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GLOBAL INNOVATION AND ENTREPRENEURSHIP

Challenges and Experiences from East and West

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Stephen E. Little • Frank M. Go • Teresa Shuk-Ching Poon
Editors

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Foreword

This book could not arrive in a more timely fashion. Whilst the effects and consequences of globalisation in the political, social and cultural domains have continued to be extensively debated among scholars and commentators, economic globalisation has gone largely uncontested. Increasing global interconnectivity complemented by the deregulation of international trade, investment and capital movement for economic growth and prosperity has become the dominant public discourse of the past decades. Scepticism about the scale and scope of economic globalisation remained limited to critical academics and business elites where alternative models of an international economy and governance have been advanced. However, recently, this discourse of boundless economic globalisation 'for the benefit of all' has come to be challenged. The crisis in the economic globalisation discourse indeed has generated alternative models of globalisation that are inclusive of social and cultural dimensions.

The discourse on economic globalisation was nurtured by the rise of Northeast Asia as a major player in world economy. The 'Asian Miracle' was basically hardware-driven: Japan, South Korea, Taiwan and China are home to manufacturing powerhouses such as Sony, Samsung, Acer and Haier. However, Asian countries swiftly caught up with the West, combining successful participation in the global economy with the development of highly sophisticated service enterprises, which provided access to resources required for a profitable connection to the wider world.

East Asian countries were the frontrunners in information technology spawning the first digital revolution. Underlying the second digital revolution—which is currently in progress—is the supply of digital content and services. The significance of this second digital revolution extends far beyond economic growth and is already emerging as a magnificent social and economic force. Innovations are driven by entrepreneurs creating new tools, concepts and forms of expression. East Asian countries, for example, dominate the production of the world's digital gadgets. Pokemon, Hello Kitty and animation from Japan and K-pop from Korea are among the most imaginative digital innovations that mark the emergence of East Asia as a cultural superpower. These products successfully attract audiences in North America and Western Europe. In aiming to enhance people's social experience or self-perception, software innovation requires a deep understanding of people and culture and about managing social and supply chain networks around them. Issues of regulation and control are the challenge for future business leaders and governments.

The various contributions to this book analyse the growing and deepening global connectedness through the lens of innovation and entrepreneurship. These contributions provide evidence that the knowledge-intensive industries play a substantial role in the transfer of technology, international trade and business practices within and between Western and Asian. The declining emphasis on traditional power structures favours talented creators with a taste for diversity and new cultural combinations. Processes of globalisation have shifted focus away from hardware to soft power. It is at the intersection of technology and culture where innovations sprout. The book's strength in dealing with the challenges of this new global economy is underpinned by a truly international and interdisciplinary range of contributors with a mix of academic expertise and professional experience.

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Contents

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Introduction: From International to Global

Stephen E. Little, Frank Go, and Teresa Shuk-Ching Poon

Introduction

For decades, the term globalisation has been a catch-all explanation of the benefits and dis-benefits of our present economic relationships. Often "Globalisation" is presented as a novel and irresistible logic leading to the unproblematic technological transformation of economic relationships but the internationalisation of trade can be traced deep into history, beyond

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the establishment of the Silk Road. The Western mercantile tradition developed around a set of technologies which Hirst and Thompson (1996) argue had reached a functional plateau with the reliability and regularity of the steamship and electric telegraph by the conclusion of the nineteenth century. They argue that there had been little change between the teens and nineties of the twentieth century with the period immediately before the outbreak of hostilities in 1914 enjoying equal levels of international trade although the First World War was followed by a retreat into isolationism and recession. While it is important to understand that globalisation does not represent a complete discontinuity, such a view ignores the complex interplay of forces throughout the twentieth century, not least in the transformation of relationships between what was an imperial centre controlling the resources of the marginalised colonial periphery, and the current networked interaction in which production and consumption take place across a network of complexly interacting stakeholders. Camilleri and Falk (1992) argue that the sovereign national state is in many respects a relatively recent phenomenon. The settlements following both world wars in the twentieth century created and defined our current understanding of the nation. They also qualified the concept by creating supra-national levels of accountability for both governments and individuals.

With advancing globalisation, both the freedom of action and the legitimacy of national states are under pressure from the supra-national regulators of the world economy, such as the World trade Organisation (WTO). Traditional means of protecting and developing sub-national regions and national interests though government support and intervention are no longer legitimate. Against decline in participation in local and national elections, individuals, communities and corporations can appeal directly to supra-national entities.

This diffusion of state power through agreement to and participation in multilateral regulation in areas such as trade, security and environment has been matched by the emergence of trans-national corporations operating in internationalised financial and labour markets (Camilleri and Falk 1992). The past century has seen profound shifts in the socio-economic paradigms (Perez 1983) underpinning global trade in international relations and in order to understand the context in which the contributors to this volume of writing, it is necessary to plot the shifts through that period.

By the last quarter of the twentieth century, massive investment in technology, especially information and communication technology, and its production had produced significant changes in the dominant model of the trans-national corporation.

The centenary of the first global war 1914–1918 is a vantage point from which to consider the dynamics of the relationships between East and West which have created the current globalised economy.

A One Hundred Year Trajectory

By the outbreak of the First World War, the key components of twentieth-century development were in place. The Ford motor company had evolved mass manufacturing, international finance had emerged along with reliable communication technologies allowing the administration of the colonised periphery from the developed centre. All of these components underwent rapid development under wartime conditions. However, this development stalled after the cessation of hostilities. The peace settlements disrupted existing relationships across Europe and beyond with the dismemberment of the Austro Hungarian and Ottoman Empires and the emergence of new nations and Soviet Russia.

After the post-war recession of the previous decade, the 1930s saw the emergence of Keynesian economics in various forms around Europe and in the USA. The First World War had been global because it involved European possessions in Africa, Asia and Pacific. Japan, a disappointed participant was mimicking European expansion onto the Asian mainland and confronting the Soviet Union over a divided and conflicted China. The economic models adopted by Italy and Germany under Fascism also saw colonial expansion in Africa in the former case attempted eastward territorial expansion in the latter.

The Second World War that ensued was even more extensive than the First, and by the 1950s the relationship between East and West had shifted further. Once again the technologies of communication, manufacture and administration had seen rapid wartime development with the emergence of operations research and information analysis in the commercial world (Hughes and Hughes 2000).

The conversion of wartime facilities, such as aircraft assembly plants, to civilian production underpinned the post-war location of high-technology manufacturing developments in key Western economies. In both the UK and the USA, government-owned plants were turned over to the private sector. The location of US government-owned, contractor-operated (GOCO) plants determined the diffusion of new industries from the East and West Coasts to locations in the midwest and "New South". In contrast to the aftermath of the First World War, these technical developments continued on both sides of the ensuing Cold War conflict. The threat of nuclear warfare maintained a fraught peace punctuated with regional and proxy conflicts while emphasising the role of technological innovation in national security.

In addition to the creation of the United Nations, the war saw the creation of a set of complementary international institutions charged with promoting and regulating international trading relations, from the World Bank and International Monetary Fund to the International Labour Organisation and the General Agreement on Trade and Tariffs, the last named eventually developing into the WTO.

In Western Europe, the 1950s saw the foundations of the European Economic Community being laid. The creation of the European Coal and Steel community in 1951 and the European Centre for Nuclear Research (CERN) in 1954 saw the first steps towards a continuing process of European integration.

In geopolitical terms, the post-war settlement in Europe and the creation of the People's Republic of China had established a bipolar world order (Ohmae 1995). India had achieved independence from Britain and the disruption of Western influence in the Asia Pacific region during hostilities had seen the emergence of new nations including Indonesia, a state promoting, along with India, a non-aligned status in this new order even as the postcolonial conflicts in Indochina began.

By the 1970s, costly postcolonial proxy conflicts were ending and the decolonisation of African countries was extending to Portugal's remaining colonies. The end of totalitarian in regimes in Western Europe also led to further expansion of the European Economic Community leading to the later creation of the European Union.

The emergence of Japan as an economic superpower reflected a model of state-managed development which combined American manufactur-

ing techniques promoted during the US occupation with a form of Soviet planning instigated by the Ministry of International Trade and Industry, itself a product of the experience of mainland Asian administration (Johnson 1982; Okimoto 1989).

The People's Republic of China emerged from a period of relative isolation and, with the support of the USA, took over the United Nations Security Council seat formerly occupied by Taiwan. Despite this change in status, Taiwan emerged over the following years as one of the four "Asian Tiger" economies along with Hong Kong, Singapore and South Korea.

The 1970s also saw growing maturity in the two technologies most responsible for the current global dispensation. The foundations of the all-encompassing commercial information technology (IT) revolution, which came to maturity, were laid over the following decades with the emergence of minicomputers in the commercial sector followed by microcomputers accessible to the smallest enterprises and the US government defense investment in computing and computer-based networking which later led to the emergence of the Internet as a commercial resource. Equally importantly however, the process of containerisation in shipping was gathering pace. Shipping containers had appeared in railroad use decades before; however, their adoption by the US government in the military logistics of the Vietnam War aided the process of standardisation among the private companies that had pioneered the expansion of the technology, initially into US coastal shipping (Levinson 2006).

By the 1970s, multinational corporations were prominent in the economic landscape and being identified as significant investors in and exploiters of knowledge (e.g. Galbraith 1969; Turner 1970; Tugendhat 1971; Vernon 1971) but subsequent developments were poorly anticipated. Tugendhat, for example, does not examine the Third World, arguing that its problems are separate and distinct from those of the developed economies. Forty years ago, Asian involvement in the multinational arena was minimal, Tugendhat's data for 1969 shows that Japanese investment in the USA was smaller than that from Belgium and Luxembourg. Now East and South Asian companies compete with Western corporations in Africa to provide infrastructure in return for access to resources (Kitissou 2007).

When in the early 1980s North American automotive manufacturers elected to control production lines in their Canadian component plants through data links from the US side of the border, they demonstrated the practicality of the routine and automated means to separate physical and intellectual capital. More significantly, in all but the highest technology undertakings, the divergent, creative activities which produce intellectual capital could be disaggregated from the convergent, focused and increasingly marginalised production process. The post-war "Fordist compromise", which required manufacturing activity to be matched by co-located consumption has been rendered irrelevant (Lipietz 1992). Production and consumption of goods and services now took place in an increasingly complex web, where both sophisticated and commodified products may be produced and consumed at centre and periphery. It has become possible to minimise the cost of labour by separating producer and consumer as Keynesian economics were succeeded by neoclassic economics and neo-liberal rhetoric.

In response to these developments in organisational technologies, organisation theorists produced a number of descriptions of the new organisational forms that emerged. The rise of the Internet and e-commerce as facilitators of trans-national commerce has led to a range of formulations of the "networked organisation". Castells has described such networks in his Informational City, as a "space of flows", arguing that access to flows of information and resources is the key to participation in the wider economy (Castells 1989) echoing an earlier formulation of the "city as communications system", (Webber 1964) intended to move established planning conceptions from physical built form to the quality of interaction in cultural life through the exchange of information.

By the 1990s, the bipolar divide had become relaxed and was further weakened by the collapse of the Soviet Union. Subsequent changes in Eastern Europe led to further dramatic expansion of the European Union. China had embarked upon its programme of modernisation which would transform its role in the global economy and India had abandoned a period of protection and self-development, embarking on a process of opening up to foreign investment which led to World Trade Organization accession in 1995.

The last quarter of the twentieth century saw significant changes in the dominant model of the trans-national corporation. The vertically integrated multinational corporation, under unified ownership, was being superseded by networks of externalised relationships between associated but often autonomous firms. This paradigm shift is encapsulated in Saxenian's comparison between Route 128 around Boston and its associated high-technology industries and Silicon Valley in Northern California (Saxenian 1994). The East Coast paradigm relied upon established corporations and a new relationship with universities and central government, the core of Eisenhower's "military–industrial complex" and the "Triple Helix" described by Leydesdorff (2000).

The closed nature of these large, individual organisations contrasts with the densely networked environment of the more dynamic West Coast firms. Silicon Valley is dominated by companies which grew up with the new technologies they promote. Manuel Castells (1989) describes the complex web of relationships necessary to sustain this level of multidisciplinary knowledge creation as a "creative milieu". Such a milieu extends beyond the boundaries of the high-tech firms themselves into a hinterland of rich knowledge resources, involving universities, sympathetic financial institutions and a highly sophisticated labour market.

Despite its freewheeling entrepreneurial milieu, Silicon Valley was as dependent upon public sector, defence-related expenditure for its genesis as Route 128 had been a decade earlier. The Internet was derived from the ARPANet, named after the Advanced Research Projects Agency of the US Department of Defense. The intention was to share expensive research resources efficiently, and in a Cold War frame, to ensure the survivability of a fragmented or degraded network under physical attack. The World Wide Web originated with a project to share documentation and other materials seamlessly among the thousands of dispersed scientists involved in basic science at CERN, the European Centre for Nuclear Research. The National Center for Supercomputing Applications at the University of Illinois at Urbana-Champaign contributed the Mosaic browser that underpinned its commercial and open-source counterparts from Netscape and Microsoft. The Silicon Valley paradox is that much of the robustness and ease of use of Internet-based applications, a key to their rapid commercial dissemination, can be traced to the requirements

of large public sector institutions. This was a lesson better learned by the developmental nation states of East Asia, Singapore, Taiwan and Korea in particular (Thorpe and Little 2001).

Entrants to the global marketplace from East Asia quickly became aware of the need to exploit their presence in the established economies and to maintain value through a knowledge-intensive approach to the delivery and support of goods, and began investing in the established economies. James and Howell (2001) showed how Asian companies established or acquired research and development (R&D) facilities within the UK and the USA. There are two motives for this approach to the capture of intellectual capital for capacity building. Knowledge of regional markets can be obtained by the route of partnership or part ownership followed by acquisition. It can also be captured through R&D focussed on local product development, informed by feedback from local customers and incorporated in regionally targeted products, which could also be modified for the "home" market. At the same time, access to a broader intellectual capital base can be obtained through tapping into regional knowledge, which might enhance home-based operations. Both Malaysian and Korean automotive companies acquired British-based engineering and design companies to further develop their home capabilities. Silicon Valley itself has attracted not just North American but Asian and European entrepreneurs. The incomers' strategy is to create a point of presence for networks that reach back to their home locations in India, Taiwan or France. These previously disconnected networks can then access the core milieu.

