

Knowledge networks and organizational network legitimacy: Lessons from China's Emerging TD-SCDMA Mobility Technology

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Abstract:

Emerging technologies are developed in knowledge networks. But as the complexity of these technologies increases, the need to formulate appropriate organizational network legitimacy strategies becomes a strategic issue. Through market, relational, investment and social legitimacy, subsidiaries of multinationals have been known to capture the knowledge circulating through the network webs of relationships. In China's emerging and politically sensitive 3G TD-SCDMA mobility technology, this paper examines how Nokia China remains a key player through these legitimacies. The results suggest that organizational network legitimacy increases the firm's opportunity to participate in this technology because legitimacy facilitates knowledge collection and local interpretation which is valuable in an unpredictable institutional environment.

Key words: Knowledge networks; Mobility technology; China

Introduction:

There are now currently two world competing standards in 3G (Third-Generation) mobility technologies – the US CDMA2000 system backed by Qualcomm Inc, and Europe WCDMA backed by Ericsson and Nokia. In China, there is also the home-grown TD-SCDMA technology backed by the government. While it is generally acknowledged the state has promised equal status to all three standards competing for a share of the burgeoning Chinese mobility market, China's TD-SCDMA technology is the preferred standard. Its preference represents a crucial phase in the development of China's next generation of wireless mobility technology.

Accordingly, the state has, and remains the primary driving force of technological reforms. In a politically sensitive and protective telecommunications sector, the state represents a key institutional sphere that affects the operations of state-owned and-linked carriers, equipment manufacturers and software developers. Through its powerful administrative and regulatory institutions, the Ministry of Information and Innovation [MII], its administrative bureaucracy reflects the way it manages and retains institutional economic power through administrative power. Bureaucracy is, in many ways, a special monopoly combining state power with market strength in the nation's economic transition (Yang, 2005).

For a long time, firms and government were therefore welded together into a closed system of networked relationships, through technological, political, social, and economic ties of state ownerships and reciprocal benefits. These ties take into account the need to control and manage economic performance and nationalist zeal. Crucially, these imperatives drives the formulation of industrial policy that affects firm's performance - directly through allocation of tangible network resources such as finances, licenses, and grants, and indirectly through valuable knowledge and insights about industry restructuring and new business opportunities.

A multitude of stakeholders, often with conflicting interests thus directly or indirectly influence the development of TD-SDCMA mobility technology, in particular the timing of its availability. More important, they play a key role in generating, holding, and circulating relevant knowledge through the closed system web of relationships. Since one of the requirements of managing emerging technologies is the ability to analyse and synthesize new knowledge with the existing knowledge base of the firm, successful firms must somehow capture the knowledge circulating through these webs and use it to their advantage (Rosenkopf, 2000).

Amidst the backdrop of established competing technologies, powerful embedded administrative institutions, and the nation's transition from a command to a market economy, the key questions for strategists of subsidiaries of multinationals (SOMs) are: what are the critical knowledge networks that influence the timing of the availability of TD-SCDMA mobility technology? Who are the dominant stakeholders in these networks? Which networks should SOMs participate in, and significantly, how? These issues must be addressed despite the complexity and unpredictable character of TD-SCDMA on existing CDMA 2000 and WCDMA mobility technologies.

Fundamentally, China's TD-SCMDA mobility technology is intimately tied to a complex set of economic, political, and technological considerations. The structure of knowledge networks that deals with these

considerations strongly influence the timing and availability of these technologies. Exploring and capturing knowledge flows in inter-organizational networks help and enable strategists to understand these considerations, think systematically about targeting useful sources of knowledge, and formulate and implement relevant inter-partner legitimacy initiatives for obtaining this knowledge. Through its network of personal and organizational ties, SOMs then form social, political, technological and business networks to deal with this complex network environment.

