Competing in a Converging ICT Market

1. Introduction

One of the major phenomena in the information and communication technology (ICT) industry today is convergence. The European Commission (1997) defines technological convergence as "the ability of different network platforms to carry essentially similar kinds of services or the coming together of consumer devices such as the telephone, television, and personal computer." This means that users can access information in an interactive way using any type of terminal over several alternative media. In fact, convergence has been around for a decade or so, ever since the digitalization of computers, communications, and other forms of electronics. It unites the functions of the computer, telephone, and television on the terminal side and a common distribution platform on the network side. The boundaries separating traditional industries such as computers, telecommunications, office equipment, entertainment, media, broadcasting, and financial services are blurring. After more than a decade of development, with the new technologies in broadcasting, transmission, and mobile devices, consumer behavior is changing from passive to active participation, as manifested in Web 2.0. ICT is one of the most interesting industries that affect our daily life.

To celebrate the 25th anniversary of the Communications Association of Hong Kong (CAHK), the Association conducted a series of interviews with the CEOs of the major players in Hong Kong to get a picture of the future of the ICT industry in the next five years. Although these CEOs have different perspectives and their companies face certain constraints, their viewpoints can generate valuable insights and effective corporate strategies to deal with convergence in the ICT industry. This study confines the scope of ICT to telecommunications, the Internet, and broadcasting – the communications industry. We hope that the findings will make contributions in the academic field and provide practical applications.

2. Characteristics of the Convergence Market

The communications industry is basically a network, or two-sided market. It functions as an intermediary (platform) between two user groups and provides infrastructure and rules that facilitate the transactions of these groups. In a traditional value chain, value moves from left to right: to the left is the company cost; to the right is revenue. In two-sided networks, however, value moves both left and right because the platform has a distinct group of users on each side (Eisenmann et al., 2006). The two groups are attached to each other, a phenomenon that economists call the network effect or externality; that is, the platform's value to any given user largely depends on the number of users on the other side, which is called a cross-side effect. In contrast, a same-side effect occurs when the increasing number of users on one side of the network affects the value to users on the same side. Network effects can be positive or negative depending on whether the joining of a new member increases or decreases the value to existing users from the perspective of their own side. The cross-side effect is typically positive; that is, the value of owning the products and service increases as the number of owners increases.

These network externalities can sometimes limit a company's ability to develop the market in the beginning stage because the markets for stand-alone products normally develop more quickly (Winer, 2004). Because network markets need a critical mass on both sides for success, a first mover has a distinct advantage over a late one and might even capture the entire market. Platforms serving two-sided networks are not a new phenomenon. Mature two-sided network industries are dominated by large players, as is the case for PC operating systems and in the credit card industry. However, platforms have become more prevalent because of advances in technology. New platforms have been developed and traditional businesses have been recreated as platforms. Examples of new platforms include Google, which links searchers and advertisers, and Xbox, which links players and game developers, while e-Bay, which coordinates sellers and buyers, and Amazon, which links readers and authors, are examples of traditional auction house and book store evolution in terms of scope and scale, respectively. Kim and Mauborgne (October 2004, HBR) took e-Bay as an example of the Blue Ocean Strategy, which makes competition irrelevant. It can attract a large volume of customers and generate value economics very rapidly. Network externality puts would-be imitators at an immediate and continuing cost disadvantage. However, the authors admitted that almost all blue oceans turn red eventually; hence, a company needs to monitor its value curve and reach out for another blue ocean when the value curve begins to converge with that of the competition.

The ICT industry inherits the challenges, and certain risks, of network markets because of convergence.

1. Pricing the platform. The negative effect on the same side is not obvious until congestion appears. A network provider sometimes offers a very attractive price to attain an economy of scale in the beginning. If the response is overwhelming and quality declines because of over congestion, then the effect becomes negative. In the cross-side effect scenario, two-sided networks have a "subsidy side," a group of users, who, when attracted in volume, are highly valued by users on the other side, the "money side" (Eisenmann et al., 2006). The number of subsidy side users is crucial to developing a strong network effect and thus the subsidy side is required to pay less as an independent market, whereas the money side pays more than it would as an independent market. The challenge of the platform provider is to determine the degree of subsidization on the one side and the premium that the other side is willing to pay for the privilege of accessing it. Consumers become accustomed to obtaining information from the World Wide Web (Web) or enjoying free TV programs. The Korean experience in mobile TV found that both free-to-air and some niche channels are required. This is the "basic cable" model in which subscription is necessary to pay for expensive gap-filler networks.
2. Winner-take-all dynamics. When two networks start out the same size but random or non-random factors cause one of them to become larger and eventually dominate the whole market, this is called a "winner-take-all" market (Shapiro and Varian, 1999). A network provider must decide whether to share the network with rivals or fight to the death. The networked market is likely to be served by a single platform if multihoming costs are high for more than one platform on the user

sides, network effects are positive and strong, and there are no strong preferences for special features from either side of users. When this is the case, the provider has to decide to fight for or share the network. In the case of telecommunications voice services, although there is no strong preference for any particular network, the multihoming cost is low; hence, service providers can coexist with a low profit margin. In the case of pay TV, the multihoming cost is relatively high and limited by available leisure time, and there is a strong preference for special programs by individuals; again, several operators can coexist.

3. The threat of envelopment. Technological convergence creates economies of scope that cut across formerly separate markets and provides cross-market incentives (Katz, 1996). The regulatory changes leading to a unified license regime facilitate these incentives. In addition, platform providers frequently have overlapping user bases. There is a danger when rivals offer the same functionality as part of a multiplatform bundle, as a lower total cost can be offered to the money side. This phenomenon is becoming common because of convergence, which is being accelerated by the rapid evolution in technology. There are two types of convergence – convergence in substitutes and convergence in complements (Greenstein and Khanna, 1997). The former appears when two product classes start to share interchangeable features whereas the latter appears when two product classes work better together than by themselves or complement each other. The threat of envelopment occurs with convergence in substitutes. Typical examples are the multifunction mobile phone replacing the low-end camera, MP3 player, and radio. The voice-over-Internet Protocol (VoIP) feature in broadband services can substitute for conventional analogue fixed-line service.
4. Market uncertainty. The communications industry is always coming out with radical new products, such as high-speed downlink packet access (HSDPA), mobile TV, worldwide interoperability for microwave access (WiMAX), and 3D barcodes, rather than incremental innovations. Concept testing may not be suitable to predict mass-market acceptance because consumers are not familiar with radical innovations and because of the absence of external factors, such as social influences, which affect consumer behavior (Moore, 19898). In addition, it is difficult to forecast demand because no historical data are available. The justification of the investment amount is based on presumed need (Bores et al., 2003). Market forecasting has to take into account competitor response. For example, when third generation (3G) operators introduced the high-speed mobile data service HSDPA, two-and-a-half generation (2.5G) operators reacted with an economical flat-rate general package radio service (GPRS) package, which affected the diffusion rate of HSDPA. However, there are success cases. Apple did not conduct market research before creating iTunes Music Store. They developed this technology because they thought it would be great to be able to buy music electronically, and had no intention of redefining the music industry (Morris, 2008).
5. Technological uncertainty. Network markets always deal with the issue of standardization, which determines the compatibility among different products and services. Products in network markets

can take advantage of indirect network externalities if there is a variety of complementary products. A well-known example is the battle in the video recorder market. JVC licensed the technology to encourage the supply of content whereas Sony was reluctant to do so. The greater availability of films in VHS was one of the major reasons why this format dominated the market, beating out the Betamax format. Similarly, the initial mobile phone operating systems were proprietary; that is, the mobile phone manufacturers controlled all of the hardware and software. These platform providers were challenged by the formation of Symbian in 1998. The company started out with the goal of developing an open operating system for existing and next-generation interactive multimedia devices. Microsoft also made a strategic move in 1999, with the ultimate goal of transforming the Windows operating system (OS) into a standard platform for a new generation of Web-based services on both high-speed fixed lines and mobile telephone networks. Apple and Google joined in the battle in 2007. One of the reasons for opening up the standard or licensing requirements is to acquire an early installed base to bring a product or technology up to an industrial standard (Farell and Saloner, 1985; Katz and Shapiro, 1985). Both companies realized that competition to "own" the standard was competition for the market (Teece, 1986, 2006). Open platform providers can also invite more third-party developers when developing complementary products. In making their decisions, phone manufacturers and third-party developers have to make a bet on which OS will ultimately dominate the market.

