

An Ontology for m-Business Models

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Abstract. The m-business landscape never stops to change and the impacts on the mobile market are constant as players reposition themselves on the market according to the new opportunities and threats brought by rapid technological developments. This paper proposes a conceptual tool to better understand this player arena. Its objective is to provide the researchers with an ontology for analyzing and assessing the business models adopted by these players.

1 Introduction

Nowadays rapid developments in wireless networks and mobile information systems, are observed and adopted, as illustrated by recent research projects and reports [5]. New business models are constantly emerging and can become a major stake in the e-business game. Understanding them and helping to design them are important issues. Conceptual modeling and formalized framework can help. We propose an ontology for defining business models in the m-business arena.

The next section sketches some research issues in the m-business arena. Then, section 3 tackles three perspectives of m-business: applications, open issues, and key players. Finally, section 4 suggests an ontology for assessing the business models.

2 Research in m-Business

There are several ways to assess the mobile technology, and to identify research issues in m-business. Well-known authors of the IS community recently published research directions and agendas. Among them, Lyytinen and Yoo [4] suggest a framework, which identifies research issues in nomadic computing environment at the individual, the team, the organizational, and the inter-organizational levels.

Lehner and Watson [2] concentrate on a stakeholder perspective, an application perspective, and a market player's institutional perspective. In the latter, they propose relevant research problems such as the business models, the useful alliances and the driving forces for cooperation, the interaction between market players, among others.

Camponovo and Pigneur [1] focus on the mobile market players landscape, and aim at sketching a conceptual tool for analyzing and visualizing the key players, their business models, their interactions and their dependencies.

3 Applications, Issues and Actors in m-Business

The demand for m-business *applications* is emerging. They concern information sharing or access, communication or messaging, and transaction or activity coordination. They deal with entertainment and gaming, healthcare, retailing, ticketing, in-car electronic, payment and cash, sale force management and CRM, team coordination and schedule synchronization. Mobile systems provide users and companies with solutions without regard to time and space.

The emerging m-business systems raise a set of commercial and research *issues* [7]. These issues can be mainly categorized into services issues (integration *Vs.* autonomy), infrastructure issues (operator-driven *Vs.* self-organized), and device issues (mono- *Vs.* multi-purpose). Some others concern the regulatory context (bandwidth and privacy).

The wireless market is highly fragmented and has witnessed a large number of market *actors*. The primary participants are access device manufacturers, content providers and aggregators, mobile network operators. Many other players show up in the landscape such as regulation authorities, standardization groups, consumer groups, airports and other “venues” (specially if one considers *WLAN* technology). Since no single player can provide its customers with an end-to-end solution on its own, fostering viable alliances and actors networks is a key challenge. Partnership management is becoming a core competence of the m-business players. Therefore it is not enough to examine the actor’s role. The relationships and interactions among the actors have to be assessed too.

For assessing the role of the different m-business key players, it is recommended to briefly but clearly describe their business models.

4 Ontology for m-Business Models

Our e-business model ontology outlines what value a company offers to which customer segments. It describes the architecture of the firm and its network of partners for creating, marketing and delivering value and relationship capital, in order to generate profitable and sustainable revenue streams.

We design this ontology based on an extensive literature review on business model [6] and on enterprise ontology. By merging the conceptually rich business model approach with the more rigorous ontological approach [8] and by applying it to e-business [3], we achieve an appropriate foundation for tools that would allow the understanding, sharing and communication, change, measuring and simulation of e-business models.

Our e-Business Model Ontology is the conceptualization and formalization into elements, relationships, vocabulary and semantics of the essential objects in the e-business model domain. The ontology is structured into several levels of decomposition with increasing depth and complexity. The first level of decomposition of our ontology contains the four main pillars of a business model, which are the products and services a firm offers, the relationship it maintains with its customers,

the infrastructure necessary in order to provide this and finally, the financials, which are the expression of business success or failure (see figure 1).

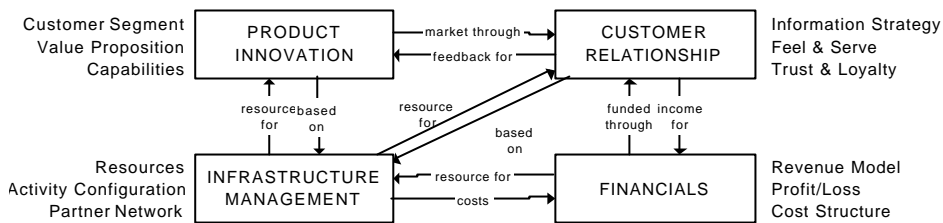


Fig. 1. The main components of the Business Model Ontology

The *product innovation* element covers all aspects related to the offering of the firm. This comprises not only its products and services but also the manner in which it differentiates itself from its competitors. The element product innovation is composed of the *value propositions* the firm offers to specific *target customer segments*, and the *capabilities* a firm has to provide in order to deliver this offering.

The *customer relationship* element describes the way a firm goes to market and gets in touch with its customers. This is composed of the *feel & serve* element, which defines the distribution channels, the *information strategy* for the collection and application of customer information for supporting customization and personalization, and the *trust & loyalty* element, which is essential in an increasingly “virtual” business world.

The *infrastructure management* describes the value configuration that is necessary in order to deliver the value proposition and to maintain a customer relationship. It is composed of the *activity configuration* (value chain), the in-house *resources* and assets and the firm’s partner network to fulfill these activities.

The *financials* are the culmination of an e-business model. The best products and services and the finest customer relationship are only valuable to a firm if it guarantees long-term financial success. The financial aspects element is composed of the company’s *revenue model* and its *cost structure*, which determines the *profitability* of a company.

5 Conclusion

The future of m-business is very uncertain. Therefore it is recommended to adopt long-range strategic planning, scenario-based forecasting [9], and simulation approaches. Such approaches should be better supported and improved by conceptual modeling, ontology and other frameworks for defining and assessing business models.

References

1. Camponovo, G., Pigneur, Y.: Analyzing the Actor Game in mBusiness. Proc. First International Conference on Mobile Business, Athens (2002)
2. Lehner, F., Watson, R: From e-Commerce to m-Commerce: Research Directions. Working paper. University of Regensburg: Chair of Business Informatics (2001)
3. Linder, J.C, Cantrell, S.: Changing Business Models: Surveying the Landscape. Working Paper, Institute for Strategic Change, Accenture (2001)
4. Lyytinen, K., Yoo, Y.: The Next Wave of Nomadic Computing: a Research Agenda for Information Systems Research. Sprouts Working Papers on Information Environments, Systems and Organizations, 1 (2001)
5. Müller-Veerse, F., et al. : UMTS Report – An Investment Perspective, Durlacher (2001)
6. Osterwalder, A., Pigneur, Y.: An eBusiness Model Ontology for Modeling eBusiness. Proc. 15th Bled Electronic Commerce Conference (2002)
7. Tarasewich, P., Nickerson, R., Warkentin, M.: Issues in Mobile E-Commerce, Communication of the Association for Information Systems, 8, January (2002) 41-64
8. Ushold, M., King, M.: Towards a Methodology for Building Ontologies, Proc. Workshop on Basic Ontological Issues in Knowledge Sharing, Montreal, August (1995)
9. Van der Heijden, K.: Scenarios: The Art of Strategic Conversation, John Wiley & Sons (1996)