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*Full Length Research Paper*

# **A cognitive discussion on Shanzhai: an emerging innovation model**

**Jiangning Zhao**

Professor of Management, College of Business Administration, Catholic University of Korea , 43 Jibong-ro, Wonmi-gu, Bucheon-si, Gyeonggi-do, 420-743, Korea

Email: [zjning@hotmail.com](mailto:zjning@hotmail.com) Tel.: 0082-2-2164-4229 Fax: 0082-2-2164-4229

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**Imitation, Innovation and Catching up Technology have been major topics among others in the increasingly globalized economy, particularly in the developing countries. Shanzhai is a hot issue of debates on imitation and Intellectual Property Right (IPR). An ongoing argument focuses on the formation and condition that cultivates and nurtures the development of Shanzhai, as well as its transformation from small family-run business units into an industry, capable of competing with SOEs (State Owned Enterprises) and MNCs (Multi-National-Corporations). This study adopts Grounded Theory (GT) framework, delving into ten-year data (2001-2011), analyzing the pattern of Shanzhai development from its Origin to its transformation. This study proposes that Shanzhai is no longer the synonym of Imitation. Imitation has become obsolete to Shanzhai after MediaTech (MTK) launched its One Stop Integrated System (OSIS) Turnkey Solution in 2005. Shanzhai has emerged as an innovative industry featured with clustered relationship among firms, small but versatile in the form of organization. Together, they facilitate the process of establishing Shanzhai Innovation Model powered by three competitive advantages (Cost Saving Operations, Speed of Products to Markets, and Cheap Price but Good Enough Products for Low End Markets). Using GEM (Global Enterprises Monitoring), this study has invited three sample groups from University Faculties, Shanzhai Managers, and Shanzhai Employees, to test the competitive strengths of Shanzhai Clusters. The applicability of Shanzhai Innovation Model as a Catching-up Technology in other developing countries, is also discussed which is followed by recommendations for future research.**

**Keywords:** Shanzhai, Imitation, Innovation, Catch up, Competitive Advantages

## **INTRODUCTION**

An ongoing argument on Shanzhai focuses on the formation and condition that cultivates and nurtures the development of Chinese Shanzhai, as well as its transformation from small family-run business units into an industry, capable of competing with SOEs (State Owned Enterprises) and MNCs (Multi-National-Corporations). This study adopts Grounded Theory (GT) framework, delving into ten-year data (2001-2011),

analyzing the pattern of Shanzhai transformation from imitation to innovation. This study proposes that Shanzhai has become an innovation model after MediaTech (MTK) launched its One-Stop-Integrated-System (OSIS) Turnkey-Solution in 2005. Shanzhai in conjunction with its clustered relationship facilitates the process of establishing three competitive advantages (Cost Saving, Speed of Products to Markets, and Cheap

Price). Using GEM (Global Enterprises Monitoring), this study examines the competitive strengths of Shanzhai Clusters. The applicability of Shanzhai Innovation Model as a Catching-up Technology in other developing countries is also discussed, which is followed by recommendations for future research. The rapid growth of China economy during the past 30 years has brought about so many emerging phenomena into business and management that are fresh to the existing knowledge. Shanzhai is one of the most phenomenal business behaviors arousing an increasing attention both domestically and internationally. Anecdotally it has been argued that Shanzhai Firms are imitators or copycats, and Shanzhai Products are referred as Counterfeits, knockoffs or mock-ups. Pros and Cons are sided against each other. Debates have been focusing on whether or not “Imitation” can be continuously used as a key driver for China economic growth on both firm level and industrial level. If mass culture in the Western society has evolved in parallel with the process of industrial revolution which is characterized as mass reproduction of commercialized products for public interests, then, it might be reasonable to extrapolate that, the popularity of replicated products might be used as a tool to manipulate mass culture (Tao, 2008, *p.10*). This is why the big letter “M” is instantaneously reflected in the mind of mass population as a food place for McDonald. The magnitude of replicated letter “M” determines the popularity of fast food culture. Similarly, Shanzhai has established a cultural recognition by capturing and satisfying public commercial needs through imitating and replicating products at an irresistible low price. From this point of view, Shanzhai represents a culture of ‘cheap or low price products’ manufactured by the means of imitation. Can imitation be used as a catch-up technology? If so, under what conditions, can Shanzhai be cultivated as a business model to catch up with market leaders? Answers to these questions might be instrumental to other developing countries in searching for catch-up technologies. The following two stories serve to underline the implications of these two questions.

### **Story 1: The Power of Imitation!**

A quick google search with “I LOVE HK” pops out 8,620,000 results in 0.11 seconds, it surprisingly remains as a mystery that why a few words “I LOVE HK” printed on T-shirts in different fonts and styles (Irish, Italian, Greek, and Chinese), different size for men and women, adults and kids, at a price range of \$16 to \$30, can trigger a hot sale in global market? What is happening? Professor Yu, Interviewed on 07/23/2010 at City University of Hong Kong, shared her interpretation of Hot-Sale-T-Shirts, “it is not about breakthrough technology; instead, it is a psychological reaction from a simple product modification”. “I LOVE HK” makes

Indigenous proud of being a HK Citizen; makes immigrants show off their HK identity - “I am a Hong Kongnese too”; and make tourists and temporary migrants express their success in making dreams come true - “I am here too”.

### **Story 2: Business Ideas More Powerful!**

A quick google search with “MOMO bear” pops out 9,820,000 results in 0.12 seconds, an originally on-line pet, has been imitated and transformed into physical toys with various creative modifications. Market burst impels the original designer of MOMO bear to become more innovative – sell the design to downstream firms, so they can manufacture MOMO bears of their own. This idea of ‘letting others to manufacture one’s own design’ is what makes this story unique in the context of present study.

### **Implications of the two stories**

The two stories demonstrate the power of imitation, and most importantly, the power of business ideas. Cutting-edge technologies may not be necessarily a MUST in order to be successful. Under certain circumstance, how good a firm can make use of available resources to its own business to create value is more important than how good a firm can solve a technological problem in order to be a market leader. Both of the two stories do not involve technological breakthroughs, but their market impacts are far-reaching, beyond the original designers’ expectation.

Kim (1997) points out that imitation may be seen as a starting point of value decay of original creation. In his effort of describing the value of industrial reproduction, Benjamin (1992) argued first time ever that industrial reproduction may represent a value “useful for the formulation of revolutionary demands” (p. 212). Imitation may be seen as a tool transforming and maximizing the value of original inventions from a few individuals to the human societies (Berger, 1972). Cognitive debate on the value of imitation is an ongoing topic. So is the value of Shanzhai. The implications of the two stories are heuristic and inspiring to both researchers and business executives – is imitation an appropriate and recommendable approach for start-ups, or a technique for firms in developing countries to catch up? Does imitation lead to innovation?

### **OBJECTIVES**

Clayton M. Christensen has spent six years (from 1997-2003) researching the Innovator’s Dilemma and trying to explain why so many Innovative Firms Fail in those emerging markets (Christensen, 1997). Until 2003, Christensen and Raynor present their findings showing

that technologies themselves are not value-adding, nor sustaining, it is the business management model that enables and drives technology to create value (Christensen & Raynor, 2003).

Existing management theories are impotent in explaining the increasingly manifested business phenomena especially from emerging developing country firms, and the dichotomy of Western world and Eastern world needs to be re-bridged (Chen & Miller, 2010). Imitation itself is non-problematic; instead, it is one way of knowledge learning process (Kim, 1997; Wang, 2009; Zeng, 2007). The challenge to management is how to discipline and guide imitation activities in a way that creates win-win-win situation for innovators, imitators, and consumers (Boudreau, 2007). More recent literature has confirmed that imitation is a channel of catching-up for developing country firms (Luo et al., 2011; Zeschky et al., 2011). Motivated in this direction, this study sets out a research agenda on Shanzhai Phenomena by establishing research questions including: as a major competitor in both domestic and international markets, is 'imitation' still an appropriate word to describe Shanzhai? ***If so***, how has Shanzhai captured market demands and meet consumers' needs by applying the imitation technology, gradually accumulated resources and capabilities, and finally becomes a market player to compete with others? ***If not***, would 'innovation' be more appropriate to describe Shanzhai? If so, then, what is Shanzhai innovation model that enables Shanzhai to transform from imitators to innovators? To answer these questions, this study has firstly delved into existing literature in search for theoretical framework that fits the Shanzhai phenomena, and then, opted for Ground Theory (GT), a reversed methodology in theoretical framework (Allan, 2003), which focuses ONLY on data (Glaser, 1998; Glaser & Strauss, 1967; Kelle, 2005; Strauss & Corbin, 1990). Additionally, answers to those questions may help build a definition of Shanzhai, unifying the largely varied existing cognitive understandings from person to person.