In the service market, major players always try to come up with a common standard through forums or international organizations such as the Global System for Mobile Communications (originally the Groupe Spéciale Mobile) (GSM), WiMAX forums, and the International Telecommunication Union (ITU). Regardless of the quality of the technology, the more a technology is employed, the greater will be its attraction relative to the alternatives. This is due to the cumulative nature of technical advances, the learning of both producers and consumers, and network externalities (Arthur, 1989). If a government adopts a technology-neutral policy, then new entrants have to choose a technology in view of its potential, the availability of suppliers, its roaming capability, and applications. The situation is even more complicated when a country such as China advocates its own standard which is not fully internationally compatible.

6. Hugh upfront investment. The diffusion of a new innovation is determined by four main factors: substitution economics, change in user behavior, technology, and infrastructure (Collis et al., 1996). Substitution economics refers to the economic benefit incurred. Change in user behavior depends on the ease of use and usefulness, which is consistent with technology acceptance theory (Davis, 1989) and diffusion theory (Rogers, 1962). Technology with a stable standard minimizes consumer investment risk. The host infrastructure provides ubiquitous access to the service or product. The coverage must be reasonably good for consumers to be willing to try it out. In the case of service provision, costs can involve a substantial license fee, expensive equipment, and a high rental cost for transmission. Complementary resources such as terminals, a billing system, and promotion are also required before a critical mass is created.

3. Current status of the Communications Industry

Hong Kong was ranked number one in 2002 in the mobile/Internet index of the ITU (itu.int/mobileinternet). The Index covers 26 variables that are sorted into three groups: infrastructure, usage, and market structure. In 2008, the number of mobile service subscribers has risen to almost 10 million, representing one of the highest penetration rates in the world at about 150% with five operators. Other than basic voice services, data services such as short messaging, mobile Internet services, all sorts of download services, multimedia services, video call services, and mobile TV services are commonly available anywhere, anytime, and are very popular among consumers. With 3G networks being upgraded with HSDPA technology and HSDPA-enabled services being introduced by service providers, 3G service customers can experience mobile data services at a higher speed, up to 3.6 Mbps (OFTA, 2007). Broadband Internet traffic volume has exceeded 800,000 terabits (OFTA, 2007), and the penetration rate of pay TV reached 80% of households in 2007 (refer to Appendix A for the details of the Hong Kong ICT market). A number of mergers and acquisitions have taken place in Hong Kong, including PCCW acquiring Sunday in September 2005, China Mobile acquiring Peoples in March 2006, and CSL merging with New World Mobility in March 2006. Mobile number portability has been in effect since 1999, and switching barriers are relatively low except for the contractual obligation between the subscriber and service provider. Indeed, voice services in mobile and fixed networks and Internet data services are nearly identical. In addition, the rapid advancement and introduction of new technologies make these kinds of services perishable. The fixed costs are high whereas the marginal cost is low. As such, there is intense pressure on service providers to cut prices below the average costs while still making some contribution to covering fixed costs. The pay TV market is dominated by Now, TVB, and iCable. As Wimax and mobile TV licenses are going to be issued at end of 2008 and beginning of 2009, respectively, new entrants are coming in and the industry structure will be transformed.

4. Future of the Communications Industry

Nobody can predict the future of a market, especially for a fast-moving industry such as ICT. Those firms that are able to correctly foresee the future can gain an important head start and obtain a competitive advantage, whereas those that cannot may be seriously threatened by the competitive position of the former. This section summarizes the predictions given by the CEOs on the future of the ICT industry.

Company	CEO/MD/GM	Predictions
China Mobile Peoples Telephone Company Limited (www.peoples.com.hk)	Charles G. Henshaw Director and CEO	Mobile Internet is becoming the killer application; everything is over Internet Protocol (IP). Backbone of the infrastructure may be the ultimate winners. A terminal is becoming a one-device driver.

PCCW Limited (www.pccw.com)	Alexander A. Arena Group Managing Director	Interactive services; content is challenging, particularly with interactive features.
HK CSL Limited (www.hkcsl.com)	Tarek A. Robbiati CEO	Service operators fulfill the needs of customers through the network, particularly data communications. Wireless technology is the best media to provide mobility and ubiquitous services.
Nokia (HK) Limited (www.nokia.com.hk)	Bruce Lam General Manager	A mobile phone is not simply a communication device. It will be an indispensable tool in the world of the Internet.
i-Cable Communications Limited (www.cabletv.com.hk)	Stephen T. H. Ng Chairman and CEO	Convergence between broadcasting and telecommunications. Two-way interactive communication and customers as content providers.
Citic 1616 Holdings Limited (www.citic1616.com)	Norman Yuen CEO	Hong Kong may lose its leading telecom position in the region because of the market size constraint and no application breakthroughs.
Television Broadcasts Limited (www.tvb.com)	S. K. Cheong General Manager-Broadcasting	Convergence will happen on different levels.
Asia Television Limited (www.hkatv.com/v3/index.html)	T. K. Ho Director and COO	A more open market policy in the future would lead to more competitors, stimulating new ideas and thus bringing growth to the industry.
SmarTone Telecommunications Holdings Limited (www.smartone-vodafone.com/jsp/tchinese/index.jsp)	Douglas Li CEO	More convenience in life. More variety in the market and service; everything will be at a faster pace. More innovation, higher standards.
Sony Ericsson Mobile Communications International AB (www.sonyericsson.com)	Marisa Kwok General Manager, Hong Kong and Macau	Rapid growth in telecommunications technology will help Hong Kong's role in the international marketplace.
City Telecom (HK) Limited (www.ctihk.com)	Ricky Wong Chairman	Hong Kong is heading towards being a facility base; small companies might not be able to survive and thus there will be less creativity in the industry.
China Telecom (HK) International Limited (www.cthk.com)	Ma Yi Min CEO	The merging of fixed and wireless networks will destroy the possibility of monopolies and oligopolies.
Hutchison Telecommunications (Hong Kong) Limited (www.hgc.com.hk)	Peter Wong CEO	The world will appear smaller as we expand into more advanced technologies. How we communicate and how we gather information will be at a more advanced and fast level.

5. Historical Overview of Competitive Advantages in Strategic Management

Porter (2006) posited that one of the great mistakes that have been made over and over again by companies is the attempt to apply a universal strategy. This is particularly true in view of the challenges faced by the communications industry, as mentioned above. An illustration in network markets is e-business, which is converging in term of distribution channels and content. Amit and Zott (2001) explored the theoretical foundations of value creation in e-business and suggested that no single entrepreneurship or strategic management theory can fully explain value creation. They proposed four interdependent dimensions for evaluation: efficiency, complementarities, lock-in, and novelty. They suggested that research on e-business and, more generally, on competition in highly networked markets, would benefit from an integrative approach that combines both strategy and entrepreneurship perspectives, and that different strategies should be applied in different scenarios and different stages in the course of corporate development. In addition, segmentation analysis, industry structure analysis, and value chain analysis are eminently useful in the context of a clearly defined market but not in the case of a future market (Hamel and Prahalad, 1994). Competition for the future is competition for opportunity share, that is, to maximize the share of future opportunities that a company could potentially access within a broad opportunity arena, rather than market share. Specifically, we need strategies with goals for the future and work backward to the present, as we do in chess.

The development and direction of strategic management is dynamic because of the ever-changing business markets and models over the years. In fact, the history of strategy management can be dated back to as early as 320 BC to the famous Chinese scholar Sun Tzu and his work, *The Art of War*. Sun Tzu advocated the appraisal of seven dimensions when making a strategic decision in the battlefield. These dimensions are: moral influence of the ruler, ability of the general, advantages of climate and terrain, execution of laws and instructions, numerical strength of troops, training of officers and men, and administration of rewards and punishments. Although the seven dimensions formed the prerequisites for strategic planning in warfare, they can be carried over into the business world and are in line with the Five Forces Model developed by Porter (1980). Sun Tzu and Porter emphasize the importance of creating competitive edges on the battleground and in industry, respectively. The essence of Porter's five forces competitive strategy is "to find a position in an industry where a company can best defend itself against competitive forces" (Porter, 1980). Sun Tzu observes, "If an advantageous strategy is already adopted, there is still a need to create an advantageous situation so as to support its accomplishment" (Wee, Lee and Hidajat, 1991).

