

Paths of Business Model Evolution

Findings from Business Model Patents

Woori Han, Bomi Song and Yongtae Park

Department of Industrial Engineering, Seoul National University, Seoul, Korea

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Abstract: All firms have business models (BMs) and they continuously modify their BMs to adjust to dynamic environment. The objective of this paper is to find paths of technology based BM evolution by investigating BM patents which are representative data source of technical BMs. The paper begins by reviewing the BM and BM patents, and provides a description and justification of the proposed evolutionary paths of BM – major (origination, transplant, mutation) and minor (variation, alternation, addition or subtraction) evolutionary stream. The paper concludes by highlighting the key findings and drawing limitation and further research.

1 INTRODUCTION

As the competitive landscape and conditions change over time, companies may face the immediate need to change and adopt their business models in order to remain competitive (Schweizer, 2005). According to advances in technology and changes in business environment, business model (BM) have been modifying and improving constantly over time. Firms need to revise their BMs over time to keep up with changing technology, market and regulatory conditions. It is indispensable to maintain profitability of the firms. And technology guides the most strongly dynamics of a business model in early development phase of a new business. For a successful BM, firms should take technological characteristics and potentials as inputs, and convert them through customers and markets into economic value (Chesbrough and Rosenbloom, 2002).

In spite of the importance of BM innovation and evolution as a critical element for continuous growth, activities to improve existing business, to explore trends depend solely on the intuition of analysts or the discussion of experts. In this aspect, this research identifies paths of technology based BM evolution by analyzing BM patents.

The BM patent typically covers combination of software and business methodology line innovative online shopping (Dorney, 2001). With the rapid progress of information technology since the mid 1990s, the current spotlight is on patents for internet-

based inventions, and the number of BM patents is exploding. BM patents have high value as a qualitative database, containing detailed BMs both in manufacturing and the service field.

In light of this, we will propose evolutionary paths of BM by investigating BM patent information. To achieve the research purpose, the scope of this research is as follows: In section 2, definitions and characteristics of BM and BM patents are briefly described; and proposed evolutionary paths of technology based BM are shown in section 3. A suggested approach can be used as a guideline in exploring continuous growth and evolution of BM and developing BM strategies.

2 BACKGROUND

2.1 Dynamic Perspective of BM

As technology developed, the needs of new business opportunity and new way of business operation management were raised. In this context, there has been an increasing interest in delineating the concept and providing further understanding of the BM. The BM is the method of doing business by which a company can sustain itself -- that is, generate revenue. It spells-out how a company makes money by specifying where it is positioned in the value chain (Rappa, 2000). And the components of the BM are defined differently by various authors as

presented in Table 1.

Table 1: Definition of BM component.

Timmers (1998)	<ul style="list-style-type: none"> •Product/service/information flow architecture •Business actors and roles •Actor benefits •Revenue sources •Marketing strategy
Afuah & Tucci (2001)	<ul style="list-style-type: none"> •Customer value •Revenue sources •Connected activities •Implementation •Price •Scope •Capabilities •Sustainability
Baghdadi (2005)	<ul style="list-style-type: none"> •Business events, input, and output •Production system •Business management/ control system •Information system •Logistic system •Partners

Within today’s business environment, the BM should also be enjoying dynamicity in order to cope successfully with the continuous changes. Characterizing the BM as dynamic (MacInnes, 2005) is essential mainly because many industries nowadays. Unlike the traditional world of business which is characterized by stability and low levels of competition, the world of digital business is complex, dynamic and has high levels of uncertainty and competition. Hence, in the more complex and sometimes unique digital business, the BM needs to be explicit and more flexible (Al-Debei and Avison, 2010). In line with this thinking, the function of a BM is an interface or an intermediate theoretical layer between the business strategy and the business processes.

Organizations and firms need to design and adopt suitable BMs in order to survive and succeed in a world of increasing environmental complexity. Since, enhancing their competitive positions by improving their ability to respond quickly to rapid environmental changes with high quality business decisions can be supported by adopting suitable BMs for the new world of digital business (Al-Debei and Avison, 2010).

