

ORGANIZATIONAL INNOVATION AND OUTSOURCING DECISION ANALYSIS

David C. Chou

Department of Computer Information Systems, Eastern Michigan University, Ypsilanti, Michigan 48197
Phone: 734-487-0054
E-mail: dchou@emich.edu

Amy Y. Chou

School of Information Technology, Illinois State University, Normal, Illinois 61790
Phone: 309-438-2804
E-mail: aychou@ilstu.edu

ABSTRACT

A competitive organization needs to continuously offer new line of products and services to the market for their customers. In order to cut down their R&D costs, companies seek global vendors to pursue their research and development (R&D) tasks. This paper discusses the issues related to innovation outsourcing, including cost and benefits concerns, uncertainty, risks, and quality and productivity issues.

INTRODUCTION

Thomas Friedman (2008), in his *“The World is Flat”* book, described that the unexpected flow of technology and social shifts created a flat world, in there “a global, web-enabled platform for multiple forms of sharing knowledge and work, irrespective of time, distance, geography, and increasingly, language.” Friedman’s (2008) ten forces that flattened the world are: fall of the Berlin Wall, Netscape IPO, work flow software, open sourcing, outsourcing, offshoring, supply chaining, in-sourcing, informing, and wireless. Friedman’s observation clearly pointed out that offshore outsourcing is a commonly accepted business model nowadays.

Moreover, outsourcing becomes a strategic practice in business world since it can save cost for organizations. Outsourcing, in its essential implication, is to hire outside professional services to congregate an organization’s domestic needs. The original motive for outsourcing was cost reduction; however, the new purposes involved achieving technological flexibility, eliminating seasonal staffing problems and buying time to focus on in-house competencies (Chou, 2007).

However, offshore outsourcing can be extended to “administrative, engineering, research, development, or technical support processes to a third-party vendor in a lower-cost location.” (Robinson and Kalakota, 2004). Most organizations treat their R&D (research and development) function as a strategic core-capability. Innovation, therefore, is a major source of corporate

sustainability. How will innovation outsourcing to be successful? This paper, therefore, intends to discuss the following issues:

1. Why outsource innovation?
2. What are possible costs and benefits of innovation outsourcing?
3. What are possible risks encountered by innovation outsourcing?

This paper starts with the concepts of innovation and outsourcing. It then discusses the implication of innovation outsourcing. Theoretical foundations for conducting innovation and outsourcing are covered in the next section. After that, uncertainties and risks toward innovation, outsourcing, and innovation outsourcing are discussed. The next section illustrates the pros and cons of innovation outsourcing decision in organization. A conclusion is provided at the end of this paper.

DEFINING INNOVATION AND OUTSOURCING

Innovation

Innovation is “a progressive and iterative process that begins with a raw idea, which is then developed into a concept, then generates invention and finally to be implemented and commercialized (Chou and Chou, 2007). Gaynor (2002) indicated that “the ideas, concepts, inventions, and innovations” are four stages of innovation continuum. Gaynor (2002, p. 16) also summarized the following opinions that involved with innovation:

- *Innovation is creating new ideas and getting them to work;*
- *Innovation is not science or technology;*
- *Innovation creates new wealth rather than knowledge;*
- *Innovation is turning an idea into a business success;*
- *Innovation is a change in the economic or social environment;*
- *Innovation must be user-focused;*
- *Innovation = invention + exploitation;*
- *Exploitation = everything involved in implementation or commercialization.*
- *Innovation is newness in the sense of not having been done before – but with a little bit of slack.*

Outsourcing

Outsourcing has been recognized as a common practice recently. A main reason for conducting offshore outsourcing is cost saving. Other than this dominant reason, Outsourcing Institute’s Annual Survey (Outsourcing Institute, 1998) found the following ten reasons for members’ outsourcing decisions:

1. reduce and control operating costs;
2. improve company focus;
3. gain access to world-class capabilities;

4. free internal resources for other purposes;
5. resources are not available internally;
6. accelerate reengineering benefits;
7. function difficult to manage/out of control;
8. make capital funds available;
9. share risks; and
10. cash infusion.

