

Journal of the Association for Information Systems

JAIS 

Special Issue

Designing Business Models and Similar Strategic Objects: The Contribution of IS

Alexander Osterwalder
Business Model Foundry
osterwalder@gmail.com

Yves Pigneur
University of Lausanne
yves.pigneur@unil.ch

Abstract

In this paper, we argue that information systems (IS) research has the potential to contribute to improving strategic planning, just like it has substantially contributed to improving decision making and its support in organizations in the past. Based on our work and experience in the field of business models, we outline how IS research can help strategic management researchers study the design of business models and other similar strategic notions. The paper suggests that the current research focus in strategic management could be improved and enlightened by some of the more conceptual and design-oriented research in IS. We highlight three areas in particular in which IS research has excelled that could inform research in strategic management. The first area concerns the identification, formalization, and visualization of the core constructs and models of interest related to the design and analysis of strategic business issues. The second area corresponds to the exploration of how design techniques and tools might contribute to improving the design of answers and alternatives to strategic business questions. The third area addresses the research in computer-aided design assisting the process of designing strategic management objects such as business models.

Keywords: Strategic Planning, Business Model, Design Attitude, Computer-Aided Design .

* Nicholas Berente was the accepting senior editor. This article was submitted on 30th August 2011 and went through two revisions.

Volume 14, Special Issue, pp. 237-244, May 2013

1. Introduction

In this paper, we explain why and how information systems research can inform research in strategic management, in particular with respect to business models. We outline how this research can complement its traditional focus on decision making, organizational design, and performance analysis with an additional new focus on the design, selection, and management of business models and similar strategic notions such as business environments, business model portfolios, and strategic canvases. We argue for research, based on design science, that investigates the design of strategic management models and tools supporting that design process. Information systems (IS) as a field can inform researchers in strategic management and help them investigate the process of generating business models. The IS discipline has a variety of research streams in modeling, the collaborative generation of models, and computer-assisted modeling.

Section 2 identifies the need for increasing the understanding of the essence of business models and emphasizes the scant attention given to their design in strategic management research. Section 3 presents the potential contribution of IS research to researchers in strategic management in three areas: (1) the formalization and visualization of the core strategic concepts, (2) the exploration of design techniques for generating and assessing multiple models, and (3) the support of computer-aided design for strategic management.

2. The Management Research in Business Models

Several management researchers have investigated the notion of “business model”. Most of the research in this area focuses on economics, finance, firm performance, and innovation processes. Chesbrough & Rosenbloom (2002) and Chesbrough (2010), for example, investigate the relationship between innovation and business models. They view business models as a mediating construct between technology and economic value, and assess how innovative business models result in business success. Zott and Amit (2008) examine the fit between a firm’s business model and its product market strategy, and analyze the impact of product market strategy and business model choices on a firm’s performance. Johnson, Christensen, & Kagermann (2008) explore how innovative business models can reshape industries and drive growth, how many companies find business-model innovation difficult, and how managers can design or renovate their business models.

Recently, special issues of prestigious journals have been dedicated to the topic of business models (Badan-Fuller & Morgan, 2010). In such a recent issue, Teece (2010) overviews state-of-the-art research on business models in strategic management. His article analyzes the significance of business models and explores their connections with business strategy, innovation management, and economic theory. Given the importance of business design, he regrets the paucity of literature on the topic. He observes that business models are mentioned frequently in the strategy literature but are rarely analyzed and poorly understood, with too little attention given to their design. He explicitly recognizes that increased understanding of the essence of business models should help the understanding of a variety of subjects including market behavior, competition, innovation, strategy, and competitive advantage.

The multiple research perspectives in strategic management therefore primarily focus on observing, analyzing, classifying, and describing business models. As Teece (2010) suggests, however, the understanding of the essence of business models could be improved and the following limits of current research should be addressed:

1. Little research proposes common languages, conceptual frameworks, and visual schemas that could be used to facilitate both the understanding and the design of business models. Without a clear conceptualization, the research in strategic management on business models innovation and competition will remain difficult, as emphasized by Teece (2010).

2. When it addresses a “how-to-build” issue, research mainly focuses on decision making or at most triggers questioning. It barely addresses the process of design thinking, prototyping, and exploring alternative solutions that is so central to the design of strategies and business models. Only a few authors (e.g., Sosna, Trevinyo-Rodriguez, & Velamuri, 2010) consider the trial-and-error learning process in designing business models.
3. Almost none of the research suggests that computer-aided design (CAD) systems could be used at a strategic level to support the work of top executives in the design and selection of strategic options for their companies. Knowing how CAD transformed the field of architecture (Turkle, 2009) and generated research in this area, one could anticipate a similar impact in business strategy, which calls for common research in this area.

