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Five Strategic Foresight Tools to Enhance Business Model Innovation Teaching

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Abstract

We discuss our lessons from 8 years of teaching business model innovation to executives in our part-time MBA program. We examine how strategic foresight tools are particularly useful to help students to overcome the cognitive bounds that inhibit business model innovation and discuss the considerations of using student-owned live cases.

Keywords: Strategic foresight; business model innovation; MBA teaching; live cases; cognitive bounds

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Introduction

This paper reflects upon 8 years of teaching business model innovation (BMI) to executives in the part-time MBA program at Aarhus BSS. Executives who return to the classroom for part-time MBA education are different from other business school students. They have accumulated on-the-job experience, have gained in-depth knowledge of their industries, and thoroughly comprehend the business models of their organizations (Garvin, 2007). For teachers, this provides opportunities for deeper discussions of the subject matter. For example, in our part-time MBA course on BMI, we use live cases from students' organizations to apply the lessons. These discussions are motivating and rewarding for students. In fact, many students sign up for the course because they are concerned about the future performance potential of their organizations' business models. However, teaching BMI to executives is not without challenges. Having worked in their organizations for years, such students have often developed hardened cognitive frames that make it challenging to see how their business model could be different. "*This would never work in my organization*" is a common remark that teachers encounter.

In our teaching approach, we have therefore decided to equip students with the tools and methods of strategic foresight to systematically reduce cognitive bounds to BMI. Strategic foresight is particularly suitable for this task, given its focus on learning, exploring uncertainty, and decision making (Vecchiato, 2012; Rhisiart, Miller and Brooks, 2015). Strategic foresight provides a rich toolbox for identifying, observing, and interpreting, the factors that induce change; determining possible organization-specific implications; and triggering appropriate responses (Voros, 2003; Rohrbeck, Battistella and Huizingh, 2015). Strategic foresight methods and processes are generally aimed at (1) identifying key factors that drive change in an organization's environment, (2) simulating and understanding the impact of potential futures, and (3) deriving actions that can improve an organization's long-term competitiveness. Examples of strategic foresight methods include trend audits, scenario planning, backcasting, and roadmapping (Popper, 2008; Gordon, 2010; Rohrbeck, 2013; Spaniol and Rowland, 2019). By including such methods, we aim to overcome executives' cognitive bounds to BMI.

Research has established that business models must be "changed, refined and innovated on a systematic basis if companies aim to survive and stay competitive over time" (Nielsen *et al.*, 2019: 9). However, path dependencies and lock-in effects make it difficult for executives to detect the need to explore new business models and implement the necessary changes in their organizations (Tripsas and Gavetti, 2000; Chesbrough, 2010; DaSilva and Trkman, 2014). For example, managers fear negative consequences for their current businesses and are hesitant to move away from business models that still yield profitable returns (e.g. Chesbrough, 2010; Günzel & Holm, 2013; Sosna, Treviño-Rodríguez, & Velamuri, 2010). Research on strategic decision-making, and strategic foresight in particular, has provided further explanations for the origin of such managerial resistance. Gavetti (2012) describes three obstacles that managers must overcome to detect and exploit new business opportunities:

- The *rationality bound* results from dominant representations shared across an industry or sector: Managers attend to the world around them and fail to recognize more distant and radically innovative business opportunities.
- The *plasticity bound* results from inertia, which can have cognitive or physical roots: Firms might fail to act on opportunities because they fail to see how they could, or they might lack the resources or capabilities to address a new opportunity.
- The *shaping-ability bound* describes the inability to legitimize needed action: Managers fail to secure the necessary buy-in of stakeholders, such as board members or investors, on a new course of action.

