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Do you see what I see? How differing perceptions of the environment can hinder radical business model innovation

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ABSTRACT

Incumbent firms face the challenge of how to adapt to disruptive changes in the external environment. One way to solve this challenge is to allocate resources to identifying and exploring new trends and opportunities emerging from the environment that may affect existing business models, and guide the development of new ones. As has been widely acknowledged, many incumbents fail at more radical business model innovation. Few studies have examined the role of cognition in this context. We suggest that differences in strategic issue identification and interpretation can help to explain the cognitive barriers that emerge when incumbent firms try to engage with radical business model innovation. We propose and test a Delphi-based method to elicit and examine differences in the perception of industry trends, comparing innovators, core business employees, and external experts, in the context of a leading Nordic insurance firm. We find considerable disagreement between members of the innovation department and the core business, in this firm. We suggest this helps explain why internal innovators find it challenging to "sell" radically new business models to the core business. More generally, we contribute to the growing literature on business model innovation in incumbent firms.

1. Introduction

In highly dynamic business environments, firms must continuously adjust their business models to shifting market conditions in order to be successful (Casadesus-Masanell and Zhu, 2013; Massa and Tucci, 2014; Mitchell and Coles, 2003; Wirtz et al., 2016). Yet, cognition scholars widely acknowledge that even within a single firm, groups of managers may have very different perceptions of changes to the external environment of the firm, and of the uncertainty attached to such changes (Huff et al., 2016; Smith and Tushman, 2005; Sund, 2015; Thomas et al., 1993; Walsh, 1995; White et al., 2003). Such perceptual differences can help us explain one of the open questions of innovation management: why do so many incumbents appear to fail at radical business model innovation (BMI)? A number of existing studies of BMI have highlighted cognition as playing a role in enabling or restricting such innovation (Chesbrough, 2010; Doz and Kosonen, 2010; Snihur et al., 2018; Sosna et al., 2010; Sund et al., 2016). We propose that at the heart of BMI failure may be differences in the perception of which environmental changes are the most salient. In short, if innovators within an incumbent firm perceive the world differently than colleagues in the core business, they will propose solutions to the ``wrong" problems (in the minds of core business managers), and therefore face resistance.

There is no doubt that environmental developments continually change the competitive game and place great demands on firms and their competitiveness (Casadesus-Masanell and Ricart, 2010; Wirtz et al., 2016). In this context, BMI is an effective way of dealing with environmental challenges (Fjeldstad and Snow, 2018). We here take a wide definition of a business model as describing how value is created and appropriated by the organization (Amit and Zott, 2001; Teece, 2010). Among scholars and practitioners there is a common agreement that firms that manage to utilize the environmental and structural changes to innovate their business models in order to achieve competitive advantages are also the fastest growing firms (Bojoaga and Petrisor, 2013; Casadesus-Masanell and Ricart, 2010; Wirtz et al., 2016). Johnson et al. (2008), for example, emphasize that ``business model innovation (BMI) is seen as a powerful management tool that supports companies in facing today's intensified global competition and dynamic market conditions." Practitioners from a wide variety of industries thus actively seek guidance on how to innovate their business models in order to improve their ability to both create and capture value (Casadesus-Masanell and Ricart, 2010).

While much literature on business models pays attention to entrepreneurial firms and the creation of new business models through start-ups, a much smaller part of the literature focuses on incumbent firms that already have established business models, and their decisions

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to add new business models that can be disruptive (Bogers et al., 2015; Kim and Min, 2015; Sosna et al., 2010). Incumbent firms, defined as firms that are already in a strong position in the market, face the unique situation of having to balance the exploration of new business models with the exploitation of existing ones (Bogers et al., 2015; Frankenberger et al., 2013; Jensen and Sund, 2017; Sosna et al., 2010, Teece, 2018). A common way of organizing such business model exploration is to establish an innovation team, unit, or lab. In this approach, a team of what are perceived to be creative people is put in charge of developing a vision of how the world is changing, and what new products, services, or business models could be developed to adapt to those changes. The business model literature contains a number of studies that have highlighted how developing new business models in particular (as opposed to simpler incremental product enhancements) is a challenge for such innovation units. For example, Chesbrough (2010) describes how ideas developed at Xerox's five global research labs that were seen as departures from the firm's existing business model that were too radical were systematically pushed aside. In another study, Bogers et al. (2015) describe how tensions emerged between the old core business and the innovation unit during BMI in the case of three postal firms. While ``cognitive biases" (Chesbrough, 2010, p. 355) and ``cognitive barriers" (Bogers et al., 2015, p. 277) are mentioned in these studies, the source of such barriers is not further explored.