In the early development of strategic management in the 1960s, scholars focused on the internal processes, characteristics, and managerial capabilities of organizations such as decision-making processes, information-processing limitations, power and coalitions, hierarchical structures, and the importance of management's role. Industrial organization (I/O) economics was first advocated in the 1950s and 1960s but was not recognized as an influential theory until the works of Porter appeared in the early 1980s. Porter summarized the structure-conduct-performance paradigm and introduced an analytical tool – the Five Forces Model, strategic group theory, the value chain framework, and generic competitive strategies, changing the area of interest from internal processes, as in the early 1960s, to

the external industry structure, competitive position in the industry, and the use of cost and differentiation as the means to gain competitive advantages. In the mid-1980s, the focal point of research swung back to organizational economics such as transaction cost economics (TCE), giving rise to agency theory. Organizational economics examined the firm environment interface using a contractual or exchange-based approach. Transaction cost efficiency was proposed via different strategies that included vertical integration, related and unrelated diversification, and the "hybrid" form of organizations (Hoskisson, Hitt, Wan and Yiu, 1999). Other frequently cited works in the economics stream in the 1980-2000 periods include studies addressing corporate strategy-product diversification, evolutionary economics, resource dependency, and behavioral theory of the firm (Hitt, 2005). In the 1990s, the resource-based view (RBV) of the firm dominated the field of strategic management. It diverted attention from external industry sources to "firms' internal strengths and weaknesses relative to their external opportunities and threats," which in turn gave insights into effective management of internal resources to create competitive advantages. Building on the RBV are strategic leadership theories, strategic decision theory and the knowledge-based theory of the firm (Hoskisson, Hitt, Wan and Yiu, 1999). In addition, strategic management research approaches include competence-based strategic management (Sanchez and Heene, 1997), competitive strategy, corporate governance, international strategy, and dynamic capability theories (Hitt, 2005). Emerging areas of research interest include network strategies (Gulati, Nohria and Zaheer, 2000), collaborative approaches (Wonglimpiyarat, 2005), which emphasize the important role of networks and inter-firm ties, the Blue Ocean Strategy (Kim and Mauborgne, 2004), which involves deriving full advantage from developing markets where there is little or no competition, and exploiting and protecting non-rival markets by property rights, patents, and high cost of market entry, and the platform strategy, which investigates the interrelation between a firm to gain profit from its technological advancement and the reinforcement of an appropriate regime to protect intellectual property rights (West, 2003).

In the field of strategic management, researchers and scholars seek to understand why firms differ in their conduct and profitability (Gulati, Nohria and Zaheer, 2000), and how firms can improve their performance in competitive interaction with other firms (Sanchez and Heene, 1997). Hence, different schools of thought, approaches, theories, and models have evolved to explain competitive advantage from the perspective of external industry sources, transaction cost economics, internal resources and capabilities, collaborative efforts, the Blue Ocean Strategy, and the Delta Model. Each of these theories is examined to obtain insights for the further development of a strategic framework for a network market. Appendix 1 summarizes the advantages and limitations of each of them.

5.1 Porter's Generic Competitive Strategy and the Five Forces Competitive Model

Porter's (1980) generic competitive strategy is based on two basic types of competitive advantages a firm can possess, low cost and differentiation, to advocate three generic strategies: cost leadership, differentiation, and focus. Focus has two variants: cost focus and differentiation focus. The goal of these strategies is to generate sustainable competitive advantages which in turn will contribute to the

above-average performance of a firm compared to its competitors in the industry (Hoskisson, Hitt, Wan and Yiu, 1999). A firm should pursue a cost leadership strategy if it competes industry-wide and has low cost advantages (Wee, Lee and Hidajat, 1991). To make the cost leadership strategy feasible, the firm should impose tight cost control, economies of scale, proprietary technology, and preferential access to raw materials to keep costs low. Additionally, the parity and proximity of differentiation should not be overlooked, which means the product quality should be equal to or above the industry average and acceptable to customers. This ensures that the depth of the price discount does not offset the benefits of cost advantages and the expanded market share. When a firm chooses to be a differentiator and the unique product has wide appeal, the firm is able to achieve a competitive advantage with a premium price. However, a differentiator should ensure that the competitive gain from the premium price is always higher than the extra cost incurred in being unique to survive long-term using the differentiation strategy. In other words, cost parity and proximity relative to its competitors should be observed. The focus strategy rests on the choice of a narrow competitive scope within an industry. A firm seeks a cost/differentiation advantage in a target segment using cost/differentiation focus strategies, respectively. Focusers address the unique cost behavior and special needs of the buyers in specific segments. However, firms that fail to associate themselves with either a cost or differentiation strategy tend to get "stuck in the middle." Consequently, they compete with below-average performance as they possess no competitive advantages and are at a disadvantage compared to the cost leader, differentiators, and focusers (Porter, 1980, 1985).

The sustainability of the comparative advantages generated from generic strategies is questionable in a dynamic market. As a cost leader, a firm is exposed to the risks of imitation by competitors, the emergency of new technology that may bring down the costs of competitors, the loss of differentiation proximity, and the lower cost in the market niche achieved by cost focusers. The risks of the differentiation strategy are imitation by competitors, the deterioration of product uniqueness from the perspective of the buyers, the loss of cost proximity, and differentiation focusers achieving even greater differentiation in segments. The potential threats facing focusers include the target segment becoming structurally unattractive because of structure erosion and the disappearance of demand, being overwhelmed by broadly targeted competitors in the segments, and the emergence of new sub-segments (Hoskisson, Hitt, Wan and Yiu, 1999).

Porter developed the Five Forces Model, which evaluates the attractiveness of an industry and facilitates competitor analysis. The five forces are the bargaining power of customers, bargaining power of suppliers, threat of new entrants, threat of substitute products/services, and rivalry among existing competitors. Wonglimpiyarat (2005) criticized Porter's competitive force model in four dimensions. First, the defensive position of the model tends to be "static" as it encourages innovators to rely solely on external forces and technology to form strategies to compete, thus limiting the potential efficient use of internal resources and undermining the technological advancement dynamic in the industry. Second, the model intends to answer current market demand with new innovation, which seems to overlook the potential group of customers in the unexploited market. Third, the model

presumes zero-sum competition and adversarial relations with competitors. It aims to capture early bird profit and deter rivals from entering into the market, such as the standard competition in the high-technology (high-tech) product market, thus eliminating possible collaborative benefits. Finally, the model was built on the existing technologies and products that a firm had, yet it neglects active and dynamic socioeconomic factors such as the internal capacities/resources of the firm, which are vital to bringing the competitive strategy to life. Sanchez and Heene (1997) also pointed out the polarization between the theoretical developments of the internal behavioral and organizational perspective and external competitive strategy perspective.

I/O economics was first recognized in the 1980s but only in research into traditional, one-sided, concentrated industry structures and strategic groups; hence, the competitive strategies derived from I/O economics may not be adaptable to the emerging virtual and two-sided market. Because of network externalities, the value to users on one side depends on the number of users on the other side, and platform providers need to build up large customer bases rapidly. Price allocation is crucial because the value chain involves not simply cost from the supplier and revenue from the buyers, as in the one-sided market.

5.2 Transaction Cost Economics (TCE)

Williamson (1983) posited that a transaction occurs when a good or service is transferred across a technologically separable interface, and that where one stage of processing or assembly activity terminates, the other begins. The basic principle of TCE is that people like to conduct business in the most economical way. Transaction costs may be lower if the transaction takes place in an open market in some circumstances, or if a manager coordinates the transaction (hierarchy) in another situation. Amit and Zott (2001) emphasized that transaction cost theory is concerned with explaining the choice of the most efficient governance form given a transaction that is embedded in a specific economic context. The critical dimensions of transactions that influence this choice are uncertainty, exchange frequency, and the specificity of assets enabling the exchange. Transaction costs include the costs of planning, adapting, executing, and monitoring task completion. Indeed, the central question addressed by TCE is why firms internalize transactions that might otherwise be conducted in markets. TCE holds that transaction efficiency can create competitive advantages by increasing efficiency; reducing costs, uncertainty, complexity, and information asymmetry; and paving the way for small-numbers bargaining conditions. Moreover, reputation, trust, and transactional experience can lower the cost of peculiar exchanges between firms.

Ulset (2002) noted that TCE deals with transaction hazards caused by interdependency and asymmetric information and the respective governance structures (firm, markets, hybrid contracting) that may serve to mitigate such hazards. TCE can be applied strategically to explore how different governance forms may assist in exploiting competitive advantages that can be derived from leading technology and best practices.

Rochet and Tirole (2003) concluded that economic value is created by “interactions” or “transactions”

between pairs of end users, that is, buyers and sellers. A transaction can occur only if the two sides have at least one platform in common and both sides are willing to trade. Hence, “transaction costs” refers to a broad range of frictions that make it costly for one side of the market to pass through a redistribution of charges to the other side. Often, these costs are associated with small stakes for individual transactions, which can become substantial when applied to a large number of transactions. Amit and Zott (2001) suggested that, in general, organizations that economize on transaction costs can be expected to extract more value from transactions.