Overcoming these bounds in the minds of our executive students motivates the curriculum design for the BMI course at Aarhus BSS. In the following section, we describe our course's structural setup and introduce five strategic foresight methods that, in our experience, have proven to be particularly helpful for overcoming executives' cognitive bounds to BMI. We limit our discussion to these lesser-known tools, and, to the likely dissatisfaction of many readers, make mere mention of the more established tools and techniques, such as dual BMs and BM roadmapping (Markides and Charitou, 2004; De Reuver, Bouwman

and Haaker, 2013). We conclude with a few reflections on the feasibility of our approach in other settings.

Course Context and Structure

Our part-time MBA students are typically middle-level managers in their 40s preparing for upper-management roles. The primary reason they choose the BMI course is the search for knowledge, approaches, and tools to solve strategic challenges and lead change efforts in their organizations. Consequently, our BMI course is designed to achieve three core learning outcomes: (1) Being able to describe and assess any business model using systematic tools, (2) making cognitive leaps towards novel business models, and (3) ensuring transferability—that participants can select from across a portfolio of tools and apply the appropriate ones to overcome the three cognitive bounds and drive BMI in their organizations.

The BMI course is a semester-long elective that includes in-class instruction modules at the beginning and end of the course. Each module lasts 2 days, and class sizes range from 15 to 30 participants. Day 1 draws from Osterwalder and Pigneur (2010), supplemented with discussion on the importance of creating strong narratives about a company's BM.[INSERT FOOTNOTE 1 HERE] Day 2 introduces, demonstrates, and has students work with two strategic foresight (SF) tools, the trend audit and stress test, to identify weaknesses in current business models. The principles of innovating

BM complete the first in-class module. Days 3 and 4 are designed to expand the innovation toolbox and identify creative solutions for BM challenges. Here, we use additional SF tools, namely science fiction, design thinking, and forecasting future markets, to explain how to create quantitative estimates about market sizes in the future. On the last day, students learn how to evaluate BMs, work with dual business models, and prepare for implementation. Figure 1 below shows the structure of the course.

On the first day of in-class teaching, the class is divided into groups of 4–6 students and each student is asked to describe their employing organizations' business model to the group. Students then select one group member's organization to serve as the live case that they will work on for the duration of the semester. Groups are checked to avoid that colleagues or students from competitor organizations are together and to ensure a diversity of backgrounds. We ensure that the cases selected are neither those of CEOs – as they are already in highly bounded role – nor are those of start-up organizations, because the cognitive bounds may not have been sufficiently hardened. The case “owner” serves as an authority and proxy for application simulation, and the information she or he provides forms the platform for applying the methods and tools that the group members learn throughout the course. It is within this particularly challenging environment of student-owned live cases that the strategic foresight methods must overcome cognitive bounds, break away from path dependency, and unstick cognitive inertia.