In this paper we contribute to the discussion of what constitutes such cognitive barriers, building on interpretative cognitive theory. Specifically, we construct an argument that the barriers to more radical BMI may stem from differences in the awareness and perceptions of environmental changes. We go on to propose a methodology for measuring such differences in perceptions, using the insurance industry as an example of an industry in which incumbents currently face changes to the external environment that could alter the way they do business. They see changes such as more self-driving cars, the spread of smart homes (the Internet of Things), and potential future competition from IT firms like Google (who have access to a range of data that allows them to tailor insurance products). The traditionally people-intensive insurance service faces substitution from smaller, nimbler, and more efficient online players, keen to cherry-pick lucrative market segments. In order to prepare for the competitive challenge of new digital entrants in the insurance market, in 2016 a leading Nordic insurance company established a new dedicated innovation department, whose main purpose is to work with innovation and new business models. We develop a two-stage Delphi-inspired method as a simple cognitive mapping tool to illustrate how differences in the awareness and perceptions of salient environmental changes have led to possible challenges for this innovation department. We conclude that achieving some degree of cognitive alignment with the core business is necessary for an innovation department to succeed in selling innovative ideas internally.

2. Cognition and incumbent business model innovation

In this section we will first discuss the particular context of BMI in incumbent firms, then briefly summarize what we know about cognition and BMI, before finally introducing an interpretative view of cognitive barriers to radical BMI in incumbent firms.

2.1. BMI in incumbent firms

The context of BMI in an incumbent firm is particular. Incumbent firms search for new business models either when the intention is to add to an existing portfolio of business models, or in order to substitute an old business model (Snihur and Tarzijan, 2018; Snihur and Wiklund, 2019). Jensen and Sund (2017) suggest that awareness of the need for this search is typically triggered by perceived changes to the external environment, such as changes in customer expectations. Yet, the organizational tensions that emerge during this search are not well addressed by existing theoretical frameworks (Foss and Saebi, 2015, 2017; Sund et al., 2016). Where a start-up exploring a new business model typically has a ``blank sheet" in terms of organizational design, resource allocation, and so forth, the incumbent has pre-established structures, resources, and relationships. Balancing the exploration of new business models with the needs of existing business models leads to considerations of organizational design. Such design can be thought of in terms of the degree of differentiation of activities (for example, giving both cognitive, resource, and capability freedom to innovative business units), and integration mechanisms (both vertical and horizontal), to encourage information and knowledge sharing and transfer. A common way of organizing BMI, including in firms in the service sector, is to empower a dedicated R&D or innovation department with the tasks of monitoring environmental changes and generating new ideas (Bogers et al., 2015; Chesbrough, 2010; Djellal and Gallouj, 2001; Lawson and Samson, 2001).

One of the major challenges that incumbent firms have to deal with are the strategic contradictions that are likely to occur when working with BMI. On one hand, the organization with its current business model(s) has to perform in the short term, but on the other, long-term performance depends on the organization's abilities to adapt and change through innovation (Brown and Eisenhardt, 1997; Tushman and O'Reilly, 1996; Van de Ven et al., 1999). It is the responsibility of top management to balance short-term performance and long-term adaptability. This is typically done by resource and organizational design decisions (Edmondson et al., 2003; Eisenhardt and Zbaracki, 1992; Hambrick, 1994). Such strategic decisions require negotiations within the organization between the present core business units and the innovation team, by identifying outcomes that will ensure the performance of both agendas. In such situations structural, cognitive, and socio-psychological barriers can prevent progress (Bazerman and Watkins, 2004; Smith and Tushman, 2005; Van de Ven et al., 1999; Virany et al., 1992).

Firms exploring new business models may not fully recognize that tensions will almost inevitably emerge regarding, for example, resource allocation and top management control, and thus may be ill prepared to manage these (Bogers et al., 2015; Sund et al., 2016). Several challenges and barriers may be associated with BMI, and established firms often face strong organizational rigidities that lead to tensions. Thus, although many incumbent firms in different industries have added new business models, there is a great variety in whether they have benefited from this or not (Sohl et al., 2018). Unlike start-ups, established firms have one or more existing business models and assets that can either complement or conflict with a new business model. This can lead to growing complexity and organizational dilemmas when trying to manage the existing business model simultaneously with a new business model (Snihur and Tarzijan, 2018). Also, managers are likely to resist experiments that might threaten their ongoing value creation within the company. Therefore, incremental innovation is likely to be favored over more radical innovation, which may be perceived to be associated with greater risk and uncertainty (Chesbrough, 2010). There is a risk that managers and employees may feel threatened by a new business unit and its possible success. If the new business model does not immediately fit the core business ``dominant logic", there is an additional risk that future value creation and innovation might be overseen or missed (Kim and Min, 2015; Sund et al., 2016).

2.2. The role of cognition

Some studies of BMI as a change process have highlighted the importance of paying attention to the micro-processes of BMI (Klang et al., 2014; Markides, 2013). In fact, in their recent review of the BMI literature, Foss and Saebi (2017) give a rather scathing critique of this literature as lacking ``clear-constructed, well-delineated boundary conditions, identification of explanatory mechanisms, and other traditional hallmarks of good theory" (p. 201). They furthermore suggest that the role of cognition is an important gap to be explored in this

context (Foss and Saebi, 2017, p. 213).