However, there are limitations in using TCE as the source of competitive advantage. First, the emphasis of TCE on efficiency may divert attention from other fundamental sources of value (Amit and Zott, 2001). Also, TCE logic was developed based on a set of assumptions about human behavior and attributes of transactions that affect transactions between two firms: bounded rationality, opportunism, uncertainty, small numbers, and asset specificity, and on assumptions of human (managerial) behavior and attributes of transactions that affect modes of transaction (e.g., market versus hierarchy) and outcomes (Hoskisson, Hitt, Wan and Yiu, 1999). These assumptions may not apply in the dynamic marketplace of the twenty-first century.

Ulset (2002) stated that, from the point of view of TCE, to profit from a mobile virtual network operation (MVNO) the price margin defined by the difference between the final user price and network rental price must cover not only the added transaction costs but also the virtual market operator’s own production costs. Through the outsourcing of network elements and service applications, costly duplication can be avoided, existing infrastructure be more fully exploited, and network services be provided at the lowest possible unit cost (economies of scale). Virtual market operators may then gain extra profit if cheap transport and access services are combined with advanced functionality and value-added services, produced by the virtual operator’s own facilities and capabilities. High transaction costs may prevent virtual market operators from becoming profitable. To improve a company’s prospects, sources of transaction costs should be eliminated, and contractual and regulatory safeguards that prevent transaction costs from escalating and market power from being extended and abused should be enforced. Simple contracts should be replaced by more complex contracts with stronger safeguards, such as long-term contracts, joint ventures, or fully integrated corporations, depending on the level of contractual difficulty and the size of potential losses from separation to reduce such transaction costs. However, successful cases using the MVNO business model are rare in the real world.

5.3 Resource-Based View (RBV)

The RBV argues that the heterogeneous market positions of close competitors are based on each firm’s unique bundle of resources and capabilities (Barney, 1991). To create sustainable competitive advantages, the resources and capabilities of a firm must be valuable, rare, and isolated from imitation and substitution. However, value and inimitability are the focal points, because rareness is applicable only if a resource is valuable and cannot be imitated by competitors. The strategies to safeguard

resources and capabilities from imitation by competitors include property rights, learning and development costs, and causal ambiguity (Hoopes, Madse and Walker, 2003). Recently, theoretical development of the RBV captures firm-specific competitive advantages. Three approaches in effective resource management have been suggested which advocate the allocation of valuable resources to create competitive advantages. First, a firm can restructure its resource portfolio via the acquisition and development of useful resources and abandonment of redundant materials. Second, bundling allows a firm to stabilize and improve existing resources, enrich and add value to existing capabilities, and recombine existing and new resources to form new competitive advantages. The final process is leveraging the configuration, coordination, and creation capabilities of the firm to achieve new competitive advantages (Hitt, 2005). Another strength of the RBV is its ability to incorporate the temporal component, that is, the history of the firm, as an important antecedent into the existing resources and capabilities. The temporal factor can provide the linkage between how a firm's resources and capability are accumulated and eroded, and how the resources are affected by the market changes over time (Priem and Butler, 2001).

Although the RBV covers the internal capacities of a firm that I/O economics cannot and helps to explain the different performance among firms based on firm-specific resources and capabilities, there are defects in the theory. Hitt (2005) pointed out that the RBV seems to be a tautology that defines rather than hypothesizes, which makes disconfirming the RBV difficult and justifying its contributions in empirical induction questionable. In fact, the RBV suffers from ambiguous theoretical constructs imported from microeconomic theory. Similarly, Priem and Butler (2001) indicated that as the criteria for the internal resources attributes in the RBV remain in a "black box," the prescription regarding the competitive advantage is also unclear. As a result, only the axioms underlying the RBV, that resources are heterogeneous and not perfectly mobile, have been clearly identified. The implicit assumptions concerning the interrelationships among the concept definitions of RBV elements require additional development and reevaluation against the requirements of theory. Amit and Zott (2001) questioned the applicability of the RBV in the emerging virtual market. Whereas the traditional RBV emphasizes value inimitability and competitive advantage sustainability over time, the highly mobile information-based resources in e-business suggest easy value migration, and the sustainability of newly created value may be reduced. At the same time, preservation of value can be attained because time compression diseconomies impose an effective barrier to the imitation of firm-specific resources and capabilities. In a nutshell, the network economy induces alternative ownership and control of resources and capabilities via partnering or sharing agreements, and rivals can access substitute resources easily, all of which challenges the explanatory power of the traditional RBV.

5.4 Collaborative Approach

Whereas the I/O economics perspective (Porter, 1980) views firms as autonomous entities that strive for competitive advantages via external industry sources and the RBV holds that internal resources and capabilities create a competitive edge (Barney, 1991), the collaborative approach looks into the

potential of using strategic networks as a means to gain competitive advantages. These strategic networks are composed of inter-firm ties such as strategic alliances, joint ventures, and long-term partnerships, among others (Gulati, Nohria and Zaheer, 2000).

In contrast to Porter's competitive approach, Hamel and Prahalad's (1994) Managing Migration Paths Model advocates five strategies of collaborative effort to outperform competitors: creation and management of coalitions, learning and experimentation in the market, building global brand and distribution, setting standards and influencing regulation, and investing in core competencies. Rooted in the assumption that a single firm may not have sufficient capabilities to compete in all dimensions in the complex marketplace, especially new start-ups, the collaborative strategy emerged as a remedy to reduce the risk of competitive innovation via lower capital, delivering better value to users through extended networks, creating future markets and technologies, obtaining access to information, generating economies of scales and scope, sharing knowledge among the alliances, reaping benefits from interdependent activities, and shortening the times to markets (Wonglimpiyarat, 2005; Amit and Zott 2001). Gulati, Nohria, and Zaheer (2000) identified five key areas of strategy research in which there is potential for incorporating strategic networks that affect the returns of the firms: industry structure, positioning within an industry, inimitable firm resources and capabilities, contracting and coordination costs, and dynamic network constraints and benefits. Taking a strategic network as an element in the industry structure allows firms to increase their understanding of the network structures of an industry in terms of network structure, network membership, and tie modality. Through observing these three dimensions of the industrial network structure, a firm can better position itself because it can reap opportunities from: the pattern of relationships in which the industry is embedded; the composition of the network in terms of density, centrality, identity, status, resources, access, timing, and referral benefits; the size of the network and heterogeneity of ties, such as oligopolistic coordination; customer-supplier network control; a broader network of resources flow; the strengthened connection and collaborative nature of ties; entry barriers; convergence of industry borders, and so forth (Amit and Zott, 2001; Gulati, Nohria and Zaheer, 2000). The network strategy is also set in the intra-industry structure and forms groups of firms into alliances (strategic blocks/cliques) based on similarities in firm attributes. Membership secures the profitability of the strategic block, thus gaining competitive advantages for members against non-members in the industry. However, the intra-industry structure also creates a mobility barrier for firms trying to reach beyond strategic groups, thus the network is said to serve as both an opportunity and a constraint. From the perspective of the RBV, the network structure can be one of the inimitable value-generating resources that allow a firm to access key resources such as information, capital, and goods and services, thus maintaining or enhancing the competitive advantage of the firm as it can increase the firm's responsiveness to the market and enable the firm to act more quickly than its rivals. Nevertheless, membership in a network can also lock a firm into a static position and close the door on future relationships available to the firm, especially new entrants with relatively weak networks, and provide insufficient information. The network perspective is also useful in contracting and governance issues in a firm. Lower transaction and coordination cost

advantages can be obtained when a history of prior relationships and associated personnel are connected via the network compared to the traditional approach.

5.5 Blue Ocean Theory

Most of the traditional strategic theories address the enhancement of firm performance and profitability in a competitive market, but Kim and Mauborgne (2004) rejected the conventional strategies and took the opposite approach. They developed the Blue Ocean Strategy, which involves creating an uncontested market space and making the competitive irrelevant by capturing entirely new demand and breaking the value/cost trade-off. They indicated that to make the Blue Ocean Strategy work, a company's activities should involve both differentiation and low cost. Elements in the Red Ocean Strategy include keen competition in the existing market, beating out rivals, exploiting existing demands, making the value/cost trade-off, and choosing between the differentiation and low cost strategies. In contrast, the simultaneous pursuit of differentiation and low cost in the Blue Ocean Strategy enables a firm to offer value to buyers with an advantageous cost structure. In the Red Ocean Strategy, cost saving is attained when the firm reduces and eliminates competitive factors, whereas in the Blue Ocean Strategy, innovative offers can be distributed to buyers and inherited values be lifted. The new product is generally accepted by customers and, as sales volume increases and an economy of scale is achieved, the cost of goods sold is further lowered. The creation of a blue ocean usually reaps the long-duration market leader benefits as there are barriers to imitation. The blue ocean creator is assumed to immediately attract a large volume of customers and generate an economy of scale and cost advantage, thus putting later comers at a cost disadvantage. In addition, the network externalities in combination with the large customer base ensure a loyal clientele. Cognitive barriers also help to prevent imitators from entering the blue ocean. Once the creator has established a well-known brand in the new market, it attracts the majority of customers swiftly and they become loyal brand followers. Attempts to imitate a blue ocean creator will lead to a conflict with the imitator's existing image.