At a philosophical level, and motivated by concepts from institutional and network theory, this paper attempts to examine and explain the currently observed behaviours of one such subsidiary in securing on-going participation in critical knowledge networks via its organizational network legitimacy (ONL). ONL is garnered when firms successfully market their competencies to key network stakeholders, by conforming to regulative processes, institutional norms and cognitive meanings within the network environment. As a result, firms develop their network position, described as their strategic identity and/or role. This identity and/or role places the firm at the centrality of the network, provides access to, and participation in, knowledge flow amidst the inter-organizational web of relationships.

The paper's main contention is that in a politically sensitive and protective telecommunication sector with its interwoven network web of administrative and political relationships, a firm's ONL is best served through the firm having multiple network positions in numerous knowledge networks. While a firm's ONL first and foremost stems from the development and commercialization of innovative technological solutions i.e. its market legitimacy, the firm is also required to search for and develop its social, relational and investment legitimacy.

The legitimation of ONL is however made and determined by the network stakeholders to which SOMs must be responsive, and on whom it is dependent for survival. Compliance is usually achieved through commonly used strategies and practices that often emerge from the interactions of firms and other stakeholders within the network (Edelman, 1992). This process of 'collective making of meaning', shaped by the 'politics of propriety, trust, and awareness' (Nielsen and Rao, 1987, p. 523) determine the survivability and profitability of these firms and the network. And while disagreements between firms are not unexpected, a properly functioning internal network dynamics that revolves around knowledge generation, exchange, learning and unlearning, is crucial in order to maintain inter-firm network legitimacy.

The paper contributes to the existing knowledge on knowledge networks in three important ways. First, it introduces the concept and importance of organizational network legitimacy (ONL) in the firm's legitimation in identifiable knowledge networks. Second, it examines the process of ONL by proposing a theoretical model. The model is based on the interaction among: (1) organizational network legitimacy, (2) market, relational, investment and social legitimacy (Dacin et al, 2007), and (3) knowledge networks. This model is depicted in figure 1. Third, and through an inductive interpretative case analysis of Nokia China, the manuscript provides some measures of support of these concepts and the model's proposed interactions. The analysis concludes with some managerial concerns.

This paper is structured as follows. The first section provides a detailed but important, contextual description of China's state power, industry and network structure. This sets the stage in the analysis of knowledge networks from an institutional theory and organizational network legitimacy perspective (ONL). We next examine the compositional diversity of organizational network legitimacy in terms of market, relational, investment, and social legitimacy. This is followed by a brief description of research methodology. Finally, an inductive interpretative case analysis of Nokia China is then presented and the paper concludes with some final observations on the practical implications.

The pursuit of knowledge: A Chinese institutional context

As China progresses, reforms have not been without institutional cost. While authority is fully retained, institutional cost is zero. However, politics with zero institutional costs do not exist outside of theory (Yang, 2005). While the State's struggle to impose its authority through coercive commands, crucially and despite the rhetoric of a hands-off approach, the reality is that there is more, not less government interference and increased control on these enterprises. These explain why the state has, and remains, the primary driving

force of telecommunications reforms. The state represents a key institutional sphere affecting the operations of state-owned and - linked carriers, equipment manufacturers and software developers.

While there have been recent institutional variations and changes in administrative structures in the telecommunications sector (see for instance work by Low, Johnston and Wang, 2007; Liang et al, 2004; Zhang, 2001), reforms are incremental and ambiguous. Old and established administrative institutions and power remain fundamentally unchanged. The structures of the telecommunications sector connecting the webs of interdependent stakeholders' relationships are still influenced primarily by state power. While the state is transforming these structures, the emphasis is in safeguarding their interests. Change is therefore evolutionary. That has, and will likely remain the nature of telecommunications reforms.

