal customer segments within as well as beyond a firm's industry of operation is contingent on the causal association in the top executives' perception of their business models, the chapter contributes to the microfoundations of customer recognition and opportunity identification.

Secondly, the content analysis of business model cognitive maps supports that idea that the framing of a firm's value proposition is a reflection of the managerial diagnosis of the issue/market gap as well as the organizational response considered suitable (Dutton et al., 1983). Results show that as insiders and outsiders are different in the way they perceive and detect issues in the first place, the frameworks as well as the information used to develop their value propositions is also systematically distinct. Insiders use their own experience as well as a deep understanding of the pain points faced by actors in the industry to identify and frame the value proposition of their firm. This also entails that they are likely to focus on a narrower range of value propositions when compared with outsiders.

Thirdly, we explore the managerial business model schemas with regards to the role of knowledge acquisition and cross-domain balancing of expertise in industry-spanning firms. We find that heuristics and cognitive biases play an important role in determining a manager's perceptions of their own expertise, the expertise available within the firm and the required expertise. Insiders' experience in the context of the legal industry leads to confidence in the firm's

legal expertise and overconfidence in the firm's non-legal capabilities. This entails that an executive's industry experience has an influence on the firm's absorptive capacity by influencing the perception of available expertise and thus skewing the drivers of acquisition of new talent.

Fourth, we find that as the approach taken to opportunity recognition, perception of one's potential value offering, and the perception of expertise differ across insiders and outsiders, the way business models evolve also reflects the structural differences in the cognitive schemas. Insiders prioritize subjective drivers of business model evolution, such as personal experimentation, executive's motivation, or customer feedback. Outsiders on the other hand, lacking in deep contextual knowledge of the domain, are driven by technological development, access to (digital) resources, and partnerships with legal partners in their firm's strategic renewal process.

Finally, we identify cognitive differences between outsider and insider executives and theorize its role in the evolution/renewal of business models. In context of Baden-Fuller et al's (2017) theoretical classification of business model types, we find that insiders are more significantly more likely to adopt bidirectional dyadic (solution) or triadic (matchmaking) type models. We submit that due to a deeper experiential understanding of the dynamics of the legal industry, insiders are able to form novel links in the business model connecting a greater variety of stakeholders and multiple directions of the flow of value. Contrarily, using the technological differential between the legal industry and other industries, outsiders are able to use causal concepts and links from a wider range of unrelated domains. Thus, they are more likely to adopt a unidirectional dyadic (product) type business model.

In summary, the chapter illustrates systematic cognitive differences among industry insiders and industry outsiders in the way they approach opportunity identification, framing of

value propositions, perception of available expertise, and their choice of trajectory for business model evolution. Insiders are shown to prioritize personally motivated opportunity identification narratives, task automation-based value propositions, exaggerated perception of the executive's expertise, and a customer feedback and personal experimentation-based business model evolution trajectory. On the contrary, it is found that outsiders attempt to compensate for their outsider-ness by proactively exploring the industry and consequently adopting a more balanced approach to their business model innovation. Outsiders prioritize technology driven opportunity identification narratives, cost saving based value propositions, and conscious legal and technical expertise management. Further, outsiders are likely to prioritize access to digital resources, and technological evolution as primary drivers of business model evolution.

**Acknowledgements**: The authors convey their gratitude to the editors and the anonymous reviewers for their support and insights. Financial support for this paper and the wider project Building Better Business Models came from EPSRC (EP/K039695/1) and Mack Institute, Wharton, U. Penn

**References**


Altman Weil, I. (2017). 2017 Law firms in transition survey.

Aspara, J., Lamberg, J., Laukia, A., & Tikkanen, H. (2013). Corporate business model transformation and inter-organizational cognition: the case of Nokia. *Long Range Planning*.

Aversa, P., Haefliger, S., & Rossi, A. (2015). From business model to business modelling: Modularity and manipulation. In C. Baden-Fuller & V. Mangematin (Eds.), *Business Models and Modelling*.

Axelrod, R. (1976). Structure of decision: The cognitive mapping approach to decision making (pp. 221–250). Princeton, NJ: Princeton University Press.

