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Conference Paper

"Geo-Political Economy" and Ecosystem in Asian I&CT Markets

22nd Biennial Conference of the International Telecommunications Society (ITS): "Beyond the Boundaries: Challenges for Business, Policy and Society", Seoul, Korea, 24th-27th June, 2018

Provided in Cooperation with:

International Telecommunications Society (ITS)

Suggested Citation: Kawamata, Takahiro (2018) : "Geo-Political Economy" and Ecosystem in Asian I&CT Markets, 22nd Biennial Conference of the International Telecommunications Society (ITS): "Beyond the Boundaries: Challenges for Business, Policy and Society", Seoul, Korea, 24th-27th June, 2018, International Telecommunications Society (ITS), Calgary

This Version is available at:

<https://hdl.handle.net/10419/190414>

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“Geo-Political Economy” and Ecosystem in Asian I&CT Markets

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Abstract

Since the East Asian Miracle report was published by the World Bank in 1993, East Asian countries have achieved economic development with the “flying geese pattern” respectively as well as advancements in informatization based on each political and cultural context. In particular, the revolution in information and communications technology (I&CT) drives commercial and social usage of the Internet throughout multiple devices such as personal computers, tablets, and smart-phones. East Asian cultural contexts thereby create commonalities over their territories and maintain their distinctive characters as well.

While telecommunications and media industries are under governmental control, with government regulations in most Asian countries, platform businesses such as social network services (SNSs), have expanded across borders, demonstrating the principle of network externality and economy. In addition, cultural and/or social contents easily expand with identity and universality as high culture and with popularity as pop- and/or sub-cultures among younger generations within areas.

This paper examines the potential of East and South East Asian markets including not only China, Korea, and Japan, but also Taiwan, Hong Kong, and Singapore, for mobile and wired communications, their technologies, services, content, and applications. It also describes the dynamism of networking among interested players over the next generation of information and communication technologies and their applications, such as SNSs and “FinTech”, including mobile payment and e-commerce, as well as content including audio and visual content, and game software; in the context of the “Ecosystem” of I&CT business and the path-dependency of social shaping of technological trajectories as enhanced in each political and cultural territory. There may be a dramatic change occurring in the structure of the industry affecting not only telecommunications network components, terminal equipment vendors and software developers, but also network operators and service providers located in Asian territories. Therefore, our analysis places emphasis on the dynamic formulation of multi-tiered and multifaceted frameworks of “Geo-Cultural Informatics,” which encapsulates the geo-politics and geo-economics associated with cultural informatics, within industrial clusters over Asian marketplaces.

This paper also suggests a new framework of market structure with some hieratic layers and geographic areas, e.g. living area (space) 「生活圏」, commercial area (sphere) 「商業圏」, economic zone (block) 「経済圏」. These areas/spheres are composed with cultural and political inheritance based on geography and history respectively as well as path-dependency on technological and institutional trajectory. Especially electronic commerce (e-commerce), which is not only the trade of digital contents and services, but also online shopping with digital payment/settlement, e.g. electronic money and credit card authorization including PayPal, reflects cultural contexts and/or political institutional frameworks, even if the

compatibility and settlement system between nations has been ensured. In the e-commerce facilitated by FinTech, it can be seen the battles and/or alliances between Internet service providers, e.g. Amazon.com (US), Alibaba (CN), Tencent (CN), Kakao Talk (KR), LINE (JP), Facebook (US), Twitter (US), Instagram (US), and local providers, and financial providers, including credit card companies, banks, insurance and securities companies, for customer's accounts and records of their preferences and assets. We finally discuss on the geo-political economic issues of the digital economy in Asian living/commercial/economic areas/spheres within the ecosystem of ICT.

Key words: Evolution of Technology, Ecosystem of industries, Geo-politics, Geo-economics, "Geo-cultural informatics"

Related Topic Area: Track 6. ICT and global society

1. Introduction: Evolution of the "Asian miracle" in the ICT sector.

Since the "Asian Miracle," reported by the World bank in 1993, Asian Economies have steadily developed as a global growth center, despite the Asian Financial Crisis and the Global Financial Crisis which occurred in 1997 and 2007-08, respectively. Together with the four dragons (Korea, Taiwan, Hong Kong and Singapore), China has rapidly been developing as a global manufacturing center, actively accepting foreign direct investments based on special economic zones. This trajectory of regional development, the so called a wild-goose formation economy development model, has expanded to the ASEAN area and India as well as reverse innovation from developing to developed areas. These areas each have potential domestic markets, which lead to a blossoming economic development with interdependence on each other. Such regional growth is supported by a system of global "supply chain management" or "global value chains" (GVCs). As Parag Khanna (2016) mentioned in his book, "supply chains are the complete ecosystem of producers, distributors, and vendors that transform raw materials (whether natural resources or ideas) into goods and services delivered to people anywhere." (p. 19)

In particular, the Information and Communications Technology (ICT) sector consists of network system as an infrastructure under domestic regulation, which is constructed with ICT elements, in which architected services such as voice phone and data transmission services involving the Internet, on which several platforms, content and applications, are provided to end-users via various devices, computers, tablets and/or smartphones in order to access and acquire information.

Fransman (2010) illustrated such an ICT sector as a simplified model of the new ICT ecosystem which has 4 layers; (1) network elements, (2) converged communication and content distribution networks, (3) platforms, contents and applications, and (4) final consumers. He also described layers (1) and (3) in global trade as well as layer (2) under

domestic regulation in the context of world trade issues under the jurisdiction of the World Trade Organization (WTO), the International Telecommunications Union (ITU) and the International Organization for Standardization (ISO). It cannot however be said that it fully reflects the geographical environmental constraints of the ecosystem and it is difficult to capture the dynamism of the global socio-economies of the ICT sector in today's complex "connected world." It is therefore necessary to apply the approaches of geo-politics, geo-economics and even geo-informatics, as well as the concept of the ICT ecosystems, to the analysis of the ICT field.