For SOMs operating in China for an extended period of time, some would have captured and internalized the knowledge on the nation's institutional transformations and its interface with telecommunication reforms in a transitional economy. But there is also a priority on seeking new knowledge on shifting reforms, and somehow uses it to their advantage. This involves the need to formulate inter-partner initiatives and working with other stakeholders especially since knowledge is often tacit and learning-by-doing becomes essential (Palberg, 2001, pp. 171). Knowledge has thus emerged as "the most strategically-significant resource of the firm" and integration of knowledge is a firm's most important task (Grant, 1996, p. 375). In this way, SOMs can then quickly respond and react to, and hopefully participate in the formulation of these institutional reforms. We next attempt to examine how?

Knowledge networks, organizational network legitimacy, and network positions

To manage knowledge networks, one first has to identify it. In China's mobility technology market, networks can be identified via inter-partner mechanisms such as alliances, marketing agreements and training programs between firms. Knowledge transfer between firms is then identifiable. Using mobility technology as a starting point, sub-networks could be further identified on the basis of similar inter-partner mechanisms. One could then track the evolution of the knowledge sharing and transfer between firms in these sub-networks, say from CDMA and WCDMA technology to TD-SCDMA technology. The web of interconnected and interdependent relationships between these firms could then be established. This analysis forms the basis from which SOMs formulates and drives its organizational legitimacy agenda – one that would eventually facilitate access to, and the capture, exchange, and interpretation of knowledge flow.

Underpinning a firm's legitimacy agenda is the desire to achieve a generalized perception or assumption that their actions are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs and definitions' (Suchman, 1995, 574). From a network perspective, a firm's legitimacy is linked together by their performance of industrial activities (e.g. marketing, exporting, production, logistic), employing or consuming various types of resources (e.g. R&D, financial, brand equity, knowledge) to produce other resources. Over time and over many interactions, the assumption is that a structured network of inter-firm legitimacies is formed. Accordingly, the determination of a firm's organizational network legitimacy is made by the stakeholders within and between networks, to which the firm must be responsive, and on whom it is dependent for survival.

In China's telecommunication sector, prominent stakeholders typically includes the state, carriers and/or operators, equipment manufacturers, software developers, financial institutions, universities and research institutions etc. Against this background, it is worth noting that knowledge networks with a longer history generally has many more stakeholders participating with a higher stake and diffusion, as is the case with China's traditional CDMA and WCDMA community compared with the more recent TD-SCDMA community. Furthermore, while some stakeholders may operate in one network, others may operate in multiple, often overlapping networks, as they attempt to move with emerging technology and integrate them into its own strategy. Firms therefore initiate, develop and maintain relationships with other firms in the network to establish their ONL. The firm's ONL in turn facilitate access to other firm's resources that are needed in the production and transformation of industrial goods and services.

In these ways, knowledge has emerged as "the most strategically-significant resource of the firm" and integration of knowledge is a firm's most important task (Grant, 1996, p. 375). Crucially, ONL in fact

legitimizes the firm's access to other firm's knowledge and their interpretation of this knowledge. The firm could also influence, and facilitate the ability to transfer knowledge between firms as a result of inter-firms' network co-operation. Firms in the network collectively learn and unlearn, from knowledge they have generated, captured and interpreted. These often take place within various parts of the network and are often developed with direct and indirect network counterparts through the location of the firm, in terms of its network position.

Network position refers to the role a firm plays in a network and how it is linked directly and indirectly to other firms in the network. The role it plays is derived from the direct and indirect relations between firms in the network that are a consequence of their earlier activities in the network - through norms, rules and regulations, series of routine transactions, specific investments and socialization of actions - that accompanies many of the relationships. This implies that over time, a firm's network position captures the firm's network legitimacy through the roles the firm plays in the network. Without legitimacy, a firm has no roles to play, and hence no network position.

With the image of the knowledge networks and the network positions of firms in mind, SOMs could then plot the networks they ought to be located. This, in turn, makes it easier for them to prepare and adjust their ONL strategy as it impacts on its survival. Otherwise, they risk accessing only redundant information especially when stakeholders in the network are prepared only for sustaining, not new and emerging technologies. These stakeholders would, therefore, make decisions according to their value based only on knowledge within this knowledge network set (Christensen and Overdorf, 2006). They are therefore isolated in terms of critical knowledge flow that may require quick adaptation at turning emerging technological challenges into achievements.