The limitation of the Blue Ocean Strategy is mainly the risky position of the first mover into an entirely new market. A blue ocean creator also faces the problem of over promising as it may fail to produce the previously committed product or service in the development stage, thus disappointing customers and damaging its reputation. Also, the initial strategy may not be applicable to deal with future needs in the unexplored market, and the creator may be caught in a dangerous position if an unexpected high cost of switching to a new policy or business model is incurred because of resources committed to the original plan. Worse still, any delay to get a substantial market share or a failure in the first launch of the innovative product in the new market may attract later comers to take advantage of the potential star market. Indirect competition may arise if competitors initiate another "blue ocean," targeting a similar customer base.

5.6 Delta Model

The Delta Model is a model for the articulation and implementation of effective corporate and business

strategies (Hax and Wilde II, 2001), and is based on the competitive advantage and value chain frameworks of Porter together with the resource-based view of the firm. These approaches are complemented with the new extended enterprise perspective, and the model offers total customer solutions. Customer bonding, according to Hax and Wilde II (2001), can be achieved through the development of relationships with customers. They also believe that customer solution strategies must be based on customer, not product, economics, and that customers must be given what they want for a business to prosper. The Delta Model contains three main strategies and four main elements. The first strategy is the creation of economic value, which is the central purpose of strategy. The objective is to achieve superior and sustainable financial performance, which can be measured in long-term profitability. The second tenet is the creation of a unique customer value proposition – attract, satisfy, and retain the customer – because customer bonding is the foundation of economic value creation. The third tenet is the creation of the "spirit of success," or the capacity to attract, satisfy, and retain talent. An important indicator of the strategic health of the company is the net flow of talent. The Delta Model makes four contributions: the triangle, adaptive processes, metrics, and experimentation and feedback. The triangle involves how the firm decides to attract and retain its customers. Three distinctive strategic options are system lock-in (SLI), best product, and total customer solution (TCS). The best product strategy is the classical form of competition, where the product itself attracts the customer, either by its low cost or differentiation. However, this strategy can lead to limitations and price wars. Typically, it depends on mass channels for distribution, but two issues then arise. First, this strategy might block the firm from its customers, and thus limits further development. Second, these mass channels are only good for mass customers, and do not serve the rich and poor extremes. The total customer solution is the complete opposite of the best product strategy. Instead of focusing on competitors and warring with them, this strategy involves seeking out customer needs and enhancing ways to serve and keep customers by satisfying these needs. Last, the system lock-in strategy involves the full corporate scope in order to lock products into the system and lock out the competition. This means that besides customers and suppliers, complementors play a role. The customer is still the major focus, but the overall system is also considered. The second contribution of the Delta Model is the adaptive processes. The customer's value has to be maximized, bonding with the individual customer has to be effected, and innovation is targeted at the joining of the product and customer. Note that the winning strategy need not only be competitive. Both aggregate and granular metrics are needed to give the overall view of the business and firm performance, respectively, and allow us to go in-depth. These should complement each other to improve and detect the sources of variability. The Delta Model can be used to reinterpret Porter's Five Forces Model, where we can use it to move from the best product position towards the TCS and SLI positions. To conclude, the Delta Model helps firms to generate barriers around their customers, learn from their competitors, develop and cultivate an integrated value chain, and include complementors in the business. This model can be implemented because of new business opportunities such as e-business/e-commerce and e-systems.

6. Strategies for the Converging Network Market

Conventional strategic management for high-tech products is not fully appropriate for a convergent market with network effects. In view of the market uncertainty, technological uncertainty, and huge upfront investment in network markets, new entrants face a great challenge in choosing the right technology and market for investment. However, extant players face the threat of envelopment, disruptive technology, and changes in regulatory policies. Both scenarios require accurate foresight in the industry in terms of market trends, customer preferences, and advancements in technology.

6.1 New Entrant Strategy

Sun (2006) posited that new entrants should not consider entering a multihoming market unless they have strong relationship resources and/or superior products that competitors will find difficult to imitate. As mentioned earlier, there is no strong preference and the multihoming cost is low in a multihoming market; thus, the winner-take-all scenario is unlikely to happen. New entrants can enter this kind of market with new technology and/or the creation of new value-added services for differentiation. Sometimes, the new technology or platform comes with a cost advantage within a window of time. Call-back service for international direct dialing (IDD) is an illustrative example. It is easier if the company already has a large customer base in its existing business. It can then extend the new services to existing customers, as in the case of entertainment content offered by mobile operators. In addition, ease of use, perceived usefulness, and compatibility through an open standard are critical factors (Davis, 1989). When a new entrant comes with a new service/product that requires changes in consumer behavior, it must be careful to position the service/product as a really new product (RNP) or an incrementally new product (INP). It has been found that consumers follow through less often on positive purchase intentions to buy RNPs than on intentions to buy INP and that the decrement grows over time (Alexander et al., 2008). This implies that pre-launch buzz is more successful for INPs as follow through increases over time. Therefore, it is recommended that a service/product be positioned as an incremental rather than a revolutionary improvement (Hoeffler et al., 2006).

Funk (2006) studied how Japanese mobile operators solved the start-up problem in the adoption of mobile Internet by first introducing entertainment content that was obtained via a micro-payment system and a custom phone that displayed the content in a consistent manner. Operators also provided push-based Internet mail that could easily be accessed via universal resource locators (URLs) by merely clicking on an icon on the screen. The format was modified to fit the small screen, slow speed, and low power of phones. Funk (2006) argued that Western service providers were slow to introduce micro-payment and entertainment content because their mental models focused on business users. They were unable to agree on content and other standards in the wireless application protocol (WAP) forum and subsequently were slow to obtain phones that displayed content in a consistent manner.

Lee and O'Connor (2003) proposed a framework for a new product launch strategy for network effect products. They suggested emphasizing intrinsic values, which include the features/attributes of the product itself as well as user experience, and the relative product advantage for interim performance in

terms of the size of the installed base and speed of development. Long-term performance in terms of market share, profitability, customer satisfaction, and loyalty depends on extrinsic values, which include penetration pricing, bundling, mass targeting, and pre-announcing. Most of the new entrants offered free terminals, low tariffs, or even free trial service to build up a mass user base. Value-added services with additional charges are then offered to improve the average revenue per user (APRU). I advocate the cherry-picking approach, which involves concentrating on a certain market segment or specific area to build up user preference, and then expanding the market after positive market feedback in the initial phase. It seems that it becomes a money game in a saturated market. Unless there is some breakthrough in technology to save costs in capital expenditures (CAPEX) and operating expenditures (OPEX), the most important thing is to hang around with a reasonably sized customer base and wait for a merger and acquisition (M&A) or initial public offering (IPO) at the right time.

6.2 Incumbent Strategy

The proposed industry structure in a network market is shown in Figure 1. For illustration purposes, I take the network provider to be a mobile operator. Side A members are subscribers, and Side B members are music producers. Apparently, the cross-side effect is positive whereas the same-side effect is not obvious unless there are too many subscribers causing traffic congestion, or there are too many music producers and the business is diluted. The mobile operator can charge the subscribers for downloading music or/and get a rebate from the music producers. The platform can be a customized portal with different terminals. The collaborative platforms can be handset manufacturers and independent retail outlets for distribution. Multiple services such as gaming or shopping are offered at the same time for different or overlapping market segments. The ultimate goal is to generate transactions through the network and create externalities. The company has to build up its core competences (resource-based view), assemble the necessary coalitions and alliances (collaborative approach), craft an appropriate marketing positioning strategy (Porter's five forces competitive strategy), maximize efficiency and productivity (transaction cost economics), and provide creative applications and service (Blue Ocean Strategy). This study employs the Delta Model (Hax and Wilde II, 2001) as the framework for discussion.

6.2.1 Best Product Solution

This solution echoes Porter's (1980) generic competitive strategy based on two basic types of competitive advantages: low cost or differentiation. It can also be categorized into two distinct revenue models (Yovanof and Hazapis, 2008) according to the ARPU: value in the community (lower ARPU for an increased customer base) and value in the subscribers (higher ARPU with fewer customers).