Today, ICT covers various fields, such as advertising and marketing (AdTech), education (EdTech), and finance (FinTech), as well as social networking services (SNSs) and online shopping, while incorporating deep learning and artificial intelligence techniques in the cloud-computing. These are used to grasp human behavioral principles and personal preferences through information and communication technology and to guide individual optimum decision making, but there are various political and cultural values, and the reality of these will result in conflicts between these interests.

In this paper, we discuss competitive advantage in global contexts based on "geo-informatics," which will include a discussion of the socio-cultural formation of information and communications based on geo-politics and geo-economics in each Asian country using illustrations of trajectories of economic development and the industrial structure of ICT infrastructure and related service sectors. Firstly, chapter 2 gives an overview of the circumstances of Asian economic development and the growth of ICT market since the "Asian miracle" by introducing the concepts of geo-politics and geo-economics. Chapter 3 discusses perspectives on the new ICT ecosystem combined other services, such as mobile payments in the financial sector. Finally, chapter 4 concludes by giving perspectives on potentiality and the new ecosystem of Asian ICT industries.

2. ICT Policy & Market Strategy as Geo-Politics & Geo-Economics

Geo-politics is part of human geography and helps to understand how international politics and geography are related. Geo-economics is another approach to geopolitics, one that focuses upon the role of economics in creating geopolitical actions and theories. While geo-politics is generally seen to be similar to international relations as, "practices and representations of territorial strategies" (Gilmartin and Kofman, 2004, p.113), it is necessary to understand global society from the viewpoint of the networks across borders, because of economic relationships characterized by wide and deep interdependences. This is also a shift from full-set domestic economies as a value chain has developed globally. In that sense, the industry could be regarded as one ecosystem in a global environment. In particular, information and communication technology forms a group of industries supporting the distribution of people, goods, money and information

through a global network, so a global perspective is indispensable. The concept of a network is a collection of nodes that linked together and are seen as means to transcend territory in geo-politics and geo-economics.

As above mention, Fransman's model of the ecosystem of ICT industries consists of four layers which are categorized into industry characteristics in trade (refer to Figure 1). However, taking into account the service-based competitive environment that crosses these layers, crustal movements have occurred in competitive advantage, and dynamic changes in the ecosystem have been seen. We will outline the dynamics as follows, focusing on mobile business in Asia.

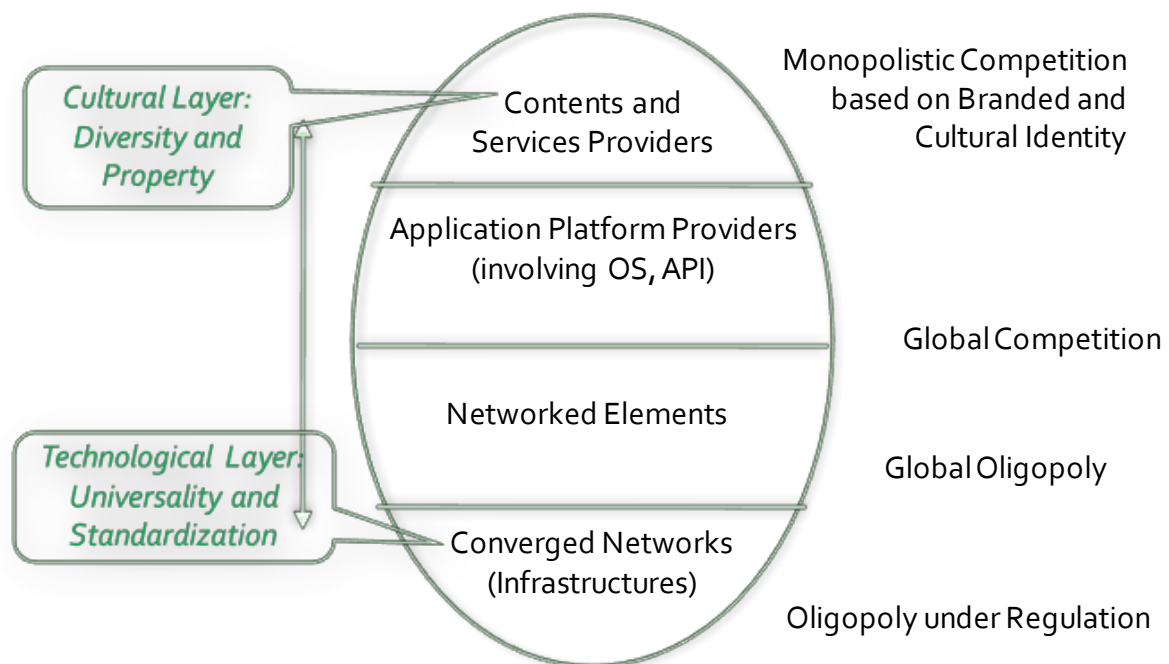


Figure 1. A Modified Model of the Advanced ICT Ecosystem

Source: Modified to Fransman (2010), p.9

Mobile phone markets in Asian countries were developed with their historical background in each country. Japan developed its proprietary technological standard Pacific Digital System (PCS) and introduced it in the regulated relaxed telecommunications market as a supplement to the existing wired business. And while accepting the entry of foreign technology and capital, the competitive market was developed: the American standard promoted by Motorola in the 1st generation (analog), while in the 2nd generation (digital) mobile phone, Vodafone entered with European standards GSM.

