



Imitation & Innovation in Emerging Countries: A conceptual framework for analysis

Nguyen Huu Phuc

Graduate School of Innovation and Technology Management,
Yamaguchi University

Address: 1677-1 Yoshida, Yamaguchi, 753-8511, Japan

E-mail: phuc@yamaguchi-u.ac.jp

Abstract:

The ultimate aims of our research are to i) offer a technical description of imitation behavior, ii) modelize imitation with other related factors to present an overall model where all important factors can be measurable, and iii) utilize the model to measure the impacts of imitation. Therefore, understanding the concept of imitation and other related concepts in order to properly characterize these concepts, and then building a conceptual model are the first steps toward achieving this aim. This paper will focus on i) the review of the literature on imitation and its limitation, ii) the understanding of the relationship between imitation and other related concepts, and iii) the resultant suggestions on a conceptual framework for analysis.

Keywords: Imitation, Innovation, Copycat, Technology Transfer

Paper received: 10/10/2014

Paper accepted for Publication: 30/03/2015

INTRODUCTION

Innovation is without doubt an influential factor that is crucial to enterprise survival and growth. It contributes an authoritative power of monopoly that generates profits until competitors show up. Having said that, however, in fact, nearly 98% of the value of innovation goes to imitators instead of innovators (Shenkar 2010).

Imitation in this paper refers to the intentional copying of the innovator (or pioneer, market leader)'s existing technology, design or function as well as the pioneer's organizational practices, business models or other strategies. Illegal forms of imitation, such as piracy and counterfeiting are not part of our paper.

If one takes a look at the leading player in many sectors, one will be surprised to find that the leading player is not the pioneer but the able and creative imitator. Visa, Master Card, and American Express copied what Diners Club once pioneered in credit card business. After a long period of creative imitation through global partnerships, China's Huawei is today the largest telecommunications equipment, and Brazil's Embraer is the third largest global aircraft company. The majority of today's giants have grown up from creative imitators.

Moreover, in developing countries, most economic development in the catching up processes started with imitative innovation. In emerging countries, imitative innovation is a topic of great practical and policy interest.

From legal perspective, imitation itself does not necessarily imply a negative behavior or illegal infringement. There are legal as well as illegal imitation. Japan and Korea obtained their rapid industrialization through inspiring many European and America enterprises' advanced technologies and business practices. All of these innovative imitations thus do not necessarily involve illegal patent infringements or counterfeits. In Korea, the majority of large local pharmaceutical and cosmetic companies have evolved from small firms. They first started as business traders importing drugs, then gradually participating in pharmaceutical manufacturing process through imitating from the simplest steps like packing the finished drugs, next importing chemical materials to produce drugs, and finally manufacturing the pharmaceutical materials. Their growth in size, technological skills and capabilities has been expanded through their imitation process. Their imitation strategy has changed and is thus optimized to their internal condition and external environment over time.

Despite the fact that imitators often overshadow innovators, imitation is unjustly neglected in the academic literature. It receives inadequate attention on most economics and business studies.

It might be because that we have been educated from a young age to consider imitation "undignified and objectionable" (Shenkar 2010). In companies, the word "imitation" has been treated as a taboo by both executives and employees. Consequently, imitation is not an available option for enterprise strategy or it is conducted tacitly in the dark without properly strategic management.

Furthermore, even if enterprises embrace imitation and treat it as important as innovation, it is not easy to make it successful. The imitation strategy tends to backfire, for instance, when imitators are attracted to the observable elements of an innovation and fail to learn and copy what makes it successful. In addition, in many cases, what worked with the innovators may not work with the imitators. On top of that, imitation itself does cost a lot of money, time and efforts. To successfully compete with the innovators, understanding the "true" imitation and being able

to develop capabilities to conduct imitation strategies are crucial to imitators.

In order to understand the mechanism of imitation, this paper focuses on building a conceptual framework for analyzing imitation. Our conceptual framework is primarily concerned with five questions.