To be a part of these crucial, emerging knowledge networks, SOMs needs to invest in network positions with a view to reinforcing existing and/or creating new legitimacies. In a politically complex Chinese telecommunications sector with ambiguous and conflicting policies announcement over the years, any investments in network positions need to be continuously monitored and reviewed. This is because existing networks be disrupted as a result of political interference. New networks with new opportunities might also be created. To ensure the firm's continuous network legitimacy and role in these new networks, new information, knowledge, and interpretation are therefore required to successfully reconfigure and renew the firm's resources and activities. As a result, the firm may initiate and develop new ONL initiatives via new inter-partner mechanisms.

From the preceding analysis, it is apparent that the firm's effectiveness in dealing with conflicting and ambiguous policies announcements depends on its network position and its positioning actions with significant network counterparts via its legitimacies initiatives. An integral part of these initiatives is concerned with trying to understand how a firm relates to other firms in the network, the roles they play in the network, and the roles others expect the firm to play. Legitimacies initiatives are thus about how a firm accesses network knowledge, other firm's knowledge, and their interpretations. It influences a firm's actual and ideal network position as a result of having to potentially deal with network changes brought on by ambiguous policies. As a result, firms not only develop strong ties (Krackhart, 1992) that are essential in developing network positions, but also the need to balance these with weak ties (Granovetter, 1982). If we take this view, then legitimacy initiatives becomes an issue of identifying the specific targets or constituents to which a firm must appear legitimate, through carefully crafted inter-partner mechanisms. This assessment cannot be made without an understanding of both the organizational network compositional diversity and the various network constituents. The answers are found in the interaction between the two which is examined next.

Organizational network legitimacy compositional diversity: Market, relational, investment and social legitimacy

Firms with known heterogeneous legitimacies connected to a diverse number of organizations in multiple networks have access to critical network knowledge. This often involves examining appropriate legitimacy initiatives through various forms of inter-partner mechanisms with key network stakeholders. For SOMs operating in an unfamiliar environment, it requires adaptations to environmental demands leading to

differences in the knowledge base, and is a matter of understanding the environment (Johanson and Vahlne, 1997).

Broadly speaking, legitimacy may be sought through market, relational, investment and social legitimacy (Dacin et al, 2007). Market legitimacy refers to the rights or qualifications to operate in the market (ibid). In cases where SOM is new to the market and has a low relative standing, the rights to operate in the market are not automatic because of the liability of foreignness. The firm may thus seek out an alliance with a legitimate firm in that market to help ensure endorsement and receptiveness by government, suppliers, or customers (Dacin et al, pp. 174, 2007). These endorsements represent crucial tools and guidelines to operate in the market. In China, they help firms deliver better performance, because of access to and understanding of commercial knowledge of “what works better” in broad competitive and financial terms with key network stakeholders.

To maintain and enhance their market legitimacy, SOMs pursue relational legitimacy through alliances and merger activities with strong local partners. These activities help them to better navigate the changing technological landscape, in particular the impact of new structural reforms on their survival. Because relational legitimacy invariably involves some collaborative pooling of technical, marketing, production resource, it also helps send out potent signals on their commitment and its worthiness as an attractive relational partner. There is then an implicit or explicit pledge of relational continuity between them and the local partners and/or stakeholders, including incorporating pledge or concrete actions binding exchange (Dwyer, Schurr, and Oh (1987, p.19). Such pledges and actions introduce and sensitize network partners to the construction and deconstruction of proprietary knowledge surrounding the various dimensions of emerging technology. This would not have been possible without demonstrable and committed relational legitimacy.