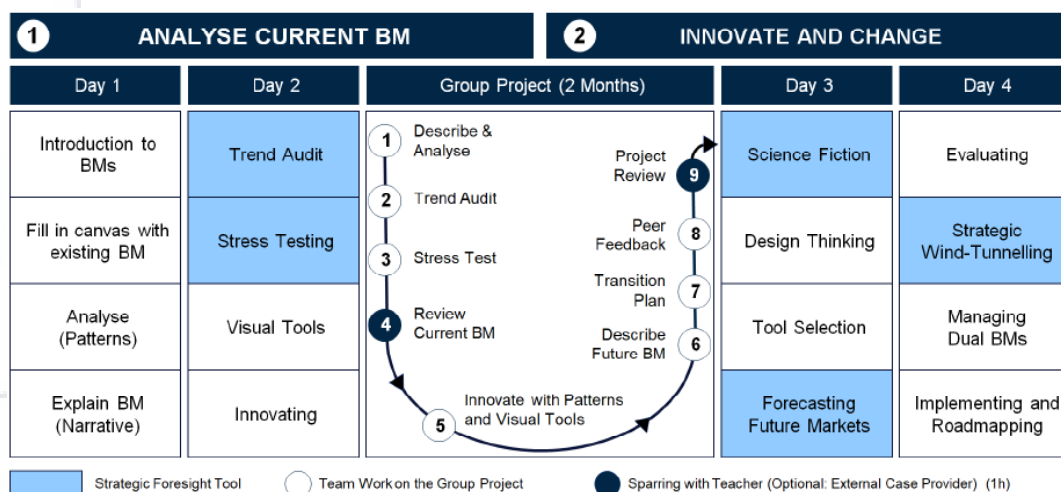


Figure 1: Course structure

The group must produce a report of no more than fifteen pages that consists of three parts: (1) A description and stress test of the current business model, (2) proposed innovations to the business model, and (3) a transition plan for implementation. Students are provided with a template to guide the project work for the next two months. The 2-month project phase is split into 9 steps. The first three steps (describe and analyse, trend audit, and stress test) produce three outputs: (1) The current BM represented as a canvas and a narrative, (2) a list of stress factors, and (3) a stress test map. Each group's output is presented to- and reviewed by- the instructor(s) in a 1-hour session. Steps 5-7 (innovate, describe future BM, propose transition plan) occupy the students for the following 4 weeks, with each participant allocating 20-25 hours to the project.

To improve the knowledge of other students' cases and to intensify reflection on the assignment, the output from these steps is added to the first part of the project, and the whole project is subjected to a peer-feedback review in which comments and suggestions for improvement are provided by individual students based on a rubric provided by the instructors (Reinholz, 2016). The peer-feedback criteria include transparency in the description of the current BM, analysis of challenges, convincing new value proposition, consistency of new BM, feasibility of development and transition plan, clarity of report, and overall feasibility of the proposed BMI.

Following peer feedback, a final 1-hour review session with the instructors completes the project work. To intensify the learning experience of defending the new BM, we often invite colleagues of the case owner or external case providers to join the review sessions, i.e. Steps 4 and 9.

During the second two-day in-class module, an instructor delivers a "best of" presentation that consists of a compilation of elements (images) selected from across the interim reports of all groups in an attempt to "raise the bar" of the expected quality of the final reports.

While instruction is concentrated during the four teaching days, the main learning outcomes—and the knowledge transfer in particular—are realized through the group project. We have observed that the success

of the project depends heavily on the suitability of the live case. The main two criteria for choosing a case are that it has a medium level of complexity and that it is possible to identify a clear value proposition and customer(s). We prefer to include both for-profit and non-profit/governmental cases to broaden in-class discussions and deepen the learning outcomes. Students are, as a consequence, better prepared to use the methods and tools in different contexts and can comprehensively reflect on their application and usefulness. Below, we elaborate on the five strategic foresight methods that are taught in the class and explain how they are applied for BMI.

Five Strategic Foresight Tools Applied to Business Modelling

The five strategic foresight tools that we use are based on our experiences as instructors, and play a crucial role in expanding the solution space that participants consider when innovating their business models. Collectively, they aim to overcome the cognitive bounds associated with the failure to change BMs—the rationality, plasticity, and shaping-ability bounds (see Table 1).

Trend audit (assessment)

To execute the trend audit, groups are tasked to identify 3-5 trends that are driving change in the larger industry or sector in which the case is situated. The challenge here is to look beyond the scope of the current business, by anticipating 3 or more years into the future. After a brainstorming session to create a list of candidate trends, those that are deemed particularly important to the business model are selected and subjected to a "trend audit" that consists of four questions (Gordon, 2010):

- What are the driving forces that create and sustain the trend?
- What enables, catalyses, or supports the drivers of the trend?
- What inadvertently stands in the way of the trend, slowing it down?
- What or who is working to actively block the trend?

The trend of digitalisation, for example, can be thought of as driven by the human need for social connection and

pressures to increase productivity; these may encounter friction in the form of legacy software and dominant products in the market. Counter-cultural movements to urge people offline also work against this trend.

The trend audit establishes an understanding of the complexity inherent in the larger contextual environment in which the case, in a first attempt to persuade students to embrace a wider perspective on external forces that will shape the BM in the future. The trend audit provides the material and shared language to construct and make explicit hypothetical statements about futures (Rowland and Spaniol, 2015).