European national governments and the European Union are encouraging companies to seek alliances and opportunities in the opposite direction, to the less developed economies of South East Asia. This is presented both as a means of accessing the market potential of these growing economies and as a means of improving offshore manufacturing resources in relation to both home and export markets (EC/UNCTAD 1996). In some instances, complementary manufacturing takes place at both ends of such relationships. Overseas plants are increasingly selling to both local and home markets. Japan too has conceded this logic by serving initially the lower value end of the domestic consumer electronics markets from overseas plants built to serve offshore markets from China and Malaysia.

Crash and Recovery: The Turbulent Present

By the turn of the twenty-first century, the twin innovations of containerisation and IT had transformed the transaction costs of international trade. The efficiency and security of containers coupled with instantaneous communication of the Internet allowed radical realignment production and consumption. The vertically integrated multinational corporation, under unified ownership, had been superseded by networks of externalised relationships between associated but often autonomous firms. The centripetal model of international flows of assets and capabilities over time from an innovating centre to a periphery dealing with mature activities was unable to account for the intensely networked and distributed global system which had emerged. Notions of technological diffusion and technology transfer were displaced by the need to network, and Silicon Valley was the embodiment of this.

The contestation between command economy, mixed economy and free-market economy reflected ideological positions rendered irrelevant by the end of the Cold War in the closing decade of the twentieth century. The cessation of crypto-hostilities led to the end of what several writers have termed a "bi-polar discipline" (Ohmae 1995). The removal of constraining ideological blocs was followed by accelerating attempts at global economic integration characterised by the "strong globalisation" view typified by Kenichi Ohmae (1990). In Ohmae's view, globalisation is dominated by a core "triad" of economic regions: North America, Western Europe and North East Asia (then predominantly Japan, now China) which share the bulk of international trade. However, the increasingly tightly coupled relationships and global financial flows meant that in one country or region quickly propagated through the system. The 1990s saw a significant check on the progress of East and South East Asian economies. South Korea Thailand, Malaysia and Indonesia experienced currency crises. These led to a reassessment of the developmental state model and a move to closer integration with the developed economies through greater openness to foreign direct investment and restructuring into less hierarchical and more openly networked relationships between firms, exemplified in the change to the South Korean Chaebols.

As the first Asian tigers faltered and Japan entered a prolonged period of stagnation, the next generation of high-growth economies were identified as the BRICS—Brazil, Russia, India, China and South Africa (O'Neill 2001). Nevertheless, the first decade of the twenty-first century saw a much deeper global recession throughout the highly connected global economy, this time driven by the irresponsible lending against low interest rates which reflective the high level of saving in Asia after their crisis, the consequent search for higher returns from riskier investment and the pooling of debt into securitised products (Economist 2013).

In the contemporary economy of flows of both human and intellectual capital (virtual and physical, legal and illegal), national governments and regional blocs find it difficult to chart a path of recovery. The emergent global system is one of complex interpenetration of peripheries and cores. These terms no longer reflect physical location, but rather reflect access and competence in the underpinning information and communication infrastructure. Tensions are appearing in this system around access to resources, from energy to water and agricultural land and skilled labour. Uneven development and residual conflicts are driving large-scale migration which places pressure on the societies at both ends of the movements (Castles and Miller 1993).

National and regional policymakers are finding that low capital, labour-intensive operations share physical locations with high-value capital-intensive activities in both developed and developing economies. At the same time, increasing complexity and specialisation mean that knowledge-intensive operations must make use of virtual forms of co-location in order to create a critical mass of intellectual and physical resources. The notion of a production chain representing a geographical hierarchy of resources, manufacturers and consumers is itself being superseded by an understanding of global production networks. The physical and logical relationship between "centre" and "periphery" becomes fluid. The new pattern of global production, distribution and consumption forces a choice: compete purely on cost terms or move to activities which enable product differentiation and customer support to add value to goods and services. Such a shift makes the distinction between products and services less obvious and leads to an intensification of knowledge requirements since a focus at end of the chain requires closer adjustment to cultural variation among users and customers to maintain value.

Klein argues that in consumer goods directed to customers, this approach to value represents a shift in focus by what were formerly manufacturing organisations from material production to a form of cultural production (Klein 2000). She argues that the apparent global expansion of high-profile brands is in fact accompanied by a downsizing or hollowing out in which all functions except the management and development of the brand itself are subcontracted. This represents the apotheosis of the outsourcing movement of the 1990s, facilitated by both a reduction of transaction costs and the alteration of the relative advantages and economies of scale. These changes in turn have increased the significance of both intellectual property and intellectual capital leveraged by the technologies on which it depends. The emergence of business-to-business branding along the supply chain suggests that in an extended networked organisation, brands may serve as an internal carrier of organisational values. Ultimately, brands may become the carrier of the core values and emotional capital of what were once physically extensive organisations that have been reconfigured in the terms described by Castells (2000) as network enterprises.

Across the new networked economy as a whole R&D, raw materials sources and routine manufacturing, final assembly, markets and aftermarket support are increasingly co-located. Plants located in China by foreign companies to serve overseas markets are increasingly serving Chinese domestic consumers as the Chinese government seeks to develop domestic consumption. Even as Asian companies invest in R&D facilities in their Western markets, Western companies invest in R&D in China and India.

Complex layering of labour markets is exacerbating unevenness of development within and between both core and peripheral economies to a degree which threatens the sustainability of the total system. Differences within individual nation states can be at least as significant as those between them. Consequently, Ohmae (1995) argues that "zebra strategies" directed at only the strongest parts of adjacent regional economies are being pursued in order to create sufficient levels of formal economic activity for entry into the world system. Such strategies can only reinforce existing inequities and result in migration both within and between national boundaries and produce dispersed communities. Both China,

through successive five-year plans promoting "harmonious society", and the European Union, through the Committee of Regions and DG Regio, are pursuing policies aimed to reduce such regional disparities while maintaining global competitiveness.

The recent driver of globalisation has been the reduction of transaction costs achieved through information and communications technologies which replace a production or supply "chain" with much more densely networked patterns. The dynamics of the underlying information and communication technologies mean that the focus of attention has shifted from flows of material to flows of information and knowledge. This brings the opportunity for both innovation in the development and exploitation of ever improving technologies and entrepreneurship though the development of new business models and relationships.

However, these networks are sufficiently open to allow the entrance of start-ups and innovative small and medium enterprises (SMEs) and the following chapters show how the capability of firms of all sizes can be leveraged by the global accessibility afforded by these technologies. While large incumbent firms implement "intrapreneurship", small and agile innovators maintain their entrepreneurial edge in the pursuit of process, product and business model innovation. This book examines the opportunities for innovation and entrepreneurship this provides.

Part I: Negotiating Innovation

The first set of chapters, from both academics and practitioners, addresses the negotiation of innovation both in the sense of navigating the complexly interacting components of a robust innovation system and in achieving the mutual engagement of the stakeholders involved.

In Chap. 2, Halemane, Janszen and Go present a structured simulation-based approach to the management of innovation. Drawing on practice at Inpaqt, they propose five levels of maturity in innovation capability. They then describe a set of e-learning modules covering the innovation process from the perspective of both innovator and manager.

In Chap. 3, Carlisle and McMillan present an overview of the application of complexity theory to strategic planning in contemporary

organisations. They argue that regarding strategy as a learning process, which can be combined with a complexity perspective, offers radical possibilities for twenty-first century organisations.

In Chap. 4, Geng and Huang present a conceptual framework growing on both institutional theory and economic geography to explain how formal and informal institutions influence knowledge exchanges within and across geographical locations in developing economies. They illustrate their framework with a discussion of the effect of informal institutions on innovative activities and in various firms operating in China. By drawing on two disciplines which have developed largely independently, they provide new perspective on the role of geographic proximity on economic and entrepreneurial activities.

In Chap. 5, Little draws on literature on open innovation and global supply chains to place innovative and high-tech SMEs in their increasingly global context. It argues that new forms of intermediation and dis-intermediation between businesses and between these businesses and their customers provide both an opportunity and an imperative for entrepreneurs and start-ups to develop new forms of strategy with which to engage an increasingly complex environment.

Part II: Positioning Within Global Networks

The second set of chapters examines sectoral and regional strategies emerging in response to the demand for a global approach to entrepreneurship and innovation.

In Chap. 6, Goto examines how countries' industry and firms become progressively integrated and embedded in trans-national production and distribution networks. Drawing on the case of the Asian apparel value chain and its role as a non-resource-based export manufacturing sector, he demonstrates how it has assisted later developing countries to enter a global economy and to increase the value of their contribution.

In Chap. 7, Breukel and Zeegers diagnose the very different situation of high-tech small and medium enterprises in a developed economy with two case studies of innovating firms offering technological breakthroughs

and seeking the necessary resources from the geographical and institutional context to enter a prospective global marketplace.

In Chap. 8, Messenger and Shackleton present a case study of a major initiative in China seeking to raise intermediate skills to support the rapid pace of economic development through the adoption of a set of international skill standards. While much literature emphasises the role of the high-skilled scientific and technical workforce innovation and entrepreneurship, significant economic development requires a range of appropriate skills at all levels within a workforce and the absorptive capacity of the location depends on the nature and development of the full range of the workforce available.

In Chap. 9, Israels draws on extensive experience in consultancy to present a set of rules for the successful provision of the global IT services required by the distributed production networks of the twenty-first century.

Part III: Creating Value in Chains and Networks

The third set of chapters presents case studies and discussions from sectors impacted by or developed with the technologies underpinning the global turn.

In Chap. 10, Palit and Mukherjee compare the fortunes of Indian companies in the textile and software histories and their contribution to value chains linking India to the European Union. Both industries have become integrated into global value chains with textiles reflecting a long historic tradition of manufacturing and software reflecting the more recent integration union economy drawing on equally ancient traditions in mathematics. Both sectors are benefited with partnerships and collaboration with both European and North American parties and both are moving into higher value market sectors.

In Chap. 11, Fujiwara presents a case study of an industry dealing with the need to abandon a highly successful business model in the face of the diffusion of the core technology, namely inkjet printing, and the emergence of low-cost competition in the consumable components of cartridge and ink. The chapter examines the responses of established companies and the difficulties facing them.

In Chap. 12, Poon and Chan review the development of a novel and lucrative sector, mobile gaming which has developed in sophistication and value alongside the transformation of the mobile phone from telephony into a platform for mobile services. Their analysis of the changing structure of this sector's value chain illustrates how technology allows small players to access a potentially global market, while new forms of intermediary have emerged to broker this process.

In Chap. 13, Kale provides a study of how the Indian pharmaceutical industry has responded to radical changes in government policy. Having developed behind government protection and favourable intellectual property rules as efficient manufacturers of imitative generic drugs, the industry has had to adjust to the consequences of WTO and compliance with an intellectual property regime requiring innovation. The chapter identifies the responses of Indian firms in the transformation of their business models.

Part IV: Maintaining Identity as a Resource

The fourth set of chapters touches on the intangible contribution to economic activity and development from cultural organisations and events with case studies and discussions of organisational responses to the global re-contextualisation of their contribution to development by cultural and tourist organisations and networks.

In Chap. 14, Rosu and Zamar use case studies of two European orchestras to show how the role of arts organisations has developed in response to a shift from an environment of direct national and local government support to one requiring an entrepreneurial frame of reference. Reduced financial support has resulted in an expansion of their role within their respective communities.

In Chap. 15, Beek and Go provide an extensive literature review and analysis of large-scale hallmark events and their role in stimulating social and economic development.

Finally, Chap. 16 reflects on the book as a whole and its contribution to both academic research and practice in the future.

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Part I

Negotiating Innovation

2

Managing Innovation Process: A Structured, Simulation-Based Approach

Murthy Halemane, Felix Janszen, and Frank Go

Introduction

'Future-oriented pro-growth policies are essential to spur employment, and the importance of innovation and entrepreneurship is high in this context' is a general statement that emerged from The Global Innovation Index 2014 (GII). Economic crises at developed and emerging markets in common have a lasting effect on innovation, thus negative consequences to future growth. Innovation expenditures, the driving mechanism of research and development (R&D), may not grow worldwide in near future, forecasts the report. Both at national level, and in business sector, the trend on R&D spending has not been in accordance with what was originally pro-

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posed by high-income countries after the last economic crisis of 2008. The GII shows that the countries which lead the index make it easy for people and not just businesses to thrive. A defining trait among the top countries, Switzerland, the UK and Sweden, is their 'ecosystem' approach to innovation. That is to say they have developed their innovation policies across all pillars, including business climate, business sophistication, creativity and enabling the younger generation. In this context, the human factor in innovation may play a highly contributing role, where in adequate education, training and motivation in schools, universities, businesses and public sector enterprises need to be addressed. Educated people make good innovators, thus education speeds the process of technological diffusion (Nelson and Phelps 1966). Sergio Ermotti CEO of UBS is cited as one of thousands of Swiss who started out as an apprentice at a bank where he learned to sell stocks and trade even before entering university. Such investments in human capital coupled with a strong innovation infrastructure, information and communication technologies and the cross-pollination of knowledge workers, transnational mobility of workers and the protection of creative outputs all contribute to keeping Switzerland and selected countries on top in the innovation race (Forbes 2014). Experience added to education will increase the level of learning-by-doing. Experience implied in the human factor counts much toward innovation. Capabilities in human resource, thus, become essential elements for the application of technologies and knowledge to the creation of products and services.

The GII conceptual framework for measuring various issues related to innovation at countries' level and has been improved in 2014 by including human factors. However the broad categorization rests on two sub-indices: Innovation input and innovation output. The inputs capturing national economy that enable innovation are characterized by institutions, infrastructure, markets, business sophistication and human capital and research. The outputs are generally embodied in knowledge and technology advances at national level and creative outputs in the form of new products, services and businesses. How much output is achieved by the available and utilized inputs is expressed in the ration or innovation efficiency. The report by the GII working committee has been able rank countries for categorizing them for their innovative capability. With this categorization, countries could be benefited for closing the gap between

the input and output, thereby achieving higher innovation efficiency in favor of the economic growth.

Based on the continuing attention on innovation, we may appreciate that there is enormous need for this in every aspect of life: innovation of products to meet specific requirements for making life at homes and outside comfortable and secure; innovation of services to meet specific demands of highly diversified needs of day-to-day life; innovation of businesses to meet specific challenges of a dynamic and competitive market. Therefore, managers and entrepreneurs need a systematic framework to advance insight in the multiple internal issues (e.g. marketing, production and finance) and external issues (e.g. competition, suppliers and changing distribution channels) which can significantly influence the product innovation process.