Baden-Fuller, C., Giudici, A., & Haefliger, S. (2017). Business models and value: Analytical comparisons of scalable solutions and digital platforms. *Academy of Management Proceedings*, Atlanta, GA.

Baden-Fuller, C., & Haefliger, S. (2013). Business models and technological innovation. *Long Range Planning*.

Baden-Fuller, C., & Mangematin, V. (2013). Business models: A challenging agenda. *Strategic Organization*.

Baden-Fuller, C., & Morgan, M. (2010). Business models as models. *Long Range Planning*.

Barr, P. S., Stimpert, J. L., & Huff, A. S. (1992). Cognitive change, strategic action, and organizational renewal. *Strategic Management Journal*, 13(S1), 15–36.

Bogner, W. C., & Barr, P. S. (2000). Making sense in hypercompetitive environments: A cognitive explanation for the persistence of high velocity competition. *Organization Science*, 11(2), 212–226.

Bromiley, P., & Rau, D. (2016). Social, behavioral, and cognitive influences on upper echelons during strategy process. *Journal of Management*, 42(1), 174–202.

Calori, R., Johnson, G., & Sarnin, P. (1994). CEOs' cognitive maps and the scope of the organization. *Strategic Management Journal*.

Carley, K., & Palmquist, M. (1992). Extracting, Representing, and Analyzing Mental Models. *Social Forces*, 70(3), 601.

Casadesus-Masanell, R., & Ricart, J. (2010). From strategy to business models and onto tactics. *Long Range Planning*.

Chesbrough, H. (2010). Business model innovation: opportunities and barriers. *Long Range*

*Planning*.

Chesbrough, H., & Rosenbloom, R. (2002). The role of the business model in capturing value from innovation: Evidence from Xerox Corporation's technology spin-off companies. *Industrial and Corporate Change*, 11(3), 529–555.

Clarke, I., & Mackaness, W. (2001). Management "intuition": An interpretative account of structure and content of decision schemas using cognitive maps. *Journal of Management Studies*.

Cohen, W., & Levinthal, D. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly*, 35(1), 128–52.

Das, T. K., & Teng, B.-S. (1999). Cognitive biases and strategic decision processes: An integrative perspective. *Journal of Management Studies*, 36(6), 757–778.

Deloitte, L. (2016). Future trends for legal services|Deloitte|legal services|article.

Doz, Y., & Kosonen, M. (2010). Embedding strategic agility: A leadership agenda for accelerating business model renewal. *Long Range Planning*, 43(2–3), 370–382.

Dutton, J. E., Fahey, L., & Narayanan, V. K. (1983). Toward understanding strategic issue diagnosis. *Strategic Management Journal*, 4(4), 307–323.

Dutton, J. E., & Jackson, S. E. (1987). Categorizing Strategic Issues: Links to Organizational Action. *Academy of Management Review*, 12(1), 76–90.

Eden, C., Ackermann, F., & Cropper, S. (1992). The analysis of cause maps. *Journal of Management*.

Eggers, J. P., & Kaplan, S. (2009). Cognition and renewal: Comparing CEO and organizational effects on incumbent adaptation to technical change. *Organization Science*, 20(2), 461–477.

Fiske, S., & Taylor, S. (2013). Social cognition: From brains to culture.

Forbes, D. P. (1999). Cognitive approaches to new venture creation. *International Journal of Management Reviews*, 1(4), 415–439.

Furnari, S. (2015). A cognitive mapping approach to business models: Representing causal structures and mechanisms. In C. Baden-Fuller & V. Mangematin (Eds.), *Business Models and Modelling* (pp. 207–239). Bingley: Emerald Group Publishing.

Grégoire, D. A., Barr, P. S., & Shepherd, D. A. (2010). Cognitive processes of opportunity recognition: The role of structural alignment. *Organization Science*, 21(2), 413–431.

Helfat, C., & Peteraf, M. (2015). Managerial cognitive capabilities and the microfoundations of

dynamic capabilities. *Strategic Management Journal*.