In Korea, there is also the purpose of supporting the technical strength of the domestic manufacturing industry, adopting the American standard CDMA, a strategy

aimed at entering the international market, as well as domestic, is taken. In the development of telecommunications networks in China, the mobile communication networks was made to complement the existing wired telephone network, mainly by European vendors that had long been concerned with the development of the telecommunications networks. And with the injection of foreign capital in the Special Economic Zones (SEZs), European and US telecommunications vendors set up bases of production, research & development in those SEZs, and through joint ventures with Chinese companies, they developed a production system for not only China, but also the global market. By injecting such capital and technology, China has firmly established the region as a so called "the world's factory" in manufacturing industries. In the countries of Southeast Asia, European and American standards have been adopted and introduced since the introduction of the domestic mobile communication business, emerging from a cultural and economic relationship that reflects former colonial policy.

In the formation of the mobile communication market in the Asian region, although each technical standard from Japan, the United States and Europe was initially screened out, they gradually achieved coexistence through the policy process of making international standards for Ericsson and Qualcomm in 1999.

The generational shift in mobile phone technology, as it is, shows the dominant model / design of mobile phones and the prosperity of the dominant companies (refer to Figure 2). Motorola was the most noteworthy in the 1st generation, and Ericsson and Nokia succeeded in European technological standardization and global expansion in the 2nd generation. What was holding the technological view of the competing model was Qualcomm, and then Samsung began to emerge in model manufacturing. The 3rd generation of mobile communication, which realized higher speeds with the changes in the international unified standard made it possible to access the Internet of mobile phones and opened the door to communication services other than telephones - including the appearance of Social Networking Services (SNSs). At that time, RIM from Canada and Samsung in Korea emerged, and there were also Taiwanese and Chinese manufactures that provided electronics manufacturing services (EMS) under the global supply chain management (GSCM). On the other hand, Ericsson and Nokia had withdrawn from the market of competitive mobile terminals and shifted their core business to the development, design and operation of backbone network systems.

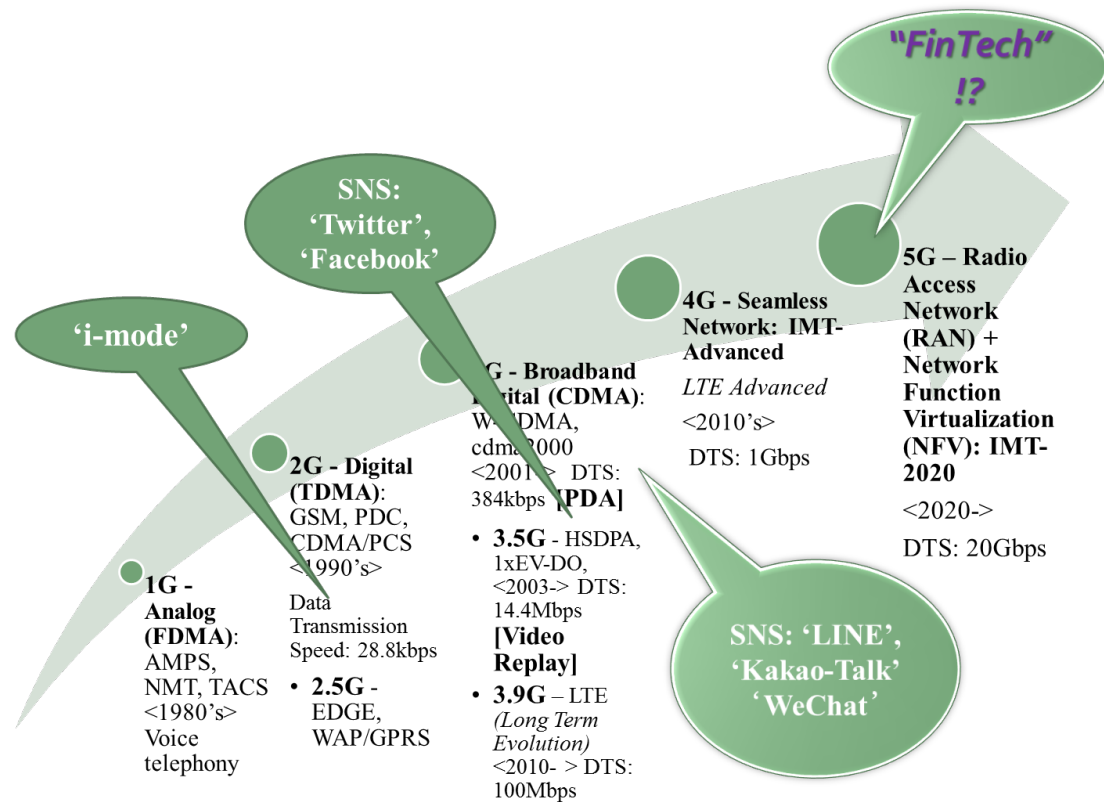
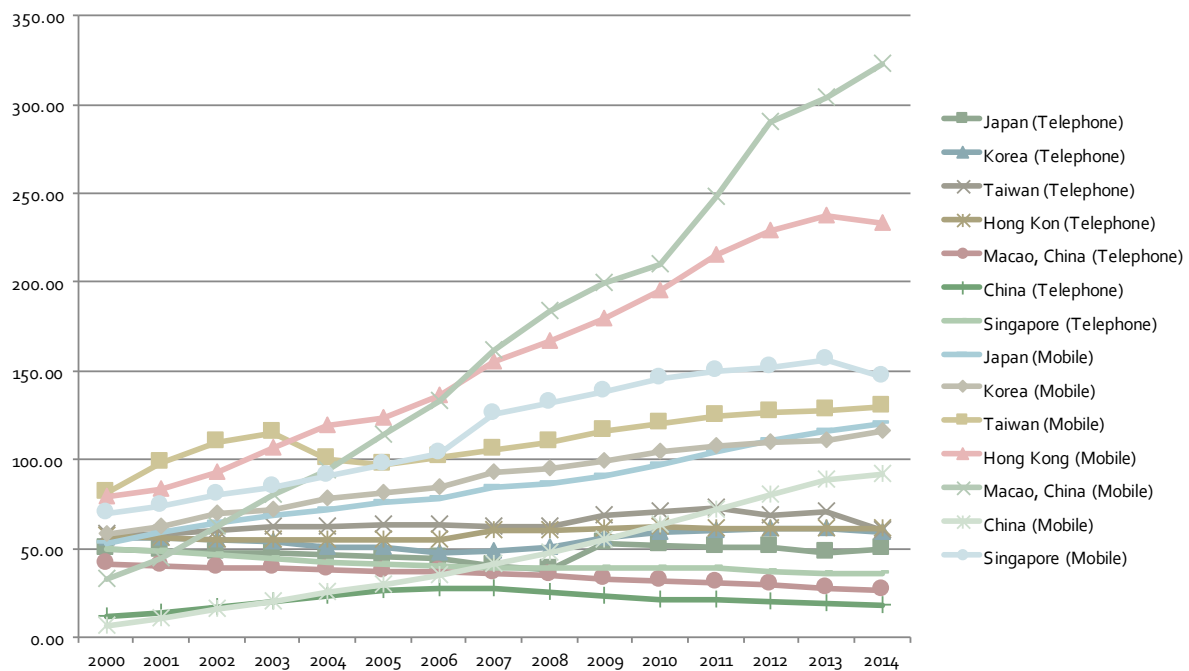