There are obvious cognitive underpinnings of the construct of business models. For example, it has been suggested that the business model can be studied as a form of cognitive structure (Doz and Kosonen, 2010), mental map, or schema (Martins et al., 2015), of how the firm creates value. From such a perspective, the business model is an abstract model, or recipe, of how the business makes money (Baden-Fuller and Morgan, 2010), but one that is held in the human mind as a mental one. Such a mental recipe would evolve over time. Several recent studies have furthermore hinted that managers' cognitions and sense-making influence business model design (Sosna et al., 2010). Thus, the existing mental business model recipe somehow influences, or even constrains, imagined alternative recipes (Tikkanen et al., 2005). In a related vein, process studies of BMI have, for example, highlighted the role of shared logics in enabling innovation (Bogers et al., 2015), and how the information and knowledge search behavior of managers affects the type of BMI pursued (Snihur and Wiklund, 2019). Yet, the links between business models and cognition remains an area in need of much more research (Foss and Saebi, 2017). The cognitive underpinnings of business model elements are often mentioned, but far less frequently explicitly studied.

The interpretative view of cognition, embodied for example in sense-making theory, suggests that individuals in organizations collectively act as interpretation systems, (1) sensing and sharing information about the environment, (2) interpreting this information on behalf of the organization, and (3) devising appropriate strategies and actions in response to these interpretations (Daft and Weick, 1984; Sund, 2015). The three stages of the collective sense-making process can help us conceptualize the cognitive barriers that incumbent organizations face when trying to engage in radical BMI. The first stage of data collection informs subsequent stages. What organizational members do not see does not enter into the sense-making process. Hence only information that is made available and is perceived as relevant by managers within the firm has the potential to subsequently be interpreted and acted upon. However, what people see and pay attention to depends largely on what they already know (Ocasio, 2011; Weick, 1995). Even when considering industry trends, managers make retrospective sense of anticipated future events (Gioia and Thomas, 1996; Weick, 1995). As a result, information cues can be missed, and blind spots and perceptual inaccuracies are a common problem for decision-making in organizations (Kaplan, 2011; Sund, 2016; Zajac and Bazerman, 1991).

As previously discussed, in the context of BMI in incumbent firms, innovators are commonly located in their own separate department, and tasked with both interpreting changes to the external environment, and coming up with new business model designs (Bogers et al., 2015; Chesbrough, 2010). As such, the information environment that these innovators face will naturally be very different than that faced by managers and employees in the core business. Innovators will interpret the information they perceive as relevant and turn this into recommendations for changes to existing business models, or recommendations for entirely new business models. Such recommendations can be disengaged from the sense-making of people in the core business, who have not perceived the same information, or been engaged in the interpretations of this information. We therefore propose that the cognitive barriers to radical BMI in incumbent firms can be viewed as a problem of a lack of shared perceptions about environmental trends. Put simply, without a shared perception and interpretation of environmental information, actions (in this case business model changes) proposed by innovators are unlikely to be viewed as relevant by members of the core business. They will be disengaged from the perceptions of those members. To illustrate this we propose an illustrative case study from the insurance industry, and a qualitative method with which to measure such perceptual differences, based on a Delphi-type method.

3. Method and case

A case study setting was used in the exploration of how the content of knowledge structure regarding important industry trends might differ between members of an innovation unit and members of the core business. Since innovation decisions are typically made at group level, it also seems appropriate to examine shared rather than individual perceptions. Some of the traditional techniques for eliciting individual perceptions, such as repertory grid technique, were not useful, as they relate to personal constructs (Kelly, 1955; Wright, 2008). We therefore devised a methodology derived from the Delphi method, which aims specifically at identifying shared perceptions of environmental trends. Both in the sense-making and wider strategy literatures, scholars consider such trends as important inputs that decision-makers interpret and use to determine actions such as innovation (Daft and Weick, 1984; Sund, 2013, 2015; Sund et al., 2018; Thomas et al., 1993; Zaman et al., 2018)).

3.1. Case selection

For this study we used a theoretical sampling, looking for an incumbent firm engaging in BMI. To select a case company, we therefore first screened the largest Danish companies, looking for those that (a) have a substantial market share in a core market, (b) have publicly announced having an innovation department, and (c) have publicly announced that they wish to engage with BMI. We rapidly identified a potential case company, a market-leading Nordic non-life insurance company. Initial informal interviews revealed that this company was indeed pursuing BMI, and faced some challenges regarding more radical forms of innovation. We therefore chose this company as a suitable context for our study.

Like many other industries, the insurance industry is highly dependent on the ability to adapt to rapidly changing trends. The insurance industry is known to be a very traditional business with a relatively conservative business model. Today, the industry is challenged in many ways, especially by new technology. The case company has almost 3400 employees and more than 3 million customers, with activities across Scandinavia. It offers a wide range of insurance products for the private, commercial and corporate markets, and each year handles almost 1 million claims.

The case company created a new dedicated innovation team in 2016, to explicitly focus on both incremental and more radical forms of innovation, i.e. both incremental and radical, both product and BMI. The team is organized in a department, reporting to the Chief Operating Officer, and is one of several centralized resource departments. The main purpose of this department is to create innovative solutions for the company's customers, which includes developing new business models and business cases for projects, concerning new services, products and partnerships for all business areas. In order to come up with new ideas, a big part of the work for the employees in the department is to monitor and identify new trends and technologies that can influence the industry. We were granted privileged access to this innovation department over a one-year period. During informal conversations with members and managers of this department, we were told multiple times that it could be a challenge to "sell" more radical and long-term BMIs to the core business. We therefore found this case company to be suitable for the purpose of our study.