Unlike relational legitimacy which is partner specific, firms also seek investment legitimacy aimed at legitimizing the worthiness of the firm’s business activities to the state. This perhaps explains why SOMs that demonstrate a propensity to invest in a market actively seeking foreign investments and technical expertise, thus mimicking the state’s policies, has stronger legitimacy claims compared with those that do not engage in such activities. In a politically sensitive Chinese telecommunications market amidst the backdrop of a transitional economy, connections to political, economic, and social stakeholders is a particularly crucial compositional diversity of the firm’s strategic adaptive capability in managing their network legitimacy. Through ties with these stakeholders, SOMs might be in a position to gain access to new information which allows them to gain a better perception of institutions trends that have so far been politically codified. The scanning of this information also allows SOMs to explore new inter-partner mechanisms, learn how to strategize as a result of emerging technology, and to search for, and identify the networks under the new rules of the game, and the required changes in legitimacies thereof.

Finally, SOMs also seek social legitimacy that is gaining importance in institutional environments where a socially responsible image is vital for firm survival (Dacin et al, 2007, pp. 176). They undertake public welfare initiatives in education and training, local and regional developments, with community organizations and government. For example, while it is generally acknowledged there is high incentive to increase R&D spending in China, there is an even greater incentive for SOMs to help train its citizens. At a time where the nation is also concerned with creating a harmonious socialist society, SOMs will therefore benefit from network legitimacy agenda that includes social legitimacy which complements its market, relational and investment legitimacy. Legitimacy with social ties is also likely to provide more non-redundant benefits via access to knowledge that might facilitate the sharing of fine-grained knowledge between the firms and the state.

It is however worth noting that the construction of this mix of legitimacies which collectively makes up the SOMs ONL is not easy. It is context dependent, especially in the case of China where it is all too easy to overlook powerful administrative and regulatory institutions that continue to affect local and SOMs performance in its selection of enterprise resource allocations and activity transformation roles. In the fluid state of a transitional economy and a politically sensitive and protective telecommunications sector, the state

appears to have stuck to deep involvement in, and direct control over the knowledge surrounding the timing and availability of its TD-SCDMA technology. It is the hope among SOMs that through heterogeneous legitimacies with connections to a diverse number of organizations and/or stakeholders in multiple networks, they would have access to this knowledge. In the following, the empirical context of the study is examined and explained.

Research Methodology:

To explore the real-life impact of organizational network legitimacy and knowledge access, the article makes use of empirical evidence from a single in-depth case study. Through a managerially oriented inductive interpretative research into the use of legitimacy initiatives and knowledge networks, the paper address real-life legitimacy strategy in a politically sensitive and protective telecommunication sector. The “differential information about a specific country”, i.e. China also act as a promising avenue for further research (Balabanis et al. 2001, p. 171).

Various characteristics associated with China’s mobility telecommunication sector lend it to readily observable trends and developments. The central government involvement, the nation’s technological leadership ambitions, structural reforms, and its obligatory WTO commitments, are characteristics that presents the sector as an ideal “critical” or “polar” case where the “process of interest is readily observable” (Eisenhart, 1989, p. 537). These observations and analysis are gauged from publicly available documents through internet sites, company reports, trade journals, commentary by industry researchers and analysts over a period of time.

Research on legitimacy, however, poses serious methodological pitfalls, not to mention the considerable practical problems associated with it. Legitimacy is also prone to change over time and difficult to operationalize for quantitative or qualitative research (Schubert, 2008). These challenges notwithstanding, it is hoped that through an inductive, interpretative, content analysis of published materials and through methodological contextualization via industry experience, some empirical descriptions and generalizations could be provided. This is achieved through the use of case research which allows for the study of interactions between the proposed variables and the empirical evidence (e.g. Eisenhardt, 1989; Glaser and Strauss, 1967). We next examine this process through an inductive, interpretative case analysis of Nokia China (NC)

Case analysis of Nokia China (NC)

Introduction:

China Nokia (CN) established its presence in China in 1985. It is currently the leading supplier of mobile and broadband network systems and mobile phones in China. China also represents an integral part of Nokia’s global manufacturing and R&D networks and the company is now the largest exporter in China’s mobile telecommunications industry. CN now has more than 50 offices and two R&D centers in China, employing over 4700 people. It registered an accumulative net sales volume of EURm 5898 in 2007, a 20 percent increase when compared with EURm 4913 sales in 2006. These are impressive numbers establishing China as CN’s largest market. With its strong organizational reputation in wireless mobility, CN has performed impressively in a highly protected and regulated telecommunications market.