Hodgkinson, G. P. (1997). Cognitive inertia in a turbulent market: The case of UK residential estate agents. *Journal of Management Studies*, 34(6), 921–945.

Kahneman, D., & Tversky, A. (1982). *The psychology of preferences*.

Kaplan, S. (2011). Research in cognition and strategy: Reflections on two decades of progress and a look to the future. *Journal of Management Studies*, 48(3), 665–695.

Martins, L. L., Rindova, V. P., & Greenbaum, B. E. (2015). Unlocking the hidden value of concepts: A cognitive approach to business model innovation. *Strategic Entrepreneurship Journal*, 9(1), 99–117.

Nadkarni, S., & Narayanan, V. (2005). Validity of the structural properties of text-based causal maps: An empirical assessment. *Organizational Research Methods*.

Nadkarni, S., & Narayanan, V. (2007). Strategic schemas, strategic flexibility, and firm performance: The moderating role of industry clockspeed. *Strategic Management Journal*.

Nelson, K. M., Nadkarni, S., Narayanan, V. K., & Ghods, M. (2000). Understanding software operations support expertise: A revealed causal mapping. *MIS Quarterly*, 24.

Pokorny, J. J., Norman, A., Zanesco, A. P., Bauer-Wu, S., Sahdra, B. K., & Saron, C. D. (2018). Network analysis for the visualization and analysis of qualitative data. *Psychological Methods*, 23(1), 169–183.

Prahalad, C. K., & Bettis, R. A. (1986). The dominant logic: A new linkage between diversity and performance. *Strategic Management Journal*, 7(6), 485–501.

Rodan, S., & Galunic, C. (2004). More than network structure: how knowledge heterogeneity influences managerial performance and innovativeness. *Strategic Management Journal*, 25(6), 541–562.

Rosca, E., Arnold, M., & Bendul, J. C. (2017). Business models for sustainable innovation – An empirical analysis of frugal products and services. *Journal of Cleaner Production*, 162, S133–S145.

Schneckenberg, D., Velamuri, V., & Comberg, C. (2019). The design logic of new business models: Unveiling cognitive foundations of managerial reasoning. *European Management Review*, 16(2), 427–447.

Sidhu, J. S., Heyden, M. L., Volberda, H. W., & Van Den Bosch, F. A. J. (2020). Experience maketh the mind? Top management teams' experiential background and cognitive search for

adaptive solutions. *Industrial and Corporate Change*, 29(2), 333–350.

Smith, W., Binns, A., & Tushman, M. (2010). Complex business models: Managing strategic paradoxes simultaneously. *Long Range Planning*.

Sutcliffe, K. M., & Huber, G. P. (1998). Firm and industry as determinants of executive perceptions of the environment. *Strategic Management Journal*, 19(8), 793–807.

Teece, D. (2010). Business models, business strategy and innovation. *Long Range Planning*, 43(2–3), 172–194.

Thomas, H., & Porac, J. F. (2002). Managing cognition and strategy: Issues, trends and future directions. *Handbook of Strategy and Management*.

Thomas, J. B., Clark, S. M., & Gioia, D. A. (1993). Strategic sensemaking and organizational performance: Linkages among scanning, interpretation, action, and outcomes. *Academy of Management Journal*, 36(2), 239–270.

Tibau, J., & Debackere, K. (2008). How outsider top executives compensate for their lack of "insiderness": Lessons from two Belgian multinationals. *European Management Journal*, 26(4), 223–233.

Tikkanen, H., Lamberg, J., Parvinen, P., & Kallunki, J. (2005). Managerial cognition, action and the business model of the firm. *Management Decision*, 43(6), 789–809.

Tripsas, M., & Gavetti, G. (2000). Capabilities, cognition, and inertia: Evidence from digital imaging. *Strategic Management Journal*.

Valente, T. W., Coronges, K., Lakon, C., & Costenbader, E. (2008). How correlated are network centrality measures? *Connections* (Toronto, Ont.), 28(1), 16–26.