Supply side convergence (Pennings and Puranam, 2001) has been occurring in the ICT industry because different technological capabilities become similar and can satisfy the same set of needs. An example is the VoIP in broadband services to provide voice services over a data network at a minimal cost. Complementary convergence on the demand side is also occurring as different but related

consumer needs are met by bundling. News updates on a mobile phone enabling differentiation is an illustrative example. Bundling can create competitive advantages through economies of complementary products, differentiation, enhanced opportunity for price discrimination, increased entry barriers, and mitigated rivalry (Porter, 1985). This strategy is adopted by service providers and terminal manufacturers.

Bundling conduit with content as the source of differentiation (Katz, 1996) is a common strategy in mobile and pay TV services. Although there are few, or no, technological linkages between the two and most of the content may not be produced directly by the service provider, this strategy follows the principle "content is king." The pay TV provider is willing to pay a substantial amount for exclusive broadcasting rights to secure its audience.

The RBV posits (Barney, 1991) that only those with the best capabilities for the new environment can succeed, and some companies reconfigure their capabilities through mergers and acquisitions (M&As) to reduce transaction costs or differentiate products The first wave of M&As started in the 1980s. For example, IBM acquired the PBX maker ROLM and sold it to Siemens after five years of heavy losses, AT&T bought the computer maker NCR in 1991 and sold it in 1995, and Matsushita brought MCA and Universal Pictures in 1990 and sold them in 1995 after heavy losses. Clearly, these M&As were failures (Lind, 2004). Local M&As in recent years have been mentioned. Examples of successful M&As include the acquisition by Nokia of Intellisync in 2005 to provide mobile e-mail service and of NAVTEQ in 2007 to enhance phone navigation functions.

6.2.2 Total Customer Solution

The total customer solution involves a deeper understanding of customers in the hope of providing flexible and logical products and services to help create new economic values (Hax and Wilde II, 2001). It requires implementing different customer strategies to help serve customers, and innovation is targeted at how to further develop convenience in unique products. The emphasis is on key suppliers and customers rather than competitors. Customers are what help guide this strategy, where winning does not mean having to compete with rivals. The degree of customer bonding is very high, as specialization and mutual learning reinforce this bond.

However, most businesses have not yet carried out this new strategy to its fullest. Hung (2000) suggested that to implement this new strategy, present customer services should be maintained, but by cooperating with other major businesses and departments, this strategy can be slowly integrated into the business model. This can help reduce unnecessary changes in the old system, and make it much easier to see responses and obstacles along the way.

I-centric communication was initiated in September 2001, developed by the Wireless Work Research Forum (WWRF) Working Group 2 (WG2) to make the individual customer the center of attention (Arbanowski et al., 2004). This technology has introduced the idea of individual communication spaces, where an individual interacts with other individuals by sharing from his or her own space. The developers believe that I-centric services support three features: ambient awareness, personalization,

and adaptability. The goal of ambient awareness is to collect and use data about services, or in other words, detect different environments and apply them to suit different customers. Personalization is the factor that has made mobile and Internet services a success. The context of the user must be considered, such as the user's preferences, behavior, and so forth. Personalization allows users to experience on their own, but also be influenced by, the existence of options. Its main goal is to allow users a much easier and more enjoyable experience. Last, adaptability is what happens if circumstances change. This means flexible services for individual customers, where user preferences, device capabilities, and application requirements are met.

Unilever de Mexico is one example of a company that has implemented the total customer solution strategy (Hax and Wilde II, 2001). Its strategy was to target the richest and most important customers, that is, five-star hotels, in Mexican resorts, and produce customized services and products, then expand these by other complementors (i.e., Kimberly Clark) and have them distributed. Whereas the best product strategy might limit the development of bonding with customers, Unilever has concentrated on developing a direct link to extreme-line customers (the very rich or the very poor), which might be neglected in other strategies. Information technology or the availability of new technologies makes this strategy flexible and attractive.

6.2.3 System Lock-In or Enhancing the Business Ecosystem

Fixed and mobile services convergence reconfigures the value chain, which refers to the sequential flow in value creation. As a result, some new players such as content providers, application providers, and middleware providers have become enablers as newly inserted components in this chain (Yang et al., 2004). In view of the convergence across the whole ICT industry and because value creation is not unidirectional, the term "business ecosystem" is appropriate. A business ecosystem is defined as an economic community supported by a foundation of interacting organizations and individuals (Moore, 1996), and includes customers, lead producers, competitors, and other stakeholders. This concept is consistent with Yoffie's (1997) suggestion that creative combinations, horizontal solutions, externalities and standards, and scale and bundling are required in convergent industries. Success is more likely to emerge from creative combinations that are built on complementary technologies than from huge infrastructure investment. Horizontal solutions have proven to be a successful strategy for companies such as Microsoft, in software, and Intel, in hardware. Externalities and creating standards are required in digital convergence as no single firm or group of firms can capture all of the value embodied in a network. Scale economies and complementary technology bundling are the common strategies to overcome start-up problems.

The leading companies in a business ecosystem are called the "keystone species." Moore (1996) also suggested that the term "industry" should be replaced with the term "business ecosystem" because customers cannot divide economic activities under specific industries, which include a variety of complementary offers. This is particular true in a converging market. Iansiti and Levin (2004) posited that the critical success factors of a business ecosystem are productivity, robustness, and the ability to

create niches and opportunities for new firms, and that the keystone companies serve as the enablers of the whole system. These are also the characteristics of platform providers. Lyer and Davenport (2008) used Google as an illustrative example of a keystone company. Google can control the evolution of its ecosystem because it has perfect, continuous awareness of, and access to, byproduct information on every transaction through its platform. Google has created a proprietary infrastructure to ensure a better user experience in searching for information, enable content providers to create information, provide an open source community for independent software developers, and deliver relevant content to identify users for advertisers. Similarly, Amazon allows third parties to bundle its capabilities into their branded services. A network provider should foster the ecosystem by providing proper incentives to attract more business participants and distributors (Sun, 2006). Alternatively, a platform provider can be a participant to overcome the chicken-and-egg problem. For example, Nintendo developed some games itself in addition to using third-party developers. Similarly, a pay TV provider may produce some programs in addition to purchasing others, and can also be distributor. Microsoft developed the "Office" package for its own Windows OS and distributed the package. It is more common for a manufacturer to distribute products through its own special store to get direct feedback from customers and build the brand. Mobile phone manufacturers tend to bundle some of their applications, which are either developed in-house or by third-party developers. These applications are not compatible with other platforms except through licensing agreements or unilateral adoption interfaces. Nokia licenses a certain Blackberry model and has developed software to enable Windows "Office" to be read on its phone. However, there must be some balance so as not to discourage other business participants and distributors.

Although consumers prefer compatibility, especially in the presence of positive consumption externalities, firm incentives to produce compatible products depend on a firm's relative size and how compatibility can be enforced (Matutes and Regibeau, 1988). If one firm has a superior product offering, larger user base, good reputation, and the confidence that it will be a winner in a system competition, then it may not prefer compatibility. Product differentiation also discourages compatibility because it can attract consumers in establishing an installed base (Katz and Shapiro, 1994). New entrants face installed base and reputation disadvantages under incompatibility unless they have a superior technology or feature. This explains why dominant platforms such as Symbian OS and Windows Mobile are not compatible with each other. Apple's iPhone has it own OS, and most of the other new entrants have joined either one or both of the dominant platforms. Hybrid strategies that attempt to combine the advantages of open source software while retaining control and differentiation are widely adopted in the industry. One example is the openness of mobile phone OSs, as shown in Figure 2.

7. Multiple Case Studies

The strategies adopted by the major players in Hong Kong are summarized in the following table using the framework of the Delta Model.