Firstly, how should we categorize and classify the different aspects of imitation? This part will introduce some of the key concepts used in defining, categorizing and classifying imitation. It also gives a broad overview of similarities and differences between imitation and innovation, learning and knowledge accumulation, and technology transfer.

Secondly, how does an imitation look like in an imitation game? We will examine some findings in the literature regarding imitation strategy as well as the strategic players.

Thirdly, how do customers react to imitation? This part examines consumer response to imitation. A proper understanding of how customers react to imitation requires us to understand a broader range of theories of consumption. We then draw out the connections between these theories of consumption and the evolution of imitation into innovation.

Fourthly, which is the optimal choice for a company, choosing between two strategies, that is, engages in R&D or abstains from own R&D and imitate the outcomes of innovators? We discuss the relationship between imitation, innovation and intellectual property protection. The basic premise is that imitation is not only as critical as innovation to business but also is vital to the effective development of innovation itself.

Fifthly, what effects does imitation have on the economy as a whole? This can be analyzed at various levels. We look at the implications of imitation in the economic growth of emerging countries as well as examine the inter-relationship between imitation, competitiveness and market structure. We also take a brief look at the role of imitation supporting a sustainable economy. This part reveals the two sides of imitation. It can sometimes be a threat to sustainability but can also - perhaps unexpectedly - help to achieve sustainability.

REVIEW OF LITERATURE

Definition of imitation

Imitation is the intentional copying of the innovator (or pioneer, market leader)'s existing technology, design or function as well as the pioneer's organizational practices, business models or other strategies. Imitation is thus an imitator's optimal strategy that is a resultant dynamic equilibrium satisfying firm internal condition, market external environment, and customer demand.

Different forms of imitation

1. From the perspective of innovativeness:
 - Technological imitation: There are two distinct levels of imitations according to how the imitated products or services are different from the originals.
 - Pure imitations (also duplicative imitations): legal copies of the original product. Most of them are third party' products like lithium batteries for a Nikon camera or numerous YouTube-like websites where users can upload, watch, and share video clips.

- Innovative imitations (also creative imitations): various kinds of modifications (or improvements) from the originals by designing differently, adding new functions, improving product performance, using different manufacturing processes and changing materials. Microsoft Excel is an innovative imitation over its pioneering product Lotus 123. Innovative imitations can be realized through several ways, for instance, reverse engineering, patent purchase, outsourcing (purchasing from open market), joint product development and imitation with adjustment for the local needs.
 - Organizational imitation: Organizational imitation consciously replicates organizational procedures, business models or strategies. It can be also categorized into pure or innovative level like technological imitation.
2. From the perspective of strategicness:
- Exploitative imitation (from an imitator): the imitator provides an imitation with more improvements or at a more competitive price. It happens when market barrier is low or is hard to establish. For example, take a look at digital camera that was first commercially marketed by Fuji Camera and now has been continuously improved by many other makers.
 - Incompatible imitation (from an imitator): the imitator's counter-strategy against the innovation by introducing similar product but incompatible with the existing originals, for instance, an incompatible imitation of Apple iPad is Samsung Nexus. This strategy is particularly adopted when there is the existence of network effects, and thus tends to lead to a war of de facto standard.
 - Proliferative imitation (from an innovator): instead of offering one product, the firm imitates its own originals and provides a lineup of various imitations with slightly different characters and prices. The firm benefits from the price discrimination. It is also a preemptive defense against any possible market entrance by curtailing competitor's opportunity and profitability.
 - Open imitation (from an innovator): one partner agrees to let the other partner use, for example, a particular technology that was strategically selected under specified conditions.