Figure 2. Product Cycle and Technological Evolution in Mobile Communications Systems

Furthermore, Apple announced the iPhone in 2007, aiming at the 4th generation of wireless and wired seamless connection environment. It was the arrival of the smartphone era. Figure 3 shows fixed and mobile telephones subscribers per 100 inhabitants in selected economies of Asia. Advanced economies have a high penetration of mobile telephones. Even China, with a huge population, is approaching the situation of every person possessing a cell phone. There is still an increasing trend in urban economies such as Singapore, and economies of Hong Kong and Taiwan of over 100 per capita. This indicates that mobile communication devices have diversified, not only as mobile phones but also including those having PC function; such as a smartphones and tablets. Access to the network from various terminal devices has become possible, and people using network services such as SNSs (Twitter and Facebook) and Chat services (WeChat, KaKao Talk, and LINE) and so on are increasing.



Source: ITU World Telecommunication / ICT Indicators Database (2015)

Figure 3. “Asian Miracle” in ICT Markets: Fixed and Mobile Telephones Subscribers per 100 Inhabitants

Currently, under the spread of smartphones worldwide, network services accessible through it are evolving diversely. In online shops, smartphones handle processing from order placement to settlement on smartphones, and even smartphones are becoming an effective means of offering financial services. In fact, in the ecosystem of such industrial groups, we will examine the goals of the business from the current situation of businesses battling over the Asian market; Who has a competitive advantage and can demonstrate market power.

3. Ecosystem and Global Supply/Value Chains under Geo-Politics/Economics

3-1. Domestic Oligopolistic Markets and their interconnected Market in the 4th Layer

The lowest layer of the ICT ecosystem is infrastructure within the territory of each country, but international telecommunication is realized by crossing the borders of territories through international networks via submarine cables. In the case of connection between Asian countries, submarine cables are indispensable, especially the Pacific submarine cables built for connection with the United States. These cables are owned by associated members, currently including not only telecom carriers, but also service providers, such as Google, Facebook, and Microsoft (refer to Table 1). Recently, Google and Facebook teamed up with Pacific Light Data Communication Co. Ltd. (PLDC, Hong Kong) in order to

construct the Pacific Light Cable Network (PLCN) from the Chinese autonomous region to Los Angeles, starting operations from the 3rd quarter of 2018.

Table 1. Asia Pacific's Core Trunk Submarine Cables

FASTER	Southeast Asia Japan Cable (SJC)	Unity/EAC-Pacific	Asia Pacific Gateway (APG)	New Cross Pacific (NCP) Cable System
2016	June 2013	March 2010	Q2 2016	Q4 2017
11,629 km	8,900 km	9,620 km	10,400 km	13,618 km
Google, KDDI, SingTel, China Telecom, China Mobile, Global Transit	Globe Telecom, Google, KDDI, Telkom Indonesia, SingTel, China Telecom, TOT, China Mobile, Chunghwa Telecom, Brunei International Gateway, SingTel Optus, Airtel (Bharti)	Telstra, Google, Global Transit, SingTel, KDDI, Airtel (Bharti)	NTT, China Telecom, China Unicom, Chunghwa Telecom, KT, Starhub, LG Uplus, China Mobile, Viettel Corporation, Vietnam Telecom International, Global Transit, Facebook, TIME dotCom	China Telecom, China Unicom, Chunghwa Telecom, KT, China Mobile, Microsoft, Softbank Telecom
United States – Japan - Taiwan	Japan - Hong-Kong - Philippines - China - Thailand - Brunei – Singapore	Japan – United States	China – Vietnam – Malaysia – Japan – Korea – Thailand – Singapore – Taiwan – Hong-Kong	China – Korea – Japan – Taiwan – United States

Source: Telegeography restricted online from:

[<http://www.submarinecablemap.com/#/>], as of 24th June, 2017.