According to the Organisation for Economic Co-operation and Development's Oslo Manual, the most significant innovation capability at firm level is the knowledge accumulated, which is mainly embedded in human resources in regard to procedures, routines and other characteristics of the firm. Innovation capabilities, as well as technological capabilities, are the result of learning processes, which are conscious and purposeful, costly and time-consuming, non-linear, path-dependent and cumulative. Non-linear processes are characterized by the fact that when input 'A' leads to output 'X' and input 'B' leads to output 'Y', the sum of the inputs (A + B) is not necessarily equal to the sum of the outputs (X + Y). As a consequence, extrapolation from past data is not permitted. Non-linearity is thus inherently linked with uncertainty.

Innovation is a complex process in that it depends on the interaction of people within an organization. Such intra-organizational interactions in the context of creation of a product or service involve diversified views backed up by individual ways of thinking and acting, also in everyday work and life. Thus, one can call this process also holistic, or an integrated process which combines traditional technological and product-oriented perspectives.

Janszen (2000) found that successful innovations rarely take place in a single instant. They evolve while they are being developed in the laboratory, drawing room or work-floor, or in contact with customers during the market development stage. The input from customers already

in prototyping phase, or finished products in use, will provide valuable feedback and provides an understanding of its pros and cons, its strengths and weaknesses. The weaknesses will lead to further improvements and a constant flow of innovations. Innovations are the result, then, of the actions involving a number of actors and can be seen as a process rather than an ad hoc event.

The human factor in innovation does not end at the creation of new products or services but also extends to the environment where the innovation is substantiated. Such an environment may include upstreaming the suppliers, collaborators of knowhow and other resources, and downstreaming the related networked marketing and service providers. Both up- and downstream, the influence of regulators prevails such as the government and organizations in regard to environmental and societal interests. From the beginning of the innovation process till the end of the market life of products and services, thus throughout the entire product life cycle, it is imperative to identify and define all customers' interests and preferences. The marketing offer serves as the total benefit package the firm provides its customers and it's only after people have purchased and consumed a new product that marketers can determine which product functionalities have proven useful and in which way these create value for the customer. The innovation environment brings forth emphasis on views and preferences of various stakeholders, in addition to the customers of a firm, within an arena related to a proposed product or service.

Effective innovation is possible only when interests of various stakeholders are properly accounted for, their capabilities are suitably employed, often-feared uncertainties and risks are systematically mitigated and essential steps are taken for making, also in the market, the innovation successful. This chapter seeks to advance insight into the complex context of innovation, how successfully innovating companies create and maintain a differential advantage, how companies' effectively employ resources and competences and how their culminating capabilities are successfully exploited. In particular, we demonstrate how capabilities are differentiated in maturity levels for different types of businesses. Then we proceed to show how various capability building and skill-developing approaches can be imparted to firms; thus how businesses can successfully practice innovation. Lastly, we will address complex situations of innovation of

IT-supported services, and the role innovation can play in the regional development of countries.

Innovation Success

The success of innovation in each category depends on the complex nature of the environment in relation to various types of stakeholders involved in the process of innovation. Stakeholders have different roles, from a range of different knowledge backgrounds with different interests and conflicting agendas. Therefore, the success of an innovation process depends in large measure on the willingness and capabilities of the stakeholders to overcome such differences in favor of an intended innovation outcome.

Innovation Arena

Due to the reciprocal influences and co-evolution of a product innovation process, small causes may have big consequences. Innovations are brought about by the behavior of a large number of actors operating more or less independently and reacting to one another, instead of understanding the imperative of interacting to build effective relationships. We could argue that these actors are located in an arena where they work together for shaping the innovation. We call this the *Innovation Arena*, a concept that was introduced by Cooper (2000). However, he limited the arena to three areas, namely technology, product and market. Following Janszen and Degenaars (2011), we add a fourth component for purposes of organizing the arena. In each of the arena's subsystems, the development of a specific aspect of the product innovation process takes place. Hence, product innovation arenas can be considered as a form of transactional environment and are part of a macro-environment, also known as the contextual environment.

In the contextual environment, all types of external changes, including societal, economic, technical and regulatory, take place, that affect the organizational boundaries of a business and its transactional environment.

Earlier we saw that the innovation capability at firm level depends significantly on accumulated knowledge embedded in human resources, which result from learning processes. Among the key characteristics of contemporary innovation processes are interactive, non-linear, path-dependent and cumulative nature, requiring businesses in pursuit of innovation to intensively cooperate with a diverse range of organizations, groups and individuals. In particular, the shift from working according to a dominant 'internal logic' to collaborating with a variety of actors has several major consequences. First, it transforms the transactional environment into an innovation arena. Second, this change disturbs the positions of the actors within the transactional environment. Third, the key drivers of change are transactional environmental dynamics that compel actors to respond to the opportunities that are likely to have a high impact on the success or failure of innovation strategy.

Innovation Efficiency and Performance

At firm level, some companies keep on winning the innovation race all the time while others never catch up with the winners. The winners consistently conceive new ideas on products and services, create them and bring to the market. In The Global Innovation 1000 (Jeruzelski et al. 2014), this issue has been expanded using the relationship between financial performance and innovation, in spending especially in R&D. The main contribution to innovation lies within the firm's capabilities: talent, knowledge, team structure, tools and processes. How successful are firms in regard to aligning their capabilities with their overall business strategies in an appropriate way, so as to create a distinct innovation strategy? Companies' efforts in innovation vary in good and bad times. Economic crises, such as the one witnessed in 2008, leave a gap of many years for the R&D budget to return to the pre-crisis level. Investments varying over such recession years shift investments toward different capabilities, particularly those that are believed will generate a differential competitive advantage.

The common strategy followed within the R&D value chain usually consists of ideation, product development and commercialization.

Mastering the essentials of emerging technologies and insight to consumer or customer needs and preferences constitutes a major element of ideation. Subsequently engaging with customers for obtaining insight forms an essential base for establishing a common product base, or a generic platform, for the intended product or service. This engagement also helps the discovery of unidentified or unspecified customers' needs or preferences. It is not uncommon that customers and even marketers fail to detect the latent needs that innovation may fulfill. Major innovations, particularly recent digital technologies which have disrupted the rules of the game, have hardly been identified or forecast by marketers or consumers.

In common practice, pilot-user selection for testing limited rollouts bringing the product closer to the market forms the last major element of commercialization. In addition to these activities and the needed capabilities for carrying out successful innovation, firms choose also a few specific strategies that are often characteristic for and correspond with their organizational mission. Accordingly, *The Global Innovation 1000* typifies such successful firms in four groups.

The most successful companies focus on a narrow set of distinct capabilities in favor of their chosen strategy. 'Technology drivers' form the first group which follow the direction stipulated by their technological capabilities strongly built on their R&D base for meeting unarticulated needs of their customers. The second group consists of 'market readers' which focus on competitors and customers. They strive to create incrementally higher value to the latter, thus capitalizing on proven market trends. Finally, 'need seekers' mainly engage with their customers for understanding their needs, and creating products and services that are typically classified as new market entries.

Competences refer to 'a firm's capacity to deploy resources, usually in combination, using organizational processes, to affect a desired end', according to Amit and Schoemaker (1993). The competence also represents the traditional definition of 'bundle of skills and technologies rather than a single, discrete skill or technology' (Hamel and Prahalad 1994). Capabilities required for each type of innovation strategy differ in skills, processes and tools. Less successful companies are likely to cover capabilities related to customers and market, but likely lack in capabili-

ties related to technology and product platform. In consideration of this issue, less successful companies can be understood to lack of synchrony, that is, the tendency for phenomena at all levels of existence to synchronize their behavior. Proper focus also means choosing the capabilities that are suitable to their innovation strategy. Such innovative companies take their products to the market more successfully. Global product launches accompanied with pilot-user selection and rollout form critical areas wherein they score higher than their less successful competitors. Then focusing on critical capabilities and avoiding resource allocation to less critical capabilities consist of an ongoing choice that successful firms are forced to consider. In this process of choice and focus, they tend to develop core competences and even dynamic capabilities. Competences alone, which are referred to in the resource-based view, thus, are static (Teece et al. 1997). Employees possessing innovation competences, also trained as business innovators, are qualified "black belts" that are responsible for the quality if ideas generated within a firm, thus can manage dynamic capabilities.

As an extension to the competence, the organizational capability refers to the strategic application of competencies, that is, their use and deployment to accomplish given organizational goals (McGrath et al. 1995). An elaboration of this confers upon an organization's management as a set of decision options for producing significant outputs (Winter 2000, 2003). Summarizing these elements, a historical record of specific shortcomings of some traditional concepts in strategic management literature has been put forward by researchers (Bharadwaj et al. 2010).

Organizational capabilities in exploiting all competences, core as well as those borrowed from network theory, form the crucial set for an effective innovation strategy. The firms that succeed in these critical activities also succeed in achieving a competitive and sustainable overall organizational strategy.

The success of innovation at firm level depends on possessing, or procuring access to, certain chosen capabilities. Thus, they may be considered as inputs. More specifics of the inputs, including ideas that go into the innovation pipeline have been listed by Hamel and Tennant (2014). The outputs consist of both financial and non-financial benefits. The former

are far easily measurable in that they embody a chosen business model, and the latter are broad in that they cover medium- to long-term benefits. Learning effects, network development for accessing external technologies, knowhow and expertise or skills are a few to name. Innovation efficiency can de specified as the ratio of outputs to inputs. In addition, firm's management process facilitating, or frustrating, innovation and leadership for removing innovation blockages contribute much to the innovation performance of the firm.

The input–output model at firm level, thus, strongly depends on the capability development, enhancement and exploitation. In other words, the capability maturity level of a firm, at least in the innovation landscape, while belonging to one or other categorization suggested in *The Global Innovation 1000*, is crucial for innovation success.

This chapter explores various degrees of capability maturity as indication of the successful innovation strategy. It encompasses the categories mentioned in *The Global Innovation 1000*. It shows possible scope for improvement at the firm level. Such improvement could take an extended process for less well-performing companies and be facilitated for successful firms which opted for a clear innovation focus within each aforementioned categories. Building capability may stretch over several dimensions along the R&D value chain and typically extends to the phase of development and commercialization of products or services.

Innovation Capability Maturity Levels

In our own innovation practice at Inpaqt, we have encountered companies at different levels of innovativeness. We concluded that there was a sort of structure/hierarchy behind these different levels. In other words, a company could not jump to a higher level of innovativeness in one step. It had to follow a certain sequence of improvements leading to successfully higher levels. In Fig. 2.1, we have described these subsequent levels. The encompassing model looks similar to the models for operational excellence as defined in the EFQM model, and software engineering as defined in the CMMI model.

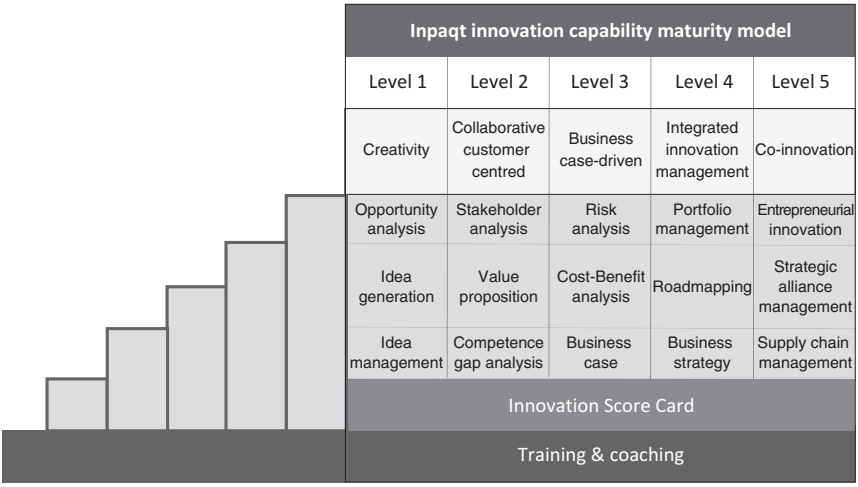

Fig. 2.1 Various levels of innovation maturity

We propose to define five levels, namely:

1. **The Creativity Level**. In companies at this level, innovation management is restricted to stimulating creativity and idea generation. Companies focus especially on idea management. Innovation is often driven to a significant extent by technology push.
2. **The Collaborative Customer Centered Level**. At this level, companies start to put the customer at the center of their innovation activities. Ideas are worked out in the form of customer value propositions and are compared to the value propositions of competitive products. Companies look for differentiators and unique selling points and they focus on value propositions for those customer groups that can be reached and cannot be easily imitated by competitors. Through this approach, they build sustainable competitive advantage. Business cases are written at this level, but mostly only at the very beginning of the innovation process. The most important purpose of these business cases is to convince senior management or other (private) investors to approve the project.

3. **The Financial Business Case Driven Level**. At the next level, the business case is used as a management instrument to better define the value and cost drivers. Critical parameters that influence decision-making are studied and used to generate options. The business case is constantly updated. Here managing uncertainty and flexibility, or in other words, option thinking, is at the heart of the management of the innovation process.
4. **The Integrated Innovation Level**. When the business case is not used in a proper way, portfolio management takes on a role which resembles multi-project management rather than an optimized form of portfolio management. At this level, companies succeed in achieving the alignment of strategy and innovation activities in the projects. In addition to the portfolio management for aligning strategy and innovation, road mapping and other innovation management systems such as knowledge management systems are also often applied.
5. **The Co-Innovation (or Co-Creation) Level**. Although the terms 'open innovation' or 'co-innovation' are in fashion nowadays, it is our experience that organizations cannot co-innovate when they do not have an innovation process positioning their own firm in the industry it belongs to. The collaboration with a variety of stakeholders, through inter-organizational knowledge transfer is a pre-condition and usually critical to successful 'open innovation' or 'co-innovation'.

To climb up the ladder of the successive levels of innovation capabilities takes time and effort. After all, innovation is a people's process. The mindset of the people and the organizational culture, or the human factor, turns out to be more important than the sole application of the proper innovation tools and innovation management systems. However, tools will help experts to improve their performance. For instance, good instruments are not only important to enable surgeons to perform delicate surgical procedures. They are also relevant for entrepreneurs, managers, engineers, marketers, controllers and other business specialists.

Good tools help them perform better and collaborate more effectively. In particular reinforcing loops between developing an innovative mindset and organizational culture exist on the one hand, and the use of innovation tools and management systems on the other. The use of such tools

can aid also to develop a customer-oriented mindset, and apply the business case to create economic value propositions in search of new business options. However, as with playing the piano, or using any other sophisticated instrument, one has to be trained and coached in the proper use of such instrument, and developing the right mindset to prevent the adoption of wrong routines that are hard to unlearn later.