Vergne, J.-P., & Depeyre, C. (2016). How do firms adapt? A fuzzy-set analysis of the role of cognition and capabilities in U.S. defense firms responses to 9/11. *Academy of Management Journal*, 59(5), 1653–1680.

Volberda, H., Van den Bosch, F., & Heij, K. (2018). Reinventing Business Models: How Firms Cope with Disruption. Oxford: Oxford University Press.

Zagorac-Uremovic, Z., & Marxt, C. (2018). Chapter 5: Cognitive processes of entrepreneurial opportunity identification: Toward a holistic understanding of the micro-mechanisms. In K. J. Sund, R. J. Galavan, & S. Brusoni (Eds.), *Cognition and Innovation* (New Horizons in Managerial and Organizational Cognition, Vol. 3, pp. 95–123). Bingley: Emerald Publishing Limited.

Zott, C., Amit, R., & Massa, L. (2011). The business model: Recent developments and future research. *Journal of Management*, 37(4), 1019–1042.

## FIGURES AND TABLES

### Figures

*Figure 1 – Four step procedure of mapping a cognitive schema from textual assertions*

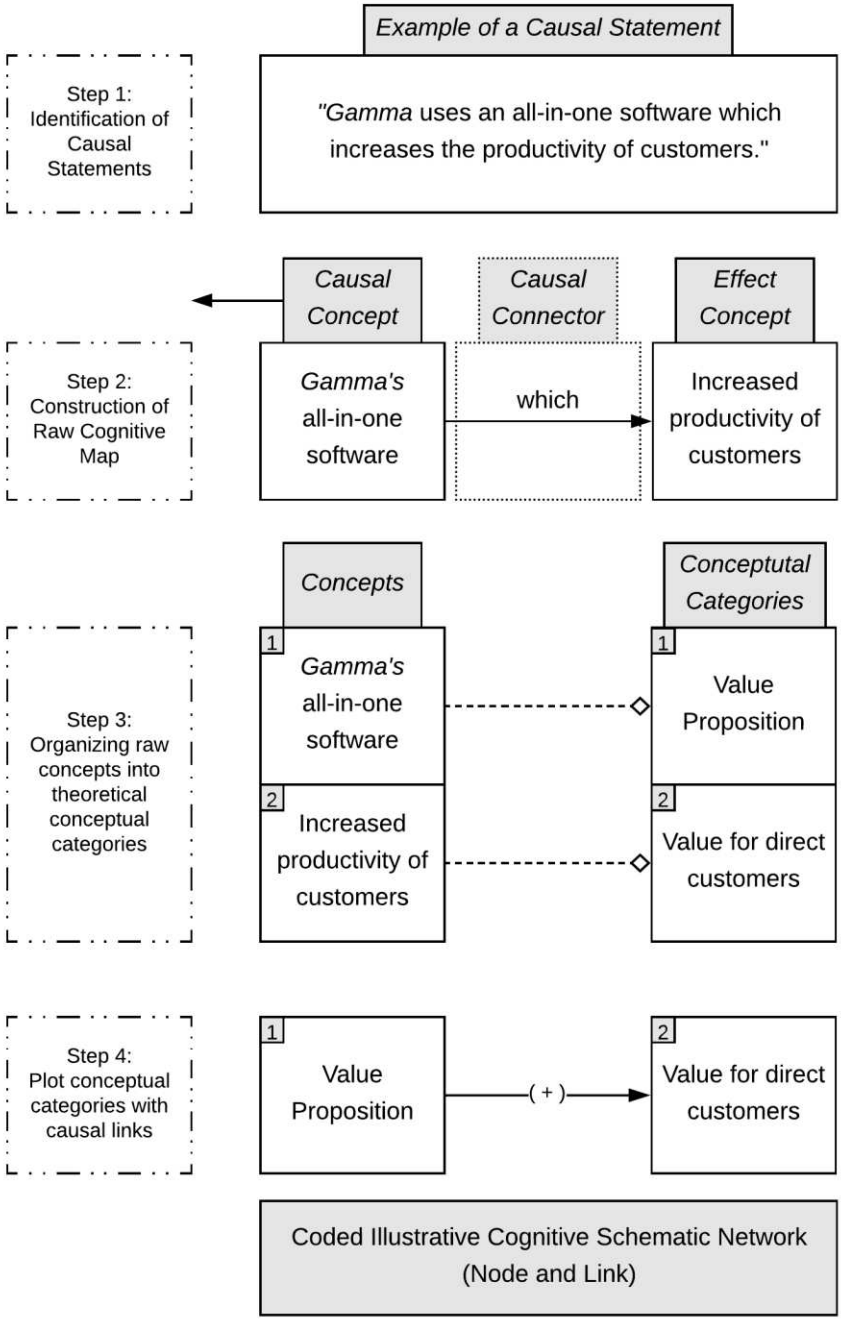
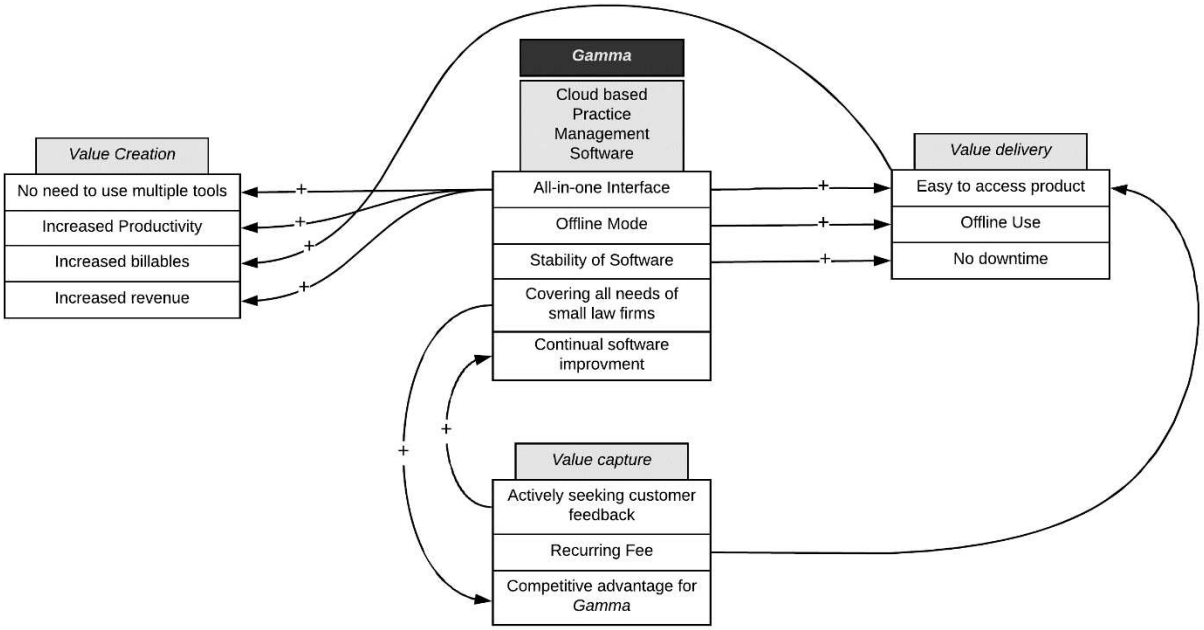


*Figure 2 Example Business model cognitive map (derived from the interview with the CEO of Gamma)*



## Tables

*Table I – Methodological considerations and research design for cognitive mapping*