In keeping with this manuscript’s theme, CN’s success could be attributed to their ability to articulate to, and navigate their legitimacy agenda through influential stakeholders in the network. Predicated on carefully targeted market, relational, investment and social legitimacy initiatives, CN’s agenda involved actions that have been deemed desirable, proper, or appropriate. Under conditions of uncertainty, they have exhibited behavior that mimicked these stakeholders, through relevant and timely network ties. With its extensive network of diverse collaborators in various inter-partner mechanisms aimed at achieving its network legitimacy, they have established a strong strategic identity and network positions via the roles they play in these networks. These in turn exposed NC to a wide variety of knowledge and learning activities that potentially could include NC’s quick adaptation at turning emerging technological challenges into achievements. We next examine these legitimacy initiatives, identify the mechanisms involved, the networks and its compositional diversity of stakeholders, and its knowledge diversity.

Knowledge network and NC’s market legitimacy

Over the past twenty odd years, we like to think that NC has “earned” the rights to operate in China. The company’s has high relative standing and desirability, especially with its global and local reputation in wireless mobility. For instance, when NC merged its four existing Chinese joint ventures in 2003, its largest China joint venture partner is a local company, Putian Corporation. According to Ouyang Zhongmou, Putian’s CEO, “the merger will not only increased opportunities for us in China, but also allow us to improve our competitiveness outside of China.”

Fully cognizance of the state’s policy to boost its local telecommunication software and hardware telecommunication industry, CN has also successfully explored opportunities to maximise growth and global competitiveness for all parties in the local value chain. For example, in 2005, through its cooperation with the government, CN contributed to the creation of an estimated 25,000 jobs among the company’s cooperation partners, local sub-contractors and suppliers. Its ability to stay alert and responsive to local market information and knowledge is a reflection of NC’s strategic capability and their abilities to partake in the creation of these opportunities. This would not have been possible without first earning its market legitimacy that allows NC to continue to explore market opportunities by cooperating with local industry, partners and government organizations.

Knowledge network and NC’s relational legitimacy

NC has also undertaken key and timely relational legitimacy initiatives through alliances and mergers activities with strong local partners that involve the collaborative pooling of local technical, marketing, production and sales resource. As a result, NC has moved and evolved with the right mobility technology together with some of the sector’s most influential stakeholders. For example, in 2005, NC and China Putian set up a 3G joint venture to focus on R&D, manufacturing and sales of 3G network solutions for WCDMA and TD-SCDMA. Through this alliance NC is now working with a company that is among the first companies to pass the TD-SCDMA field trials organized by the Chinese Ministry of Information Industry. China Putian is also one of the initiators of Chinese TD-SCDMA Industrial Alliance and owns the international bidding agent qualification awarded by the Ministry of Commerce.

Earlier in 2003, Nokia signed an agreement for cross-licensing of WCDMA related patents covering the manufacturing and sales of WCDMA infrastructure equipment globally with Huawei, thus lowering the threshold of technology transfer. Notably, Huawei is China’s largest, indigenous telecommunication equipment manufacturer. The collective pooling of collaborative technical and sales efforts in the TD-SCDMA space predates an earlier relationship CN had with China Mobile, culminating in the signing of EUR 580 million frame agreements for GSM/GPRS network expansion in China, in 2006. Nokia’s strategic cooperation with China Mobile started in 1994.