The Inpaqt method presents a portfolio of tools for application in various innovation activities at organizations. The tools are categorized for effectively covering various stages of the intricate innovation process. They are cast in the form of e-learning modules. These modules are used for training and coaching within organizations. During the course of training and coaching, a few workshops and brainstorm sessions are held. The purpose of those is to open up discussions among a limited number of managers from relevant departments within an organization and bring clarity to often disputed issues such as those between marketing and R&D managers. The sessions also create an open environment for each participant to review any proposal from another member. As a consequence, this process brings alignment between various departments, thus organizational strategy. It is believed that acceptance of others views, consensus and ultimately commitment shall follow.

E-Learning Modules of Inpaqt

The innovation process often is long, and it has many stages or milestones for review and correction, if any needed. The process can be conveniently split to the following, as categorized by Inpaqt. Each category is facilitated with its own e-learning module as described below.

Module 1: Opportunity Analysis and Idea Generation

The purpose of opportunity analysis is to analyze various opportunities in depth, and any prevailing gaps and bottlenecks that destroy value, if any. Coming with solutions to close these gaps and removing these bottlenecks create extra value.

In order to perform this, we start with asking ourselves the following questions:

1. What are the sources of innovations? Which are still underused and offer a business opportunity?
2. How do we transform strategic options at macro level into feasible business opportunities?
3. How do we select the most attractive and feasible business opportunity?

We can use a number of tools to support us in answering the above questions, namely:

1. Market/Technology life cycle analysis using, for example, BCG Matrix
2. The innovation radar
3. Analysis of the customer value proposition versus competition
4. Outcome-driven innovation
5. Bottleneck analysis
6. Quality cost analysis
7. Root cause and root conflict analysis.

After this opportunity analysis step, several idea generation methods can be used to stimulate participating managers to look in another way to a given problem. These methods can be divided in 'out of the box' methods such as TRIZ and 'in the box' methods such as SIT. In this module, these methods, and many others, have been discussed in brief and tools are made available to practice them.

Module 2: Entrepreneurial Innovation

This module focuses on the innovation process in its totality. Most of the process is conducted in multidisciplinary teams. In popular terms, we can characterize this process with activities such as 'dreaming', 'thinking', 'deciding' or 'daring and doing'. The activities of this process can be best characterized as the entrepreneurial innovation activities. These are the things that innovating entrepreneurs are bound to be active in.

In this module, the innovation process is taken up starting from the environmental analysis, through developing a vision, up to product or service development and market introduction. The whole process is divided into four main steps as shown in Fig. 2.2.

Each of these steps is briefly explained and the tools to execute these steps are offered in a structured way. To clarify the use of these tools in practice, a short innovation case is presented. In order to keep the gap between theory and practice as small as possible, the business cases in a module are derived from specific sectors or industries such as pharmaceutical and biochemical industry, the engineering industry, chemical or food industry, construction, care or hospitality sector, or clustered around themes such as sustainability or urban development.

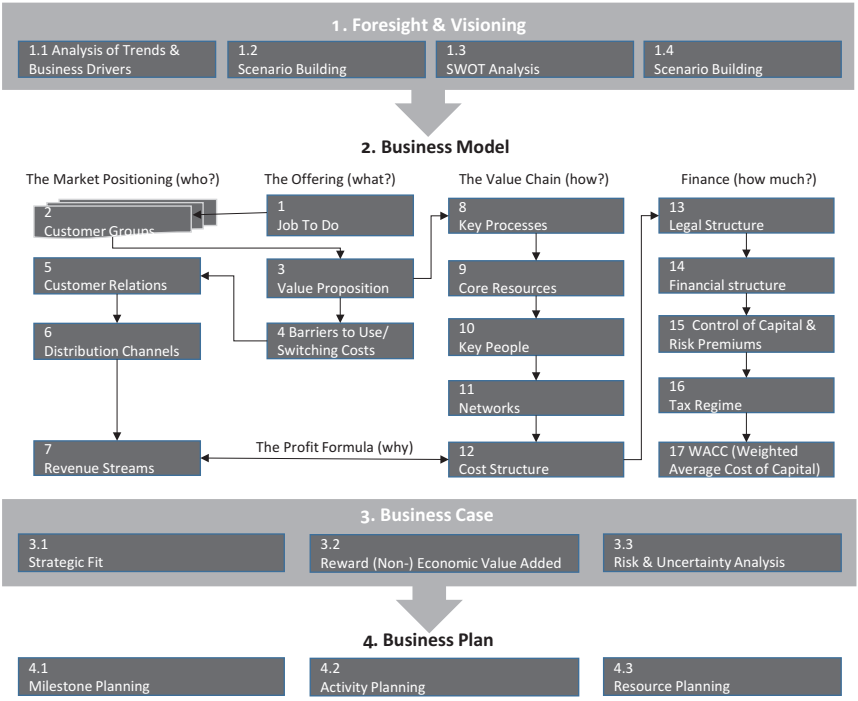

Fig. 2.2 Division of innovation process to four major steps

Module 3: Process Innovation and Operational Excellence

Process innovation and operational excellence are often treated as disconnected entities. This is because process innovation and operational excellence stem from different domains, namely innovation and operations, respectively, in which different management paradigms prevail. In the former, planning and control are difficult to apply because of high level of uncertainty. In the latter, planning and control represent two management pillars with a rigid structure. To be successful, however, one has to apply both in connection to each other. Taking a closer look at the methods and tools applied in both fields, one discovers that in reality 80 % of the methods and tools overlap, for good reasons.

In this module, we discuss the various methods and tools that are used in process innovation and in operational excellence looking at the value chain from four perspectives, namely:

1. The process perspective
2. The competence and technology perspective
3. The people perspective
4. The partnering or network perspective

Techniques that are discussed in these perspectives cover the following:

1. Value stream analysis
2. Quality function deployment
3. A formal modeling framework for process analysis
4. Competence gap analysis
5. Quality costs analysis
6. Root cause/conflict analysis

Module 4: Innovation Management and Innovation Management Systems

In this e-learning module, we deal with the alignment of the innovation process as it occurs in the multidisciplinary innovation teams ensuring

company's vision, mission and strategy. In this module, 12 innovation management principles are presented. Correspondingly, 12 dilemmas innovation management has to deal with are discussed. These lay the basis for the discussion of three encompassing main management activities and their subsystems as listed below.

1. **Strategic Innovation Management**: The process of defining the strategy or direction of the organization, and making decisions on allocating resources to pursue this strategy, including capital and people. Strategic planning is the formal consideration of an organization's future course. Thus, capability utilization is the key for making this activity successful. The following sub-management activities belong to this main activity, thus worked out with the help of following suitable tools.

   1.1 Foresight and visioning (diagnosis)
   1.2 Life cycle management (diagnosis)
   1.3 Business modeling ((re)design)
   1.4 Roadmapping (planning)
   1.5 Pipeline management (planning)
   1.6 Portfolio management (control)
   1.7 Innovation performance management (control)
   1.8 Reward management systems (control)

2. **Front End Innovation Management**: The front end of innovation is the part in which signals are taken up from both outside and inside the organization, and they are combined to form new innovative business ideas. The resulting business ideas are transformed into business concepts and business plans, again using knowledge from outside and inside the organization. This front end innovation management can be separated into two management activities each with specific supporting management systems. The following sub-management activities belong to this main activity and are dealt with as follows:

   2.1 Idea management and concept development ((re)design)
   2.2 Knowledge management ((re)design)

3. **R&D Management and Implementation:** Managing the development processes of separate elements of the business model falls under this main activity and it incorporates technologies and other capabilities, components, products, production processes, and manufacturing and organizational infrastructure. Two types of sub-management activities are of importance here.

   3.1 The stage-gate process, program and project management (planning)
   3.2 Process and (business model) change management (planning)

These management activities that are part of innovation management can be classified, as depicted in Fig. 2.3, using the following categories: (1) Diagnosis, (2) (Re)Design, (3) Planning and (4) Control. These activities can be considered to follow a cyclic path.

In fact, each of the above innovation management activities can be assigned to one of these basic activities. Subsequently, those management activities can be further classified according to the management level at which they are executed, namely at top-, middle- and first-line management level. Corresponding capability requirements can be subsequently undertaken for either own development or outsourcing to the partners in the network.

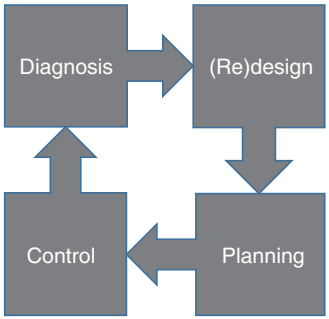

Fig. 2.3 Cyclic path of the innovation process

Module 5: Co-Innovation of IT-Supported Services

In global markets, companies tend to excel in their businesses by focusing on activities that belong to their competitive strategy. Companies focused on their mission and vision, thus concentrate on their organizational strategy and on every activity that directly contributes to their goal. These are categorized as core activities and are often critical, because they involve specific competitive considerations of the businesses in question. Some examples are R&D and product innovation-related activities that are likely to be carried out within the premises, though some changes are taking place in recent times. In manufacturing, more and more components, subassemblies and assemblies are outsourced as witnessed by automotive and electronic industries. Thus, outsourcing has become more of a practice than an exception. Many types of services, in majority supported by information technology, such as those offered in banking, communication and supply chain have been outsourced also at an increasing rate.

In recent years, outsourcing is becoming a major element in business strategy and companies are adopting outsourcing in an effort to increase their flexibility and free themselves to focus on their core competency (Quinn 1999). Outsourcing non-core activities allows companies to redirect scarce resources toward their core functions and processes, thus reinforcing their core competences and the resulting capabilities.

Module 6: Stimulating Innovation and Regional Development

Today's competition takes the form of a worldwide scientific, technological and economic race for pre-eminence. At the same time, businesses are confronted with conditions of scarcity and hard choices when formulating their innovation strategy. The past decade has witnessed a sea of initiatives designed to improve business performance on social, economic and environmental issues. In particular, a global climate crisis presents a universal challenge that has pushed policymakers beyond their traditional comfort zone, because both the risks and opportunities

which ensue from global warming clearly impact the long-term health of our economic system. The Europe 2020 strategy for smart, sustainable and inclusive growth is a vision designed to influence, among others, companies to generate profits by moving toward more sustainable forms of production and consumption. At the same time, the new Millennium Development Goals underscore the need to align processes and create a world wherein a willingness to eradicate poverty prevails in a more sustainable and equitable way.

With sustainable issues shaping innovation strategy, entrepreneurs need to gain a deeper insight of how these issues affect their business model and future license to operate.

As we have seen earlier, there are still plenty of companies that lack the capabilities to engage effectively with innovation and may go about their business with little thought to the social and environmental challenges that lie ahead. The evidence unearthed through numerous cases, whereby the Inpaqt method was deployed, suggests that entrepreneurial innovation occurs increasingly through the management of strategic alliances and road mapping across supply chains.

Partnerships are becoming a powerful tool for stimulating sustainable business development. However, the total cast of actors indicates a large number of players in a variety of roles, from a range of disciplines and backgrounds and conflicting objectives and agendas. Moreover, the transactional environment is only managed in part, and decision-making emerges from ownership and key management roles. This calls for a relational turn in studies and praxis alike and demonstrates the relevance and distinctiveness of contextual relationships, processes and dynamics to create both the capacity and momentum to explore the structural cooperation between different actors.

For example, Unilever launched an ambitious plan to double revenue by 2020 while halving the company's environmental impact by leading a socially driven mission, while protecting company's core. Two overlapping relationship paradigms emerged: the first is a financial framework comprised of thousands if not millions of shareholders whose objectives typically differ. So, it became important to identify those shareholders that are comfortable with Unilever's longer-term growth model as opposed to catering to shorter-term interests. The second one is a partici-

patory relationship with those initiating and those receiving the effects of change. Said Unilever's CEO Paul Polman (2009):

> a longer-term growth model doesn't mean underperforming in the short term. It absolutely doesn't need to involve compromises. If I say we have a ten-year plan, that doesn't mean "trust us and come back in ten years." It means delivering proof every year that we're making progress. We still have time-bound targets and hold people strictly accountable for them, but they are longer than quarterly targets. Often they require investments for one or two years before you see any return. For instance, one of our targets is creating new jobs for 500,000 additional small farmers. We had 1.5 million small farmers who directly depended on us, and we've already added about 200,000 more to that group. It's a long-term goal, but we still hold people accountable. The same is true for moving to sustainable sourcing or reaching millions with our efforts to improve their health and well-being. All of this is hardwired to our brands and all our growth drivers.

Every innovation management situation is unique. The global market forces entrepreneurs to reinvent their product portfolios on an ongoing basis. This puts the human factor center stage. The most sophisticated information systems will fail to deliver competitive advantage without the capability to manage organizational cultures that encourage the unleashing of human potential through ideas and experimentation and through these the stimulation of innovation, which in turn drives regional development.

To compete effectively in a global economic arena, well-known companies like Unilever and lesser-known ones must apply innovation to find creative ways to link private sector resources and public sector initiatives for promoting growth and mitigate the impact of pollution. Unabated urban regional development is a highly likely scenario. The conduct of enterprises impact regional structure; in turn regions, cities and countries represent the *meso*-environment for enterprises. Therefore, knowledge of the enterprise relations with stakeholders, particularly government and higher education, has become an imperative in the form of shaping public–private partnerships. Particularly, to comprehend and implement inviting and imaginative scenarios in support of innovative entrepreneurship on the one hand and innovation management geared toward sus-

tainable regional development, on the other. Such integrated innovation scenario offers a design to stimulate entrepreneurship, creativity and contributes to 'making poverty history'.

Discussion

In this chapter, we have described six different e-learning modules that cover the innovation process, holistically, from both the innovators' perspective and the management's perspective. The innovators' perspective deals with the entrepreneurial activities and therefore in this chapter, we also deal with the entrepreneur–management interaction. More details and white papers can be found on the website of Inpaqt (www.inpaqt.nl). Whereas in small and medium enterprises' the management perspective is negligible, in large corporations this perspective is often dominant and may kick entrepreneurship away from the process. Therefore, we claim that we also explain how the gap between entrepreneurship and management can be closed and balanced.

At this moment, these modules have been applied in a large number of European companies. The feedback is used to improve the modules. We assume that the business climate in emerging markets may differ from the European ones. We are now in a position and ready to apply these modules in the upcoming market context on the basis of what we have learnt in Europe. Possibilities for cooperated approach, thus, are available using the Inpaqt method. In our endeavor, we intend to analyze similarities and differences so that successful approach can be pursued for analyzing business cases: *Think global and act local.*

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3

Complex Adaptive Systems and Strategy as Learning

Ysanne M. Carlisle and Elizabeth McMillan

Introduction

This chapter argues that organizations are complex adaptive systems (CASs). It reinforces the importance of organizational learning and adaptation, particularly in relation to organizational survival and sustained success. It supports learning organizations concepts and the learning school of strategy and suggests that a complex adaptive learning model of strategy can help managers and researchers understand adaptation and innovation in modern globally connected organizations. The prescriptive schools of strategy and strategy development undervalue learning and overemphasize control and reflect a world view dominated by classical science. Yet the complexity paradigm has emerged to challenge many long-held scientific assumptions, encouraging new thinking in a range of scientific domains. We offer a short selective overview of the history of strategy and distinguish between these two world views. We argue that

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organizations (and economies) are complex adaptive systems which are better understood from a complexity science standpoint.