| **Methodological Concern (Nelson et al, 2000)** | **Criterion for Addressal** | **Treatment in this Study** |
|---|---|---|
| Research Focus | To identify specific and measurable aims of cognitive mapping | To identify cognitive differences between industry insiders and outsiders |
| Choice of Source | Interviewee selection by Industry Experts and Peers | Interviewees selection by members of the professional legal-innovation community |
| Sampling Strategy – Incorporation of Research Objectives | Interviewees must address myriad aspects of their business model | Interviews with Executives originally target their peers as audiences, ensuring specific, detailed, and verifiable communication |
| Construction of Maps –<br>• Theoretical and Conceptual Relevance of Categories<br>• Operationalization of Constructs<br>• Operationalization of Linkages | Identifying causal statements from interview data<br>Ensuring inter rater reliability of coding<br>Interpreting of concepts and relationships using suitable existing theory | Two raters (the doctoral candidate and a master student familiar with the research) independently extracted causal statements from the interview data<br>Existing theories of business model process elements, technological evolution, and generative cognitive were used to inform the coding process |
| Unit of Analysis – Suitability for the investigated constructs | Ensuring a theoretically reasonable and empirically evidenced level of analysis to aggregate various constructs | Interpretation and investigation of the cognitive representation of team, organizational, and industry, level constructs at the executive level |
| Convergence – Consistency in insights from different sources | Use of auxiliary sources of information | Use of content analysis to support findings from cognitive schema analysis |
| Validity of findings – Accuracy in representing the reality | Ensuring conceptual consistency in coding interpretation | Use of content analysis facilitates nuanced interpretation of cognitive schema analysis results |

*Table II: Summary of managerial and firm characteristics for the sample*

| Variable | Mean | St. Dev. | Min. | 25th Percentile | 75th Percentile | Max. |
|---|---|---|---|---|---|---|
| Executive's age | 41.77 | 7.42 | 30 | 37 | 46 | 62 |
| Executive's work experience (in years) | 14.84 | 7.12 | 2.30 | 10.81 | 18.19 | 33.28 |
| Proportion of work experience at current firm | 0.27 | 0.21 | 0.01 | 0.12 | 0.29 | 0.73 |
| No. of previous employers | 4.03 | 2.67 | 1 | 2 | 5.8 | 12 |
| Firm age (in years) | 7.77 | 10.01 | 0 | 2.2 | 8.2 | 45 |
| Firm size (No. of employees) | 60.93 | 158.34 | 1 | 3.5 | 18.5 | 800 |

*Table III: Network Analysis results for Business model Cognitive Schema Network*

| | Network Characteristics | Conceptual Variable | Insider | Outsider | Welch t-test (t) | GLM (b) |
|---|---|---|---|---|---|---|
| (1) | Size | Comprehensiveness | Low | High | -1.96* | -0.17* |
| (2) | Complexity | Connectedness | Low | High | -2.11** | -0.16** |
| (3) | Centrality | Focus Distribution | High | Low | 1.82* | 0.18* |
| (4) | Linkage Density | Depth of Understanding | High | Low | 2.52** | 0.20** |

*$p<0.1$, **$p<0.05$, ***$p<0.005$

*Table IV: Thematic content analysis results and cognitive differences among industry insiders and outsiders*

| Thematic Content Analysis | Insider | Outsider |
|---|---|---|
| **Opportunity Recognition** | Narratives centered around personally experienced or observed problems | Narratives built around the optimal utilization of technology and overall societal good |
| | Opportunity identification centered around potential customers and their needs | Balance of Customer-driven, solution-driven, and technology driven opportunity identification |
| | Primarily targeting legal professionals as customers | Targeting non-lawyers as customers in addition to legal professionals |
| | Attention to law firms as well as in-house general counsels as customers | Focus on law firms as potential legal clients; likely to ignore in-house counsels |
| **Value Framing** | Automation of redundant task as value driver | Cost saved by customers as a metric of value |
| | May rely on a single form of value driver such as resolving specific customer needs and pain points | Consistent addressal of both customers and task simplification as value drivers |
| **Expertise Perception** | Expected reliance on executives' own legal expertise | Acquisition of team/network of qualified attorneys |
| | Reliance on executive's assumed technical expertise | Expected reliance on executives' own technical expertise |
| **Business Model Trajectory** | Personal drive and experimentation as a main driver of changes in the business model | Access to digital resources as the main driver of changes in the business model |
| | Focus on customer feedback as other key drivers of change | Technology and partnerships are acknowledged as other key factors |
| **Business Model Type** | Depth of industry acumen facilitates both dyadic and triadic relationships among actors (solution and matchmaking type business models) | Predominantly, dyadic relationships among actors leads to inclination towards product type business models |