Note that since Mobile Phone Manufacturing is the most Phenomenal Industry being referred as Shanzhai, hence, the term Shanzhai in the context of this study refers to Shanzhai Mobile Phone Industry and Firms, unless otherwise denoted.

## METHODS

### Why Grounded Theory?

Grounded Theory (GT) is a research methodology initiated by Glaser and Strauss (1967) as a systematic approach in generating a theory from data, and can be used in both qualitative and quantitative data. The goal of GT is not for truth-seeking, instead, it is to conceptualize what's going on by using empirical data

with a focal point on incidents (Glaser & Strauss, 1967). Rather than formulating the research hypotheses in advance as in most of traditional researches, GT takes a reversed approach from data analyses and then to the construction of an integrated set of theories/hypotheses developed from data to fit data (Allan, 2003; Glaser 1998). Therefore, the risk of validity issue is not significant in GT, which instead is mainly judged by fit and relevance between data and formulated theories/hypotheses (Glaser & Strauss 1967, Glaser 1978, Glaser 1998).

The fundamental principle of GT is: nothing matters but data, and the core variable explains the main concern with as much variation deviated from data as possible (Glaser & Strauss, 1967). In other words, GT is multivariate, and the core variable can be theorized as a basic model that accounts for most of the deviation in change over time. Furthermore, the core variable can be incidents occurred in both systematical and non-systematical ways (Glaser, 1998). It is important that this conceptualized model is not forced through literature review or any type of pre-assumptions (Glaser, 1998).

For these reasons, this study adopts GT to inductively extrapolate the key points and concepts from the data using a coding system. Following the advice of Kelle (2005) that coding system might incur the conflict between action theory and system theory, this study chooses to use coding system to conceptualize the key points first, and then invite interview, survey, and on-site observation as complementary methods for theory construction.

## DATA COLLECTION AND ANALYSES

From September 2008 to November 2011, this study collected 1339 documents (all in Chinese) in total, of which, 17 master theses and one doctorate dissertation are from different universities in China. The rest of the documents are from Academic Journals, Industrial Journals, Internet Articles, Newspapers' Articles, and Companies' Web Posts (See Table 1).

Eleven people have involved in this two-year document searching, reviewing and stripping processes. After two rounds of reviewing processes, only 743 documents are selected out of 1339, which have been categorized and organized according to their contents. The leftovers are either irrelevant or copied (plagiarized) from others, or one paper repeatedly published by multiple publications. Content analysis is processed using the coding and cross-checking procedure as listed below:

Step 1: Write down key words or key sentences for each document

Step 2: Cross-checking the key words or key sentences by switching the examiners or reviewers to evaluate if the key words or key sentences match the content of its document.

Table 1. Collected Publications in Relation to the Subject of Shanzhai

Papers \ Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total
Research Papers	0	0	1	0	0	2	4	71	116	113	27	334
Industrial Articles	4	7	5	11	13	9	14	26	63	47	32	231
Internet Articles	0	0	3	2	11	14	21	43	31	27	39	191
Newspaper Articles	0	0	3	3	19	6	11	27	99	167	12	347
Company Web Posts	0	0	0	0	0	0	3	7	158	63	5	236
<b>Total Papers by Year</b>	<b>4</b>	<b>7</b>	<b>12</b>	<b>16</b>	<b>43</b>	<b>31</b>	<b>53</b>	<b>174</b>	<b>467</b>	<b>417</b>	<b>115</b>	<b>1339</b>

Table 2. Trend of Research Interests on ShanZhai from 2008 to 2011

Year	Contents Codes	# of Papers	% of Total	% of the Year
2008	106 (山寨概念 Concept)	1		1/50 = 2%
2009	106 (山寨概念)	15		15/273 = 5.49%
2010	106 (山寨概念)	25	42/743 = 5.65%	25/305 = 8.2%
2011	106 (山寨概念)	1		1/115 = 0.87%
2008	102 (山寨起因 Origin)	1		1/50 = 2%
2009	102 (山寨起因)	14		14/273 = 5.13%
2010	102 (山寨起因)	2	18/743 = 2.42%	2/305 = 0.66%
2011	102 (山寨起因)	1		1/115 = 0.87%
2008	<b>109 (山寨文化 Culture)</b>	<b>1</b>		1/50 = 2%
2009	109 (山寨文化)	55		55/273 = 20.15%
2010	109 (山寨文化)	42	112/743 = 15.07%	42/305 = 13.77%
2011	109 (山寨文化)	14		14/115 = 12.17%
2008	107 (山寨现象 Phenomena)	1		1/50 = 2%
2009	107 (山寨现象)	16		16/273 = 5.86%
2010	107 (山寨现象)	25	43/743 = 5.79%	25/305 = 8.2%
2011	107 (山寨现象)	1		1/115 = 0.87%
2008	112 (山寨其它 Miscellaneous)	0		0/50 = 0
2009	112 (山寨其它)	22		22/273 = 8.06%
2010	112 (山寨其它)	77	101/743 = 13.59%	77/305 = 25.25%
2011	112 (山寨其它)	2		2/115 = 1.74%
2008	111 (山寨社会观 Social Attitude)	0		0/50 = 0
2009	111 (山寨社会观)	13		13/273 = 4.76%
2010	111 (山寨社会观)	19	34/743 = 4.58%	19/305 = 6.23%
2011	111 (山寨社会观)	2		2/115 = 1.74%
2008	115 (山寨与法律 Legal Issues)	0		0/50 = 0
2009	115 (山寨与法律)	3		3/273 = 1.1%
2010	115 (山寨与法律)	3	8/743 = 1.08%	3/305 = 0.98%
2011	115 (山寨与法律)	2		2/115 = 1.74%
2008	100 (山寨战略 Strategies)	2		2/50 = 4%
2009	100 (山寨战略)	3		3/273 = 1.1%
2010	100 (山寨战略)	5	15/743 = 2.02%	5/305 = 1.64%
2011	100 (山寨战略)	5		5/115 = 4.35%
2008	105 (山寨模式 Models)	11		11/50 = 22%
2009	105 (山寨模式)	27		27/273 = 9.89%
2010	105 (山寨模式)	10	52/743 = 7.00%	10/305 = 3.28%
2011	105 (山寨模式)	4		4/115 = 3.48%
2008	<b>104 (山寨制造 Manufacturing)</b>	<b>5</b>		5/50 = 10%
2009	104 (山寨制造)	54		54/273 = 19.78%
2010	104 (山寨制造)	54	144/743 = 19.38%	54/305 = 17.7%
2011	104 (山寨制造)	31		31/115 = 26.96%
2008	108 (山寨市场 Marketing)	1		1/50 = 2%
2009	108 (山寨市场)	7		7/273 = 2.56%
2010	108 (山寨市场)	1	21/743 = 2.83%	1/305 = 0.33%
2011	108 (山寨市场)	12		12/115 = 10.43%
2008	<b>103 (山寨手机 Mobile Phone)</b>	<b>25</b>		25/50 = 50%
2009	103 (山寨手机)	41		41/273 = 15.02%
2010	103 (山寨手机)	29	118/743 = 15.88%	29/305 = 9.51%
2011	103 (山寨手机)	23		23/115 = 20%
2008	101 (山寨汽车 Automobiles)	2		2/50 = 4%
2009	101 (山寨汽车)	3		3/273 = 1.1%
2010	101 (山寨汽车)	13	35/743 = 4.71%	13/305 = 4.26%
2011	101 (山寨汽车)	17		17/115 = 14.78%
Total Papers:		743	743/743 = 100%	
Total Papers in 2008:		50	50/743 = 6.73%	

Step 3: Use three digits to code each document, then cross-checking the coded documents without original title.

Step 4: Categorize and reorganize the documents into groups according to the similarity of contents.

Step 5: Summarize the key points and establish research assumptions.