CASs are a key feature of complexity science. Understanding and knowledge of these systems provides hard scientific evidence to validate the notion that learning and adaption are central to the survival and success of organizations comprised of living human agents. Our description of CASs and their key attributes enables us to consider how this knowledge highlights the importance of learning in organizational contexts, adds weight to learning organization concepts and the notion of strategy as learning.

CASs are at their most successful when operating at "the edge of chaos" and this notion informs the "Complex Adaptive Learning Model of Strategy" (McMillan 2008). This model provides a useful conceptual framework to enable researchers and practitioners to revise and develop symbiotic notions of strategy, innovation and learning on an ongoing basis.

A Selective Brief History of Strategic Studies

During the 1970s, most strategy research aimed to establish rigorous relationships between the strategic direction of organizations and a host of variables that might account for their success or failure (Hendry et al. 1993). In the 1980s, strategic management research was concerned primarily "to test the relationship between different strategic, organizational and performance variables" (Hendry et al. 1993, p. 3). Achieving a strategic fit between the organization and its environment became the primary goal of the strategy development process (Porter 1980, 1985). During the 1990s, the resource-based view of the firm proposed by Wernerfelt 1984, Peteraf 1993 and others[1] rose to prominence. From this perspective, distinctive inimitable capabilities (Rumelt et al. 1991) and core competencies (Prahalad and Hamel 1990) are the foundations upon which competitive advantages are built. Prahalad and Hamel considered core competencies to be the outcome of organizational learning and knowl-

[1] Rumelt (1984), Grant (1991), Barney (1991).

edge creation. The resource-based perspective accords a central role to organizational learning in developing and sustaining competitive advantage thereby acknowledging its place in strategy development.

At about the same time as the resource-based view emerged interests in the nature and usefulness of knowledge as a strategic resource when "created" in organizations was pursued (Nonaka 1991, 1994). This work challenged previously accepted prescriptive perspectives on strategic management processes. Because learning at both individual and organizational levels is a key "knowledge process" which feeds in to almost every organizational activity, the idea of "strategy as learning" became widely adopted (Carlisle 2002).

According to Mintzberg et al. (1998), the learning school of strategy originated in the work of Lindblom (1968), Quinn (1980) and others who conceived of strategy as more evolving than planned. Lindblom's described policymaking as "disjointed incrementalism," a concept further developed by Quinn in his notion of strategy as "logical incrementalism." Quinn (1980) considered strategy formulation and implementation as dynamic processes that merged as managers guided streams of activity into an integrated system of strategic management. He believed that successful managers sense the need to do things differently and create strategy through their actions. Quinn put people rather than formal planning systems at the heart of strategy-making, highlighting the importance of human systems and their learning and awareness attributes but stopped short of recognizing the full implications of this for strategy development. Early evolutionary strategy process theorists continued to stress the importance of logical, rational, analytical procedures in strategy development.

Evolutionary theories of strategy today see organizations as complex sets of interlinked and interconnected systems in which any disturbance to normal routines will produce strategic change (Mintzberg et al. 1998) as the "vibrations" cascade through the system. Feedback loops in a complex system are no longer seen as mere control mechanisms prompting the need for "corrective" action, their potential for amplification and disequilibrium are also recognized and this is a basic tenet of complexity.

Mintzberg famously noted that "all strategy making walks on two feet, one deliberate and one emergent" (Mintzberg 1987, p. 69). The deliber-

ate dimension fosters control while the emergent fosters learning. In volatile industries, successful companies have often emphasized the emergent learning dimension of the strategy process. For example, Burgleman and Grove (1996) described how Intel fostered "constructive confrontation" between the internal champions of alternative technologies as a means of learning the best strategic directions for the future. Tichy and Charan (1989) described how Jack Welch achieved success in General Electric by shifting strategy-making towards a bottom-up approach which would capture knowledge and expertise from people throughout the organization. However, radical change usually requires "unlearning" as well as learning (Johnson 1988, p. 1990). Often, this process has required some form of crisis as a catalyst. Nonaka (1988, p. 57) observed that organizational self-renewal is "a process of dissolving an existing order and creating a new one" but top managers can sometimes "live in worlds circumscribed by their cognitive structures" (Nystrom and Starbuck 1984, p. 57). Decision makers do not learn from mistakes if their cognitive make-up or vested interests preclude them from recognizing decisions as mistakes in retrospective sense-making.

In questioning the separation of strategy formulation and implementation, learning school theorists challenged a basic tenet of the classical science paradigm and implicitly offered a complexity science perspective. In considering how strategy was formed and how an organization embarked on a fresh strategic direction, learning school researchers found that these changes were often due to strategies emerging from self-organization. It was accepted that often strategies arose from a number of small actions or decisions that management made without any prior strategic intent (Mintzberg et al. 1998) and that taken "together over time, these small changes often produced major shifts in direction" (Mintzberg et al. 1998, p. 178). This is strategy seen not as a top-down prescription but as an unpredictable emergence from the self-organizing actions of the many in a CAS.

The prescriptive schools of strategy were heavily influenced by a perceived need to reduce uncertainty. But the real world *is* unpredictable and uncertain and strategic approaches designed to reduce or eliminate uncertainty do not accord with reality. They are likely to be ineffective and may even compromise organizational survival (Downs et al.

2003). Fostering emergent strategy is a key feature of the learning school approach to strategy development which recognizes that uncertainty is here to stay. Further, emergent strategies rely on an organization learning from the real-life experiences of all its employees not just those at the top (Noe et al., in Downs et al. 2003). Brown and Eisenhardt (1998) highlighted the importance of improvisation as a feature of emergent strategy. Businesses that improvise tend to produce products and services that are successful and unexpected. The ability to improvise and grab the passing opportunity which offers a possible advantage is an intrinsic property of effective CASs. Their blueprint for survival is spontaneous experimentation, double-loop learning and adaptation coupled with retrospective sense-making. These are attributes highlighted by the learning school. CASs interpret and reinterpret their experiences in real time and evaluate the possibilities they offer for competitive advantage and future survival. Given that organizational strategic thinking has gradually moved away from the classical prescription of both strategy and process towards a concern for adaptation grounded in learning, it is unsurprising that complexity approaches to strategy and innovation have become more prominent since the turn of the new millennium (e.g. Carlisle and McMillan 2006; McMillan 2004, 2008; Carlisle 2011; Ashkenas et al. 2014).

Comparing the Two Paradigms

The classical scientific paradigm holds that the world is like a clockwork machine controlled by universal laws with linear, cause and effect systems that make it possible to predict outputs and outcomes. It advocates analytical, logical, rational thinking and attaches little value to intuition and synthesis. Early writers on organizations like Weber, Taylor and Fayol drew on these scientific notions in founding the field of organizational studies (Handy 1990; McMillan 2004, 2008; Morgan 1986; Shelton and Darling 2003).

By the late twentieth century, the emergence of quantum mechanics, chaos theory and then complexity science seriously challenged this paradigm. Complexity thinking is increasingly influencing the social sciences with significant work emerging in the field of organizations and

management by Anderson (1999), McKelvey (1997, 1999), McMillan (2000, 2002, 2004, 2008), Pascale et al. (2000), Stacey (1992, 1993, 1996, 2003, 2005), Stacey and Griffin (2005), Stacey et al. (2000) and others. Complexity science or the study of complex systems is multidisciplinary and primarily concerned with explaining self-organizing and CASs. A number of writers contend that organizations are not merely complex systems but CASs, for example, Allen (2001), Baskin (2000), Lewin and Regine (1999), McMillan (2004, 2008), Pascale et al. (2000), Stacey (1996).

The classical science paradigm assumes that organizations are controllable with the formulation and implementation of appropriate planning and controlling processes and that it is possible to predict the outcomes of planned events. The complexity paradigm assumes that these organizations are inherently unpredictable, uncontrollable and liable to both slow incremental change and rapid and transforming events. Minor variations in initial conditions have been shown to lead over time to major differences, making it impossible to accurately predict the outcome of events over any but the shortest time period. Thus, the non-linear systems of the living world cannot be properly understood by the use of linear models and cause and effect analysis alone.

In seeking knowledge and explanations of natural phenomena, including human behaviour, the classical scientific approach tends to be numerically driven and entity focussed. Complexity science on the other hand seeks explanations by studying process, flows and patterns of behaviour and activity. Stacey et al. (2000) contend that organizations are driven by complex responsive processes whereby people are constantly interacting individually and collectively and transforming themselves and their environments in an ongoing process of relating.

Strategy and strategic thinking based on classical science concepts assumed that change was an evolutionary process that took place over long timescales and developed incrementally. This notion fitted comfortably with accepted Darwinian theory but newer interpretations of evolution show that life on earth developed not only incrementally but also with abrupt periods of massive change.

Descartes argued that the mind and the body should be treated separately, thus classical science separated thinking from action. This view

is especially evident when one considers the separation of formulation from implementation is a feature of the prescriptive schools of strategy. The design school promoted the idea of thinking as separate from action and the planning school developed even more complicated systems of planning and analysis which distanced the strategic thinking process even further from action. The positioning school continued this tradition by focusing on the complete formulation of strategy before considerations of implementation. From a conventional strategy perspective, strategy involves an iterative linear process of formulation, implementation and review. From a complexity perspective, thinking and action are synchronous. The most powerful learning comes from direct experience, from taking action and seeing the consequences of that action (Senge 1992).

"The complexity paradigm advocates a vibrant model of strategy that exists within a dynamical and unpredictable framework. This is very different from the essentially static models advocated by the traditionalists. From a complexity perspective strategy is seen as a real-world, real-time process which emerges from organizational interactions and responses infused with learning, innovation and creativity" (McMillan 2008, p. 196). Thus, a complexity perspective sees learning and discovery, not planning and control, as vital to survival. As Stacey (1996) suggests, employees in an organization have no idea where they are heading over the long term but by working and learning together a new direction emerges. This is strategy unfolding as a learning and adaptation process shared by everyone in the organization.

Complex Adaptive Systems

CASs are self-organizing, living systems that are able to learn and adapt to changes in their circumstances in order to survive. They include biological systems, ecosystems, social systems, human and insect societies, viruses and the human brain (McMillan 2008). Economies, stock markets, organizations, groups of people and individuals are all CASs. It should be noted, however, that they are not always able to operate as "perfect" CASs because of different contextual constraints. They are complex because they are composed of large numbers of individual inde-

pendent and interdependent agents. These interact with each other and their environments creating systems of great complexity such that it is impossible to know, to predict or to accurately measure all the many interactions that take place over a given period of time. They are non-linear and self-organizing because they are not controlled in any hierarchical way, but self-regulate and respond spontaneously to events around them according to a set of underpinning principles. A flock of birds, for example, self organizes when it takes off into flight in order to avoid a predator. No one bird issues the instruction nor guides the flock setting direction or speed. The birds are guided by underlying laws or principles, which have evolved over millennia as part of the survival process of the species.

Organizations are CASs and thus cannot be effectively microcontrolled within hierarchical systems. The financial crisis of 2008 and wider unanticipated and undesired consequences of this provide recent evidence of the fact that outcomes of interactions in such systems cannot be accurately predicted or controlled.

A good example of how a CAS is able to learn, adapt, use feedback and create its own mental models is the human brain. Think of how its billions of neurons spontaneously react and respond to everything that is happening in your head as well as everything that is going on in the world outside. It interacts with everything it encounters so that you develop simple new skills and techniques (single-loop learning) and at the same time revise your mental models so that significant new behaviours emerge (double-loop learning). Within an organization, senior management has an important role in creating a climate and a culture which encourages such learning, an important precursor to true innovation.

"The edge of chaos" is where a living system is neither so stable that it ossifies and ceases to exist nor so unstable that it becomes chaotic and disintegrates. CASs have evolved to flourish on "the edge of chaos" preferring to exist in a balance between equilibrium and disequilibrium. This provides them with not only sufficient stimulation and freedom to experiment and adapt but also adequate frameworks and structure so that they avoid disintegration. In this way, they optimize their chances of survival. It can be argued that large, traditional, complex bureaucracies operate too close to equilibrium and therefore ossification whereas many

of the new dotcoms of the 1990s operated too close to disequilibrium and disintegration (McMillan 2008). Arguably, this is also true of some of the financial institutions which failed during the financial crisis.

CASs flourish by constantly exploring, experimenting, learning and adapting to changes in themselves and their environments. If organizations are to thrive in today's volatile fast-moving world, they will need to behave like these systems (Lewin and Regine 1999). But their ability to do this and to flourish may be hindered and inhibited (Lewin and Regine 1999; McMillan 2008) by traditional mechanistic approaches.

The Importance of Learning to Organizational Survival

It is widely recognized that knowledge is vital for wealth creation and competitiveness (Penrose 1959; Teece 1977) and that learning is central to the process of knowledge creation. Further, the ability to learn in a variety of ways has been linked to organizational effectiveness for some time.[2] In periods of discontinuous environmental change, adaptability and the capacity to learn and change rapidly are key requirements (Allen 2001). De Geus (1988, p. 71) suggested that we live in a world "in which the ability to learn faster than competitors may be the only sustainable competitive advantage."

Handy (1990) and others point out that organizations need to learn to reframe the way they see the world to develop effective survival strategies. Shelton and Darling (2003) describe the need for new mental models free from mechanistic thinking that will facilitate organizational learning and encourage ongoing improvements and collaborative learning, while Tetenbaum (1998) considered learning as key to survival in a turbulent new century advocating the creation and maintenance of a learning organization incorporating self-organizing principles.

Baskin (2000, p. 2) considers that: "Evolution is the process by which living things develop emergent adaptations to change over many genera-

[2] For example, Cohen and Levinthal (1990), Brown and Duguid (1991), Senge (1992), Badaracco (1991), Kogut and Zander (1996), Powell (1998).

tions. Learning is the process by which they develop emergent adaptations within a single generation. Organizations, however, blur this distinction. While it took the dinosaurs many generations to evolve into birds, Mercedes-Benz Credit Corporation was able to evolve from a mechanical hierarchy to a much more organic form in only five years in a single organizational generation. As a result, we can define organizational learning as the process by which organizations evolve emergent adaptations."