On the other hand, the construction of submarine cables is a tripartite regime, three companies of Japan, the United States and Europe form oligopolistic markets as follows.

- Alcatel Submarine Networks (ASN: former Alcatel-Lucent Submarine Networks) affiliated with Nokia(France)
- TE SubCom (Tyco Electronics Subsea Communications Ltd.: US)
- OCC (Ocean Cable & Communication: NEC/Japan)

3-2. Global Competitive Market for Terminal Devices in the 3rd Layer

In the 3rd layer of the ICT ecosystem, network elements are subject to fierce global competition. Terminal equipment and devices especially have diversified from servers to PCs and tablets to smartphones, and among the effects of substitution and complementation, the communication service gateway device seems to have converged on

smartphones in consideration of penetration growth rate. Crustal movement has occurred in the mobile terminal market since Apple released the iPhone (refer to Figure 4). Nokia, who swept the market with the 3310 model in the 2nd generation, tried to switch to smartphones in collaboration with Microsoft, but after it failed to achieve much success, it once exited the mobile terminal market. Meanwhile, Samsung has been emerging in the global market with Google's Android OS devices.

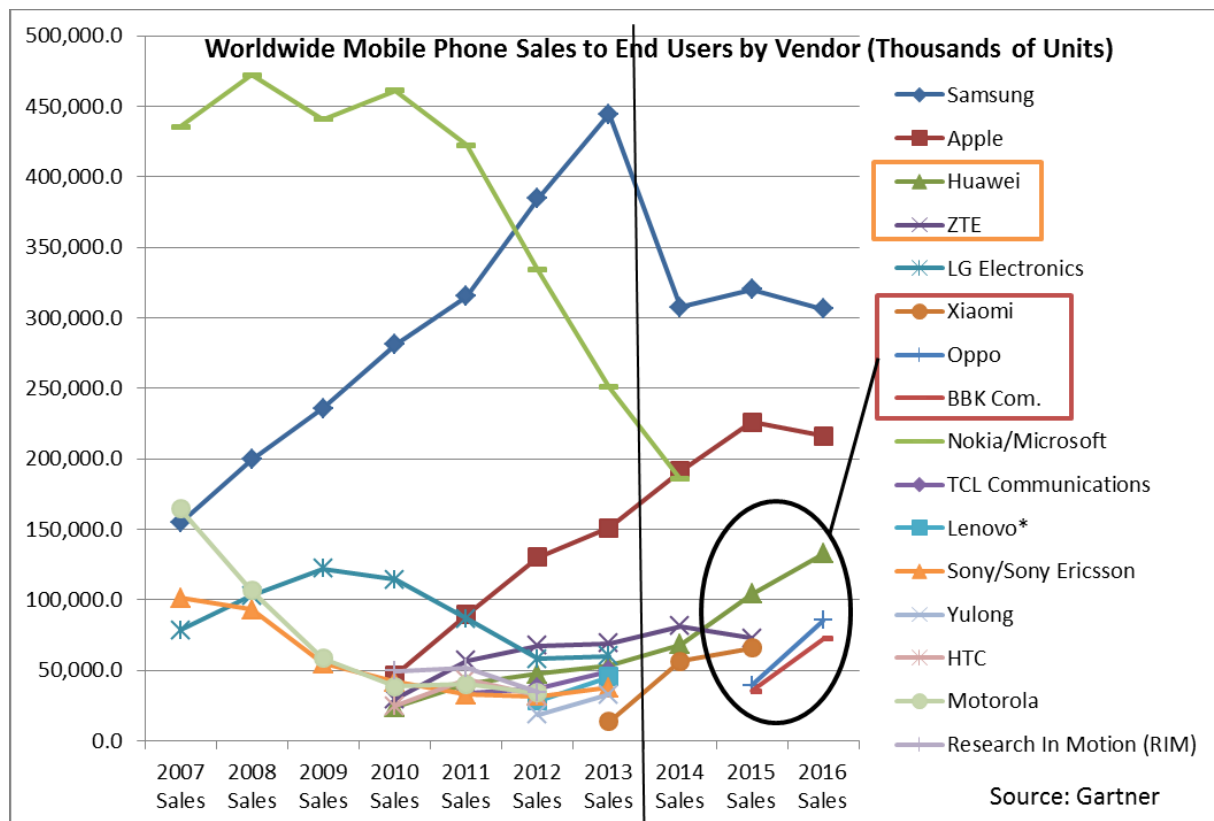


Figure 4. Crustal Deformation in Mobile Handsets Market (Mobile-phone to Smart-phone)

Furthermore, over the huge Chinese domestic market, the long-established Chinese enterprises and start-up companies in China are competing for market share with price competitiveness. China's long-established companies, Huawei and ZTE, are equipment manufacturers of not only mobile terminals but also communication systems in general, and they are also major players in the American market. Along with that, political and economic friction has occurred between China and the United States. Here we can see one aspect of the intrinsic geo-political and geo-economic problems of the ICT industry.

3-3. Geo-Economics of Global Supply Chains: Cases of Apple, Inc. & Foxconn

EMS has also developed in this market for terminal devices; the base of EMS is concentrated in Taiwan and China, and has established a global supply chain. We can see the typical cases in Apple's supplier chain management. Figure 5 illustrates the supply chain that has developed globally based on *Apple's Supplier List 2015* of over 200 suppliers, including component providers and others representing at least 97 percent of procurement expenditures for materials, manufacturing, and assembly of their products worldwide in 2014.