The final 743 documents are coincidentally from recently published articles in between 2008-2011. Ideas presented are clearer and mature than the documents

from previous years (2001-2007). Contents are concentrated on 13 thematic subjects, of which, the top three hot topics throughout the ten-year-period (2001-2011) focus on the issues of Shanzhai Manufacturing (coded as '104'), Shanzhai Mobile Phone (coded as '103'), and Shanzhai Culture (coded as '109'). Discussions on Shanzhai have been incrementally increasing especially after 2007 (See Table 1 above), and increasing concentrating on manufacturing industry especially on mobile phone manufacturing industry (See Table 2). This pattern of time and contents presents several implications that draw attention of this study. Firstly, Shanzhai as a rising industry plays more important role than previous stage of China Economic Development. Secondly, economic recession (start from 2008) may influence China manufacturing industry and export business, therefore, Shanzhai might become an outlet that may help China business society deal with the economic downturn, and thirdly, because of the success of Shanzhai, it is expected that Shanzhai may be used as a source of domestic manufacturing force, together with SOEs (State Owned Enterprises), to compete with MNCs (Multi-National Corporations) in order to secure the status of being a manufacturer of world product, and sustain a continuing growth of China economy.

### Methodological Cautions Adopted in This Study

Debates over data-focused grounded theory (Glaser & Strauss, 1967) argue that it is impossible to completely free oneself from preoccupied knowledge and experiences in the process of data collection and analysis in the way as Glaser and Strauss described; and that one solution for this theoretical drawback is to constantly compare the data findings with information from other sources (Thomas & James, 2006). Given these advices, this study has conducted a twenty-two month (from January 2009 to December 2010) on-site investigation and interviews with owners, managers and employees of those mobile phone companies located in Huaqiangbei Electronic Market in Shenzhen and Zhongguancun district in Beijing. There are 420 firms being observed and interviewed in total, of which, 335 in Shenzhen, and 85 in Beijing.

As explained earlier, ten-year data (2001-2011) presents an increasing emphasis on three topics: Shanzhai Manufacturing, Shanzhai Mobile Phone and Shanzhai Culture (See Table 2), and the focal point of these three topics unanimously focuses on mobile phone manufacturing industry. Therefore, this study delves into the data analysis in conjunction with on-site observations and interviews, aiming at examining the conditions that cultivate the development of Shanzhai, and business models that support Shanzhai to gain and sustain competitive advantages in the journey of catching up with both SOEs and MNCs.

### The origin and conditions cultivating Shanzhai imitation

Shanzhai, once as a term referring to a place occupied by a gang of anti-government, is recently used (since the 90s of last century) as a term for emerging business behaviors not complying with government policies and regulations (i.e. Imitation, Infringement of IPR, Tax Dodging, and Production without Registration and License). The most popular meaning of Shanzhai is either a company operating its business purely on imitation, or a product imitated from others. From culture perspective, Shanzhai has been granted as an emerging culture of anti-monopolistic market, or perhaps a culture of anti-centralized social system. An interview held on 02/16/2010 with Professor Xie at Political Science Department, RenMin University, Beijing. How does Shanzhai happen? How has Shanzhai evolved? What conditions give birth to and nurture the development of Shanzhai?

### The origin of Shanzhai in Modern china

Shanzhai is initially emerged in Shenzhen, a coastal city immediately next to Hong Kong. This geographical location is one of the reasons why Deng Xiaoping, the former leader of China decided to make it one of the first Special Economic Zones (SEZ), to test economic reformation policies in 1979. Since then, millions of people have been attracted to Shenzhen for business opportunities, and the population has increased from 94,100 in 1980 to 10,357,938 in 2011, with an average age around thirty. The information is provided by China State Statistic Bureau, posted at China Statistical Yearbook Database at: <http://tongji.cnki.net/overseas/engnavi/HomePage.aspx?i d=N2011010073&name=YZGRL&floor=1>. Along with other reasons, Shenzhen has been known in China as a city for entrepreneurs and risk-takers. Shanzhai is one of risk-taking business opportunities, starting from small electronic devices including mobile phones, and then spreading into multiple and still increasing number of other manufacturing industries. For this reason, the City of Shenzhen is also known as the *Birth City of Shanzhai*. The word "Shanzhai" has become a fashion of public vocabulary since 2008. China Central Television (CCTV) has broadcasted the news on Shanzhai, and even produced a documentary film titled as "The Coming of Shanzhai Industry" in March, 2009. Thereafter, Shanzhai has emerged from folk level to official level, a hot topic on mass media systems including newspapers, radios and internet. The word is initially coined as a folk-term referring to those mockups/knockoffs of mobile phones and other small devices of digital products manufactured in Guangdong, China. Due to the popularity of Shanzhai products, the meaning of "Shanzhai" has been expanded from 'imitated products' to 'companies' that produce the

imitated products. Ironically thereafter, Shanzhai and imitation become synonymous in modern Chinese language, because of the resemblance of Shanzhai products and those leading brands.

### Conditions in cultivating Shanzhai

To examine what are those conditions that cultivate the rapidness and aggressiveness of Shanzhai development, three external aspects deserve in-depth understanding: Legal loopholes in Intellectual Property Right (IPR), Relieved Policy Restriction, and Reduced Technological Barriers.

### Loopholes in IPR

Before entering WTO in 2001, China possesses limited knowledge and experiences on Intellectual Property Right (IPR). This weakness in legal system constitutes a loophole which imposes disadvantages challenging those market leaders especially MNCs in protecting their IPRs of proprietary technologies. For example, according to China's Act of IPR (Patent Law and Trademark Law), infringement is defined on the basis of similarities in product design and category of product (Guo, 2009), stipulating that if two products are similar in design and within the same category, then, infringement of IPR becomes legitimately liable. However, without specific measurements on the degree of similarities, it is difficult for law makers to enforce it. Cognitive differences on individual subjective level may be a major legal barrier when measurement is not well-established. Or, perhaps the law means nothing but to create some rhetoric argument appealing to WTO "WE HAVE THIS LAW TOO" in responding to increasing number of legal motions filed against imitators (Shanzhai). As a result, market leaders are overwhelmed and hesitated in launching new products knowingly that it will be imitated sooner or later, and why bother to weave a wedding dress for others.

In contrast, the weakness of IPR in China provides Shanzhai with a risk-free opportunity to imitate MNCs' technologies. Why bother to invest in R&D if free sources of technologies are available? "Black cat, White cat, only the one capturing a mouse is a good cat" (an economic policy put forward by former State Leader Deng Xiaoping in 1979) becomes a prevailing mind-setting worshiped among Shanzhai firms. Obviously, fair competition is not listed on their agenda. Despite the short-term gains through imitation, the future of Shanzhai is dimmed. According to DCCI (data center of the China Internet), Accessible at <http://www.dcci.com.cn/>, the profit-margin of Shanzhai Mobile Manufacturing Industry has dropped from hundred percent in 2005 to less than thirty percent in 2008 (Pan, 2008). It is expected that Shanzhai may face

a Life-or-Death Challenge along with the improvement of China IPR system, increasing awareness of Consumer Right, and most importantly, the upcoming new and highly integrated technologies (i.e. 4G-plus Smartphone technology, presumed to be difficult to imitate). Furthermore, without developing their proprietary technology, Shanzhai may have little chance to survive in a long run (Shanghai Daily, 07/16/2011), [http://chinachallenges.blogs.com/my\\_weblog/2011/07/shanzhai-phone-sales-set-to-decrease-in-coming-years.html](http://chinachallenges.blogs.com/my_weblog/2011/07/shanzhai-phone-sales-set-to-decrease-in-coming-years.html), accessed on 10/07/2011.

### Relieved policy restriction

In October 2007, the government of China canceled the mobile phone manufacturing licensing system, which has been previously imposed and administered for nine years by Ministry of Information Industry. This policy cancelation is marked as liberation of thousands of Shanzhai firms, triggering a widespread debate on the issue of IPR. Does it mean that the government of China supports the imitation activity of Shanzhai? Or, does it mean that the government intends to offer Shanzhai a chance of fair play? Or, perhaps because the government has realized that SOEs are not capable enough in competing with MNCs, so that Shanzhai may be used as a backup for domestic industry as a whole?

### Reduced technological barriers

In 2005, MediaTek Inc. (MTK), a Taiwan based semiconductor and chip design company, has a newly developed technology, a One-Stop-Integrated-Solution (OSIS) which is launched in Mainland China, resulting in an unprecedented wave of technological innovation in mobile phone and other electronic manufacturing industries in China. The term '*Shanzhai Industry*' has been officially established in Chinese Vocabulary, characterized as an industry with diversified manufacturing sectors including but not limited to mobile phones, household electronics (i.e. flat screen TV), office equipment (i.e. PCs, Notebooks, Netbooks), fashion clothing, just to name a few.