3. Contribution of IS Research

IS research can play a role in informing the strategic disciplines and in contributing to increase understanding of the essence of business models and other strategic notions, and in improving their design, which are goals that Teece (2010) proposes. As Taylor, Dillon, & Van Wingen (2010) demonstrate, decision making and its support constitute a large part of IS research. We believe that IS research has a unique opportunity to contribute to business strategy research by helping in the design and exploration of multiple strategic options, much in the way it has contributed to better decision making.

We suggest three major areas of potential contribution that could mitigate the limits we mentioned in Section 2. First, IS research can help shed light on modeling, formalizing, representing, and visualizing the concepts, constructs, and models of interest related to the design business models and similar strategic notions. Second, we believe that IS research can help us understand how design techniques and tools can improve the process of designing answers to strategic business questions. Third, IS research can help clarify why and how computer-aided design can assist business developers, strategists, and entrepreneurs in the design of answers to strategic business questions.

4. Modeling at Strategic Level

At a strategic level, organizations and their managers need to share a common ground or a common language to facilitate their discussions (Clark & Brennan, 1991). Research in strategic management should define and articulate concepts that facilitate the description of objects of strategic interest and that improve the strategic discussions and enhance related decision making. A similar approach to the one we took in establishing a common language for the design, selection, testing, and building of business models (Osterwalder & Pigneur, 2010) could be refined and applied to other strategic notions such as the value proposition, the business environment, the business model portfolio (Sabatier, Mangematin, & Rousselle, 2010), and the strategic canvas (Kim & Mauborgne, 2002). The core of this kind of research is the identification of underlying strategy constructs and models that should be formalized and visualized.

IS research embodies a large body of knowledge with regard to modeling constructs, concepts, ontology, and artifacts, and is rooted methodologically in design science thinking (Hevner & Chatterjee, 2010), design theory (Gregor & Jones, 2007), conceptual modeling and requirement engineering (Jarke, Loucopoulos, Lyytinen, Mylopoulos, & Robinson, 2011), and knowledge process design (Markus, Majchrzak, & Gasser, 2002). Although business models originated in strategic management research, we believe that IS research can contribute substantially to what Teece (2010, p. 192) calls a better “understanding of the essence of business models” through its body of knowledge and principles concerning the conceptual modeling and formalization of such objects. Although strategic management research discusses such concepts, it is often not rigorous about its conceptualization. IS research can inform strategic disciplines by identifying and formalizing strategic notions such as business models in three areas that are familiar to IS (Jarke et al., 2011): (1) the

discovery of objects relevant to the design of strategies, (2) turning these objects into explicit specifications of a conceptualization, and (3) validating those subsequent objects.

IS research also can help investigate the visualization and usability of business models in organizations as it has done for other domains (Lindquist, 2011) such as data analytics, graphical information display and visual facilitation for thinking strategically (Eppler & Platts, 2008). Our experience in the field of business models shows that it is vital to make these objects more tangible by using visual representations. This allows a group of business designers to easily and jointly sketch, create, manipulate, assess, and discuss such objects in order to create new strategic alternatives using a common language.

5. Strategizing as Designing

Teece (2010, p. 192) mentions that little attention has been given to “designing business models”. IS research has a strong foundation in investigating the rules and principles related to the process of designing artifacts. IS research can help strategic researchers in improving the process of co-designing and validating strategic objects.

The existing body of knowledge in strategic planning about such design processes is relatively weak. For example, the essential problem today’s organizations face with respect to strategic questions about their business models and their evolution is not that of choosing between several known business models in an industry—that would require a decision attitude, which managers have already mastered. Rather, the core issue many organizations face today is the lack of a process that allows them to come up with entirely new and viable business model alternatives from which to choose. This type of problem requires a design attitude such as Martin (2009) and Boland, Collopy, Lyytinen, and Yoo (2008) already propose and examine in general management. Their “managing as designing” paradigm is an important step, but it must be refined and investigated more specifically for strategic planning and business model design.