Relationship between Imitation and Innovation and Intellectual Property Protection

In the economic literature on innovation, there are two contradictory results regarding the relationship between innovation and imitation. One starting with the works of Schumpeter (Schumpeter 1934, Schumpeter 1942) argues that imitation deters innovation as it discourages efforts of innovators in creative innovation. As a result, imitation has negative impacts on innovation, and strong protection of intellectual property is the prerequisite to promote innovative activities in R&D (Arora and Gambardella 1994; Gallini and Scotchmer 2002; Gans and Stern 2003; Gan et al. 2008). On the other hand, other studies (Aghion et al. 2001; Bessen and Maskin 2009; Zhou 2009) show that the pressure of being imitated stimulates the incumbents' innovative endeavors. Therefore, intellectual property protection can hinder rather encourage the innovative activities.

Regarding the protection of intellectual property, there are two approaches. One is the formal method having intellectual property to acquire some kinds of official acknowledgement, for example, patents, registration of design, trademarks, and copyrights. Making the IP public, however, also induces the competitors to imitate, particularly in countries where the IP law enforcement is still weak. The other approach is informal but strategic, that is, i) wise use of lead-time, ii) ensuring product/process/design complexity, iii) confidentiality agreements, and iv) other strategies for secrecy. Literature has shown that the informal strategic approach offers much better protection effectiveness for the IP regardless of firm size (with exceptions found in chemical and pharmaceutical industries).

Innovative Imitation, Incremental Innovation, Technology Transfer

Innovation expresses a strong implication of invention – the process that the firm involves the development of a radically new product. There are two types of innovations according to the impact of the innovation on the competencies of established incumbents: incremental innovation and radical innovations.

Incremental innovation implies the improvements that are made steadily to a product or process without changing the fundamental characteristics of that product or process. Established incumbents are able to respond effectively to these incremental innovations from competitors.

Radical innovation refers to the fundamental improvements that transform the product features. It seriously threatens the market power of established incumbents and deteriorates their competencies. Established incumbents find it hard to respond to these radical innovations. Incremental innovation occurs steadily along a product life while radical innovation happens very occasionally, but it is disruptive to the incumbent products, for instance, CD-R disks that displaced the 2.5-inch floppy disks as a storage media in personal computers.

In general, innovative imitation is not the same as incremental innovation. Innovative imitation is a superset of incremental innovation. Innovative imitation encompasses not only improvements made to the originals, but also innovative degenerations, for example, that may abate the originals' functionality but reduce the product price. The innovative degeneration does not contribute any technological improvements, but by, for example, wisely adjusting the production process or using inferior materials, the imitator can offer a downgrade but useful product at a much cheaper price. Without a clear distinction between the two concepts, many may barely tell innovative imitation from incremental innovation. This ambiguity may give a wrong impression that the study of incremental innovation covers the other and thus makes the study of innovative imitation look less important. In this paper, we suggest two new definitions: inferior imitation and superior imitation. The latter is incremental innovation itself while the former refers to the innovative degenerations.

Technology transfer is a deliberate activity of a technology patent holder to transfer technological knowledge to an imitator. It is considered to be beneficial to both sides as imitators can gain new technology or update their existing technological base while technology patent holders can earn license fee or exploit the advantages of the imitators. For instance, using the natural and human resources of imitators, expanding the patent holder's market or forming a favorable technology standard. From an imitator's view, it is a technological imitation with the support from the innovator.

Technology transfer occurs in the manufacturing sector, whereas in the service sector, there is a similar imitation form that is called “franchise”.

Players in an imitation game and their strategic action

According to Schnaars (Schnaars 1994), “the concept of imitation is related to, but distinct from, the concept of later market entry”. Therefore, an innovator may not be a pioneer, but a later entrant. Likewise, an imitator may beat the innovator to be a pioneer in the market instead of being a later entrant. Schnaars adds the “time” factor that is the timing of entering the market into the imitation game between innovator and imitator.

Shenkar (Shenkar 2010) expands this thinking by integrating the “space” factor into the game. It results in three strategic types of imitators: “the pioneer importer, an imitator which is the pioneer in another place (another country, industry, or product market); the fast second, which is a rapid mover arriving quickly after an innovator or pioneer; and the come from behind, a late entrant who typically relies on pronounced differentiating factors.” (Shenkar 2010).