3.2. Modified Delphi method

A two-round Delphi-inspired survey was organized. Specifically, we took inspiration from recommended Delphi procedures outlined by Schmidt (1997) and by Okoli and Pawlowski (2004), where the technique serves a dual purpose of soliciting opinions from experts and having them rank these according to importance. The Rand Corporation originally developed the Delphi method in the 1950s to find the best

defense system for the United States against the Soviet Union. Since then, the method has gained ground in business as one of the most widely used techniques for technological forecasting (see e.g. Jiang et al., 2017). The study is usually carried out in the form of a questionnaire conducted on a panel of experts in the field. The principles of the method are anonymity, repetition, controlled feedback and group response (Paliwoda, 1983), but beyond this the method has been used in many different ways, and is often combined with other methods (Melander, 2018). An advantage of the Delphi method is that it allows for a broad investigation of a field of study, as it gathers knowledge from a variety of experts individually, which is then reflected upon by the whole panel, rather than soliciting the opinions of single respondents as would be the case with traditional interview or survey methods.

Our purpose with the Delphi method was to simulate a sense-making process between experts who are not physically together. Consistent with this method, we wished to develop three reliable lists of current and future trends, perceived by each of the three groups of respondents to have an impact on the insurance industry in the future (Delbecq et al., 1975; Schmidt et al., 2001). With this method we wanted to elicit which environmental trends were ``top of mind" for these three different groups. We could then, in a second stage, compare and contrast responses between groups to look for any similarities. As we did not want to limit the number of trends identified by each respondent, we designed our online questionnaire in such a way that any single respondent could initially bring up as many trends as they wanted (Schmidt, 1997).

3.3. Respondents

Since most Delphi researchers characterize the technique as a method for soliciting information from experts, the process of selecting the appropriate experts is of great importance (Okoli and Pawlowski, 2004). We choose in this paper to refer to all respondents as experts, in keeping with Delphi nomenclature, although arguably core business respondents were selected based on job description, not level of expertise. A Delphi study does not aim at representativeness of a sample based on some selected variable, as we know it from traditional survey methods. Instead, such a study typically aims to gather a variety of expert opinions. The method acts as a form of sense-making mechanism that requires experts with a deep understanding of the issue at hand. Rather than being an opinion poll trying to elicit the "average" opinion of respondents, the method aims to build a consensus among experts over several survey rounds.

Expert panel size is a particular concern in a Delphi study. How many experts are needed? There is no easy answer to this question, but to some extent, it depends on the aim of the Delphi in question (Paliwoda, 1983). In our case the aim is not to estimate anything quantitative (such as a probability interval), but to develop general scenarios. The key aim is that as many trends as possible are identified in the initial stage, in order to fully document what trends are in the collective mind of respondents, subsequent to which the list of trends can be reduced by letting respondents determine which are the most important. By not limiting the number of trends each respondent can identify, one can quickly generate a very large list of trends, and the chance of overlap among respondents grows the greater the number of respondents (Ludwig, 1997; Okoli and Pawlowski, 2004; Paliwoda, 1983). One quickly reaches a point of saturation, where adding additional respondents fails to bring into play new trends. Because of this, it is often recommended to keep the number of experts to the minimum sufficient (Delbecq et al., 1975). A sufficiently high level of reliability is typically reported to be reached with around 10–15 respondents (Dalkey et al., 1972; Ludwig, 1997), but where the population one could sample is small, an even lower number will often be sufficient. It is usual in a Delphi study that some experts drop out of the study between rounds. In their review of Delphi studies aimed at building future scenarios, Nowack et al. (2011) report an average round one response rate of 23%, and a subsequent average dropout rate of 18% between rounds one and two, something to be aware of when building the expert panel.

We constructed three groups of experts relevant for the study. Group one (innovation department) consisted of most employees of the innovation department (some employees were not available at the time of the study). They typically had many years of experience within the insurance industry and many of them had a background in the company. We invited all 18 members of this department to take part in the study. Of these, 13 answered round one. Based on their responses, 58 trends were identified. In round two, the trends were presented to the 13 members who completed round one. Nine of these answered round two.

Group two (core business) consisted of managers who represented the various existing business areas in the organization. We chose managers who have a good knowledge of the core business of the firm. Thirteen people were invited to take part in the study. Of these, eight answered the questionnaire. Based on their responses, 42 trends were identified. In round two the trends were presented to the eight managers who completed round one. Of these six answered round two.

Group three (external experts) consisted of chosen experts in the field with extensive knowledge of the insurance industry in general. These experts were from other insurance and financial firms, industry organizations, and so forth. We initially contacted 22 experts. Eleven experts answered round one. Based on their responses, 57 trends were identified. In round two the trends were presented to the eleven experts, of whom seven answered round two. Details of all respondents are found in Table 1.

3.4. Questions and approach

To investigate what current and future trends experts in the field perceive may have an impact on the insurance industry in the future, we contacted the experts by phone and email to secure their participation, and then used two rounds of online questionnaires for each group of respondents (innovation department, core business, and external experts). Participants were informed that their answers would be anonymized, but in order to analyze the results of the study in the best way possible, we briefly asked for the participants' background and work experience. For this type of elicitation, Nowack et al. (2011) recommend using a neutral approach to question design such as the PESTEL framework.