2.3 BM Patent

A BM patent is defined as a method of administering, managing, or operating an enterprise or organization, and is a technique used in conducting business (Koda, 2000). Most BM patents are intended to protect the business model within legal boundaries. They also describe the real world business and business models of manufacturing and the service field in electronic environments, and they are the only sources of information that can explain the business process or method thoroughly.

BM patents in the United States Patent and Trademark Office (USPTO) are classified as class

705. This class contains four major and numerous smaller groupings directed to specific and general business data processing machines and methods. These methods still heavily reflect the electrical and computer engineering that underlie them.

Basically, a BM patent encompasses processes and methods of general business. Despite the considerable contribution that BM patents can bring to business, there has been little research conducted on them. Furthermore, most of that research has focused on analyzing the need to apply patents and conduct patenting activity, rather than the content of the BM patent itself (Coriat and Orsi, 2002; Connor and Leak, 2002; Wu, 2005). Therefore, in this research we deal with the contents of BM patents. In particular, we focus on technology based BM in an attempt to identify paths of evolution.

3 EVOLUTIONARY PATHS OF TECHNOLOGY BASED BM

By investigating BM patents we can find that there are several paths in evolution of technical BMs. The identified evolutionary paths were divided into two types depending on the degree of change. Firstly, if the evolutionary change takes place on the whole BM, then that kind of evolutionary path assorts in major stream of evolution (origination, transplant, mutation). Along with this, if the evolutionary change occurs in the component level of a BM, then it belongs to minor stream of evolution (variation, alternation, addition or subtraction). Figure 1 illustrates the evolutionary paths of technology based BMs with some symbols respectively.

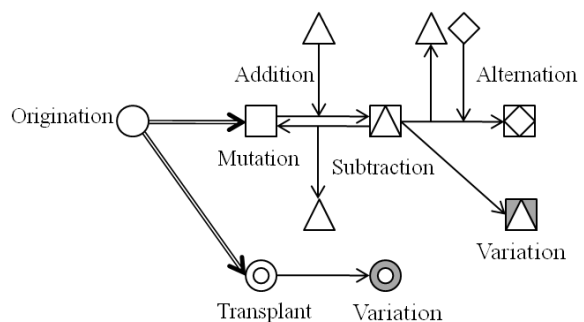


Figure 1: Evolutionary paths of BMs.

3.1 Major Stream

3.1.1 Origination

Origination of a BM means that a totally new BM,

which did not exist at all, is came into the world by any chance. Most of the BM origination arises from creative business ideas and technologies materialize that kind of ideas. One of the most famous cases of technical BM origination is automatic teller's machine (ATM) (No. 4660168: Apparatus for completing a customer initiated ATM transaction). An ATM having various peripheral devices such as a card handler mechanism, a printer mechanism, one or more cash dispenser mechanisms, and a depository mechanism, include a dedicated processor and memory for controlling the operation of the peripheral device connected thereto. The ATM also includes a peripheral control unit connected to the various subsystem controllers and to an ATM control unit for receiving generated transaction sequence event messages and in response thereto concurrently processing the messages to initiate simultaneous real-time operation of the various peripheral devices. It made possible to self service system, that is to say, customers participate actively in the process of service production not only just receive the service.

3.1.2 Transplant

The great part of major evolution of technology based BM can be considered as BM transplant. With the advance of technology, existing BMs should be changed on the whole BM due to the transfer of infrastructure. Owing to the development of information technology especially, almost businesses based on off-line market move to on-line marketplace. Nowadays, mobile marketplace takes center stage of business and moreover, ubiquitous technologies lead to a new business world. Among the huge amount of transplant BM cases which can be found in BM patent database, healthcare services are explicable for transplant BMs. Healthcare services were originally delivered by hospitals or pharmacies, so a patient should visit the hospitals or pharmacies. But as technology developed, the patient does not need to go out. Patent No. 7260586: "Method and system for home medical management" and patent No. 7307543: "System and method for video observation of a patient in a health care location" shows that the patient can receive healthcare service in his/her home. Patent No. 7260586 relates to a printed record contains emergency contact information, medical history information, personal information and medication information. The report can be used as a life saving device in an emergency situation to provide emergency personnel with required information. It can be also used during doctor visits and hospital