CASs and Learning Organizations

Organizations are CASs as they are composed of individual CASs, people, but whether they are able to operate at their optimum depends very much on culture, structure, processes, values and underlying principles. Learning organization theory considers change and learning as essential for survival (Pedler et al. 1991) and double-loop learning is viewed as essential for real change. This accords well with the notion of the organization as a CAS, as these systems engage in both single-loop and double-loop learning and consequently second-order change, creating the potential for true innovation.

A learning organization encourages all employees to learn afresh, reframe their world (Handy 1990) and reinvent themselves in order to survive. In the same way, a CAS uses group learning and adaptation skills for its survival. It is not enough for learning organizations to simply survive (Senge 1992), like CASs they must constantly expand their capacity to create their future. Learning is seen as a highly dynamical, creative and immediate strategic survival process. How effectively an organization learns, however, and whether learning is integrated throughout the organization is, in traditional organization structures, determined by senior management. This situation could prove problematic for organizations seeking to radically change and adapt.

Building on earlier work, Stacey (2003) refers to the complex responsive processes of learning. He defines learning as the "emerging shifts in the thematic patterning of human communicative interaction and power relating" (Stacey 2003, p. 330) whereby learning arises out of shifts in meaning that are simultaneously individual and collective. Learning is the

activity of interdependent people in an organization and may be understood as a self-organizing interaction of communication and power relating between individuals—which has the potential to transform them.

Further, Stacey maintains, individuals are not able to learn without interacting with others, and these interactions can over time amplify small differences that may lead to major shifts in thinking. Thus, a complex web of responsive learning processes is always unfolding. It is a web that both creates and sustains an organization. Stacey, however, is concerned that major changes may lead to anxiety which may inhibit or even close down the learning processes. Managers therefore need to accept that people may be entering unknown territory and may not have the skills to immediately respond effectively. Transformative learning, therefore, is not without its dangers.

McMillan (2004, p. 165) proposes that groups or teams within an organization can work as effective CASs. She writes: "Socially organized insects, birds and mammals all engage in complex, adaptive learning activities in order to survive. Organizations can use this model to improve the learning, adaptation and therefore survival of their own species, the organization. By creating richly diverse groups they provide a complex range of new interactions and experiences that stimulate learning. By using mixed groups an organization can help raise the levels of complex learning for individuals and groups and thus the level of adaptive skills within those parts of the organization where they have significant influence."

Organizations have the potential to change and adapt by virtue of the ability of individuals to explore, monitor and interpret their experiences and these human learning systems offer better possibilities for long-term sustainability than short-term rationalistic approaches (Allen 2001).

An organization which operates and is designed on organic principles can function as a genuine learning organization (Baskin 2000). The corporate store of knowledge is contributed to, drawn upon and used by all employees to enhance organizational learning and sustainability. Baskin (2000, p. 10) refers to 3M where "people work together as the autonomous agents of a self-organizing CAS, learning and adapting because that is the basic nature of their organization."

Every learning organization is a unique and constantly changing CAS and as an organizational form with its focus on learning and adaptability, it has major advantages over other organizational forms in its potential to operate as a CAS at peak performance.

The Complex Adaptive Learning Model of Strategy

The learning school of strategy was partly a response to the fact that prescriptive schools did not properly consider the human dynamics of an organization. Nor did "they properly recognize that the unfurling of strategic intent does not take place in an unresponsive vacuum. Thus they gave insufficient consideration to the role of feedback and reverberation across the human web of the organization and tended to neglect the importance of individual organizational members as contributors to the strategy making process" (McMillan 2008, p. 99). Consideration of the organization as a CAS acknowledges that rigid control and manipulation of human dynamics is not feasible and if attempted can produce unpredictable, even unwelcome results (e.g. Carlisle 2011). Further, strategy-making and the use of strategic analysis should be a multidisciplinary activity and prescriptive strategy-making, which relies heavily on economic and financial aspects, overlooks the importance of other significant real-life factors (McMillan 2008).

McMillan (2008, p. 196) puts forward the Complex Adaptive Learning Model of Strategy, a conceptual model with real-world applications that is built upon complexity paradigm notions of strategy. It accords powerfully with learning organization theory and supports the learning school of strategy (Fig. 3.1).

At the heart of the model is an organization operating as a CAS balancing itself on the "edge of chaos" so that it avoids the extremes at either end of the spectrum. Thus, it does not get stuck in the past nor trapped in endless speculation about the future. And so, it avoids clinging to static mental models and repeating past mistakes or alternatively obsessing about the future and developing flimsy new mental models. This is an organization that changes its view of the world as it reacts, interacts and

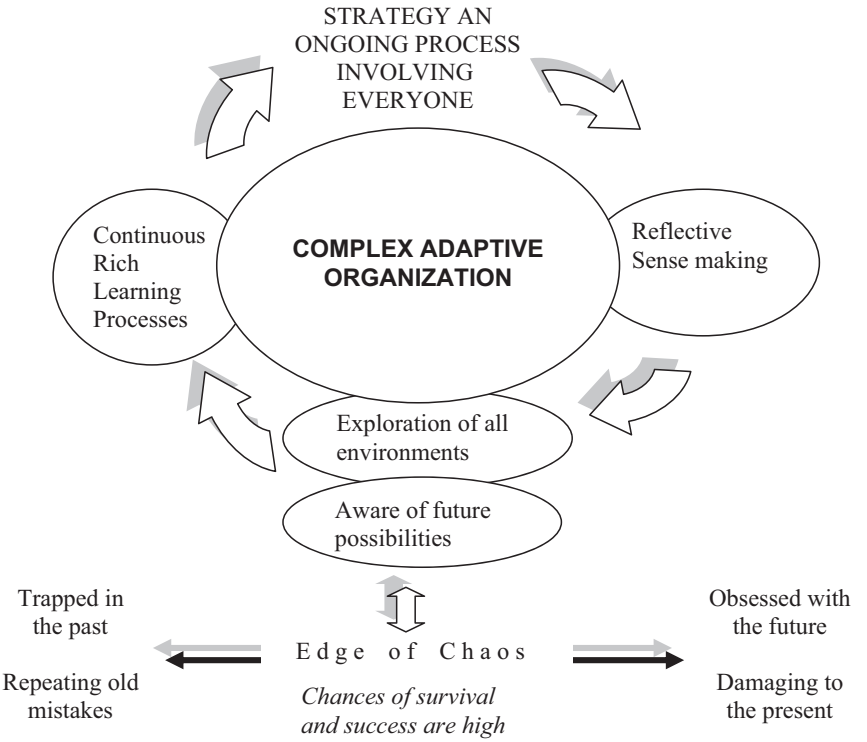

Fig. 3.1 Complex adaptive—learning model of strategy. Adapted from McMillan (2008)

responds to events and feedback from the many contexts (social, political, economic, technological, environmental and competitive) in which it exists.

By endeavouring to dance between the extremes on the edge of chaos spectrum, it avoids the traps of stability and instability and a consequent paucity of innovation or an overload of ill thought-out ideas and changes. It is an organization that is best placed for genuine innovation to emerge rather than frantic ideas and ill-conceived adaptations.

It is an organization which engages in the future through actively learning at all levels in a continuous process that embraces the whole enterprise. Employees are all encouraged to think about their roles in the organization, to learn from everyday activities and to participate in a

range of learning and development activities both formal and informal. Through these processes, they are involved in retrospective sense-making and single- and double-loop learning, hallmarks of the learning organization and the CAS. From these real-time activities emerges the strategy-making process—a process created and shaped by contributions from everyone in the organization, each person contributing their own personal perspective, their knowledge, ideas and insights. It is an approach to strategy-making that is infused with relevant real-time thinking and, importantly, real-time action. Here strategy development is in a symbiotic relationship with strategic action. They cannot exist separately.

In McMillan's model, "strategic direction would be replaced by a strategic 'roving' process where the organization roves opportunistically over many 'landscapes', internal and external, seeking competitive advantage and opportunities for experimentation and learning … all employees would be engaged in this process, not just senior management. The organization would be making use of the individual and the collective capabilities of everyone in order to maximize its survival chances. The role of senior management would be to ensure that there is a constant flow of fresh information and opportunities for creative and innovative activities that provide the right amount of novelty. This would be balanced by the provision of sound frameworks which would ensure that it did not drift towards chaos and disintegration" (McMillan 2008, p. 197).

Conclusion

The notion of strategy as a learning process combined with a complexity perspective offers significant possibilities. It builds upon the thinking of the learning school of strategy and blends with aspects of learning organization theories. It offers radical possibilities if one considers the human dynamics of CASs as vehicles for shared learning and emergent strategy development. It is one which is better attuned to the real globally interconnected world in which twenty-first century organizations operate than the more prescriptive and essentially linear approaches which have been adopted in the past.

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4

Informal Institutions and the Geography of Innovation: An Integrative Perspective

Xuesong Geng and Kenneth G. Huang

The geography of innovation is an intriguing topic for economists and management scholars as well as corporate decision makers and government policymakers. The observation that firms are remarkably concentrated in geographic space has inspired a large body of research conducted in a variety of industries in management, economics and sociology (Krugman 1991; Saxenian 1994; Almeida and Kogut 1999; Sorenson and Audia 2000). According to the economic geography literature, firms tend to agglomerate to gain better access to pooled skilled labors, shared specialized suppliers, inter-firm knowledge spillovers, and greater consumer demands (Marshall 1920; for a recent review, see McCann and Folta 2008). Like other economic activities, firms' knowledge creation

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and inter-firm knowledge exchanges are significantly clustered in space too (Audretsch and Feldman 1996; Jaffe et al. 1993; Almeida and Kogut 1999). Particularly for firm innovations, recent theoretical development suggests that the geography of innovation is contingent on social and institutional contexts that shape the interaction and knowledge exchange of firms (Morgan 1997; Storper 1997; Bell et al. 2009; Laursen et al. 2012). Given the wide variety of institutional contexts across countries, how would institutional environments impact the geographical distribution of firms' entrepreneurial and innovative activities?

Institutions in a country can be categorized into formal and informal ones: formal institutions represent structures of codified rules, laws or regulations, whereas informal institutions are enduring non-codified, socially constructed practices and norms (North 1990; Scott 1995). The concomitant consideration of both socio-institutional factors and spatial relationship has the potential to make important conceptual advance in our understanding of the innovation dynamics of entrepreneurs and firms (Geng et al. 2015; Huang et al. 2015). In this chapter, we explore this question: if institutions influence social interactions among entrepreneurs and firms both within and across geographical proximity, how does the geography of innovative activities vary across different institutional environment in different countries? Knowledge creation and innovation activities in firms play crucial roles in entrepreneurial activities and it has been found that entrepreneurship is influenced by the geographical collocation of established firms (e.g., Sorenson and Audia 2000). Therefore, our analyses focus on innovative activities of firms and we also discuss the implications for the geography of entrepreneurship.

Geographical Proximity, Clusters, and Innovations

One important mechanism through which agglomeration or collocation produces externalities is by facilitating the transfer of tacit knowledge. Knowledge in general is difficult to be confined within its originating firms because of its public goods nature (Arrow 1962). Once the knowledge spills over into the public domain, it creates positive externality that

benefits other firms (Jaffe 1986). Some knowledge can be tacit and difficult to articulate or express in codified language (Polanyi 1966). Although such knowledge may be transferred through formal channels, such as through licensing, alliance, or supply contracts, the efficient transfer of tacit knowledge across organizational boundaries generally requires close social interaction and face-to-face contact that can be enhanced by geographical proximity (Marshall 1920). Even with the modern communication tools like telephones, e-mails, or teleconference that can facilitate the transfer of codified knowledge, the acquisition of tacit knowledge still rely heavily on face-to-face interactions (Ganesan et al. 2005). As such, the resulting knowledge transfer and spillovers are significantly localized and clustered in space (Jaffe et al. 1993; Audretsch and Feldman 1996; Almeida and Kogut 1999; Rosenkopf and Almeida 2003; Stuart and Sorenson 2003; Huang and Ertug 2014).

Since densely clustered regions suggest close geographic proximity among collocated firms, scholars often conceptualize clusters as the proxy for the effect of vicinity on enhanced knowledge creation (Pouder and St. John 1996; Baptista and Swann 1998; Porter 1998; Maskell 2001). Clusters help knowledge creation and exchange for individual firms by providing a large pool of knowledge workers (Almeida and Kogut 1999; Rosenkopf and Almeida 2003), more channels of knowledge transfer through social networks (Owen-Smith and Powell 2004; Whittington et al. 2009), and greater learning opportunities among firms (Arikan 2009). Extant empirical evidences affirm that the degree of clustering positively affects the innovative output of individual firms (Baptista and Swann 1998; Beaudry 2001; Whittington et al. 2009; Geng et al. 2015).

Geography of Innovation and Local and Non-Local Social Interactions

When facilitated by inter-firm knowledge exchanges, innovation becomes a social and collective process, which requires joint action of clustered firms (Audretsch and Feldman 1996; Morgan 1997; Rosenkopf and Almeida 2003). Although the proximity of firms in a cluster can enhance direct observation and, therefore, the imitation of each other's inventions

even without direct social interactions (Porter 1998; Arikan 2009), the transfer and communication of deeper, tacit, and fine-grained information require intensive interaction and socialization between firms (Uzzi 1996; Hansen 1999; Laursen et al. 2012). Knowledge interaction can be impeded in the absence of disciplined social interactions that underpin the trust among firms in the clusters (Maskell 2001; Eapen 2012; Laursen et al. 2012).

As social interaction intensifies, geographical proximity promotes the convergence of idiosyncratic beliefs, assumptions, and values, which can evolve collectively into a shared 'macroculture' among clustered firms (Abrahamson and Fombrun 1994). Social and professional networks among individuals and firms emerge within the clusters (Stuart and Sorenson 2003). Trust develops among collocated firms with frequent interactions (Maskell 2001). The thus developed social norms and relationships among geographic proximate firms form a kind of 'geographically localized social capital' (Laursen et al. 2012). They are generally accepted as 'rules of the game' in the cluster (Pouder and St. John 1996) and enhance the 'untraded interdependence' among collocated firms, thus facilitating inter-firm interactions even in the absence of formal economic exchanges (e.g., licensing, alliances) (Storper 1997). Such interdependence increases firms' awareness of the appropriate and effective social relations and provides them with cues on how other firms will behave (Bell et al. 2009). Consequently, the knowledge exchange process is conditional on social interactions and embedded in a broader social structure that, in turn, guides interactions among firms (Morgan 1997; Storper 1997). For example, the success of Silicon Valley is believed to stem from its being embedded in a decentralized but cooperative industrial system with dense social networks and a high level of social capital (Saxenian 1994).