The first questionnaire, presented in round 1, consisted of the following open question: "*What current and future trends (*e.g. *social, political, economic, customer behavior, environmental, technological issues, etc.) do you expect to have a significant impact on the insurance industry in the future? Name and briefly explain as many trends as you find important."* Participants were thus asked to name as many trends as they found important and to add a brief explanation of why they thought the trend is important. In addition, an open text field was added so participants had the opportunity to add further comments. After two rounds of reminders, we aggregated the answers received in a single list of trends.

We discussed each trend separately, and reworded some of these where they were unclear. In a number of cases, respondents mentioned several trends in one sentence. In these cases we separated the trends. Where the same trend was mentioned by several respondents we merged these. We thus identified 58 trends for the innovation department, 42 trends for the core business, and 57 trends for the external experts. To ensure reliability, where any rewording was done following round 1, we were two researchers to discuss each rewording. In addition, we asked a colleague to independently verify that changes made sense. The anonymous nature of both rounds ensured that experts felt comfortable in reporting their thoughts and were not influenced by other experts, as can be the case in a face-to-face Delphi.

In round two, the same experts were presented with these trends in

Table 1
Delphi respondents round 1.

Respondent no.	Group*	Current job title	Years of industry experience
1	1	Manager of Innovation Department	5–10 years
2	1	Senior Business Developer	15–20 years
3	1	Business and IT Developer	0–5 years
4	1	Senior Business Developer	10–15 years
5	1	Senior Business Developer	5–10 years
6	1	Student Assistant	0–5 years
7	1	Commercial Innovation Manager	10–15 years
8	1	Business Developer	0–5 years
9	1	Student Assistant	0–5 years
10	1	Senior Project Manager	0–5 years
11	1	Head of Innovation Department	15–20 years
12	1	Innovation Consultant	0–5 years
13	1	Senior Business Developer	5–10 years
14	2	Vice President	10–15 years
15	2	Strategist and Business Partner for COO	0–5 years
16	2	Head of Corporate Responsibility and Claims Prevention	N/A
17	2	Head of Private Partner	0–5 years
18	2	Vice President, Business Excellence, and Digitalization	5–10 years
19	2	Director of HR, Legal, and Facilities Officer	0–5 years
20	2	Leader of Market Strategy, Business Development and Commercial Management of Consumer Division	0–5 years
21	2	Director, New Markets and Large Accounts	15–20 years
22	3	Partner and Head of Research at a specialized consulting firm	0–5 years
23	3	Director at a rival insurance company	20 + years
24	3	Founder and CEO of a rival insurance company	0–5 years
25	3	Director in a rival insurance company	10–15 years
26	3	Innovation and Growth Advisor at a specialized innovation consultancy	0–5 years
27	3	Sector Analyst at a major bank	20 + years
28	3	Sector Analyst at a major bank	10–15 years
29	3	CEO and owner of a specialized consultancy firm	20 + years
30	3	Vice President of an industry association	0–5 years
31	3	Head Of Customer Experience and Concepts at a rival insurance company	N/A
32	3	Director at a major financial institution	10–15 years

*Group 1 = =Innovation Department; Group 2 = =Core Business; Group 3 = =External Experts.

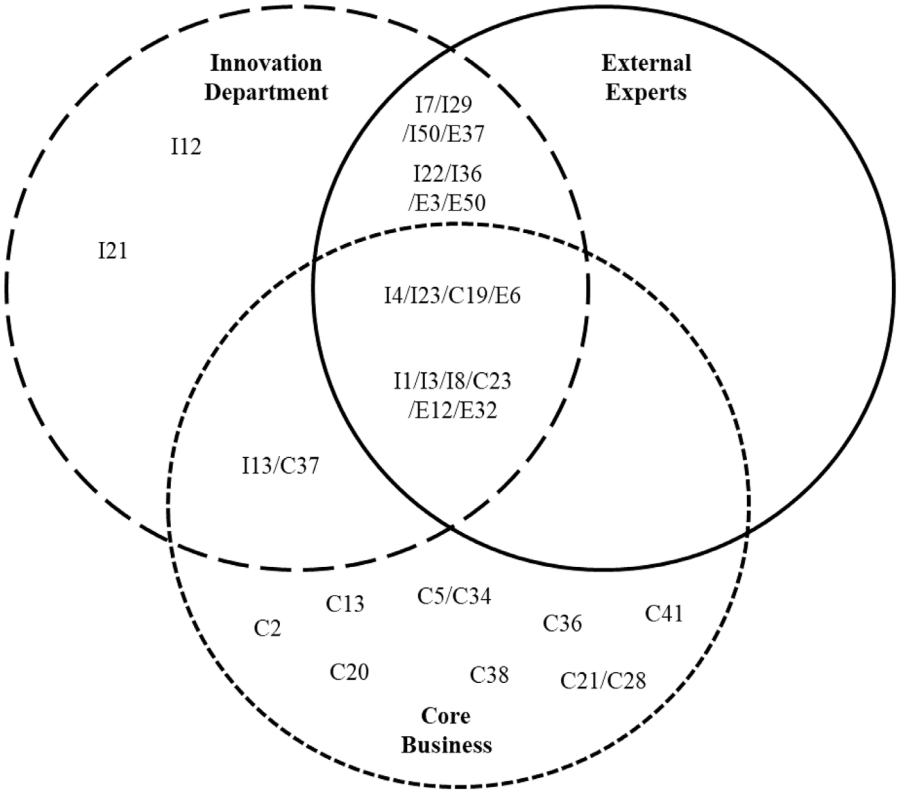

Fig. 1. Overlap of perceptions of most important trends.