We believe IS research is relatively well equipped to address this issue because of its historical focus and its body of knowledge specifically related to the design process and methodology (Checkland & Poulter, 2010). Various IS disciplines research and employ design techniques. IS and strategic researchers together could investigate the use of design techniques in the process of crafting business models and other strategic concepts. Such techniques include, but are not limited to, ideation, visual thinking (Lindquist, 2011), prototyping (Lim, Stolterman, & Tenenberg, 2008), customer or user insight (Mumford, 2003), and storytelling and scenarios (Rasmussen, 2008). IS and specifically human-computer interaction (HCI) research are well positioned to leverage their body of knowledge and inform management research on testing the usability of artifacts. Although these design techniques are common in IS and in professional domains such as architecture and industrial design, research still needs to demonstrate how and with what benefits they can be applied to questions of strategic importance to an organization. We believe that a design attitude and the application of related techniques could significantly improve organizations’ responses to strategic questions.

6. Considering Computer-Aided Design

As a third area of research, we propose that strategy and IS researchers investigate computer-aided design (CAD) that assists in the process of designing business models and other strategic notions, similarly to how decision support systems (DSS) have been designed, developed, and used for decision making (Taylor et al., 2010). Such CAD or “design” support systems (DgSS) should aim to assist a person or a team in the task of conceptualizing and conceiving strategic objects.

In IS, design tools constitute an important area of research in the field of computer-aided software and requirement engineering (Lyytinen, Loucopoulos, Mylopoulos, & Robinson, 2009) and strategic decision support systems (Carlsson, 1999), but also in the organizational domain, such as process design (Markus et al., 2002). They are already widely adopted in all of these areas. Computer-aided design is much less researched and applied in strategic management.

We suggest exploring the application of computer-aided design tools to design tasks such as prototyping, simulating, iterating, and versioning business models and similar strategic notions. Observing what CAD tools have brought to the fields of architecture and engineering (Turkle, 2009), we anticipate that, in the realm of strategic concepts, computer-aided design at the strategic level would make many tasks easier and quicker, while revealing as-yet-unseen opportunities. In particular, CAD brought speed, rapid prototyping, quicker visualization, integration, better collaboration, simulation, and better planning to engineering, architecture, and other design areas. For conceiving such environments for strategic planning, a strong collaboration of strategy and IS researchers is necessary.

Furthermore, many of today's organizations are global, with the teams, functions, and collaborators that contribute to strategic planning being spread across the world. We suggest that IS research could inform strategic management on how to support co-design and collaborative engineering (Briggs et al., 2010) of business models and similar strategic objects, in the same way that group decision support systems (GDSS) have extended the traditional DSS (Taylor et al., 2010), how strategic management has been linked to DSS (Carlsson, 1999), and how network-centric CAD has extended the individual CAD (Turkle, 2009).

7. Conclusion

In this paper, we outline how information systems research is particularly well equipped to provide substantial inroads into the study of strategic planning, in particular with respect to business models. We argue for research at the interface of IS and strategic management that investigates the essence and the design of business models (Teece, 2010) and similar strategic notions according to the proactive engagement in the fashion-setting process of research, which Baskerville and Myers (2009) suggest.