Although extant literature has focused on geographically localized social interaction, the geography of innovation can also be influenced by the non-local social interaction that goes beyond geographical vicinity. For example, Ganesan et al. (2005) found that the strength of relational ties with knowledge providers is unrelated to the geographic proximity and those relational ties across geographical distance play significant role in new product development. As this topic is still under-explored in the economic geography literature, we draw upon the social network literature that provides some discussions and empirical evidence on how informal ties between

individuals and firms can transcend geographic limits. For instance, in the Canadian mutual fund industry, the social networks of managers affect firm innovations independent of their spatial distance (Bell 2005). In addition, more knowledge will flow across geographically distant friendship ties than proximate ones, because friends in different locations exposed to diverse local milieus have acquired diverse localized knowledge (Bell and Zaheer 2007). Nevertheless, these friends with similar backgrounds can share the knowledge effectively. Meanwhile, informal ties are more resilient to geographic distance than formal ties, and the informal ties between units in an organization can mitigate the effect of geographic distance on knowledge transfer (Hansen and Lovas 2004). In addition, Sorenson and Stuart (2001) found that previous syndication participation with another venture capital firm mitigates the effect of geographic distance on the likelihood of venture capital investment on entrepreneurial start-ups. Finally, the influence of geographical proximity on firm innovation depends on the extent to which the firm is also embedded in a global social network comprising physically distant partners (Whittington et al. 2009).

In sum, the geography of innovation is contingent on the intensity and content of both the local and non-local social interactions. While local social interaction can be facilitated by geographical proximity and further increases the inter-firm knowledge exchange, the non-local social interaction may mitigate the limitation of geographical proximity on firm innovation. To the extent that the institutional environment influences how firms and individuals socially interact among one another, both locally and non-locally, the role of geographical proximity in inter-firm knowledge exchange and firm innovation should vary under different institutional contexts and the embeddedness of firms in such institutional contexts. Our next section will further explore this topic.

Geography of Innovation and Institutional Environments

The distinction between formal and informal institutions can be useful in investigating the complex relationship between institutional environments, geographical locations, and firm innovation. Formal institutions represent structures of codified or formally accepted rules that are nor-

mally enforced by laws, whereas informal institutions are enduring but unwritten societal norms and conventions (North 1990; Scott 1995). Both formal and informal institutions promote social order and stability by providing shared expectations and routinized guidelines for the appropriate behaviors when individuals or firms consider strategic choices (DiMaggio and Powell 1983; Peng 2003). Compared with informal institutions, formal institutions are more malleable because they can be consciously and purposely designed by human agency (Scott 1995). But the effect of formal institutions also depends on the supports or constraints of informal institutions that evolve more incrementally (Zucker 1987). The culturally and socially constructed informal institutions have strong binding effects on societal members (North 1990; Scott 1995). For example, collectivist beliefs and norms that value adherence to social norms and expect goodwill and cooperation among societal members have strong binding effects on individuals and firms because societal trust and cohesion are rewarded and nonconformity is disciplined (Hofstede 2001; Holmes et al. 2013). Moreover, the effect of informal institutions is usually associated with the trust-based informal relationships or networks (Zucker 1987). Indeed, recent studies have found that firms tend to rely more on social networks and ties to facilitate social interactions and resource exchanges when informal institutions are prevalent (Batjargal et al. 2013).

Compared with developed countries, developing countries have long been depicted as having weak formal institutions and strong informal institutions (Batjargal et al. 2013). In developing countries, the banking system, legal protection for private and intellectual property, financial disclosure and the judiciary are under-developed or ineffective (Peng and Heath 1996; Khanna and Palepu 2000; Huang et al. 2015). Recent literature also suggested that when formal institutions are weak and ineffective, firms tend to rely more on informal institutions (Hitt et al. 2004; Webb et al. 2009; Batjargal et al. 2013; Holmes et al. 2013).

For innovative activities that involve tacit knowledge, the interdependence between formal and informal institutions may have important bearings because 'no amount of legal protection can make a thoroughly appropriable commodity of something so intangible as information' (Arrow 1962, p. 615). To understand the relationship between institu-

tions and geographically constrained social interactions among firms, we draw from and build upon the insights from previous literature that examines the relationship between institutional environment and governance of inter-firm relationship (Williamson 1991; Bell et al. 2009; Abdi and Aulakh 2012). Under a specific institutional environment, firms can develop governance structure that is specific to the inter-firm relationship in order to facilitate economic exchange. In the absence of support from external formal institutions (e.g., laws regulating and enforcing contracts), formal safeguards (e.g., explicit contracting) become less effective (Abdi and Aulakh 2012). Therefore, firms have to rely more on informal safeguards based on trust and embeddedness, as well as reputation effects (Uzzi 1996; Dyer and Singh 1998). By contrast, reliance on such informal safeguards can be reduced when formal institutions are developed and effective, and provide clear guidance and enforcement.

Under weak formal institutions in developing countries, informal safeguards for inter-firm governance based on the localized social norms are important for geographically proximate firms, especially when complex exchange like knowledge transfer is involved (Dyer and Singh 1998; Bell et al. 2009). In particular, the formal institutions that protect knowledge creation and exchange are the intellectual property right (IPR) system which includes patents or licenses laws. Stronger formal institutions for IPR protection increase firms' incentive to innovate by providing them insurance against expropriation (Nordhaus 1969; Teece 1986; Levin et al. 1987). When the support from formal institutions is ambiguous, weak, or absent, firms have to rely more on informal safeguards and informal institutions that are shared by the interacting firms. As a result of the weak formal (and legal) environment for the protection of IPR, the weak formal safeguards for inter-firm knowledge exchange may push firms to develop informal safeguards (Pisano 1990; Geng et al. 2015; Huang et al. 2015), which would allow firms to discipline the inter-firm interactions given the potentially pervasive market failures and information asymmetry in the technology market in which firms can exchange and transact on their proprietary knowledge (Arora et al. 2001). As the monitoring of inter-firm social interaction and maintaining of trust-based informal safeguards are facilitated by spatial proximity (Maskell 2001), the effectiveness of such informal safeguards is more constrained by the geographical

distance. In other words, such informal safeguards are easier to monitor and maintain for geographically proximate firms (Laursen et al. 2012). Although knowledge can be exchanged between people with modern technologies like telephones or e-mails, face-to-face interaction is still important for the exchange of tacit knowledge (Ganesan et al. 2005). The importance of informal safeguards and relational ties in knowledge acquisition is not mitigated by the modern communication technologies (e.g., Ganesan et al. 2005).

As such, we would expect that the proximity effect on geography of innovation is more pronounced in developing countries where the informal institutions are prevalent and heavily relied upon by firms. Put formally, we postulate:

Proposition 1 To the extent that firms' innovative activities are concentrated in clustered regions, geographical proximity has a greater positive effect in developing countries than in developed countries on firms' innovation when they engage in inter-firm knowledge exchange within the clusters.

The reliance on informal institutions in developing countries may also influence non-local social interactions and subsequently the geography of innovation in these countries. Informal institutions and the significance of social networks are historically and culturally rooted; thus, they rely less on geographical proximity for maintenance. For instance, friends tend to still trust each other even in the absence of geographic propinquity (Bell 2005). Firms within a social network spanning spatial distance are still willing to undertake risky cooperative and joint actions without fear of opportunism (Uzzi 1996). Therefore, knowledge can still be exchangeable for geographically distant firms through such resilient social ties (Bell and Zaheer 2007). Indeed, Ganesan et al. (2005) found that the strength of relational ties with knowledge providers is not related to geographic proximity. These social ties provide the necessary informal safeguard for inter-firm knowledge exchange. Valuable knowledge is much more likely to be transmitted through strong relational ties (Frenzen and Nakamoto 1993; Rindfleisch and Moorman 2001). As such, those strong ties transcending geographic distance can facilitate the knowledge acquisition and innova-

tion (Ganesan et al. 2005). We therefore expect the social ties across geographical boundaries to play a bigger role in developing countries with strong informal institutions. Therefore, we propose:

Proposition 2 The effect of geographical proximity on firm innovation will be less positive for those firms that maintain more non-local social ties and interactions. This effect is more pronounced in developing countries than developed countries.

The Context of China

To illustrate the theoretical framework, we use the context of China to discuss the effect of informal institutions on innovative activities and outputs of different types of firms operating in China. Although China has undertaken substantial efforts in recent years to improve its institutional framework (Huang 2010), its formal institutions still remain generally weak and inefficient (Fan and Wang 2006). For instance, after China joined the World Trade Organization (WTO), to comply with the corresponding WTO obligation, China introduced and adopted several major institutional reforms to harmonize its institutions with international rules. The agreement on the Trade Related Aspects of Intellectual Property Rights (TRIPS) is one of such efforts and the associated passage of the 2001 patent law reform significantly improves upon its current judicial protection, reduces the ambiguity in application procedures, and strengthens the enforcement and protection of IPR (Hu and Mathews 2008). Nevertheless, the development of formal institutions in China is still weak compared to the developed countries (Huang 2016).

Given its weak formal institutions, the informal institutions in China that have been shaped by the long Chinese history and deep-rooted cultural tradition still have profound influence on Chinese business activities. The strong collectivistic culture of the Chinese people (Hofstede 2001) tends to emphasize networked relationships and in-groups (Xiao and Tsui 2007). For example, *guanxi* is a Chinese-style social network that has been used widely in the Chinese business community to obtain market information, scarce resources, and protection (Xin and Pearce

1996). Furthermore, Chinese people tend to form in-groups based on such characteristics as kinship, hometown, common schooling, or work experience (Yang 1994). These in-groups are usually permanent groups with inner or more intimate networks, in which resources flow easily. Both *guanxi* and in-groups, among other cultural and normative aspects, point to the long-lasting Chinese informal institutions that emphasize the importance of trust, obligation, and reciprocity in Chinese social interactions. These informal institutions are exceedingly enduring and can function both within and beyond geographical boundaries.

To deepen our understanding on the effect of informal institutions, we discuss the difference in innovative activities between multinational enterprises (MNEs) from developed countries and domestic Chinese firms located in different regions of China. To the extent that MNEs operating in China have less access to informal institutions and norms for knowledge exchange than Chinese firms, we should observe the differential impact of informal institutions on their innovations activities (Huang et al. 2015; Huang 2016).

In general, MNEs have considerable technological advantages compared with their domestic Chinese counterparts and they often transfer advanced knowledge into the domestic region in China where they operate and conduct research and development (R&D). However, there is an increasing need for MNEs to tap into the local knowledge of their host countries in order to develop context-relevant innovations and products (Govindarajan and Ramamurti 2011). Although the modern communication technologies like teleconference and e-mails can increase the efficiency of communication, they alone cannot help these companies to achieve the goal of acquiring tacit knowledge in the local market. This situation is demonstrated by the increasing number of R&D centers established in China by MNEs (Zhao 2006). Previous studies have also found that there are both significant inflow and outflow of knowledge between MNEs and host countries (Singh 2007), and that the knowledge structure of host countries has significant positive impact on MNEs' innovation (Almeida and Phene 2004).

In the process of gaining access to local knowledge, MNEs often rely less on informal institutions than domestic Chinese firms. The attitudes, beliefs, and values of managers in MNEs are strongly influenced

by the culture in their home countries despite their culturally diverse working environments (Hofstede 2001). MNEs from developed countries are generally more responsive to formal IPR protection because they traditionally attach greater importance to formal rules and regulations in their home countries (Grossman and Helpman 1991; Khoury et al. 2014). Their well-developed home institutional environments usually have clearly stipulated rules and effective enforcement, which reduce their need to rely on informal institutions to protect their intellectual assets from infringement. As MNEs have developed their organizational routines to suit the developed institutional environment of their home countries, these routines can constrain them from effectively adapting to the complex and sometimes ambiguous institutional environments in the host countries (Kostova and Zaheer 1999). It is often very difficult and time-consuming for foreign firms to adapt to Chinese informal institutions or break into the Chinese domestic social networks (Luo 2007).

In comparison with Chinese firms, the lack of access to the Chinese informal institutions and associated social networks makes geographical proximity not critically helpful for MNEs to effectively tap the local knowledge of proximate firms in a cluster (Geng et al. 2015). Therefore, we postulate:

Proposition 3 The effect of geographical proximity on firm innovation is stronger for domestic Chinese firms than for MNEs in China.

Furthermore, domestic Chinese firms are more likely to engage in knowledge exchange with distant firms through their maintained social networks which are not easily available for foreign MNEs. Therefore, for those MNEs located far apart from other firms, in order to develop context relevance and innovations suitable for local usage, they can primarily only tap into geographically localized knowledge in the immediate region in which they are located. Therefore, we suggest:

Proposition 4 MNEs are more disadvantaged than domestic Chinese firms in acquiring external knowledge in the host country (China) if they are located in less clustered regions in China.

Concluding Remarks

In this chapter, we integrate institutional theory and economic geography to explain f irms' innovative activities in the context of China. Although these two disciplines appear to have been largely developed independently, there exists synergy between them in that both emphasize the role of social interactions. Economic geographers focus on the concept of spatial proximity and suggest that social interactions are more likely to take place within the vicinity (Storper 1997; Maskell 2001). Meanwhile, institutional theorists argue that social interactions are guided and shaped by institutions that provide the rules and norms (North 1990; Scott 1995). The integrative perspective derived from these two disciplines can help deepen our understanding of the effect of spatial proximity on firm behavior. This chapter postulates that the influence of geographical proximity on inter-firm knowledge exchange depends on formal and informal institutions that underpin the social interactions both within and across geographical boundaries.

This chapter also provides a new perspective on the constraining and enabling function of geographical proximity in relation to economic and entrepreneurial activities, although this relationship is probably more salient in the case of China with its strong influence of informal institutions. On the one hand, although economic activities are generally territorially constrained, non-local social interactions may help firms to overcome such limitation. This might be especially important for new start-ups which may be more resource constrained and vulnerable to the localized competition. However, these entrepreneurs probably can take advantage of their relational ties with their prior friends or employees (e.g., Sorenson and Audia 2000). On the other hand, collocating with other firms does not guarantee that firms derive the full benefit from agglomeration. Localized social interaction sometimes can play a more important role than that played by geographical distance. Consequently, firms, especially start-up firms, need to take into account of the social structure when they make locational decisions. Moreover, some studies have suggested that firms with superior knowledge tend to stay away from clustered regions due to the concern for potential knowledge leak-

age to rival firms (Shaver and Flyer 2000; Alcácer and Chung 2007). The theoretical framework outlined in this chapter provides yet another motivation for these firms to behave in this way because they may be able to rely on social ties that are less constrained by geographical proximity to acquire the external knowledge.