NC appears to have carefully crafted and leveraged its relational legitimacy by choosing complementary partners, including China Telecom and China Unicom. As a result they have become a key, indispensable partner in inter-firm sharing knowledge routines in the development and evolution of China’s mobility technology. This has happened despite the disruptive character of TD-SCDMA wireless technologies that makes extrapolations of their eventual market availability and prospects a seemingly futile exercise.

Knowledge network and NC’s investment legitimacy

NC ability to sense and respond to policies changes in a relatively quick and flexible way through its investment legitimacy is of essential importance for its continuous involvement and access to knowledge networks in a changing environment. For example, while China has historically been seen as a manufacturing and sourcing hub, there are increasing expectations that China is also seen as a science and technology hub. And while NC remains one of the largest Chinese mobile communications manufacturer and exporter, the company has also become one of the largest foreign invested enterprises in China, with the merging of its manufacturing joint ventures and the production of CDMA handsets in China in 2003. This merger underscores two key state’s policies – increased R&D investment in China, especially in 3G technology, particularly in TD-SCDMA, and improving the nation’s competitiveness globally.

By reaffirming its commitment to TD-SCDMA in late 2008, Nokia has also made it known that they now support the development of China's home-grown third-generation mobile wireless technology. As Colin Giles said at the event, "Our goal is to not only develop TD-SCDMA products that can deliver outstanding user experiences to consumers, but also to work with operators, chipsets providers, developers and all parties along the value chain to support the creation of a vibrant TD-SCDMA ecosystem in China." Earlier in 2006 Nokia also announced the construction of its China Campus and the selection of Beijing Economic-Technological Development Area (BDA) as the location. The campus will consist of their China headquarters, R&D centers, and mobile phone manufacturing based. Attendees of the ground breaking ceremony included Nokia's CEO, officials from the Central Government, the Beijing government, Beijing Economic-Technological Development Area and other Nokia partners.

Through such investment initiatives, NC hope to assist China realize its ambitions in wireless mobility technology and handsets. This assistance is what China has been looking for, but seldom acknowledged until recently. Crucially, by investing in the evolving networks of state's sponsored alliances and exchanges, NC can gain access to valuable knowledge to discover new opportunities.

Nokia's social legitimacy

While the need for social legitimacy is likely to be less significant in China because constituents are unlikely to monitor closely compliance with these rules, nevertheless stakeholders' expectations are changing. Globalization further increases institutional pressures on firms to surpass local social responsibility requirements even when they may be tempted by lax regulations and enforcement in local institutional contexts (Christmann and Taylor,2001). The benefits of social legitimacy are both social and technical.

For example, while there is high incentive for China to increase R&D spending, there is an even greater incentive for Nokia China to help train its citizens. Investment in education and training is costly. It is however also necessary if Nokia China wants to have access to the support of important constituencies that could lead to an enhancement of its network legitimacy. More important, the challenge to their market, relational and investment legitimacy could also declines. They may then not face the loss of opportunities in participating in the development of emerging mobility technology. With a reputation and visibility to protect, the need for social legitimacy is vital.

This perhaps explains why in 2007, Nokia and Tsinghua University announce the establishment of a joint research facility in Beijing which will drive technology development for Asia and the world. As Zhisheng Niu, Dean of the School of Information Science and Technology at Tsinghua, points out, "China has set itself the goal of developing indigenous innovation, and with four times as many mobile users as internet users, the opportunities within mobile technology are clear." For its part, Nokia was recognized as one of the most respected companies in China in 2004. The award paid special attention to social responsibility, innovation, operations and commitment to the local market.