random order and were asked to assess on a Likert scale from 1 to 5 how important they think each trend is for the insurance industry. This measure of perceived importance is a very simple version of the types of measure previously used by, for example, Milliken (1990) or Thomas et al. (1993). The experts also had the possibility of adding comments. We subsequently ranked the trends by mean importance score.

Answers in round two were not necessarily normally distributed. In other words, within each group there could be some disagreement about the interpretation of importance of a given trend. In order to assess which of the many trends were interpreted as most important in consensus (i.e. for which there was a shared interpretation of importance), we simply reduced the lists of trends by selecting those with a mean greater than 4. This resulted in reduced lists of 13 important trends for the innovation department (I), 13 trends for the core business (C), and six trends for the external experts (E). The wording of the trends was the result of the three separate Delphi studies, meaning that a particular trend found identified by all three expert groups could be worded differently by each group. In a third step, we therefore compared the resulting lists, to see if there was an overlap of perceptions. We did this by interpreting and comparing the wordings of each of the 32 trends in total, merging these together into common themes where the trends were highly similar. We first did this separately, and then compared and discussed our interpretations to arrive at a consensus about the final grouping and labeling of the emerged themes. We subsequently asked a colleague to independently perform the same thematic analysis of the three sets of trends, in order to verify the reliability of our analysis. Although his labeling of trends was slightly different than ours, the themes he found were very similar, and most importantly, his interpretation of whether there was any overlap among the three groups coincided with ours. This procedure resulted in a final list of 15 themes.

4. Findings

To illustrate the degree of overlap in perceptions among groups, we have constructed the Venn diagram found in Fig. 1. A full list of the 32 trends that emerged after the second Delphi round is found in the Appendix, along with mean scores and standard deviations. The merged 15 themes are found in Table 2 and briefly described below.

Table 2
Themes resulting from grouping of trends (see also the Appendix).

Coded themes	Associated trends
Themes linked to all three expert groups	
1 Self-driving vehicles	I4, I23, C19, E6
2 More individualized assessment of risk and of product pricing thanks to technology	I1, I3, I8, C23, E12, E32
Themes linked to two expert groups	
3 Greater transparency and regulation in the use of data	I7, I29, I50, E37
4 Automation of service touch points and increased self-service	I22, I36, E3, E50
5 Increased automation in relation to decisions about insurance payouts in the future	I13, C37
Themes linked to single expert group	
6 Increased threat from cybercrime	I12
7 Change in types of damage due to climate change	I21
8 Increasing process standardization	C2
9 Enormous speed of technological development	C13
10 Growth in smart homes	C20
11 Lower margins on traditional premiums	C5, C34
12 Easier for customers to report claims	C38
13 Aging technology infrastructure in the industry	C36
14 Increased competition from e.g. financial sector	C21, C28
15 More strategic partnerships	C41

4.1. Themes linked to trends identified by all three groups

Two technological themes stood out, and were linked to trends identified by all three groups of experts. The first one was related to self-driving vehicles. As one innovation department respondent wrote, ``in the future, cars and buses will drive themselves.” An external respondent indicated that the effect of driverless technology will be fewer injuries, which suggests a perception that removing human errors from the road could lead to safer roads.

The second theme was the ability for insurance firms to more accurately assess individual risk, and thus propose a more individualized product pricing, thanks to technology. Underlying this theme are several related trends. A more accurate and personalized risk assessment will become possible as insurance companies gain access to more data, for example from social media and connected devices. Once combined with artificial intelligence, automated individualization of pricing allows sales channels to move towards digital channels. Furthermore, there will be a greater focus on being able to advise on and recommend products automatically, and online.

4.2. Themes linked to trends identified by two groups

Another technological theme emerged from both the innovation department (I) and the core business (C), characterized as increased automation in relation to decisions about insurance payouts. Traditionally, claims consultants have dealt with insurance claims, reviewing and approving these on behalf of the insurance company. One expert wrote that ``algorithms will to a greater extent make decisions in connection with the handling of claims” while another referred to the ``robotization” of claims handling.

Two themes emerged from the innovation department (I) and the external experts (E), but not the core business (C). The first concerned the automation of service touch points and subsequent increase in self-service. The second concerned greater transparency and regulation in the use of data. This second theme involves both regulators’ and customers’ expectations of greater transparency and responsibility in relation to the use of data, and safe data storage.