Additionally, in most markets, we can identify a core of firms that are persistent innovators or persistent imitators while other firms are either occasional innovators or imitators.

Imitation Strategy

It is generally accepted that a successful imitation strategy is contingent on various internal capabilities. Previous literature (Luo, Sun and Wang 2011; Yoon 1998; Cohen and Levinthal 1989, Cuervo-Cazura and Genc 2008, Lieberman and Asaba, 2006) indicates five capabilities as follows:

- Combinative capability: skillfully combine and integrate the imitator’s own resources with outside technologies.
- Absorptive capability: speedily evaluate, learn, apply and enhance new knowledge.
- Networking capability: foster reliable formal and informal network.
- Hardship-surviving capability: a combination of entrepreneurship with persistence and flexibility to overcome economic, political and institutional uncertainty.
- Intelligence capability: ability to detect, collect, and evaluate information regarding imitation-relevant PEST, market and industry intelligence.

The ultimate goal of these capabilities is to acquire and enhance three competitive advantages:

- Cost advantage: to deliver suitable technology at a low cost.
- Speed advantage: fast imitation is the key to succeed when confronting the innovators and other competitive imitators.
- Channel advantage: standalone imitators will never succeed with any imitation strategy.

Regarding the relationship between imitation and market competition, the literature on innovation shows an ambiguous result. To grasp the overall relationship between three factors: imitation – innovation – market competition, the reasons are sequenced as follows:

Firstly, market competition means market pressure that is inversely proportional to the degree of market concentration. Market competition can also be measured by the degree of product differentiation, that is, an increase in the homogeneity of products (i.e. lower degree of product differentiation) implies that market competition is more intensive.

Secondly, the effect of market competition on incentives for innovation is inconclusive. There are three conflicting results. One is that market pressure fosters innovation as a decrease in market concentration spoils the innovative spirits (Dasgupta and Stiglitz 1980; Geroski 1990; Blundell et al. 1999). On the other hand, several researchers argue that more intensive market competition discourages incentives for innovation, as innovative advantages are temporary (Arrow 1962; Futia 1980; Gilbert and Newbery 1982; Reinganum 1983; Zhou 2009). Therefore, market concentration vitalizes firms' innovation as monopoly power of larger firms proved a major accelerator of technological progress (Henderson and Cockburn 1996; Cefis 2003). These controversial arguments gave a support that the relationship between market competition and innovation may not be monotonic. For instance, Aghion et al. (2005) shows that the relationship is an inverted-U shape. At low and high level of market competition, the incentive for innovation is low, whereas firms will increase efforts in innovation when they are in a medium level of competition. Again to make the issue more complicated, Boone (2000) indicates that the innovative efforts depend on not only the market competition but also the innovative capability of the firms: less efficient firms tend to increase innovative activities when competition is weak. Conversely, firms that are more efficient will boost their investment in R&D when competition becomes more intensive.

Finally, as mentioned in the previous part, there are contradictory results regarding the bi-directional relationship between imitation and innovation: it can be positive or negative. Moreover, Braguinsky et al. (2007) reveals that the relationship between imitation and innovation is also contingent on other factors like the maturity of the industry itself or the characteristics of the market. When the industry is still in its early stage and small, innovators as well as incumbents do not have incentives to prevent imitation. However, as the industry keeps growing, imitation will deteriorate innovative effort.

As a result, further work needs to be done to understand the complex interrelationship between market competition and imitation.

CONVENTIONAL METHODOLOGIES FOR ANALYZING IMITATION AND THEIR LIMITATIONS

Recently, there have been an increasing number of studies on imitation. According to their analysis approach, the majority can be categorized into two types:

1. Business management approach: It often uses survey data to conduct empirical analysis (Lee and Zhou 2012; Luo, Sun and Wang 2011; Zhou 2006). A distinctive tendency of this kind of study is the research context originates in China. Foreign investment has poured into China to seize the huge opportunities in this fast-growing market. The influx of foreign firms brings new technologies as well as creates competition in China market. Consequently, firms in China have to rely on innovation orientations to survive the competition. The initial and realistic step of many firms is to imitate the innovators. This phenomenon provides rich material for

studying imitation.