From Institutional Processes point of view, under certain circumstances, what seems to be true may overshadow the profundity of real truth. Emerging business behaviors such as Shanzhai in those emerging countries, may involve an intricate institutional understanding in order to explain why a business model is successful in one country, but failed in another (Greif, 2006). He argues that the process of institutionalization is a combinative outcome of self-reinforcing and taking whatever available resources for granted (Greif, 2006, p. 3-9). Failure in market competition does not necessarily belong to small firms, start-ups, or firms in developing countries due to their lack of technological capability;

**Table 3.** Examples of Fake Brands Created by Shanzhai in Its Early Stage

Original Brands	Mock-up Brands
Nokia	Nckia, Nokir, Nolia, Nokla
Motorola	Motolora
Sony Ericsson	Suny Ericsson, Suny Ericcsun, Song Ericsson
Samsung	Sunsung, Sansong, Samsang, Sumsung, Sasung, Samsing
LG	LC
Toshiba	Toshifa, Tochiba, Tochifa
iphone	Hi-phone, ciphone, sciphone

instead, many global business leaders with world-class proprietary technologies sank in the ocean of emerging markets, because they are unable to establish and operate an effective business model in those emerging markets (Christensen & Raynor, 2003, p.21-43). Given this context, it seems understandable why the existing-Western-dominating-management theories need to adjust their lenses in order to explain the newly manifested business phenomena especially from East part of the world (Chen & Miller, 2010; Zeschky et al., 2011).

Shanzhai, born in a newly developed city (Shenzhen) in a fast growing economy in China, takes the initiative as followers, adopts the means of imitation to catch up with those first movers, outperforms the SOEs in market competition, and becomes a major market player in less than 10 years. A single word of 'imitation' may not be convincing enough, especially to explain the rapidness and aggressiveness of Shanzhai Development, which might require an in-depth understanding of institutional forces that drive Shanzhai to evolve and transform.

### Developmental and transformational path of Shanzhai

As explained earlier, Shanzhai by origin is anti-government policies and regulations, endowed with a spirit of risk-taking and entrepreneurship. The developmental path of Shanzhai may be delineated as a transformational process, from first stage (Faking) through the second stage (Duplicating), to the third stage (Innovating). Understanding this transformation may help interpret the process of Shanzhai institutionalization.

#### In the first stage (faking and showing off stage)

From the mid-80s to end 90s, high-techs such as mobile phone manufacturing technologies are new in China. Risk takers choose to sell second-hand mobile phones smuggled from Hong Kong. Due to the high volume of market demands and driven by a greater profit margin, these risk takers start off importing used parts and components, and assemble the mobile phones of their own labeled with fake brands to confuse innocent consumers (See Table 3).

Mobile phones – once a luxury consumption affordable to only a few (the price of a mobile phone during the end of 1980s was about ten thousand RMB, equivalent to a regular employee's ten-year total income in China), suddenly become affordable to many people in China because of these faking activities. An emerging business of faking products is therefore, emerged and boomed due to the high volume of market demands, stimulating those risk-takers especially in Shenzhen City. From then on, Shanzhai becomes a given name representing fake products "*Jia-Huo* (Fake)" or imitation activities "*Fang Zhi* (Imitation)". According to Professor Yang Hua at Beijing University of Post and Telecommunications, Interview conducted on the topic of Shanzhai on 01/15/2009 in Beijing .

'Imitation' during this period, is purely the activity of faking or counterfeiting those original brand products (i.e. Mobile Phones, Louis Vuitton handbags, and popular style of clothes). It might be true, Professor Yang continued that, there is an antagonistic mentality among the mass population in China at that time (80s-90s) against foreign products only available for the rich ones because of their high price, and this is why mass population with low income knowingly and willingly accept *Fake Products with Look-Like Brands* provided by Shanzhai at remarkably cheap prices (on average about 1/5 -1/3 of those leading brands' price). Perhaps, Professor Yang continued, it is a reflection of mass support for domestic products – a similar mass psychological reaction as illustrated in the two stories at the beginning of this paper. To this end, Shanzhai in its early stage may also be considered as a 'Showing Off Stage' – *WE CAN MAKE IT TOO*. Put simply, this fake and showing off stage is the prototype of Shanzhai, laying a foundation for Shanzhai to leap forward to the next stage. Nevertheless, these illegal activities are beyond the discussion of present study.

#### In the second stage (duplicating and accumulating stage)

In between 2000 and 2005, Shanzhai firms have accumulated certain skills, although limited in core technologies (i.e. chipset), but good enough skills to modify the architecture design (i.e. shapes and appearances), improve functions of mobile phone

peripherals, and still maintain the low prices. In the meanwhile, Shanzhai firms have accumulated financial capabilities sufficient enough to expand their production scales, market shares, and to improve their product qualities and reputations. Most importantly, faking and counterfeiting activities become obsolete since Shanzhai is already well-known for some of their own brands (*KTouVch* Tianyu, and *Gionee* Jinli, two leading companies originated from Shanzhai in Chinese mobile phone industry). Shanzhai firms, instead of simply duplicating those leading brands, now become able to apply their own architecture design, and add new functions and features. With these accumulated technological and financial capabilities, some Shanzhai firms have grown into multi-million dollars companies (i.e. Tianyu, and Jinli), and are motivated to take a proactive approach to product innovation.

### **In the third stage (innovating stage)**

2005 is the year of rewriting the history of Shanzhai, the year of leapfrogging from imitation to innovation. As mentioned earlier, MTK has developed and launched its Turn-Key solution, a system that integrates hardware and software into a single chipset required for GSM/CDMA mobile phone manufacturing. MTK Turn-Key solution is widely known in China as One-Stop-Integrated-Solution (OSIS), and the liberator of Shanzhai Mobile Phone Manufacturing Industry. OSIS has destroyed the technological barriers, and turned the mobile phone manufacturing process into a process of "Plug & Play", so that anyone, once licensed or contracted with MTK, can develop mobile phones of their own by putting together the functional devices and accessories into the integrated chip-board (Liu, et al., 2009).

Relieved from the core technology barrier (chipset), Shanzhai firms are motivated and encouraged by MTK to launch their own innovative activities through the application of OSIS. For this reason, MTK, is known as the "*Father of Shanzhai Mobile Phone Industry*", famous for knocking down the technological threshold and propelling Shanzhai to leapfrog from small scale family run operations to mass production of innovative products capable of competing with those leading companies. For example, Reversed-Engineering Technique has been used by Shanzhai firms as a tool for a completely different purpose before and after the launch of OSIS. Before 2005, it was a tool for duplicative imitation. After 2005, in contrast, it has been used as a tool for innovation. Making differences by redesigning and upgrading the original products has become one of Shanzhai unwritten principles – WE MAKE DIFFERENCES! (See Figure 1).

One hypothetical topic being discussed nationwide in China is that, since China has been experiencing a transitional period of economic development and

technological advancement, does it mean that Shanzhai is merely a flash in the pan, will be diluted, and eventually will disappear in the future? In response to this hypothesis, next section is to examine whether Shanzhai has established its competitive advantages, and if so, can they be sustained?

### **Competitive advantages of shanzhai**

On the surface level, Shanzhai has been known for low price. Underneath, cost saving and speed of products to markets are the two operations model intrinsically supporting Shanzhai in price control. Therefore, this study proposes that Costs Saving Operations, Speed of Products to Markets, and Low Price but Good Enough Products to the Mass Population, are the three distinguishable competitive advantages, Of which, low price is vital to the survival of Shanzhai.

### **Cost saving operations**

Before 2005, imitation is the first key for Shanzhai firms to achieve cost saving advantage by skipping the resource-consuming stage of R&D (Zhao, 2012). After 2005, adopting MTK OSIS makes the core technology (chipset) no longer a barrier, so that Shanzhai firms can operate a simplified business process (no need to struggle for chipset imitation), through their small-but-versatile type of organizational structure, which is the second key for Shanzhai firms to achieve cost-saving advantage. For example, most of Shanzhai firms operate their business in a space less than twenty square meters with '5-10' employees on average as their regular size. An investigation conducted since January 2009 to December 2010 (twenty-two months) in Huaqiangbei Electronic Market in Shenzhen and Zhongguancun district in Beijing. 420 firms being observed and interviewed in total, of which, 335 in Shenzhen, and 85 in Beijing. Each employee is recruited because of his/her previous experiences and skills from related industries (i.e. mobile phone, electronic engineering, software or hardware). These employees joined Shanzhai for various reasons, but one in common is that they carry a dream of establishing their own business, indicating that Shanzhai is a dream-land for entrepreneurs.