Concluding remarks and managerial implications

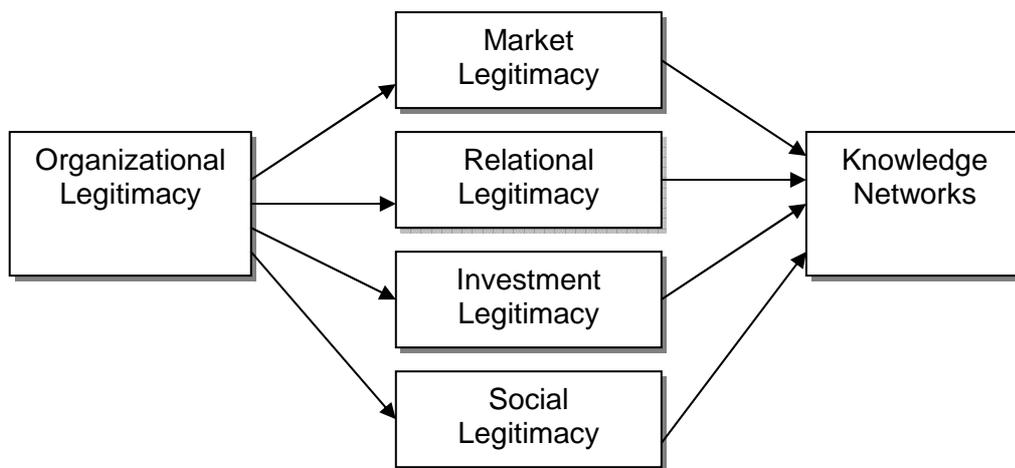
Emerging technologies are developed in knowledge networks. But as the complexity and unpredictability of these technologies increases, the need to formulate organizational legitimacy strategies becomes a strategic issue. Through social networking, technology – coalition building, political lobbying, and investment inter-partner mechanisms and/or initiatives, Nokia China seems to have captured the knowledge that is circulating through the network webs of relationships. In a politically sensitive and protective Chinese 3G TD-SCDMA mobility technology market, Nokia China appears to have systematically tried to understand the knowledge networks, determine how they are connected and identify key network stakeholders. Its mix of market, relational, investment and social legitimacies and the formal and informal linkages with these stakeholders to which they must appear legitimate examined in this manuscript, ensure the firm's active and continuous participation in critical knowledge networks.

Like many of the other competing SOMs facing uncertainty in the timing and availability of China's TD-SCDMA technology, Nokia China is often not sure the legitimacy directions and initiatives to take. Through a strategic but adaptive incremental coalition of legitimacy building initiatives, they were however able to establish corresponding key network positions, playing key roles in various social, political, technological and economic networks. This allows the firm to envision key stakeholders in these communities. A diverse

network rich in organizational legitimacy increases Nokia’s China opportunity to participate in emerging technologies for such legitimacy facilitates knowledge collection, exchange and interpretation, which is valuable in knowledge-rich but unpredictable environment. Nokia’s managers could then make decisions that were not only firm specific, but also sector and nation’s specific. These decisions were made with the knowledge of a keen sense of the special type of relationship between politics and economy in China’s telecommunications sector.

It is however important to recognize that managing and participating in knowledge networks is not easy. It is an ongoing process. Particularly, there is heterogeneity in identifiable market, relational, investment and social legitimacy Nokia China can bring to the network. This will be influenced by network stakeholders who might not necessarily have the same needs as the SOMs. Neither would they necessarily accept that such needs could not be met in a variety of different ways. This manifests in greater pressures upon Nokia China to manage their organizational network legitimacy. A balance, then, of both building its future legitimacy and exploiting its past legitimacy is seen as essential. There is no necessity to be locked into any one particular set of market, relational, investment and social legitimacy. The focus instead, is, constantly aligning these legitimacies with the demands of network stakeholders and its implications of its current portfolio of network positions. In a technologically turbulent TD-SCDMA mobility technology environment, organizational network legitimacies of SOMs like Nokia China promote knowledge creation, sharing and interpretation within and between knowledge networks. How this is produced, where does it become manifest, and at what administrative layers within China’s politically sensitive and protective telecommunications are systematic empirical research questions we could address in the future.

CONCEPTUAL FRAMEWORK



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