Business model stress testing

To stress-test the current business model, we apply an approach loosely based on Haaker, Bouwman, Janssen, and de Reuver (2017) that assesses a BM's robustness in the medium term (5 years) and in the long term (10 years). Groups are tasked to assess how each building block would perform under the conditions of the trends (stress factors) that they identified as being salient to their case. Students assign colours to BM elements that reflect the viability, or the "level of stress", that affects the BM elements. This results in a visualization that shows how the current, well-functioning business model will increasingly fail as trends unfold their disruptive force (see Figure 2 below).

The output from the stress test creates a sense of urgency, which, in a real situation, is imperative to create buy-in among upper management and other relevant stakeholders. In class, it allows group members to consolidate complex discussions about the robustness of their existing BM. It also facilitates a focused

discussion on how the pending failure of the BM can be linked to individual building blocks.

Science fiction

In this step, we use science fiction vignettes, images, and states of the future to help students think through radically different frames. They may be dystopian or utopian in nature and often involve an exaggeration of current technological capabilities. These images challenge the status quo and current mental models by inciting fear or optimism, and reframe our conceptualization of "how things work" (Peper, 2017).

In class, examples of technological innovation sparked by science fiction novels are given, and students are lectured on the power of storytelling and imagining oneself in a distant reality. A group exercise is undertaken to create a business model for a problem described for a fictitious future society. We use passages from science fiction novels and invite students to prototype a business model for a future use case (Schwarz and Liebl, 2013).

Science fictioning broadens students' horizons and search scope, allowing them to move outside existing mental frames, and lays the foundation for non-incremental innovation. The utility of a mobile phone that allows the captain of the Star Trek ship *Enterprise* to stay in contact with his crew when he is on another planet is obvious to fans. In organizations, these science-fiction inspired visions can play the role of powerful catalysts that consolidate and refines BMI initiatives across technical and marketing units, as well as top management. In other words, science fiction, strategic foresight, and BMI can be brought into

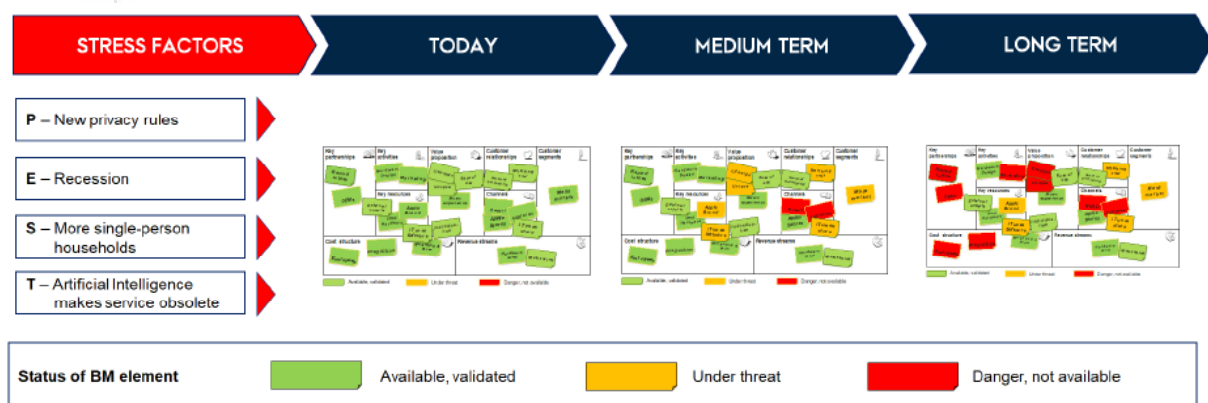
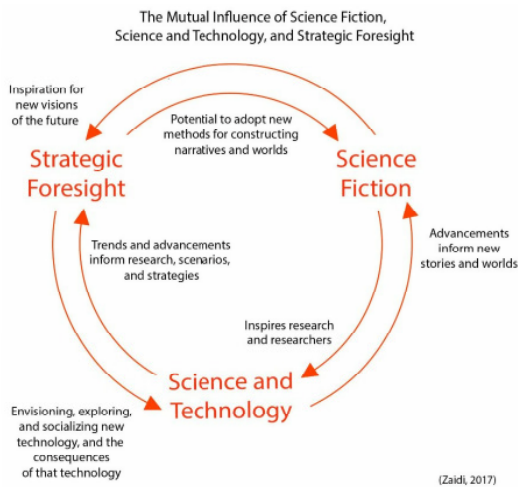