INNOVATION OUTSOURCING

Innovation outsourcing can be described as any company seeks external effort to support its R&D work or fully/partially moves out its R&D department to a lower-cost location or country. The main purposes of conducting innovation outsourcing are to reduce corporate R&D cost and to utilize talented researchers in other countries such as China and India.

The growth of multinational corporations (MNCs) encourages the adoption of innovation outsourcing. MNCs do not need to implement their supply chain all in headquarters. These companies have their business processes distributed globally. Many U.S. companies have moved their innovation (R&D) to their global networks or partners. For example, an MNC may have its assembly plants located in the U.S., in the mean time, it may have engineering division in Taiwan, software division in India, and manufacturing plants in China.

Companies like Dell, Motorola, and Philips are “buying complete designs of digital devices from Asian developers, tweaking them to their own specifications, and slapping on their own brand names.” (Engardio and Einhorn, 2005). Boeing Co. announced on February 8, 2005 that it is “working with India’s HCL Technologies to co-develop software for everything from the navigation systems and landing gear to the cockpit controls for its upcoming 7E7 Dreamliner jet.” (Engardio and Einhorn, 2005). Also, pharmaceutical companies such as GlaxoSmithKline and Eli Lilly also doing the same model by “teaming up with Asian biotech research companies in a bid to cut the average \$500 million cost of bring a new drug to market.” (Engardio and Einhorn, 2005). Procter and Gamble Co. also predicted that “half of its new product ideas to be generated from outside by 2010, compared with 20% now.” (Engardio and Einhorn, 2005).

India and China are two Asian countries that take most R&D outsourcing contracts. India is mostly focusing on “design” aspect. The top players in India’s software development industry are HCL and Wipro. They are expected to help India “boost its contract R&D revenues from \$1 billion a year now to \$8 billion in three years.” (Engardio and Einhorn, 2005). China is another geographical location that gained most R&D contracts. There are about 300 MNCs have set up R&D centers in China, including big names such as Microsoft, Nokia, General Electric, Unilever and Alcatel-Lucent, etc. (Engardio and Einhorn, 2005). Other than that, computer MNCs such as Google, IBM, Motorola and Intel also conduct their research and fund projects at China’s universities (Engardio and Einhorn, 2005). Other Asian countries/locations like Hong Kong, Taiwan, Singapore, South Korea are heavily involving in innovation outsourcing work.

THEORETICAL BACKGROUND

Afuah's (2003) Profit Chain described that the profit from innovation (that leads to low-cost or differentiated products) stems from factors such as environment, nature of innovation, knowledge, competences, and assets. Afuah (2003) also pointed out that "The new knowledge or new way of offering the new product or service can originate from the firm exploiting it but often is from its environment of competitors, suppliers, customers, government, or other institutions." It is clear that organizational innovation can be developed within the organization or through its external entities that encountered. A logical inference from the Profit Chain is to extend its innovation (R&D) through outsourcing activities.

Knowledge is an important source for innovation. Afuah (2003) also pointed out that "How well a firm can exploit this new knowledge is a function of how different the new knowledge is from the firm's existing knowledge. It is a function of whether the new knowledge builds on the firm's existing capabilities or is very different – it is a function of whether the change is radical, incremental, or architectural to the firm." His reasoning showed that corporate knowledge must be well organized and managed. Therefore, a modern and well established knowledge management system can facilitate organizational innovation process. Another important concern here is the type of organizational changes occurred after innovation. For example, a newly created innovative process may cause process reengineering that will result in radical changes inside an organization. Therefore, further influences to organizational change must be clearly identified, monitored and managed. Similarly, Chou and Chou (2007) proposed a Knowledge Management, Innovation, and Organizational Change (K-I-O) model to illustrate the interrelationship among the three dimensions.

Another viewpoint made by Afuah (2003) was the utilization of globalization for innovation. Since innovation is the use of new technological or market knowledge to offer a new product or service in the global market, the ability of a firm to obtain these global technological or market knowledge may determine the possibility of innovation success. In order to gain possible global profits, firms may like to pursue the challenges in these locations or countries. This argument reflects the standpoint of innovation outsourcing. A firm's globalization strategy pinpoints to its possible advantage of gaining worldwide sources of innovation.