The third key for Shanzhai firms to achieve cost saving advantages is their inter-firms relationship which is a typically clustered industrial chain (discussed in next section), so that firms within the clustered chain share resources, services and information with the least costs. Firms are clustered because they share the same operating platform – MTK OSIS. Clustered firms are mostly concentrated in one location such as Huaqiangbei Electronic Market in Shenzhen, and Zhongguancun Electronics Street in Beijing, so that they

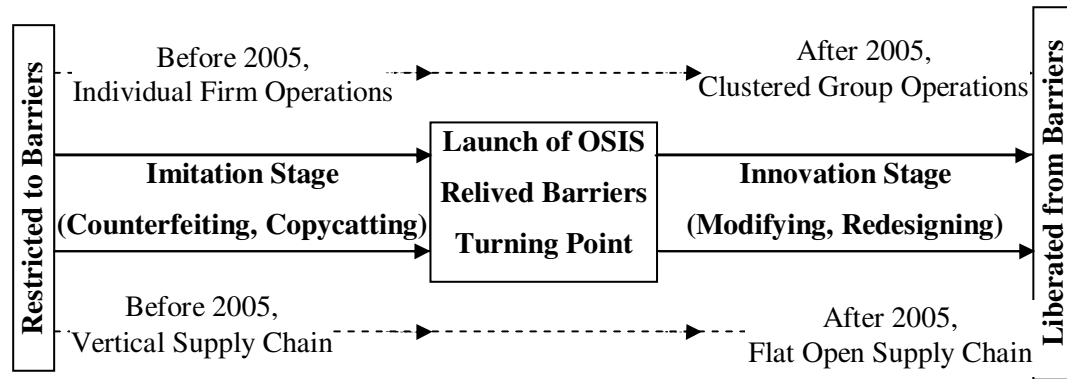


Figure 1. Transformational Change before and after 2005

can keep each other informed of new product models, new devices or applications, consumers' feedbacks as well as other market dynamics. It is interesting to note that, clustered Shanzhai firms collaborate with each other more than compete with each other, mutually supportive to each other. In other words, Shanzhai has established a flaunting cluster model functioning as a warehouse of *Cost Innovation* (Zeng & Williamson, 2007), which enables clustered firms to leverage available or alternative resources (Luo et al., 2011), so that, clustered firms can reduce the cost of operations by collaboratively modifying functional devices, redesigning the shape and appearance of products' architectures, installing software programs of their own choices, and then, integrating their innovative creations into the OSIS system.

For example, more than a thousand mobile phone firms operate their business in Huaqiangbei Electronic Market (in Shenzhen), from design, parts and components, assembling, storages for finished products, to retailers directly facing customers both domestically and internationally (from India, Pakistan, Middle East, Africa). New models emerge on a daily base, with strange brands and newly developed functions and appearances creatively designed by these small Shanzhai firms (i.e. louder speakers, larger touch screens, MP3 and higher pixels SLR camera, mobile TVs, hand-writing, GPS, dual mode and dual standby, over-a-month-standby batteries). Additionally, Shanzhai firms have innovatively designed phones specifically for minors, seniors and handicapped individuals with features such as one-key-touch linking the users with their families. When customers ask for return for any reasons, satisfaction is guaranteed by an instant replacement from the firm or its collaborators. The author has purchased 102 phones from January 2009 to December 2010, returned or replaced 39. when ask why providing replacement so fast, the answers are similar from different vendors, "we really don't have to time to argue, we prefer spending more time on more potential buyers"

### Speed of products to markets (lead-time saving operations)

After adopting MTK OSIS, liberated from time consuming process in core technology (chipset) imitation, Shanzhai firms can focus on peripherals' innovations to make their products more appealing to consumers' preferences. Clustered operations enable firms to share resources, knowledge and expertise instantaneously with each another, so that firms become resilient to the dynamic change in market, responsive to consumers' preferences, and adaptive to product upgrades or new products development in a timely manner accordingly.

An immediate reverse engineering project is triggered within a Shanzhai cluster when a new product (model) is released from those market leaders. A typical procedure of Shanzhai reverse engineering project includes examining the technological distance between the new product and those existing ones, evaluating the feasibility of producing a matching product with newness according to existing in-house technological capabilities and resources availability within the cluster; predicting the potential market demands and consumers' acceptance, and then, calculating the profit margin. A final decision is then followed by a round-the-clock pilot project until the trial products are sent to test the market. For example, when a concept design with a clear timetable is sent to a design house, clock starts ticking. 24-hours non-stop working schedule is not uncommon in Shanzhai industry (Luo et al., 2011). A finished and approved design is subsequently sent to assemblers or manufacturers, and a new cycle time starts ticking until the trial samples ready for market test, which is followed by a process of necessary modifications according to feedbacks collected from market trial. Finally, a batch size is determined based upon a demand forecast. The entire process takes place in less than 50 days (a conservative estimation according to the investigation of this study). Comparing with average lead time required for R&D in those leading companies (6-12 months) in new product development, Shanzhai has gained an undisputable *Speed Innovation Advantage*.

### **Low price but good enough products to the mass population**

Shanzhai firms are best known for their Price Advantage, which may be reasoned as a combinative outcome of Cost Advantage and Speed Advantage. When cost of operations is reducible, then, reducing the products' price may not hurt the overall profit margin. Similar rationale may apply to explain the relationship between Speed Advantage and Price Advantage. When a market follower is able to promote a comparable product competing with products released from those market leaders, then, the market follower might gain a remarkable savings from the cost of marketing campaigns. In addition, customers may likely to switch, when allured by the cheap price for comparable products. Shanzhai offers products comparatively good enough in quality, or even better than those leading brands, but at an average price only 1/5 -1/3 of those leading brands, (for example, 400-800 RMB/Unit is an average price for Shanzhai mobile phone, but 1500RMB/Unit is only a starting price for those Leading brands). Similar phones with more functions, better looking, and only a fraction of brand products' price, make Shanzhai a favorable choice, logically difficult for consumers to refuse.

Bottom-up marketing strategy is another key driver facilitating Price Advantage. Shanzhai firms focus on the low-income-mass-population at the bottom of the pyramid (Prahalad, 2005) first, and then, moving upward to high-end consumers through the processes of improving and upgrading the quality of products. From this point of view, the combination of cost performance and bottom-up marketing strategy constitutes the *Price Innovation Advantage*. How has Shanzhai achieved these competitive advantages and evolved from imitators to market leaders?

### **Shanzhai model – an innovative model to catch up**

The three competitive advantages discussed above would not be sustainably effective if they are not supported by Shanzhai business model, which needs to be analyzed at two levels, firm level and Supply Chain Level.

#### **Shanzhai Model on the firm level**

Despite the fact that Shanzhai firms have not yet built their own core technology such as chipset of mobile phones, nevertheless, they have learnt and accumulated skills, experiences and critical resources in marketing strategies and operations. Accordingly and most importantly, Shanzhai has established a unique management model organically connecting internal strengths (cost saving, speed and low price) with external clustered collaborations. Shanzhai clusters are

composed of mobile phone firms, design firms, suppliers of hardware and software, and services providers. Clustered firms are located in a walking distance, and it is not uncommon that some of them even share a working space for the sake of cost savings (i.e. Huaqiangbei Electronic Market in Shenzhen). Clustered firms are organized on an open and voluntary base without legal bindings of any kind. Each firm is selected because of its specific expertise value-adding to the cluster's operations (i.e. manufacturers of monitors, cameras, batteries, bluetooths, hands-free-earplugs, providers of software programs and logistic services). Note that Shanzhai firms, inherited from MTK operations, maintain low threshold, and remain an open system so that they can constantly allure new comers to join the cluster. This is known in China as Shanzhai cluster recipe for cost saving operations and low price products. Those "Open Hubs" shown in Figure 2 represent the openness and aggressiveness of Shanzhai cluster for expansion. Firms within a cluster are horizontally flat (collaborating and sharing) rather than vertically hierarchical (commanding and obeying) to ensure the instantaneous flow of information and market feedbacks (See Figure 2).

To ensure their up-to-date frontier market position, Shanzhai firms remain in a state of vigilance to the newly released products from competitors. As discussed earlier, once a target being identified, a collaborative project among the clustered firms is launched for a matching product with newness against competitors'. Firms are acting as a project team, sharing their expertise and resources, except that they keep market channels and price as in-house control respectively. Given these details of Shanzhai Model on the Firm Level, it is reasonable to infer that the Shanzhai Cluster Model is conducive to the aforementioned three competitive advantages, and also effective in circumventing the weakness of lack of proprietary innovation and lack of in-house R&D (Luo et al., 2011).