4.3. Themes linked to trends identified by a single group

Of the 15 themes we found, we considered 10 to be unique to just one of the three groups of experts. The innovation department (I) pointed towards the two themes of the threat of cybercrime and of weather-related damage due to climate change. As for the core business (C), we identified eight themes that were particular to this group. Five could be characterized as technological themes of which three were external factors regarding the speed of technological development, the growth in smart homes, and an increased ease for customers to report claims. A further two themes could be described as internally focused, regarding increasing process standardization and an aging technology infrastructure in the industry.

Finally, core business experts indicated an economic theme, whereby insurance firms will see a rise in strategic partnerships, as well as increased competition from other actors in the financial sector. As one respondent wrote, ``globalization will continue, leading to more global companies entering the Danish/Scandinavian market.” A related trend was lower margins on traditional premiums.

The advantage of presenting the trends and resulting themes in a Venn diagram is that this illustrates qualitatively whether the same trends were identified as important by each group. Experts from the innovation department (I) and the external experts (E) shared four out of seven themes. On the other hand, experts from the innovation department (I) and the core business (C) only agreed on three of fifteen themes. If so, this could result in some of the challenges that cause the organizations to fail in their attempt to work with BMI, as we will discuss in the next section.

5. Discussion

While our single case study setup does not leave us with generalizable facts, nor with the ability to develop any kind of contingency-based theory of cognition and organizational design, we nevertheless have results that can inform such a theory. Our empirical setup for the elicitation of perceived trends may seem simple, but our results indicate quite clearly that the perceptions of the innovation department in our case are more aligned with those of external experts than with our panel of representatives of the core business. The implications may be profound. In sense-making and interpretation theories of cognition, there is a long tradition of viewing perceptions as the drivers of organizational decision-making. What decision-makers see is what leads them to act (Daft and Weick, 1984; Sund, 2015; Thomas et al., 1993; Weick, 1995; Weick et al., 2005). Blind spots, on the contrary, result in inaction.

Innovation departments are typically tasked specifically with keeping up with external industry, technological, and societal trends. It is therefore not surprising that department members would have similar perceptions to external experts, such as industry analysts and consultants. These actors all spend a large proportion of their time scanning the environment for relevant information and engage with the same general information environment (Argyres and Silverman, 2004). Our initial informal conversations with managers of the innovation department of this company revealed that these managers found it difficult to "sell" more radical ideas to the rest of the organization. This is not surprising, as such ideas would be born out of a different set of perceptions than those occupying the minds of actors in the core business. In essence, the ideas of the innovation department are a response to a different set of threats and opportunities than those recognized by actors in the core business. This challenge is particularly acute in the ideation, or exploration stage, of BMI (Frankenberger et al., 2013; Jensen and Sund, 2017). Täuscher and Abdelkafi (2017) point out that, as well as overcoming existing mental maps associated with the old business model, thinking within an appropriate solution space presents an additional cognitive challenge.

Our results point to several open questions linked to organizational design that could be addressed through further research on BMI in incumbent firms. The first question relates to the cognitive alignment of members of the innovation department and of the core business in the context of BMI. How can such alignment be achieved? Existing studies point out that the object of alignment could be business model elements that need to be mentally represented in a way that can be shared with others (Frankenberger et al., 2013; Täuscher and Abdelkafi, 2017). What we suggest is that, from a sense-making perspective, shared mental representations of important environmental trends must precede this. A first step is to agree on what challenges the new business model should solve, and then in a second step the new business model can be developed and shared. A simple answer to this challenge could be to examine various integration mechanisms. Vertical mechanisms are those that enable knowledge and information sharing vertically through the organizational hierarchy, thereby creating vertical alignment. Horizontal mechanisms are those that enable such sharing across horizontal ``silos" in the organization. The role of such integration mechanisms is not yet understood in the context of BMI.

A second question concerns the organizational design of the innovation department. Argyres and Silverman (2004) studied 71 large innovative firms to find out how they organized R&D. They found that the organizational design of an R&D or innovation department is linked to the degree of innovativeness. Where there was a centralized, corporate R&D department financed by corporate funds, innovations had a higher level of impact on a broader range of technological areas. Such findings only scrape the surface. Our results provide a way to understand the cognitive underpinnings of such a finding. If the R&D department perceives threats and opportunities differently than the core business, then giving the R&D department a high degree of independence to explore and launch new business models is likely to lead to a very different outcome, and potentially more radical departures from the current business model, than if it is driven by a need to satisfy the perceived needs of the current core business. In a multiple case study of European postal operators, Bogers et al. (2015) found that organizational location (i.e. the location in the organizational structure of the firm) of the innovation department was the subject of much experimentation in these firms. One reason for this was precisely the tension of managing the expectations of all parties involved (Sund et al., 2016).

Recently, Snihur and Tarzijan (2018) found that introducing new business models in an incumbent firm results in added complexity. This leads to a third question. If adding more business models to the organization leads to added complexity, the effect is that the organizational design must somehow be adapted to accommodate this added complexity. Whether achieved through a change in actual structure (for instance, moving from a functional to a matrix structure), through horizontal differentiation (such as added departments), through vertical differentiation (such as added layers of management), or through integration mechanisms (such as a task force), design changes seem to be the inevitable outcome of adding business models to the organization. If this is the case, should organizational redesign actually precede BMI? Is an organization already designed to accommodate a future BMI more likely to be successful at implementing radical BMI ideas emerging from an innovation department? To our knowledge, such a line of research has not previously been pursued.