Five economic theories can be used to structure the theoretical foundation of outsourcing practice, they are (1) production cost economics, (2) transaction cost theory, (3) resource-based theory, (4) competitive advantage, and (5) economy of scale (Chou, 2007; Chou and Chou, 2009).

UNCERTAINTIES AND RISKS

Outsourcing's Uncertainties and Risks

Outsourcing's uncertainties and risks stem from a variety of sources. Aubert et al. (2005) employed transaction cost theory and agency theory to illustrate embedded and undesirable outsourcing events and their associated risk factors. Transaction cost theory focusing on

contracting negotiation and monitoring, any deviation from a complete contract will cause high risk, such as opportunistic behavior prompted by any contracting party. Agency theory focuses on client's problems while choosing an agent (or service provider), working relationship building and maintenance, and information asymmetry (Aubert et al., 2005).

Innovation Outsourcing's Uncertainties and Risks

Any company intends to outsource its R&D tasks must carefully assess encountered uncertainties and risks. In essence, innovation outsourcing must consider both aspects' (i.e., innovation and outsourcing) uncertainties and risks factors. In summary, they are:

- Technological risks
- Market risks
- Business risks, and
- Outsourcing life cycle encountered risk factors

The altitude of uncertainties determines the intensity of risk. The risk must be assessed in relation to the company's capability to handle the risk. Also, the scale of an outsourced innovation project and its cost affect the level of risk acceptance. Usually, small companies is capable of taking greater risks than that of the larger MNCs' since small companies' project scales are relatively smaller than that of larger firms'.

PROS AND CONS OF INNOVATION OUTSOURCING

Implementing innovation outsourcing project is not easy. The outsourcing company must deal with many uncertainties and risks come from technological, market, and business aspects. Other than that, an outsourcing company must consider possible responsiveness reflected from their employees, customers, suppliers, and investors. No matter what will receive from these parties, it can always present both positive and negative reactions. However, we can identify possible pros and cons of going innovation outsourcing as following:

Pros for Innovation outsourcing

- Innovation outsourcing can strategically put a company in a sustainable leadership position (Quinn, 2000).
- Outsourcing vendors can offer advanced technological sources and share customer concerns and solutions.
- Innovation outsourcing allows company to share R&D uncertainties and risks with vendors.
- Innovation outsourcing allows company to recruit field experts and talents.
- Innovation outsourcing saves corporate R&D cost and generates new profits.
- Offshore innovation outsourcing has advantages of globalization.

Cons to Innovation outsourcing

- Innovation outsourcing generates higher risk than working in-house.
- Company may lose the control of R&D progress.
- Innovation outsourcing causes security issues such as intellectual property theft.
- Outsourcing vendor may breach the contract, sell developed products to others.
- Quality control is a challenging issue to both outsourcing company and its vendors.
- Offshore innovation outsourcing has risks on cultural, language, and regulatory diversities.

CONCLUSION

Innovation creates sustainability to an organization. In order to keep competitive advantage in the industry, leading organizations must keep investing into their R&D sector. The concern on growing demand for R&D expenses caused a new innovation business model, that is, innovation outsourcing. Specifically, offshore innovation outsourcing is gaining the most attention in the business world.

Although implementing innovation outsourcing can save cost and share risks with outsourcing partners or vendors, this business model generates more uncertainties and risks to corporate innovation processes. These risks stem from four dimensions: technology, market, business, and contracting life cycle. Corporate managers must clearly identify these risk factors and then monitor them carefully in order to minimize these risks.

Seeking partnership with quality universities through funding support to research projects is an alternative to offshore innovation outsourcing. Another cost-benefit way to invention is through “open system” approach to generate external contribution. Linux operating system, for example, has grown through this business model.

Further research to this area could be the creation of quantitative measures or metrics of various risk factors. Another future development in offshore innovation outsourcing may focus on the determination of methodology and the related decision making processes, for example, TCO (total cost of ownership) could be a candidate for further analyses.

References are available upon request.