#### **Shanzhai Model on the supply chain level**

The uniqueness of Shanzhai Supply Chain is decisive to the success of Shanzhai industry, which is a highly concentrated industry. By year 2007, the entire domestic mobile phone manufacturing industry both Shanzhai and non-Shanzhai adopted the MTK OSIS platform. Non-Shanzhai firms (SOEs) switched to OSIS because of their consecutive loss to Shanzhai in market share and shipment volumes. According to China Ministry of Telecommunications, Data Center of China Internet (DCCI), and China Telecom Market Analysis Agency, China Telecom: <http://www.ct1000.com/mobile/special/001127IM/shanzhaishouji.html>, accessed on 04/23/2011, the market share of SOEs has been decreasing since 2005 from 50% to less than 13%. Meantime, Shanzhai has been

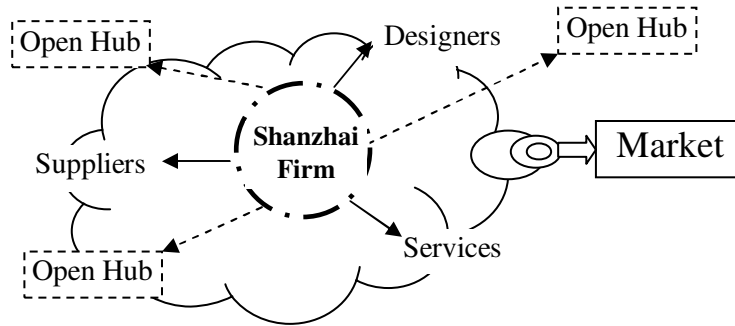


Figure 2. Clustered Organizational Model of Shanzhai Firms

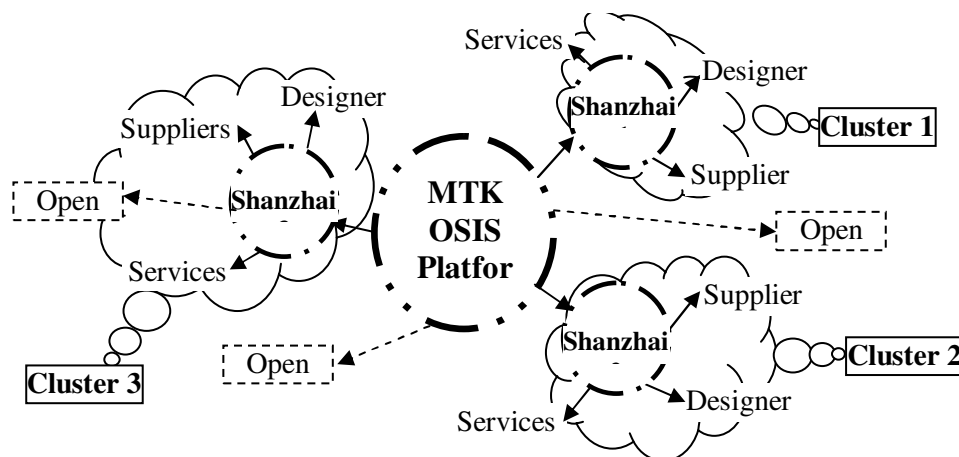


Figure 3. Flat and Clustered Supply Chain Model of Shanzhai Firms

expanding market share from less than 7% in 2005 to over 50%. By 2007, the total shipment volume of Shanzhai mobile phones exceeds 150 million which equivalents to half of total shipment of mobile phones in China. More interestingly, since 2007, half of Shanzhai mobile phones have been exported to foreign markets including India, Pakistan, Middle East, Africa, South America, and Even European Countries. Anecdotaly, the exporting business is the main reason explaining why China government supports Shanzhai, knowingly that Shanzhai is troublesome in IPR. It indicates that SOEs are impotent in competing with MNCs in high end market, and impotent in competing with Shanzhai in mid-low markets. Why Shanzhai outperforms SOEs even though they both adopted OSIS? To answer this question, this study proposes four assumptions:

The first assumption is that Shanzhai has established the Cluster Model on both firm-level and supply chain level. Cluster Model provides Shanzhai with a synergy that is more efficient and competitive (cost saving, speed of products, and low price) than SOEs' traditionally vertical and hierarchical supply chain model. According to DCCI, Shanzhai mobile phones have been consistently increasing their market share, which has outperformed those SOEs by 19% in 2008, and this discrepancy is expected to continuously grow, Accessed

on November 2<sup>nd</sup>, 2011 at <http://search.dcci.com.cn/user/s.aspx?u=%CA%FD%BE%DD&tex=shanzhai>, indicating an undisputed market position of Shanzhai products (Liu, et al., 2009). It is important to note that Shanzhai Clusters are centered on MTK which plays a role of central nerve system. In other words, MTK has established a Virtual Industry in China, composed of Mobile Phone Manufacturing firms that are virtually connected with one another through OSIS platform (See Figure 3).

The second assumption is that Clustered Model ensures Shanzhai firms a stronger link with MTK OSIS than SOEs do. Shanzhai firms may have gained more benefits from OSIS than SOEs. The third assumption is that the open and flat system of Shanzhai Cluster Model (discussed above) enables Shanzhai firms a faster process of decision making in responding to market change, and more choices of selecting suppliers than SOEs' hierarchical supply chain. The fourth assumption of this study is that Clustered Model provides lower threshold and friendlier environment for new comers to join the cluster than SOEs' hierarchical system. Therefore, Shanzhai firms can be more efficient than SOEs in identifying, allocating, and integrating critical resources, more quickly in networking and expanding their already established cluster (see those "Open Hubs"

**Table 4.** Transformational Change before and after 2005

<b>Before 2005: Imitation Stage</b>	<b>Causes of Changes</b>	<b>After 2005: Innovation Stage</b>
Impotent in Design Resulting in Counterfeiting, Copycatting	Launch of OSIS in 2005	Capability of Design Resulting in Modifying, Redesigning
Illegal Manufacturers without License from Government	Relieved Licensing Policy	Legitimate Business in Manufacturing and Marketing
Individual Scattered Firm Operation	Process of Operations	Clustered Group Operations
No Formal and Well-Established Supply Chain	Supply Chain Operations	Flat & Open Supply Chain with Multiple Suppliers
Unhealthy & Unstable Market Demand only from Young, Migrant and Low Income Consumers, Only Domestic Market	Market Demand	Healthy, Stable and Exponentially Increasing Market Demand, Attracting Mid and Higher Income Consumers from both Domestic Market and Other Developing Countries
Inferior to Leading Brands, Without Customer Services	Quality Competition	Catching up with Leading Brands, More Functions, Better Appearances, and Instant Exchange Customer Services
Single Channel to Black-Markets, Street Vendors, or C2C Channels	Market Competition	Diversified and Flexible Market Channels with Immediate Reactions on Customers' Feedbacks
Low but Not Enough to Attract More Customers	Price Competition	Low Enough Price to Attract More Customers

**Table 5.** Scoring Scales and Evaluating Criteria

<b>Scores</b>	<b>Evaluation Scales Used to Adjust Parameters</b>	
5 Points	Excellent (the best)	Very Important Factor
4 Points	Good	Important Factor
3 Points	Average (Ok)	Relevant Factor
2 Points	Not Good (but not bad)	Slightly Relevant Factor
1 Point	Bad	Not Relevant Factor

in Figure 3), and hence, Shanzhai Cluster is a more efficient supply chain system in gaining and sustaining the aforementioned three competitive advantages (cost saving, speed and low price) than SOEs. How has Shanzhai developed Cluster Model? And why is Cluster Model important to the success of Shanzhai?

### **The development of Shanzhai cluster – the key to success**

Before 2005, Shanzhai firms were generally operating small scales of family-run business without a formal and well-established supply chain (See Figure 1). OEMs were nominally and the only suppliers but with an irrational price range which was determined by “who you know” type of personal relationship (*Guan Xi Hu* or *Hou Men* in Chinese).

### **Path dependent of Shanzhai clusters**

After 2005, due to the launch of MTK OSIS, Shanzhai firms once motivated by imitating others were now driven by innovation. Firms had to learn and adapt their business operations to be compatible with OSIS platform.