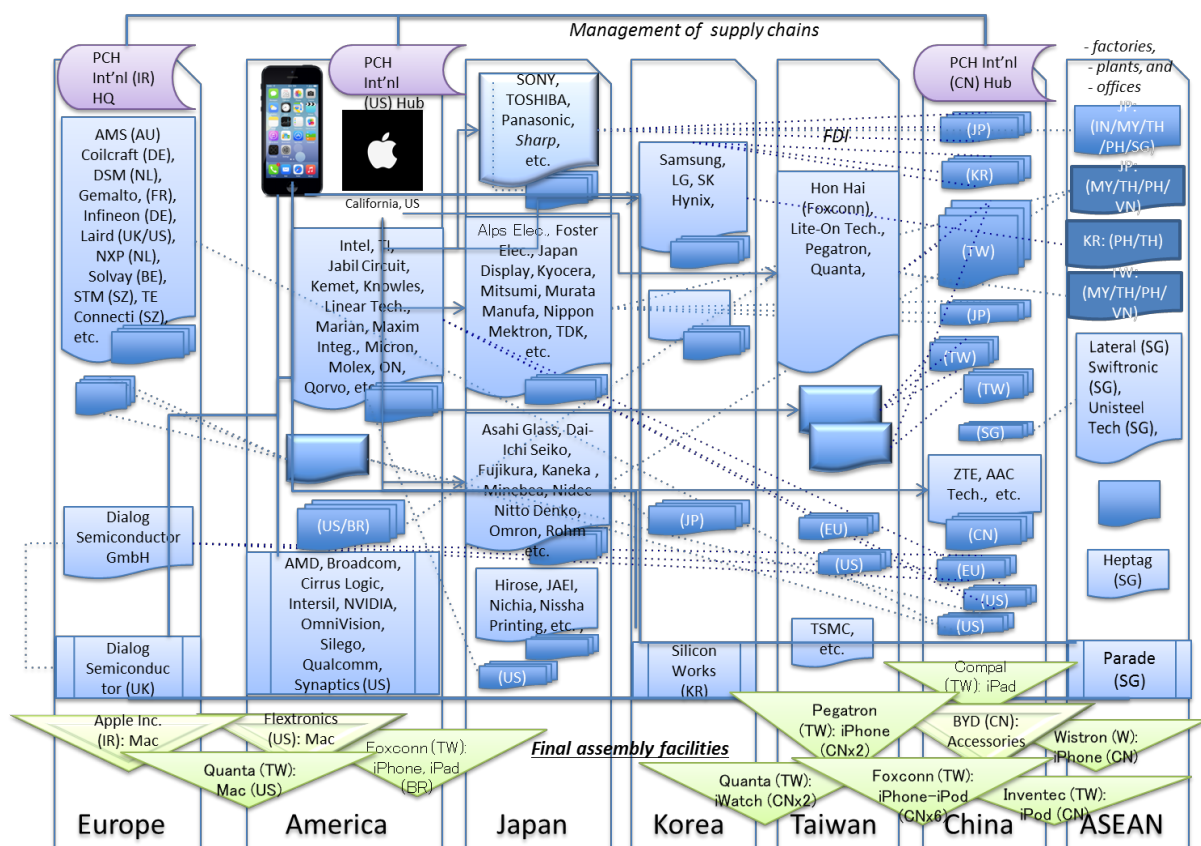


Figure 5. Apple's Global Value Chains

Source: Illustrated by the author on the basis of the *Apple's Supplier List 2015*.

Apple's global strategy is a system to control the three districts of the Americas, Europe, and Asia, procuring key elements of Apple products from US and European suppliers and incorporating them into the supply chain network. Although well-known manufacturers are famous as suppliers, almost all manufacturers are related subsidiaries or their plants and factories in China and Southeast Asia, as seen from their direct suppliers. These affiliated companies are located in SEZs in China and Southeast Asia, and the final assembling process is consolidated in 18 facilities. Fourteen of them are located in China and Hon Hai Precision Industry (Foxconn) of Taiwan owns seven of these facilities. PCH

International, headquartered in Ireland, manages this huge supply chain, and has hub functionality in the US and Shenzhen City, Guangdong Province, China, and controls Apple's supply chain. Taiwanese companies based in China are located in Shenzhen City (Guangdong Province), Shanghai City, and Suzhou City (Jiangsu Province) as three major bases, and facilities in inland economic zones. Apple is now also based in Shenzhen City, China, with partnerships with Foxconn aiming at the Indian market.