References

- Baden-Fuller, C., & Morgan, M. (2010). Business models as models. *Long Range Planning*, 43, 156-171
- Baskerville, R., & Myers, M. (2009). Fashion waves in information systems research and practice. *MIS Quarterly*, 33(4), 647-662.
- Boland, R. Jr., Collopy, F., Lyytinen, K., & Yoo, Y. (2008). Managing as designing: Lessons for organization leaders from the design practice of Frank O. Gehry. *Design Issues*, 24(1), 10-25.
- Briggs, R., de Vreede, G., & Massey, A. (2009). Introduction to JAIS special issue on collaboration engineering. *Journal of the Association for Information Systems*, 10(3), 8.
- Carlsson, C. (1999). Strategic management and decision support systems. *Decision Support Systems*, 26(2), 89-98.
- Checkland, P., & Poulter, J. (2010). Soft systems methodology. In M. Reynolds and S. Howell (Eds.), *Systems approaches to managing change* (pp. 191-242). London: Springer-Verland.
- Chesbrough, H., & Rosenbloom, C. (2002). The role of the business model in capturing value from innovation: evidence from Xerox corporation's technology. *Industrial and Corporate Change*, 11(3), 529-555.
- Chesbrough, H. (2010). Business model innovation: Opportunities and barriers. *Long Range Planning*, 43, 354-363.
- Clark, H., & Brennan, S. (1991). Grounding in communication. In L. B. Resnick, J. M. Levine, and S. D. Teasley (eds.), *Perspectives on socially-shared cognition*. Washington, DC: American Psychological Association.
- Eppler, M., & Platts, K. (2008). Visual strategizing: The systematic use of visualization in the strategic-planning process. *Long Range Planning*, 42(1), 42-74.
- Gregor, S., & Jones, D. (2007). The anatomy of a design theory. *Journal of the Association for Information Systems*, 8(5), 312-335.
- Hevner, A., & Chatterjee, S. (2010). *Design research in information systems: Theory and practice*. New York: Springer.
- Jarke, M., Loucopoulos, P., Lyytinen, K., Mylopoulos, J., & Robinson, W. (2011). The brave new world of design requirements. *Information Systems*, 36, 992-1008
- Johnson, M., Christensen, C., & Kagermann, H. (2008). Reinventing Your business model. *Harvard Business Review*, 86(12), 50-59.
- Kim, C., & Mauborgne, R. (2002). Charting your company's future. *Harvard Business Review*, 80(6), 5-11.
- Lim, Y., Stolterman, E., & Tenenberg, J. (2008). The anatomy of prototypes: Prototypes as filters, prototypes as manifestations of design ideas. *ACM Transactions on Computer-Human Interaction (TOCHI)*, 15(2), 1-27.
- Lindquist, E. (2011) Surveying the world of visualization. *Australian National University*. Retrieved from https://crawford.anu.edu.au/public_policy_community/research/visualisation/Visualisation_roundtable_2_Background_Paper.pdf
- Lyytinen, K., Loucopoulos, P., Mylopoulos, J., & Robinson, W. (Eds.). (2009). *Design requirements engineering: A ten-year perspective*. Heidelberg: Springer Verlag.
- Markus, L., Majchrzak, A., & Gasser, L. (2002). A design theory for systems that support emergent knowledge processes. *MIS Quarterly*, 26(3), 179-212
- Martin, R. (2009). *The design of business*. Boston: Harvard Business School Press.
- Mumford, E. (2003). *Redesigning human systems*. London: Irm Press.
- Osterwalder, A., & Pigneur, Y. (2010). *Business model generation: A handbook for visionaries, game changers, and challengers*. Hoboken, NJ: Wiley.
- Rasmussen, L. (2008). The narrative aspect of scenario building-how story telling may give people a memory of the future. In Gill S. (Ed), *Cognition, Communication and Interaction* (pp. 174-194). London: Springer.
- Sabatier V., Mangematin M., & Rousselle T. (2010). From recipe to dinner: Business models portfolios in the European Biopharmaceutical Industry. *Long Range Planning*, 43, 431-447.
- Sosna, M., Trevinyo-Rodriguez, R., & Velamuri, S. (2010). Business model innovation through trial-and-error learning: The Naturhouse case. *Long Range Planning*, 43, 387-407.

- Teece, D. (2010). Business models, business strategy and innovation. *Long Range Planning*, 43, 172-194.
- Taylor, H., Dillon, S., & Van Wingen, M. (2010). Focus and diversity in information systems research: Meeting the dual demands of a healthy applied discipline. *MIS Quarterly*, 34(4), 647-667.
- Turkle, S. (2009). *Simulation and its discontents*. Cambridge MA: The MIT Press.
- Zott, C., & Amit, R. (2008). The fit between product market strategy and business: implications for firm performance. *Strategic Management Journal*, 29, 1-26.

About The Authors

Alexander OSTERWALDER is an entrepreneur, speaker, and business model innovator. Together with Professor Yves Pigneur, he co-authored "Business Model Generation". The Business Model Canvas, a tool to visualize, challenge, and (re-)invent business models is used by leading organizations around the world, such as GE, P&G, Ericsson, and 3M. Alexander is a frequent keynote speaker and has held guest lectures in top universities, including Stanford, Berkeley, MIT, IESE and IMD. The Business Model Foundry, his current start-up, is building strategic tools for innovators. Alexander holds a Ph.D. from the University of Lausanne, Switzerland, and is a founding member of The Constellation, a global not-for-profit organization aiming to make HIV/AIDS and Malaria history.

Yves PIGNEUR serves as Professor of Management Information Systems at the University of Lausanne since 1984, and has served as visiting professor at Georgia State University, University of British Columbia, National University of Singapore, and HEC Montreal. He earned his doctoral degree at the University of Namur, Belgium. He is editor-in-chief of the academic journal *Systèmes d'Information & Management*. Together with Alexander Osterwalder, he authored the book "Business Model Generation".