It became essential for firms to establish long-term relationships with suppliers in order to maximize the value of MTK OSIS, which allows them to produce cheaper, more function and better quality phones, and to compete with those leading brands. Meanwhile, Shanzhai firms realized that their previous operations (small scales and family run business) were no longer a fit in the contemporary competitive environment. Ironically, perhaps because of the culture of imitation in Shanzhai, most of firms quickly adopted MTK supply chain model, which allows firms, suppliers and service providers to be bundled (clustered) only to compete against market leaders (indicating Shanzhai spirit of anti-mainstream business approach). This clustered relationship is set to be free of any legal, or financial bindings or burdens to each others, 322 CEOs of Shanzhai firms explained similarly on the history of Supply Chain Development in Shanzhai Mobile Phone Manufacturing Industry. In Short, firms are clustered for information, knowledge, technology, skills and other resources sharing, a Prototype of “Business Utopian”. Driven by these motifs, Shanzhai firms have collectively and voluntarily adopted this clustered industrial chain in which, MTK OSIS is centered by and linked with Shanzhai firms, and each firm is centered by and linked with suppliers and service providers (See Figure 2 and

Figure 3).

Shanzhai Mobile Phone Manufacturing Industry has transformed from small scale family run operations to Clustered and collective operations after the launch of MTK OSIS. *Shanzhai before 2005 is not the same Shanzhai after 2005* (See Table 2). According to Professor Chen at Shenzhen University, Shanzhai Cluster may be regarded as the “Second Revolution” or a “Stepping Stone” toward success in Shanzhai Mobile Phone Manufacturing Industry, Interview with Professor Chen Shiming at Shenzhen University on 03/06/2009, if considering the first revolution is to be the launch of MTK OSIS (See Table 4).

### Theoretical Discussion on Shanzhai Clusters

An Industrial Cluster is defined as group of business entities geographically concentrated in a particular location, collaborating, interconnecting, and sharing resources in order to gain strategic competitive advantages (Porter, 1998; 2000; Rosenfeld, 1997; and Vom-Hofe, & Chen, 2006). Shanzhai mobile phone industry including designers, assemblers, suppliers of soft-hard wares, and manufacturers are mostly located in Guangdong Province, especially in Shenzhen, Dongguan and Panyu cities. As discussed earlier, they have gained three strategic advantages (cost saving operations, speed of products to markets, and low price), and outperformed SOEs.

It has been argued that Low-Cost-Manufacturing-Clusters have emerged typically in developing countries (Altenburg & Meyer-Stamer, 1999; Manning, et al., 2011), and the success of this kind of clusters depends on the availability of Lower-Cost Knowledge, Skills and Expertise serving a growing market demand (Manning, et al., 2010). As discussed earlier, Shanzhai Firms are beneficiaries of Low-Cost-Technological Solutions provided by MTK OSIS, a platform for Shanzhai firms to achieve cost saving operations.

It is suggested that Industrial Clusters improve firms' performances in gaining competitive advantages, and the key to securing a long-term clusters effect is to maintain an open networking system that is able to link clusters with other clusters (Eisingerich, et al., 2010), emphasizing the important role of Open Industrial Clusters in building an inter-organizational relationship so that clustered firms may efficiently utilize resources in order to respond to dynamically changing markets. As discussed earlier, Shanzhai Cluster is built on a voluntary base, and remained open for new comers in order to secure their Low Cost Operations (i.e. low cost suppliers and service providers).

It is argued that an industrial cluster imposes three potential impacts on the clustered firms: first is by improving firms' productivity; second is by enforcing firms' capability of innovation; and third is by attracting new comers to join the cluster (Porter 1998).

Furthermore, Porter argues that in terms of competitive advantages, firms' location may not be as important as firms' ability of utilizing available resources in the process of innovation (Porter 1998). In other words, if a clustered firm is not able to make use of clustered resources, then, the cluster is meaningless to that firm. Given this context, this study is motivated to employ the GEM (Global Entrepreneur Monitor) model to examine the clusters' effect on Shanzhai firms.

### GEM test on competitiveness of Shanzhai cluster

#### GEM Model Test on Shanzhai Cluster

It is recommended that GEM (Global Entrepreneur Monitor) Model is an appropriate approach to evaluate the competitiveness of Regional or National Industrial Clusters (Levie & Autio, 2008; Padmore & Gibson, 1998). One advantage of using GEM model is that the validity and reliability of the test may be ignored especially when analyzing public perceptions on the performances of new start-ups and small business under a dynamic economic condition (Levie & Autio, 2008). The purpose of running the GEM test in this study is confirmatory, cross-checking and comparing the GEM outcomes with the findings from grounded theory approach.

GEM model is “a symmetrical framework combining dimensions of the Porter competitiveness ‘diamond’ with an equally explicit accounting of infrastructure and markets, important in a regional framework” (Padmore & Gibson, 1998, p. 625). Following their footprints, this study adopts GEM model, and uses the same six determinants established in Padmore and Gibson's research, in order to evaluate whether economical infrastructure and market in China are related to an overall competitiveness of Industrial Clusters of Shanzhai Mobile Phone Manufacturing Industry. The six determinants are Resources, Infrastructure, Suppliers, Firm Strategies, Local Markets and Global Markets. The procedure is:

Step 1: Initially, 30 questions were designed, and then, evaluated by three faculty members from three different universities. Finally, 18 out of 30 questions were selected and simplified for the ease of respondents.

Step 2: The 18 finalized questions were sent back to those three faculty members to establish scoring system (See Table 5).

Step 3: Sample size is 30 and three samples in total ( $N = 90$ ,  $n = 30$ ). Each sample consists of 30 individual respondents purely on their voluntary basis. First sample is professors selected from the three universities. Second sample comes from managers of Shanzhai firms (mobile phone industry); and the third sample is from employees with at least two years experiences in Shanzhai industry. The survey was conducted in the year 2011 from July to December.

Step 4: In order to pursue a uniform distribution when

**Table 6.** Key Words of Survey Questionnaire on the Competitiveness of Shanzhai Cluster

Item		Evaluation	Score
<b>Resources</b>	Availability of Financial Resource	Professor Group:	3.9 449.31
		Manager Group:	4.2 529.2
		Employee Group:	3.9 458.64
	Availability of Labor Force	Professor Group:	4.6 640.33
		Manager Group:	4.7 671.19
		Employee Group:	4.4 580.8
	Availability of Skilled and Experienced Labor Force	Professor Group:	3.3 326.7
		Manager Group:	4.6 623.81
		Employee Group:	4.7 674.03
	Availability of Technology and Information	Professor Group:	4.8 694.08
		Manager Group:	4.6 621.08
		Employee Group:	4.6 643.11
	Toughness of Government Policies and Regulations	Professor Group:	2.2 150.53
		Manager Group:	4.8 696.97
		Employee Group:	4.8 676.88
	Toughness of Industrial Competition	Professor Group:	4 480
		Manager Group:	4.9 726.19
		Employee Group:	4.3 549.55
Convenience of Telecommunication and Networking	Professor Group:	4.6 637.56	
	Manager Group:	4.9 714.43	
	Employee Group:	4.7 671.19	
Convenience of Transportation and Logistic Services	Professor Group:	4.8 679.73	
	Manager Group:	4.7 665.52	
	Employee Group:	4.5 612.91	
<b>Infrastructure</b>	Affluence of Design Companies	Professor Group:	3.1 292.03
		Manager Group:	4.7 659.88
		Employee Group:	4.5 615.63
	Affluence of Hardware Suppliers	Professor Group:	4.3 557.28
		Manager Group:	4.7 651.47
		Employee Group:	4.3 541.88
	Affluence of Software Suppliers	Professor Group:	2.1 132.3
		Manager Group:	4.3 557.28
		Employee Group:	4.1 511.71
	Affluence of Consulting Service Suppliers	Professor Group:	2.1 131.04
		Manager Group:	3.2 314.93
		Employee Group:	2.3 154.59
<b>Suppliers</b>	Willingness to Collect Consumers' Feedbacks	Professor Group:	4.5 596.75
		Manager Group:	4.9 726.19
		Employee Group:	4.9 717.36
	Responsiveness to Consumers' Feedbacks	Professor Group:	3.2 297.68
		Manager Group:	4.6 637.56
		Employee Group:	4.8 679.73
Willingness to Collaborate with Partners/Suppliers	Professor Group:	4.9 711.51	
	Manager Group:	5 744.01	
	Employee Group:	4.9 726.19	
<b>Firm Strategies</b>	Responsiveness to Market Competition	Professor Group:	4.8 688.32
		Manager Group:	4.8 699.87
		Employee Group:	4.8 682.59
	Speed of New Products to Market	Professor Group:	4.9 732.11
		Manager Group:	4.9 723.24
		Employee Group:	5 735.08
Price of Products	Professor Group:	4.9 708.59	
	Manager Group:	5 750	
	Employee Group:	5 750	
Reputation of Product Quality	Professor Group:	3.8 440.07	
	Manager Group:	4.7 648.68	
	Employee Group:	4.7 671.19	
<b>Local Markets</b>	Speed to Respond to Consumers' Complaints	Professor Group:	1.3 48.387
		Manager Group:	3.3 318.83
<b>Global Markets</b>	Speed of New Products to Market	Employee Group:	4.1 504.3
		Professor Group:	4.9 732.11

**Note:** the Mean Score =  $30 \times 2.5^2 = 187.5$ , representing the competitiveness of Shanzhai Cluster on National Level

calculating the distinct value of each factor, the method of rank transform is implemented. Then, a cumulated value for each factor is calculated as:

$$S_f = ns_i^2$$

Where:  $S_f$  stands for cumulated factor value and  $s_i$  is the point value from each respondent, and  $n$  represents the sample size.