Company	Best Product	Total Customer Solution	System Lock-In
China Mobile Peoples Telephone Company Limited	Low cost	Providing value-added services through data communication. First to start the EDGE service, or EGPRS network	Leverage of the infrastructure of China mobile to provide "1-card multinumber service" and competitive roaming charges in China. Chance of cooperation with other carrier services.
PCCW Limited	Differentiation	Satisfying customer needs through different and new technologies by continuous infrastructure investment	Now a multimedia company providing integrated and interactive solutions including fixed, mobile, broadband, and content services.
HK CSL Limited	Differentiation through a distinctive market segmentation strategy	Satisfying customer needs through mobile communications. Extensive studies in user habit and behavior. Three brands to cover different market segments	Working with partners to achieve time to market such as first MMS, EDGE, 3G video sharing, 3G mobile TV, and Xanga mobile. Mobile coverage services to more than 260 destinations globally.
Nokia (HK) Limited	Low cost and differentiation to cover all market segments	Established OVI as a platform for personal portal platform. (N-Gage gaming, music store, and map navigation). Cooperation with HKC to provide classes to expand user experience	Declaration of an Internet provider: support Symbian platform for open source; encourage third parties for music and N-gage development; increase resource capability through acquisition; continue expansion in different areas.
i-Cable Communications Limited	Low cost and differentiation to address the mass market	Multimedia broadcasting to provide an interactive platform to attract customers. The technology to satisfy customer needs	Exclusive broadcasting rights of some prominent sports events in the coming years to lock in customers. Increasing distribution channels by using broadcast landing rights in China. Continuing to expand paper and electronic publications as complementary services.
Citic 1616 Holdings Limited	Low cost for voice services and premium for value-added services	Providing a one-stop platform (hub) for connections between overseas operators and China operators	Creating externalities between international operators and China operators. The huge traffic volume attains an economy of scale for both sides. Hoping for more cooperation with China's productions and more competitors into the market to stimulate new ideas.
Television Broadcasts Limited	Differentiation. 24-hour high-definition television channels	High-definition TV for their most popular channels. Ongoing variety to serve the wide range of customer taste. ~~Coming up with ideas on how to make and package information~~	~~Must buy high-definition box with expansion and only broadcasted in certain regions.~~ Now TV ~~may also be used~~as one of the distribution partners ~~to see~~for their high-definition channels. Satellite broadcasting to other countries. Chinese channels dubbed into other languages and distributed to other countries worldwide. ~~Program licensing, video distribution, satellite broadcasting, etc.~~
Asia Television Limited	Low cost and variety packages, 24-hour home channel	Variety in shows to serve customers, such as 22-hour world channel. Now broadband TV to access ATV news anytime	Normal definition channels allow higher frequency, which leads to more channels for customers; compressed frequency technology will be an investment in the long run. Distribution to broadcasters in Europe, America, Australia, and other countries around the world.

SmarTone Telecommunications Holdings Limited	Convenience and easy access; different built-in services. Updated network navigation. World's only PC and mobile subscription model music service (MusicXS)	Differentiated propositions for their targeted customer segments. Have also concentrated on building a strong network for many years. Own news source that receives fastest news for their own content. LTE. Concentrating more on personal than shared media	From wireless provider to a total service provider. Merging of Smartone and Vodaphone lets they expand their capability in different areas. Investments in new products and continuation of subsidiary undertakings, joint ventures, undertakings, and investment globally. Cooperation with other partner networks around the world in the development and marketing of global services under dual brand logos. Agreements with Microsoft, Yahoo!, Youtube, Google, ebay, Myspace, etc. Socioeconomic impact (SIM) research project to analyze the impact of mobile usage in different areas such as Africa, and in healthcare, etc.
Sony Ericsson Mobile Communications International AB	Specialization in products, which include necessary basic functions as well mobiles	Crossover with Sony Walkman for music lovers, Cybershot series, Experia, etc., and specializing in these functions. Expanding their market to different age groups, e.g., Web communication or mapping service for the working class	On the lookout for new innovations, own Play Now portal, content is mostly international based, hoping to expand and cooperate with other international companies. Continuation of product, design and development research globally.
City Telecom (HK) Limited	International and fixed network services. World's fastest broadband residential and broadband services	Higher price compared to other rivals but higher coverage and more customer service (service quality differentiation)	International telecommunication service. Encouraging young people to join the industry, regulation for competition. Investing in metro ethernet IP network, expansion in coverage, long-term investments, such as in US-Japan cable.
China Telecom (HK) International Limited	Owns the world's largest fixed line network	Providing diverse telecom services: "Total China Services"	Expanding internationally in the Asia-Pacific region; ensures worldwide accessibility to its services. Different overseas companies cooperating.
Hutchison Telecommunications (Hong Kong) Limited	Internet access services, data services, voice services, and international connectivities	Introducing advances in present technology so that customers can press fewer buttons to do the things they want to do. Owns and operates an extensive fiber-optic telecommunications network. Cooperation with Apple on the I-phone	An open platform for War Garden. Specializing in roam light home. First fixed network provider in Hong Kong to direct telecommunications links with mainland China; is racing ahead as a regional telecommunications carrier with the rapid extension of an international network. Continuation of expansion in the fiber-optic network. Expansion of coverage worldwide. Bilateral partnerships with international carriers. First to launch the 3G iPhone with contract to lock in customers.

8. Conclusion

Dynamic strategies are required in today's dynamic business world. By the time this article is published, the strategies adopted by the interviewed companies may have changed. This article serves as a framework for exploring the best strategies to deal with the converging telecommunication market. After all, it is a matter of execution or action. As Buddha said, "If you want to know your past, look into your present condition; if you want to know your future, look at your present actions." People call

this karma, which means “action” and is both the power latent within action and the results our actions bring. Application of this cause and effect concept will help corporations to anticipate future scenarios.

Table 1: Summary of previous research on competitive advantages of strategic management

	Porter's Five Forces Competitive Strategy	Transaction Cost Economics (TCE)	Resource-Based View
Theory	1. Bargaining power of supplier 2. Bargaining power of customers 3. Threat of new entrants 4. Threat of substitute products or services 5. Rivalry among existing competitors	1. Explains the choice of the most efficient governance form in a transaction 2. Suggests that transaction cost can be reduced by complex contracts with stronger safeguards 3. Concludes that firms which effectively keep transaction cost measured achieve higher profitability	1. Resources are heterogeneous and not perfectly mobile 2. To create sustainable competitive advantages, the resources and capabilities of the firm must be valuable, rare, and isolated from imitation and substitution
Advantages	1. Positions, differentiates, and defends a firm from competitors 2. Provides the guidelines for the firm to recognize and determine its appropriate competitive advantages	1. Deals with transaction hazards caused by interdependency and asymmetric information and the respective governance structures (firm, markets, hybrid contracting) 2. Explores how different governance forms may assist in exploiting competitive advantage that can be derived from leading technology and best practices	1. Restructures, bundles, and leverages internal mobility, coordination, and configuration creation capabilities to achieve new competitive advantages 2. Incorporates the temporal component
Limitations	1. Suggests the firm rely solely on outside forces and understates the importance of technology change in competition 2. Addresses only current demands and overlooks potential demands in unexploited markets 3. Pursues adversarial relations with competitors, rejecting potential gains through collaboration 4. Suggests strategies based on current products, which make it difficult for the firm to compete in a new and changing socioeconomic environment	1. Emphasis of transaction cost economics on efficiency may divert attention from other fundamental sources of value 2. Developed based on a set of assumptions about human behavior and attributes of transactions which may not be applicable in the current dynamic market, especially in virtual markets, which require more complex and less standardized interfaces that will increase transaction costs 3. Fails to incorporate effective internal resource management as one source of competitive advantage	1. A tautology that defines rather than hypothesizes, making it difficult to justify its contributions in empirical induction 2. The criteria for the internal resource attributes in RBV remain in a "black box" 3. Applicability of the RBV in the emerging virtual market is doubtful 4. If firms are coherent and avoid diversification outside their own core competence area, then they will lose their competitiveness in a convergent market in which boundaries between different markets are burred

	Collaborative Approach	Blue Ocean Strategy	Delta Model
Theory	1. Creating and managing coalitions 2. Learning and experimentation in the market 3. Building global brand and distribution 4. Setting standards and influencing regulation 5. Investing in core competencies	1. Creating an uncontested market space 2. Making the competition irrelevant 3. Creating and capturing new demand 4. Breaking the value/cost trade-off 5. Aligning the whole system of a company's activities in pursuit of differentiation and low cost	1. The best product does not always win 2. Execution is not the problem; but the linking of strategies 3. Managing by averages leads to below-average performance 4. Plans are not made to be followed
Advantages	1. Incorporates strategic networks as a means to gain competitive advantages 2. Captures the opportunity share in the future market and creates future demand 3. Brings in profit through integrated skills and capabilities 4. Applies to the launching of new innovations and entry into new markets	1. Provides innovative offers to cater to the need in the new market and the first mover with the advantage 2. Deters the market entry of competitors 3. Reduces the cost of competition 4. Achieves an economy of scale rapidly	1. Customer targeting aims at developing individual customer bonding by increasing marketing intelligence and customer interface 2. Addresses the issues of experimentation and feedback 3. Low cost and differentiation may attract some customers 4. Offers adaptive alternatives that adjust to different challenges that may appear along the way 5. Provides a rich overall framework that integrates a firm's options and activities without running the risk of oversimplifying the context in which it makes decisions
Limitations	1. Locks a firm into a static position and closes the door on future relationships available to the firm 2. Fails to give a full explanation of the competitive advantages gained in the virtual market	1. Involves risk of early commitment but not realized 2. The initial strategy may fail to deal with future dynamic market situations 3. High cost of changing the strategy because of resources committed to the original plan 4. Indirect competition may arise if competitors initiate another "blue ocean" targeting a similar customer base 5. First mover advantage may be exploited by later comers if the initial launch is unsuccessful	1. Responses and obstacles along the way may be hard to see; thus, it is suggested that current customer services be maintained to enable customers to adapt. Then, the total solution strategy can slowly be integrated 2. The evolution of new technology may shift the model's strategies 3. Best product strategy may block the firm from the customer, thus limiting its understanding of the need for further development 4. Adoption of the product to increase its value to customers without creating extra monopolistic behavior must be done in order for system lock-in to work

Figure 1: Elements of the Industry Structure in a Network Market.