Figure 2: Exemplary output of the BM stress testing

a mutually reinforcing relationship through this technique (Zaidi, 2017).



Forecasting future markets

The forecasting future markets block teaches students how to create quantitative estimates about market sizes. The groups are tasked with forecasting the commercial viability of business models by first creating a value formula and estimating the values for the variables. We explain different approaches to estimate calculations (e.g. Fermi's approximate calculation of the number of piano tuners in Chicago) and various ways of running estimate calculations (top-down, bottom-up, and explicit estimates). We aggregate these calculations using the principle of triangulation to produce to a future market forecast. In the classroom, groups work to forecast the market for a fictitious product before its launch in Europe, after which the groups compare their market potential estimates (in number of sold units). As a result, they are equipped with a method for making assumptions and forecasting the future market potential of their project's new business model.

BM Wind-Tunnelling

Strategic wind-tunnelling builds upon, but goes beyond, the stress test. The metaphor comes from the testing of plane designs in controlled environments—in front of a large fan—where wind and other weather conditions are blasted at a prototype until the wings fall off or other structural failures occur.

Wind-tunnelling requires a set of scenarios, each of which describes a different future state of the operating environment. It is important that the scenarios

cover all plausible futures and that they are sufficiently distinct from the status quo without becoming unrealistic (van der Heijden, 2005). Again, we leverage outputs from the trend audit and identify branching points in the trends that could result in different outcomes and implications. Different outcomes from multiple trends are combined to provide base elements from which the scenarios can be constructed (see also Van der Heijden, 1996).

Wind-tunnelling is undertaken in a role-play activity in which one advocate explains why the BM will perform well in a given scenario, and the other team members explain how and where failure might occur. This can be seen as a lean version of scenario-based business wargaming (Schwarz, Ram and Rohrbeck, 2018). This is repeated for each scenario while changing the roles of advocates and adversaries, who act as stand-ins for management, investors, and colleagues in the case organization. This process provides a time-efficient to check on the robustness of a BM under various conditions and from various perspectives.

Discussion and Conclusion

One of the major obstacles in BMI is the difficulty of breaking free from cognitive bounds due to managers' deep embeddedness in the daily life of the existing organizations and their business model logic (Gavetti, 2012). Even when managers are confronted with the task of BMI in the relatively safe environment of an MBA class, they find it difficult to move beyond obvious rationalizations. This state of cognitive lock-in, or cognitive inertia, is clearly observed by the course instructors in those students working on the cases from their own organizations. Managers' hardened cognitive frames make it difficult to evolve beyond their current business models and ideate novel business models. In real-life situations, this also prevents managers from overcoming the threefold cognitive bounds (Gavetti, 2012). One design principle of the course is the use of visualizations that can be expected to help in collaboration, but are also associated with decreased creativity and willingness to adopt new BMI ideas (Eppler and Hoffmann, 2012). We therefore also adopted a second design principle to apply strategic foresight tools where creativity and out-of-the-box thinking are particularly necessary. The impact