Step 5: Each factor is equally weighted as suggested in Padmore & Gibson' study (1998) in order to compare the similarities and differences from three samples.

### Results of GEM Model Test

Using the calculation formula illustrated above, the mean score is 187.5 ( $=30 \times 2.5^2$ ) representing the

**Table 7.** Survey Results from Three Sample Group

	Shanzhai Cluster Score	Mean Score	Highest Score	Lowest Score
<b>Sample 1: Professors</b>	425.35	187.5	732.1	48.39
<b>Sample 2: Managers</b>	615.51	187.5	750	314.93
<b>Sample 3: Employees</b>	604.24	187.5	750	154.59

competitiveness of Shanzhai Mobile Phone Manufacturing Industry Cluster on national level. The highest score is 750 ( $=30 \times 5^2$ ); and the lowest score is 48.39 ( $=30 \times 1.27^2$ ) and so forth (See Table 6).

The results of three samples demonstrate a unanimous pattern that Shanzhai Cluster possesses prevalent competitiveness in China (above mean score and lowest score respectively), indicating prevailing public optimism to Shanzhai Industry (See Table 7).

The results show that in the three respective samples, the scores of willingness of collaborating with partners, speed of products to markets, and price of products are comparatively higher than the scores of other factors, indicating the effect of Cluster on firms' competitive advantages (See Table 6). The obvious weakness of Shanzhai Cluster is the lack of sufficient consulting services (See Table 6), indicating the limited resources of technology. For example, Shanzhai solely depends on chipset provided by MTK OSIS, resulting in homogeneity of products in China. Another weakness manifested from the survey results is the quality of customer service in relation to handling complaints (See Table 6), this weakness might help explain the cause of negative reputation of Shanzhai product quality.

It is interesting to note that Levie & Autio (2008) found evidence from their GEM test that the knowledge and skills are not strong links in the development of start-ups and small business. In contrast, the results of this study show that the availability of skilled and experienced labor force is relatively strong in developing the competitiveness of Shanzhai Clusters. One possible explanation is that the test of Levie & Autio (2008) was executed in high-income (p. 235) capitalistic countries, where social-economic environment is different from China as a state controlled emerging economy.

## DISCUSSION

This study starts off by asking: Can imitation be used as a catch-up technology? If so, under what conditions, can Shanzhai be cultivated as a business model to catch up with market leaders? The results of this study confirm and propose that, imitation can be used as a catch-up technology. The success of Shanzhai sets another canonical example after the successful catch-up in Korea using imitation technology (Kim, 1997). The conditions that cultivate Shanzhai must be the combination of external support and internal accumulation of strengths.

- Externally, the success of Shanzhai is indispensable to the loophole of legal system (vagueness of IPR),

cancelation of policy restriction (mobile manufacturing licensing). Therefore, sharp changes in a rapid economic transition within a short period of time, lack of government and industrial administrative experiences in dealing with rampant Shanzhai phenomenon (i.e. weak in IPR and Consumer's Right Protection), together with the inability of existing industrial leaders (both SOEs and MNCs) to responsively cope with Shanzhai in China, are generally considered the external conditions giving birth to, and nurturing the development of Shanzhai. MTK OSIS (Turnkey Solution) is an effective catalyst / activator that expedite the speed of Shanzhai development.

- Internally, Shanzhai takes the advantages of small-but-versatile organization structure and industrial clusters, sharing available resources, learning and accumulating competitive strengths (low cost operations, speed or products to markets, and low price of products for mass population with low income), to transform from imitator to innovator, and to catch up with market leaders.

## Definition of Shanzhai

Shanzhai is an emerging business phenomenon developed in an emerging economy (China). It is an innovation model for firms (entrepreneurs) in manufacturing industry to catch up with existing industry leaders. It is a model vigilant and alert to government policies, and responsive to and focusing on market sections in which dominating consumers are from mass population with limited affordability. Providing Products at Cheapest Price is the key strategy of Shanzhai model in maximizing the benefits of industrial clusters (Altenburg & Meyer-Stamer, 1999; Manning, et al., 2010; Manning, et al., 2011), because this is a strategy that enforces and re-enforces cost saving operations in the process of product development (Zhao, 2012). In short, Shanzhai is an innovative and catching-up business model developed as combinative effects of external opportunities and internal effectiveness of clustered business operations.

## Is Shanzhai model an appropriate and recommendable catch-up approach for start-ups, or firms in other developing countries?

Shanzhai Model using collective strengths empowered by clustered relationship with firms, and MTK OSIS support in technology, is not only a successful business model in China, but also a successful model in India. For

example, G'Five International Corp., originated from Shanzhai as a small-family-run mobile phone assembler in 2003, takes the advantage of economic open policy launched by contemporary Indian government, and moves its business operations from China to India in 2005, and has achieved a great success by applying Shanzhai model. According to Mr. Liu Liangqing, Interview with Mr. Liu Liangqing on March 13, 2011 in Shenzhen, the general manager of marketing division of G'Five International Corp., 'Indian mobile phone market is similar to but not the same as the market in China. Both markets are dominated by mass population with limited buying power for high end products. In other words, low end market is the mainstream in both markets. However, Indian market at that time was not as competitive as in China, and that was the reason G'Five decide to march into Indian Market. ... after five years Corporate hardworking, G'Five became the Top 10 global brand, and ranked as the second largest mobile phone provider (the first is Nokia) in India market'. When asked the recipe for success in India market, Mr. Liu promptly responded that clustered supply chain relationship with local assemblers and manufacturers was the key for G'Five to survive and thrive in India.

It is indicated from G'Five example that, Shanzhai model is applicable in India. Furthermore, since Shanzhai model facilitates the clustered firms to gain competitive advantages (cost, speed and price innovations), -- the power engine driving emerging firms (new comers) to catch up by undercutting the durability of market leaders' first-mover advantages (Lee et al., 2000). Therefore, it is recommendable for start-ups or firms in other developing countries to apply Shanzhai model with cautions on local policies and cultural differences.

## RECOMMENDATIONS

As explained earlier, MTK OSIS 'Turn-Key Solution' made Shanzhai leapfrog from imitation to innovation. Imitation once was a tool for Shanzhai to survive, became unnecessary and obsolete after adopting MTK OSIS. This study illustrates that Shanzhai clustered supply chain (See Figure 2 and Figure 3) is more efficient and competitive than traditionally vertical and hierarchical supply chain (SOEs) in market performance. Future research may want to compare Shanzhai clustered supply chain with MNCs' supply chain.

It is interesting to note that, a large number of documents (in Chinese) collected in this study interpret Shanzhai phenomena by using the framework of disruptive innovation (Christensen, 1997). Empirical research is needed to examine the 'Fit' of disruptive innovation framework in the context of Chinese Shanzhai from imitation to innovation.

Another interesting topic for future research is the role of first movers or market leaders in bridging the gap

between Western and Eastern business world (Chen & Miller, 2010). If imitation is unavoidable and non-problematic (Kim, 1997; Wang, 2009; Zeng, 2007); then, the real challenge is to create a win-win-win situation for innovators, imitators, and consumers (Boudreau, 2007). MTK presented in this study is a good example, demonstrating how MTK (owner of proprietary technology), provide a platform, so that imitator (Shanzhai) can be clustered and transformed into innovator, in the meanwhile, consumers are satisfied with cheap products but good enough quality. The mechanism of MTK's strategic formulation in creating the win-win-win situation may draw attention for future research.

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