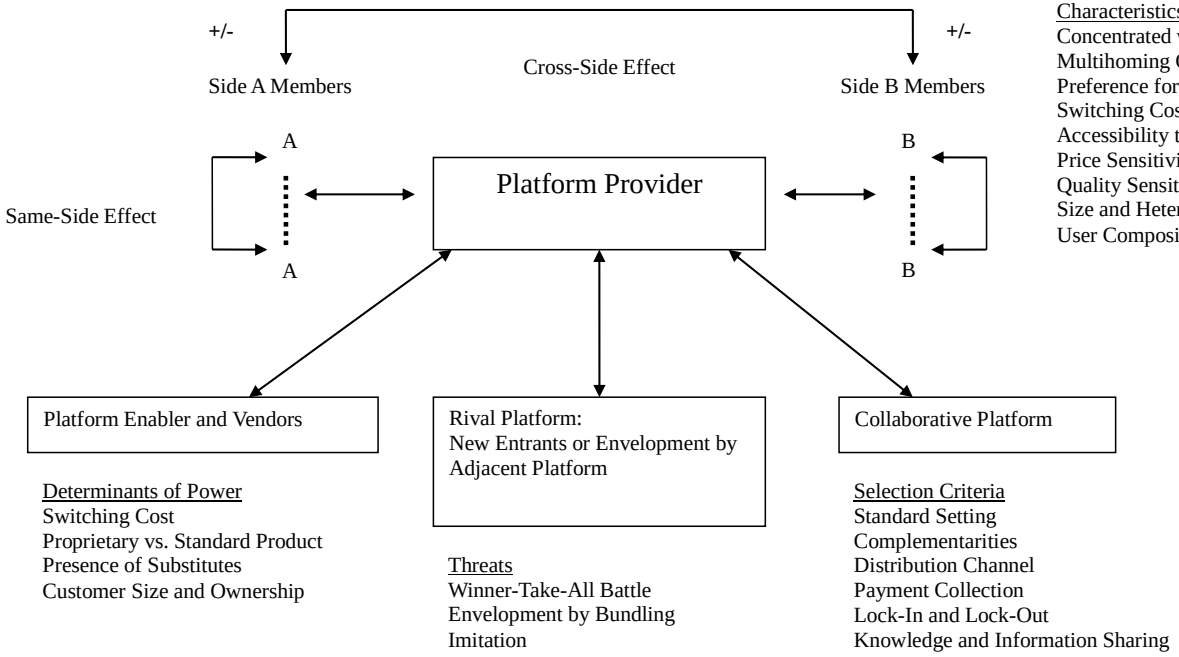

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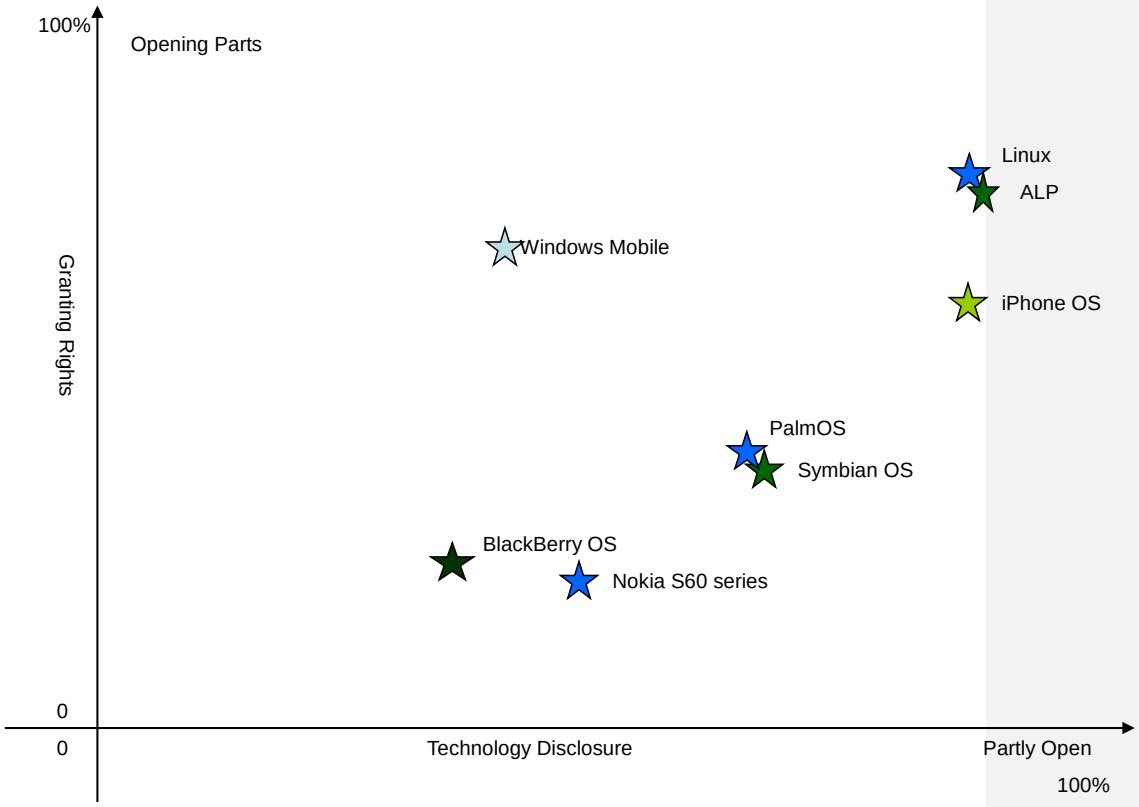
Fig 2: Openness of Mobile Phone OSs.



Open sources waive the ability of the vendor to appropriate the return from that technology. So far, two hybrid strategies have been employed (West, 2003).

1. Opening parts. Waiving control of the commodity layer but retaining full control of others.
2. Partly open. Disclosing technology that provides value to customers but difficult to be directly employed by competitors.

Note:

1. ALP is the Access Linux Platform. Access acquired Palm Source in 2005 and in the same year, Palm Source announced the move to Linux as the core OS. The ALP was announced in 2006, and includes the Palm OS compatibility layer that allows the traditional Palm application to be run on the new OS.
2. Linux and ALP have the highest technology disclosure and highest rights granted. The whole Linux Kernel is under general public license (GPL) and the source code is available. (Note: manufacturers should make the customized source code available to the public under GPL, but usually they do so only years later, to avoid competition.)

3. The Palm OS and Symbian are more or less the same in terms of openness. The source code of the OS is not publicly available but both OSs provide many development kits and documentation on how to interface with the OS, and allow applications called in-depth application programming interfaces (APIs).
4. Blackberry and Nokia S60 both allow the Java application to be run, but provide little information about the OS structure or an in-depth API. Both OSs provide only the Java interface layer.
5. Windows Mobile provides little information about the OS structure. However, it provides many application development details such as an API and technical "message" details (inter-task communication). Microsoft is moving to grant licenses to developers/end-users to use their own propriety technology such as MPEG4 and WMA coding.
6. The Linux OS on mobile phones has gained momentum in the last two years.
7. The iPhone OS is based on Mac OS X, and the OS core is a branch of the BSD implementation of Unix, which is free and open source (Apple calls this core "Darwin"). In addition, Apple has built different layers for the iPhone, such as the multitouch user interface called "Cocoa."
8. Apple's official software development kit (SDK) was available in March 2008 for free downloading (Beta version). It provides a very rich API for application development with detailed documents. Official developers have to register with Apple with a small registration fee (US$99). Therefore, the technology disclosure aspect remains very high. However, if the developer wants to distribute the application to others, then the application needs to be sent to Apple for approval and digital signing. Then, Apple returns it to the developer. Hence, there is a restriction on developers regarding the release of the application if it is developed using the official SDK. In this sense, the granting of rights to the developer is being restricted.