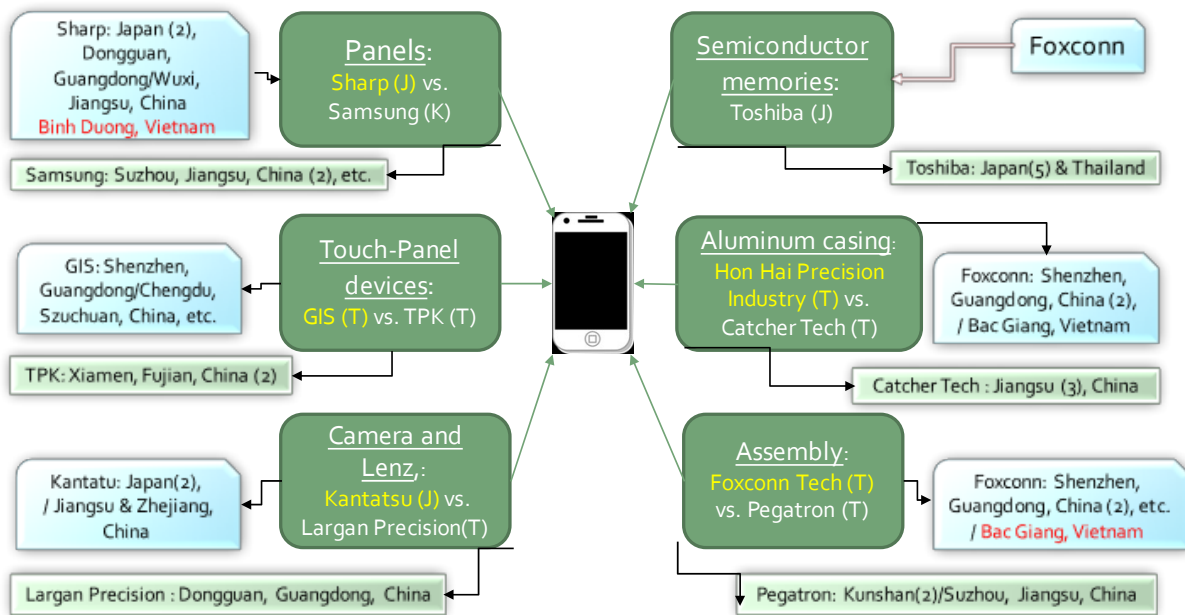


Figure 6. Parts Procurement and FDI: Case Study - Foxconn's EMS for iPhone

Source: *NIKKEI Newspaper*, 11th April 2017.

Looking at how the iPhone can be assembled, it can be seen that one iPhone incorporates parts and materials from various suppliers (refer to Figure 6). Foxconn's EMS for the iPhone procures parts and materials from companies under Foxconn and competitors. Specifically, the touch panel procured from Sharp and Samsung, which was acquired last year, the touch panel function is from the affiliated GIS and competitors' TPK, the camera and lenses from Sharp's affiliate Kantatsu and its competitor, Largan Precision, aluminum casing assembling are also in competition with Catcher Tech and Pegatron while their process are conducted by its companies. And Toshiba is the supplier of the semiconductor, which is the core part of the iPhone. Currently, in accordance with Toshiba's semiconductor division procedure, Foxconn seeks cooperation with Apple and Softbank while seeking to acquire it.

3-4. Competitive Evolution over Platform Control in Service & Content (2nd & 1st) layers

On the other hand, the degree of competition in the ecosystem of the ICT

industry has become more severe in other dimensions. Although the first and second layers in the ecosystem are layers of services and content, due to the spread of smartphones, the platform competition over the API (Application Programming Interface) has intensified, and the services and contents provided through the application have become enormous and diversified. On the other hand, market-dominating service suppliers are also emerging. However, this dimension is a field in which consumption (usage) forms reflect strongly differs political, cultural and social tastes, and social structures, unlike fields that are distributed as commodities embedded in objects with universality of mechanism. Therefore, political speculation and selective exposure are also projected, which could also contribute to political polarization.

These markets in Asia are exactly projections of socio-cultural aspects, taking geopolitics and geography into account. In this paper, this geographical socio-cultural aspect is grasped from the viewpoint of socio-informatics in geopolitics and geo-economical contexts, advocating "geo-informatics" beyond a general context of engineering, and challenges one to extract the characteristics of the Asian region.

Table 2. Major Application Service & Content Providers in Selected Asian Countries

	USA	Japan	Korea	China	Indonesia	Thailand	Vietnam
Online Shipping	Amazon	Amazon					<Amazon>
		(Alibaba)		Alibaba	Alibaba (Lazada)-EMTEK	Alibaba-CP group Lazada	Lazada
		Rakuten Yahoo!	Coupang	JD.com			Tik/ Sendo/ Lamido (Facebook)
Search Engine*1	Google Yahoo!	Yahoo/Japan Google	Google	Baidu	Google	Google	Google
SNS*2	Facebook, Twitter, Pinterest Instagram	Facebook, Twitter, Mixi, Instagram	Facebook, KakaoStory Twitter	Qzone, Sina Weibo, Baidu Tieba, Tencent Weibo	Facebook, Google+	Facebook, Google+, Instagram	Facebook, Google+,
Messenger, Chat app.*2		LINE,	KakaoTalk,		BlackBerry Messenger (BBM), WhatsApp	LINE,	Zalo,
	Facebook Messenger	Facebook Messenger	Facebook Messenger	WeChat	, Facebook Messenger	Facebook Messenger	Facebook Messenger , Skype
Electronic Money	PayPal VISA/ MasterCar	Suica, Waon, T-Point	'Chocos', 'acorns', T-money,	UnionPay 'Alipay' WeChat	Flazz Card, Espay	Rabbit, E Payment,	momo,

	d 'Apple Pay' 'Google Pay'	(F-Mart), Ponta (Lawson), nanaco (7-Eleven), RakutenEd y (NTT) 'Apple Pay' 'Google Pay'	eB Card (chashbee)	Payment,	(Emtek)	TrueMone y
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Notes: *1 StatCounter GlobalStats [<http://gs.statcounter.com/>]

*2 we are social, "Digital in 2016" restricted online from
[<http://wearesocial.com/uk/special-reports/digital-in-2016>]

Google, Facebook and Twitter originated in the United States and spread worldwide, with penetration is also seen in Asian countries, featuring unique APIs which are drawing out the characteristics of each country. The most popular chat and message service in Japan is LINE, and Korea also has Kakao Talk. Also, in Japan, unique online shops such as Rakuten and Yahoo are competing with Amazon. In Korea, "Coupang" dominates online shopping. In China, the government does not allow the use of Google and Facebook from the United States, and so Baidu and Weibo have an enormous number of users for their equivalent services, and Alibaba is achieving market dominance in the online shopping.