6. Conclusion

Cognitive barriers to BMI is an area that has only recently received attention (Foss and Saebi, 2017; Frankenberger et al., 2013; Snihur et al., 2018; Täuscher and Abdelkafi, 2017). If the organization is to balance the exploration of new innovative business models with the needs of existing core activities, actors within the organization have to achieve a common understanding of new trends and the development of innovation solutions to exploit opportunities and defend against threats. In this paper we have proposed an interpretative perspective on the role of cognition in BMI, and a Delphi-based method for qualitatively eliciting differences in the perception of trends. In our case study example, we find many trends about which we do not see a consensus. As a result, problems and solutions may not be matched. One consequence is that the innovation department will be more successful in proposing incremental rather than radical innovations.

A key finding is that all the important trends identified by the external expert panel were also identified by the innovation department panel. Core business respondents, on the other hand, identified a host of other trends that were either not identified at all or not identified as important by the innovation department and external experts.

While a Delphi-based method of elicitation offers some unique benefits, in enabling trends to be captured inductively and separately for different groups of actors, there are also some disadvantages that could be considered limitations of the method. We want to point out two in particular. The first is reliability. While having multiple raters (three in our case) guarantees some degree of interrater reliability, both rewording and thematic analysis will always carry some risk. The second relates to the large number of primary responses collected. When presented with very long lists of trends (in our case 58, 42, and 57 trends respectively for each respondent group), survey fatigue is a real risk. This can result in respondents not sufficiently reflecting on each trend. Running further Delphi rounds could perhaps mitigate this effect. However, the problem of falling response rates with subsequent rounds then leads to possible non-response bias (Nowack et al., 2011).

With this study we hope to have demonstrated the usefulness of the interpretative cognitive perspective in understanding barriers to radical BMI in incumbent firms, and to have pointed out a future avenue of research, both theoretically and methodologically, that can help us better understand the process of BMI.

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Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.techfore.2019.119787.

Appendix

Trend	List of identified trends perceived to be of high importance by Innovation Department experts (mean importance score > 4)	Mean	Std. Dev
I3	We will increasingly see automated individualization of pricing based on data and AI (artificial intelligence)	4.44	0.73
I13	Algorithms will to a greater extent make decisions in connection with claims handling	4.44	0.73
I29	There will be higher expectations regarding the safe handling of data	4.44	0.88
I50	There will be an increase in regulation of companies' use of data	4.44	0.88
I8	There will be an increased use of customer data to customize products for customers	4.33	0.87
I12	There will be an increased threat of cyberattacks, hacking, data abuse, identity theft, etc.	4.33	1.00
I22	More existing service touch points will be automated	4.33	0.71
I4	We will see more self-driving cars on the roads	4.22	0.83
I7	Customers will expect greater transparency and responsibility in relation to the use of data	4.22	0.83
I36	The degree of self-service will increase in line with digital opportunities in modern society in general	4.22	0.83
I1	Technological developments will enable a more personal risk assessment	4.11	0.78
I21	Climate change will change types of damage	4.11	0.93
I23	We will increasingly see driverless technology; in the future, cars / buses will drive themselves	4.11	1.45
Trend	List of identified trends perceived to be of high importance by Core Business experts (mean importance score > 4)	Mean importance score	
C5	Insurance company earnings from traditional premiums will decrease	4.67	0.52
C37	There will be increased automation (digitization / robotization) of claims processing	4.67	0.52
C21	There will be increased competition from both the financial sector and other entrants in the insurance market	4.50	0.55
C23	Insurance companies will increasingly use AI (artificial intelligence) for the purpose of taking advantage of existing customer data	4.50	0.55
C34	There will be an erosion of the industry's primary business due to falling traditional customer risks	4.33	0.82
C36	There is a trend towards increasingly outdated IT systems in the (insurance) industry	4.33	0.82
C38	It will be easier for consumers to report injuries	4.33	0.52
C41	More strategic partnerships will arise between insurance companies and partners with their own distribution – agreements between companies with shared value chains	4.33	0.52
C2	Standardization of claims management processes will be increased	4.17	0.98
C13	The pace/speed of technological development is enormous	4.17	0.75
C19	We will see more self-driving cars on the roads	4.17	0.75
C20	We will increasingly see smart homes	4.17	0.75
C28	Globalization will continue, leading to more global companies entering the Danish / Scandinavian market	4.17	0.75
Trend	List of identified trends perceived to be of high importance by External experts (mean importance score > 4)	Mean importance score	
E12	In the future, insurance companies will have much more data available, for example from social media and connected devices, IoT (Internet of Things)	4.71	0.49
E32	We will increasingly see sales channels move towards digital channels and there will be more focus on being able to advise on and recommend products online	4.57	0.53

E3	In line with technological developments, companies will increasingly have customers serve themselves online	4.29	0.76
E37	Over time, we will see an increasing need for regulation regarding digital identities and data	4.29	0.49
E50	Customers are increasingly used to effective digital contact with companies from which they buy goods and services	4.29	0.76
E6	Self-driven cars are expected to cause fewer injuries (frequency of injury and personal injury)	4.14	0.69

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