stays to eliminate mistakes and on a daily basis to manage the individual's taking of medications. And patent No. 7307543 relates to a system and method for observing patients in geographically dispersed health care locations. A patient is assigned to a health care location comprising a patient visual monitoring system, a patient audio receiver, and a patient controller.

3.1.3 Mutation

Mutation of a BM intends to create a new marketplace by dealing a novel value. Its business configuration is not much different with its previous BM, but it brings out a huge difference in the value of the business. Apple's iTunes (No. 7797242: Method and system for network-based purchase and distribution of media) case can illustrate mutation BM. In this BM, a potential purchaser can search and browse through numerous media items on-line that are available for purchase. The potential purchaser can thereafter purchase one or more media items on-line with great ease. Upon purchasing a media item, the content for the media item can be downloaded over the network to the purchaser. The content for the media item is then encrypted for the purchaser's use and stored on the purchaser's machine. Thereafter, the purchaser can make use of the media item (e.g., play the media item). Improved graphical user interfaces suitable for reviewing, browsing, previewing and/or purchasing numerous media items are also disclosed.

3.2 Minor Stream

3.2.1 Alternation

The majority of the evolutionary path of technical BMs can be considered as alternation BM. It changes a certain component of BM, although maintains overall BM. New technology leads to substitute the existing BM components, and emergence of a new component drives innovation of a suitable structure and architecture. In other words, alteration of the BM components is the main factor of innovation and evolution of the industry. As a representative case, for identification of the customer which is one of the most important BM component, sensing instruments are changed. Traditionally a simple card with limited information was used, but as technology developed, smartcard (No. 6199762: Methods and apparatus for dynamic smartcard synchronization and personalization) or fingerprint (No. 7240207: Fingerprinting media

entities employing fingerprint algorithms and bit-to-bit comparisons) replaced its function.

3.2.2 Addition / Subtraction

Firms try to change their BMs by adding new business function components for diversification or subtracting exist business function components for simplification. Impact of that kind of attempt is generally trivial but it cannot be ignored. With the primary functions of ATM – cash dispensing, deposit and transfer, there are numerous trials to add and subtract supplement functions such as advertisement (No. 5870724: Targeting advertising in a home retail banking delivery service), currency dispensing (No. 7584885: Currency dispensing ATM with RFID card reader), and gift certificate dispensing (No. 7660767: Application banking machine gift certificate dispensing system).

3.2.3 Variation

For continuous improvement of the firms, they provide another version or edition of their exist BM. In this context, they change their business value mostly. By way of example, a bank focus its business value on optimizing accounts (No. 7383223: Method and apparatus for managing multiple accounts) then the bank can modify its business value on enhanced management (No. 7536350: Systems and methods for providing enhanced account management services for multiple banks).

4 CONCLUSIONS

It is natural that interests in BM evolution are growing and that demands for new businesses are on the rise, due to humanity's constant need for newness. And a BM for a digital business should be reviewed continually to ensure its fit with the complex, uncertain, and rapidly changing external environment. Accordingly, in this research we identified distinct types of evolutionary paths of technology based BMs and gave several examples to demonstrate the paths.

Through this research, we can understand the overall flow of technology based BM's evolution. This research is meaningful in its setting up typology of technology based BM evolution paths. We found the evolution from BM patent data, so the evolution is basically derived from technology development. But there are opportunities for further research. In view of the technology-intensive

characteristics of BM patent, exploring evolution of other technology-intensive businesses or knowledge-intensive business services (KIBS) also can be a meaningful work.

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