This approach without doubt offers several very useful and applicable results. However, due to the nature of latent analysis, there is still considerable ambiguity with regard to the design of the survey which is the foundation of the analysis. The empirical analysis was built on previous qualitative research of Schnaars (1994) in which three questions are set up to measure pure imitation, similarly another three questions to measure creative imitation. As discussed above, not only imitation type but also the types of imitators as well as the characteristics of the industry should be included in the survey. Moreover, this survey method also suffers from uncertainty that with only three answers from an imitator, is it possible that one can identify and measure pure imitation or creative imitation?

2. Economics approach: This approach is developed from two distinct perspectives: Macroeconomics (the North-South model of growth and trade) and Microeconomics (the Two-stage Cournot model).

Theoretical results are beautifully constructed and very instructive. Nevertheless, because of the characteristics of the models, the main limitation is that the analysis cannot be conducted with empirical data.

DISCUSSION TOWARD A CONCEPTUAL FRAMEWORK TO ANALYZE IMITATION

This part will be quite short, but that does not imply its content is unimportant. Rather it is because parts of discussion have been mentioned earlier in the previous parts. Issues that are related to the characterization of possible variables and parameters will be discussed as follows.

Firstly, the literature on imitation would seem to omit an important factor, that is, consumers. Products, either imitations or innovations, eventually will be evaluated by customers. The response of customers will decisively determine the success of that imitation. In general, the response may be active or passive with regard to an imitation. It is not clear about the effects of consumer types on imitated products. It may vary over the consumer segmentations (or customer attributes), place of living, or product life cycle. Additionally, the aggregate demand, network effects or sunk costs are also important factors. Moreover, in theory, there are several types of consumers such as Douglas, Veblen, Marshall, and Galbraith consumers, or utility-based economic consumers.

Secondly, the behavior of imitation would seem to be a process of absorbing and applying new knowledge originated by an innovator. As for the imitator, the knowledge that he imitates is the subset of the knowledge of the innovator. However, it may be either completely new to the imitator (i.e. it has the empty intersection with the imitator's own resource), or partly overlapped. As mentioned earlier, one of the distinct differences between imitators and innovators is that while the innovator tends to enhance its technology by their own and keep it secret from others, the imitator exploits its network (or channels) to learn and apply the technology. It implies that i) the knowledge once the imitator obtained will be more versatile, and ii) the existence of spillover effects over its network. It is a hint for an imitator to succeed in its imitation strategy as well as for a counter-strategy of an innovator.

In sum, an ideal model for imitation analysis is proposed to take the following aspects into consideration:

- Types of imitation
- Types of imitators
- Types of consumers and their response to imitation
- Characteristics of the innovator
- Characteristics of the industry include but not limited to: market competition (or market concentration, or product differentiation), the industry maturity, innovation diffusion degree, intellectual property protection, and networkability.
- Capabilities required for an imitation strategy

Hence, analysis results will include an imitator's optimal strategy that is a resultant dynamic equilibrium satisfying firm internal condition, market external environment, and customer demand.

CONCLUSION

This paper conducted a review of the literature on imitation and the relationship between imitation and other related concepts. We also explained some limitations in the literature. Our study provided some suggestions on a conceptual framework for analysis. However, our work clearly has its own limitations. The current study was limited to offering academic suggestions. Despite this, we believe this study has gone some way towards enhancing our understanding of imitation. Future work will focus on i) offering a technical description of imitation behavior, ii) modelizing imitation with other related factors to present an overall model where all important factors can be measurable, and iii) utilizing the model to measure the impacts of imitation.