Tool	Purpose	Impact on Bound*			Learning Outcome
		RB	PB	SAB	
Trend audit	Increase awareness of the need to change the current business model	✓			Learn how to systematically scan the environment for changes and assess their impact on BMs
Stress testing	Assess the impact of trends on the current BM and the robustness of the new BM		✓		Learn how to use visualizations to help decision-making
Science fiction	Open students' perspective and broaden the solution scope		✓		Learn how to use mental images to induce change and motivation to move
Forecasting future market potential	Reduce anxiety related to having to develop fully-fledged business plans			✓	Learn how to develop estimates quickly and systematically enhance forecast quality
Strategic wind-tunnelling	Engage the leadership team in checking the robustness of BMs		✓	✓	Learn how to use novel tools in a decision-making arena

*RB= Rationality Bound; PB= Plasticity Bound; SAB= Shaping-Ability Bound

Table 1: Summary of Strategic Foresight Tools and Their Impact

of the SF tools on cognitive bounds and learning outcomes is summarized in Table 1.

Unlike other approaches, strategic foresight provides a toolbox of methods that can be expected to broaden the solution-search scope and offer a systematic framework for exploring distant strategic options (Gavetti and Menon, 2016; Lehr *et al.*, 2017). They complement the classic BMI tools of design thinking and the use of analogies, and are guided by instructors in the knowledge transfer process to enhance the likelihood of successful implementation. We therefore foresee the continued combination of various BMI tools with future-oriented strategizing approaches to expand the BMI horizons and cut across BMI process phases to have a bigger impact on strategy development in general (Wirtz and Daiser, 2018).

Over the years, we have also learned that groups with complex cases (e.g. regulated industries, high-tech service providers with interrelated offers, and governmental agencies) face more difficulties than groups with easier cases, such as a company that manufactures one consumer product or provides a single service. With difficult cases, executive students often need to be urged during the process or sparring sessions to

suspend their disbelief for the sake of the group and to complete the assignment, regardless of whether the actual BMI will be implemented. The challenge of overcoming mental models is aggravated by using student-owned live cases. However, we still prefer to present this challenge in the classroom rather than leaving it to the participants to attempt implementation alone when back in their organizations.

For students who are working on other students' live cases, it is important to provide space to envision and plan how implementation could happen in their own organizations. By making their anticipated difficulties explicit in plenum, students can exchange implementation ideas to which the instructor can provide guidance. At the end, instructors pose questions to the class to foster reflection for increasing the likelihood of successful implementation, such as:

- Which tools will (and will not) be attempted;
- Why (why not);
- When (and when might timing be suitable); and
- Who (and who not) to include.

For the oral exam, students are asked to start with a five-minute reflection, and many of them choose to

reflect on such implementation considerations in their organizations.

We would, however, advise teachers to reflect carefully on the feasibility of running these exercises with students who have no prior work experience. Another consideration is that our propositions might work best for smaller classes or classes where the primary teacher is supported by teaching assistants. Interim reports, sparring sessions, and clear guidelines on how to structure group reports have proven to be fundamental for success of the course—because not only the tools and techniques are foreign, but also because students appreciate the attention and the instructor can address any problems the students face. Additionally, the in-class facilitation skills of the instructor(s) are important to ensuring the correct use of foresight methods (Rohrbeck, 2014; Rowland and Spaniol, 2017). Thus, we recommended this approach in settings and structures where instructor(s) are acquainted with strategic foresight methods and have the opportunity to work closely with the groups throughout the course.

Our motivation to incorporate foresight into BMI teaching stem from the experience of teaching MBA students and executives. However, what we described in this article may not be limited to this audience. Strategic foresight tools have emerged and matured in practice before their assignation by academics to the rational, evolutionary, processual, or other paradigm of strategic management, where the tools serve to mediate and discipline strategic conversations (Lehr *et al.*, 2017). Our aspiration is not only that learning takes place in the classroom, but that students put the tools to work in their organizations to create better strategies. As we move forward, we are delighted when past students return to us with their BMI success stories, which we proudly present to the newest cohort.

¹ Here we use the video of Charles Baden-Fuller, https://www.youtube.com/watch?v=_AB1s4pc48k

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