In Southeast Asia, Lazada has won the largest share in online shopping, but Alibaba in China is developing the market, aiming to acquire Lazada in Indonesia, and cooperating with the CP group in Thailand. Indonesia's message and chat service is distinctive, and the BlackBerry Messenger (BBM) from Canada is dominant. Vietnam's own Zalo service is also spreading. It can be said that each country is developing and spreading its own API reflecting their communication culture.

In addition to these major API services, the ICT businesses that have incorporated financial services deserve attention. Apple intends to introduce "Apple Pay" into Suica, which has the most popular electronic money function in Japan. Alibaba looking to capitalize on the huge market in not only China, but also South-East Asia, has developed "Alipay" and is trying to put it in customers' wallets. Alibaba has also sought to introduce its e-money "Ally Pay" to the Japanese market for Japanese customers, but Japanese banks refuse to cooperate on the grounds of privacy protection for their customers.

On the other hand, there has been a lot of fighting about information technology and services between China and the U.S. Under the control and regulation of the Chinese government, the entry of U.S. companies into this sector in China was restricted; e.g. Facebook has not been available since 2009. In addition Twitter, Google search and maps, and YouTube have also been unavailable on the Chinese mainland since 2010, while Apple set up the base for its cloud service in China and sold the VPN application, but

transferred its operation to a Chinese company in 2017 after the enforcement of the “Cybersecurity Law of the People's Republic of China”. Meanwhile, the US government imposed sanctions on China’s ZTE and Huawei. As a result, their communication equipment transactions were banned due to violation of trade export restrictions and fears of spying activity using “backdoor” and “kill-switch” programs.

As ICT markets have developed through technological advances and competition for global standards has spread, a requirement has arisen to understand the unique socioeconomic, political and cultural features within each geographical region. In other words, the field of ICT has expanded from a technical global standard to a “glocal” strategy based on the cultural and socio-political contexts.

4. GVCs in Geo-economics: Shift from Technological Economy to Cultural/Political Economy

Technology can pursue universality and versatility, and globalize with standardization, but cultural economy may evolve in unique ways in the region. While the information economy is based on technology, the uniqueness of the area is demonstrated by content and applications. There is a shift from featuring on technology to focusing on culture. The “Galapagos” phenomenon is a cultural phenomenon.

On the other hand, for services, businesses that acquire universal positions as platforms have also developed, and companies that occupy a dominant position are also emerging. Why did Japan become a “Galapagos” in the mobile phone business? If you look at only technical aspects, you cannot grasp its core. The fact that the bullet train has not been adopted overseas is more of a cultural factor rather than a result of technological or economic (cost) problems. Is it possible to operate a system like the *Shinkansen* in countries other than Japan? The precision of Japanese culture is impeding global business. The technologies, services and contents that make up the network system tend to reflect the cultural values of each region and country. Otaku business is also a symbol of that.

The cultural features in life and business construct mosaic-like multilayered segments in the market. Culture has been formed by institutions historically in each area. In the case of the adoption of electronic money, it has a path dependence based on institutions, commercial practices and customs relating to the formation of trust, as well as a technological trajectory. For example, in Japan, where the cash culture is highly developed, credit cards and electronic money can only be a complementary mean of payment in Japan: credit cards are used for large payments, while prepaid types or coupon types of electronic money are used for small amounts. In contrast, Korea has promoted strategically advanced information policy along with a social security number system, thereby enabling credit card payments in domestic e-commerce even for small amounts in

convenience stores. In China, electronic money in mobile payments, such as Alipay and WeChatPayment have become a means of replacing cash settlements thereby avoiding problems of counterfeit money and currency exchange, although Union Pay debit cards are used in shopping nationwide and worldwide. Furthermore, China has developed so-called “Sesame Credit” to judge whether the other party can be trusted. As you can see from the situations in East Asian countries, there are different path dependences of institutional change affected by cultural contexts, especially the formation of trust in settlement methods. In other words, the Japanese tend to believe in anonymous payment methods so as not to reveal their purchasing behavior, while Koreans prefer post-payment with credit card. The Chinese tend to provide their information in cyberspace voluntarily, and are thereby evaluated for credit worthiness and receive services according to that evaluation.

How to earn the trust in the invisible space of the Internet depends on the cultural basis of trust formation cultivated in real space. Economics has suggested sorting information sources by “signaling” and “scanning” in conditions of asymmetric information. The process and scope of trust building creates mosaic-like multilayered segments in the Asian marketplace which consist of living area (space) 「生活圏」, commercial area (sphere) 「商業圏」, and economic zone (block) 「経済圏」.

In the case of Japan, most people stand at living area and cyberspace where they communicate and exchange information with kindly friends in real and virtual spaces through LINE as one of Japan’s most popular SNSs, and enjoy e-commerce in the commercial sphere provided by services such as Yahoo Japan and Rakuten. In addition, American biggest online shop, Amazon.com takes Japanese customers in its economic zone with credit card information and collecting data on their purchasing behaviors. In the Asian marketplace for e-commerce, there is a battle between Amazon and Alibaba regarding which will stretch their economic zone into Southeast Asia respectively.

It is said that future business will be determined by the principle, “Those who win the data Winners in the World.” Indeed, the data driven economy is starting to advance. However what data is that data? What can be inferred from that data? Communication and net service providers can gather data about the online behavior of subscribers. Online shops hold the customer's purchasing records. And financial businesses report on customers' asset management. The fusion of these businesses will become the core of the fight for supremacy in the future of the global ICT ecosystem. What is to be understood from the data summarized there is that beyond geo-politics and geo-economics “geo-informatics” would be required to understand the cultural economy within which global value chains (GVCs) are being developed

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Acknowledgment: A part of this research was supported by ISHII MEMORIAL SECURITIES RESEARCH PROMOTION FOUNDATION.