REFERENCES

Aghion P, Harris C, Howitt P, Vickers J (2001) Competition, imitation, and growth with step-by-step innovation. *Rev Econ Stud* 68:467–492

Aghion P, Bloom N, Blundell R, Griffith R, Howitt P (2005) Competition and innovation: an inverted-U relationship. *Q J Econ* 120:701–728

Arora A, Gambardella A (1994) The changing technology of technological change: general and abstract knowledge and the division of innovative labour. *Res Policy* 32:523–532

Arrow K (1962) Economic welfare and the allocation of resources for invention. The rate and direction of inventive activity: economic and social factors. Princeton University Press, Princeton

Bessen J, Maskin E (2009) Sequential innovation, patents, and imitation. *RAND J Econ* 40:611–635

Blundell R, Griffith R, Van Reenen J (1999) Market share, market value and innovation in a panel of British manufacturing firms. *Rev Econ Stud* 66:529–554

Boone J (2000) Competitive pressure: the effects on investments in product and process innovation. *RAND J Econ* 31:549–569

Braguinsky S, Gabdrakhmanov S, Ohyama A (2007) A theory of competitive industry dynamics with innovation and imitation. *Rev Econ Dyn* 10:729–760

Cefis E (2003) Is there persistence in innovative activities? *Int J Ind Organ* 21:489–515

Cohen, W. M., & Levinthal, D. A. (1989) Innovation and learning: The two faces of R&D. *Economic Journal*, 99, 569–596.

Cuervo-Cazurra, A., & Genc, M. (2008) Transforming disadvantages into advantages. *Journal of International Business Studies*, 39(6), 957–979.

Dasgupta P, Stiglitz J (1980) Industrial structure and the nature of innovative activity. *Econ J* 90:226–293

Futia C (1980) Schumpeterian competition. *Q J Econ* 94:675–695

Gallini NT, Scotchmer S (2002) Intellectual property: when is it the best incentive system? In: Jaffe A, Lerner J, Stern S (eds) *Innovation policy and the economy*, vol 2. MIT Press, Cambridge

Gans J, Stern S (2003) The product market and the market for ideas: commercialization strategies for technology entrepreneurs. *Res Policy* 32:333–350

Geroski P (1990) Innovation, technological opportunity, and market structure. *Oxford Econ Papers* 42:586–602

Gilbert R, Newbery D (1982) Preemptive patenting and the persistence of monopoly. *Am Econ Rev* 72:514–526

Henderson R, Cockburn I (1996) Scale, scope, and spillovers: determinants of research productivity in the pharmaceutical industry. *RAND J Econ* 27:32–59

Lieberman, M. B., & Asaba, S. (2006) Why do firms imitate each other? *Academy of Management Review*, 31(2), 366–385.

Lee, R. P., & Zhou, K. Z. (2012) Is product imitation good for firm performance? An examination of product imitation types and contingency factors. *Journal of International Marketing*, 20, 1-16.

Luo, Yadong, Jinyun Sun, and Lu Stephanie Wang (2011) Emerging Economy Copycats: Capability, Environment, and Strategy, *Academy of Management Perspectives*, 25 (2), 37–56.

Reinganum J (1983) Uncertain innovation and the persistence of monopoly. *Am Econ Rev* 73:741–748

Schnaars, Steven P. (1994) *Managing Imitation Strategies: How Later Entrants Seize Markets from Pioneers*. New York: The Free Press/Macmillan.

Shenkar, Oded (2010a) *Copycats: How Smart Companies Use Imitation to Gain a Strategic Edge*. Boston: Harvard Business Press.

Yoon, S. C. (1998) A successful strategy of follow the leader combined with cultural adaptation. *International Studies of Management & Organization*, 28(4), 49–56.

Zhou, K. Z. (2006) Innovation, imitation, and new product performance: The case of China. *Industrial Marketing Management*, 35(3), 394-402.

Zhou W (2009) Innovation, imitation and competition. *BEJ Econ Anal Policy* 9(1), article 27