In summary, this chapter sheds light on the social and institutional mechanisms underpinning the knowledge exchange processes and regional innovation. Although we used the case of China for illustration, our theoretical framework has the potential to serve as a starting point to advance our methodology in future empirical studies, particularly in the context of other developing countries. Our discussion shows that integrating an institutional perspective in understanding the geography of innovation is a promising agenda for future research on firm innovations in emerging economies.

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5

Global Networks, Open Innovation and Entrepreneurial Firms

Stephen E. Little

Introduction

Organisational innovations facilitated by information and communication technologies (ICTs) and global logistics have undermined our assumptions of the relationship between organisational size and performance. However, the additional accessibility and flexibility available to smaller players also allows larger firms to restructure into networks which can enter niche markets yet still draw on their wider resource base. Castells (2000) describes the complex web of relationships necessary to sustain this level of multi-disciplinary knowledge creation as a 'creative milieu' extending beyond the boundaries of the firms themselves into a hinterland of rich knowledge resources, involving universities, sympathetic financial institutions and a highly sophisticated labour market. He goes on to identify a form of 'network enterprise' composed of components of larger corporations, collaborating in specific spatial and tem-

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poral circumstances, while the companies as a whole are still pursuing global strategies of direct competition. Castells is describing a mechanism by which larger corporations can achieve some of the agility of smaller competitors, bringing their large-scale resources to bear on niche or relatively localised markets. The rise of the internet and e-commerce offers small and medium companies access to resources from and to compete within global networks, and examples of such successful interventions began to appear in the 1990s. Inoue (1998) describes a 'virtual village' in which small enterprises were able to form and reform alliances in order to provide high-technology services to larger companies. Their physical co-location across a number of inner suburbs of Tokyo was enhanced by electronic exchange. Such electronic adjacency was stretched further by the London-based supporters of Sohonet. A group of specialised media companies shares high-capacity data links in order to participate in the creative milieu based around Hollywood and West Los Angeles. The high-speed digital exchange of film, video and sound enables post-production operations to be carried out in London, in direct competition with Californian companies. The open-networked nature of the entertainment industry of Southern California mirrors the information technology networks in Northern California which, through rapidly increasing use of technologies such as computer-generated images and the online promotion and delivery of content, is moving towards convergence with its northern neighbours. Sohonet continues as a specialist service provider to over 400 media and entertainment companies but continuous improvement by telecoms providers, including a general move to fibre-optic infrastructure, now enables all but the most demanding activities to take place over the standard networks. Corresponding improvements in mobile technologies have enabled entrepreneurs in less developed regions to create innovative business models reflecting a shift from e-commerce to the delivery of location specific services via m-commerce.

Such striking business model innovations appear to alter the relationship between organisational size and performance. However, the additional accessibility and flexibility made available to smaller players has also allowed larger firms to restructure into networks with the agility to enter niche markets yet still draw on their wider resource base. Castells' networked organisation is the means by which larger corporations can

achieve some of the agility of smaller competitors. The larger firms are able to decouple key business units better to target customers and markets traditionally served by much smaller firms. This sophisticated understanding of distributed opportunities by large corporations presents a formidable challenge to smaller- and medium-scale players.

Chains to Networks

These strategies also challenge the traditional view of production as a linear chain of interdependent processes. This model is exemplified by Peter Dicken's use of it to examine the global shift in economic activity (Dicken 2003).

Dicken uses a generic production chain to analyse the dynamics of the global economy by focussing on the globalisation of production. In common with Porter's representation of the value chain (Porter 1990, Figs. 2.3 and 2.4), a range of critical support activities is modelled at each stage of this generic model. Dicken separates these into flows of materials, personnel and information on the one hand and technology and research and development functions on the other. Established views of the diffusion of the knowledge and practice involved in global production reflect these essentially linear models. Vernon (1971) developed a model of locational decision-making based on increasing product maturity. As technology becomes familiar and routine, production can be transferred away from the centre and its research and development (R&D) milieu, via overseas subsidiaries to less developed regions where in the final stages of product life, the output is sent back to the original source. However, the very success of such approaches to international production has led to a range of imitators from India and China and the emergence of the first multinational corporations from the 'periphery'.

The globalisation of productive resources brings new competitors to the markets previously dominated by the most developed economies and the rate of diffusion is no longer a prerogative of the centre. Transnational companies now have to make location decisions for each part of their production chain. Dunning presents a more complex model of the choices facing investors seeking to establish international production (Dunning 1993). This identifies a variety of motives for seeking overseas location,

ranging from investment directed at securing natural resources, at securing new markets or at securing synergy with existing assets or activities.

Significant restructuring among transnational companies took place during the 1990s as the concept of 'value chain' (Porter 1990) became widely understood. For example, movement along the production chain from bulk and specialist chemicals to consumer packaged goods was evident in the interaction between Western and Asian firms. Both Imperial Chemical Industries (ICI), effectively the UK's national champion in chemicals and Unilever, an Anglo-Dutch multinational corporation (MNC), began moving to the area of higher added value where product differentiation and customer support can maintain demand for goods and services and maintain premium prices for them. Created by a merger of leading companies in 1926, ICI began divesting its lower-value assets with the sale of its polythene plant to British Petroleum in 1982 followed in 1991 by agricultural and merchandising operations and nylon in 1992. The successful pharmaceutical division was divested in 1993 along with bioscience and agrochemicals to form the Zeneca Group. In 1997, Unilever passed its specialist chemical division to ICI in order to concentrate on the delivery of differentiated brands made from these chemical feedstocks that could now be sourced competitively, not internally. ICI had to make further sales to finance this purchase, while Zeneca went on to merge with Swedish Astra AB and become one of the largest global pharmaceutical companies. Unilever went on to concentrate on the management of a subset of its original portfolio of brands, via an extensive culling operation (BBC World Service 2000). Some 1600 brands were reduced to 400 in order to the increase the value of the retained products by developing them into truly global brands. In 2002, Unilever sold its oil and fats division to a Malaysian oil palm company. The company maintains global third place in consumer goods behind Proctor and Gamble (P&G) and Nestlé. ICI in turn retained its established brands, such as Dulux paint while continuing to dispose of its chemical activities finally being taken over by AzkoNobel.

International Computers Limited (ICL) was formed in 1968 by the government-sponsored merger of the UK's four principal computer companies. Primarily a mainframe computer manufacturer, as technology and markets developed it moved into the minicomputer and personal

computer market and partnered with Japan's Fujitsu who provided IBM-compatible PCs for sale under the ICL brand. However, margins were reduced rapidly by the effective commodification of this area of business. Retail point-of-sale equipment was a more successful diversification, but as the company moved towards a provider of business solutions to capitalise on this, it was acquired by Fujitsu as a base for European business in 2002 completing a transition from a manufacturing to a service organisation. The transformation, and in some cases, demise of high profile, large-scale businesses demonstrates the difficulty of responding to the challenge of low-cost and high-volume competition through decoupling vertically integrated enterprises and groups into more loosely connected networks in pursuit of added value. Rolls Royce Aerospace has been successful in restructuring its business model so that its 'product' is the power output delivered by its engines, not the sophisticated hardware which remains within the firm's control. 'Power by the Hour', trademarked by Rolls Royce, creates more event income flows for the company facilitated by technical innovations which allow the engines to record and report their performance in real time (Smith 2013). Selling engines and spares periodically, producing peaks and troughs has been superseded by a steady income stream from customers and, to achieve this, the company has established a global network of directly owned and authorised service centres.

Theorists have attempted to characterise the organisational forms emerging in these prevailing conditions of ICT-driven globalisation both in terms of spatially extended networked relationships and 'informated' organisations entirely dependent on the new technologies (e.g. Sproull and Kiesler 1991; Zuboff 1988) and in terms of renewed vitality for small, flexible and traditional forms of organising given new relevance by these technologies (e.g. Clegg 1990).

New Strategies for Innovation

During the 1990s, business process re-engineering (BPR) promoted by Hammer (1990) dominated much Western management while outsourcing was promoted as the route to cost reduction and agility. BPR prom-

ised high levels of efficiency gain, but in practice the only reliable measure of progress for a manager became the number of staff displaced by such re-engineering. Downsizing, or 'rightsizing' in its user-friendly guise, became almost synonymous with BPR. Unfortunately, many of the individuals 'rightsized' out of organisations took with them key knowledge.

Initially outsourcing was promoted as a means of shedding non-essential activities to external providers to allow organisations, private and public, to focus on their core, high-value activities. However, by the late nineties, outsourcing meant replacing key internal sources with external resources. Only those competencies which were unique to an organisation's competitive position should be retained. Often the outsourced activities were carried out by the same individuals whose knowledge and skills had previously been internal resources of the organisation in question. IT-related services, were increasingly located offshore for both cost and tax opportunities. This 'hollowing out' of the corporation led to new strategies for innovation. The internal resources, such as the customised research laboratories, carefully separated from the routine production of mature products and services overt, as with the Bell Laboratories or covert, as with the Lockheed Skunkworks, where cutting-edge military products were pursued in secrecy (Rich and Janos 1995) were no longer available and external sources of innovation were sought.

Chesbrough (2006) formulated the concept of Open Innovation as 'the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively'. In contrast to the traditional vertical integration, approach with internal R&D activities leading to the internal development of products distributed directly by the firm.

The growth of cost-driven outsourcing allowed smaller companies to contribute to large-scale production. In the past, vertically integrated firms were difficult for new entrants to mimic in terms of capacity and capability. However, the distributed nature of contemporary outsourced business models means that experience of global conditions can be gained within the global production network, without the need for direct competition with established transnational companies. A 'modularisation of manufacturing' allows participation in global production and opens a development pathway of the type that has been exploited by Taiwan's

electronics sector. Here the domination of key components—in particular motherboards and hard drives led to the development of integrated products typified by the emergence of Acer as a global computer brand.

Distributed Open Innovation

Williamson's (1975) transaction cost view of organisation has underpinned the neo-liberal substitution of markets for hierarchical governance in both commerce and public administration. In essence, governance replaced management with the governance flowing along the interdependencies of the value chain.

Raymond (2001) characterises the shift by contrasting Microsoft with the Open Source Foundation in terms of Cathedral versus Bazaar—the complex and impressive hierarchy versus the apparently disorganised but diverse marketplace in which information distribution from a centre is replaced by knowledge exchange and hierarchies are replaced by distributed communities of practice (Wenger 2003).

In a similar vein, Novotny et al. (2001) argue that Mode 2 knowledge, characterised as the production of knowledge from the process of practical problem-solving activities, must be developed from the carefully validated Mode 1 knowledge from scientific enquiry through the reflexive production of transdisciplinary knowledge produced by self-organising practitioners. For these authors, this implies trading zones or "agora" where users and problem-solving practitioners interact to 'get things done'.

The bazaar implies that there is space for innovative firms entering a network and the prospect of business model innovation on the back of disruptive opportunities.

Cost Innovation

Participating in the global system, even at a relatively subservient level, reduces or at least shortens the period of protectionism and promotion of national champions typical of the Asian development states. In contrast to Japan, which nurtured infant industries with protectionism within a

set of government-approved industry plans under the stewardship of the Ministry of International Tade and Industry, China encouraged large-scale inward investment at an early stage in the implementation of its modernisation policy. This comparative openness coupled with the lure of an immense potential domestic market meant that inward investment rapidly superseded the initial support of family-based capital-controlling networks from the Chinese diaspora around the globe.

Zeng and Williamson (2007) describe an emergent Chinese business model with which Chinese companies are able to offer high technology at low cost in the global marketplace as 'cost innovation'. They also present a large choice in what were considered mass-market environments. Third, they use their low-cost base to offer specialty products at low prices.

These tactics utilise many of the elements of 'open innovation' and undermine one of the fundamental strategies of established incumbents, the reliance on high-end leading-edge technology to command a price premium and the only gradual diffusion of these technologies to lower-priced entry-level products. The disruptive cost innovation model targets a middle-level mass market with leading-edge technologies at lower margins relies on greatly increased market volume and share.

Chesbrough argues that companies can innovate across their own boundaries by buying or licensing relevant technologies and derive value from their own unused intellectual property and intellectual capital through outward licensing agreements or joint ventures and spin-off enterprises. Zeng and Williamson describe how Chinese companies have made use of the availability of alternative intellectual property to create competition for established high-technology products. At the same time, cost innovation has allowed these firms to address the large domestic market sectors untouched by expensive foreign offerings. This aspect of cost innovation reflects Prahalad's arguments that major companies routinely ignore the potential of the vast 'bottom of the pyramid' population of billions who may have limited resources individually but who represent collectively a vast untapped market of considerable aggregate value (Prahalad 2006).

Zeng and Williamson illustrate this development pathway with the example of Wanxiang, a company that has moved from the role of provider of automotive suspension components and bearings to a major

global player. Wanxiang's rapid development from start-up to dominant national provider of components to foreign first-tier subcontractors was followed by direct competition with international leaders.

Other case studies by Zeng and Williamson's show how some Chinese companies were able to circumvent foreign propriety technology with alternative intellectual property. The China Aerospace Science and Technology Corporation (CASC) was able to make use of Russian line-scanning technology to set up a spin-off, Zongxing, which markets an alternative to the highly protected flat panel technology adopted by Philips and General Electric Company for digital x-ray equipment. Their disruptive business model offers the core of the system at a mid-range price, with customers from the large number of mid-range hospitals and health facilities in China and other developing states providing their own PCs and printers to control input and outputs against the unaffordable premium-priced integrated packages of the Western model.

Zeng and Williamson argue that the creation of new mass markets for sophisticated products means that Chinese companies can develop the resources in finance and capacity to attack higher value niche markets from below illustrating this with cases ranging from pianos and specialised wine refrigerators to the specialised shipping containers which carry the world's products. Western competitors have responded quickly, with General Electric disaggregating its own products into cheaper packages, and accepting a shorter cycle of diffusion from premium to mainstream product for some of its innovations (Immelt et al. 2009).

National and Regional Contexts

Trickett and Lee (2011) argue that physical space and place still matter even in a globalised and interconnected world. The most advanced economies and globalised value chains require specific locations for their activities. While companies and organisations can occupy a global business space through current ICTs, e-commerce still relies upon physical logistics systems to deliver the manufactured items to end customers. Even the prospect of a global manufacturing revolution through the application of additive layer manufacturing techniques—3D printing—

still implies the physical supply of energy and raw materials to the point of production.

Trickett and Lee argue that the stakeholders engaging with different spatial scales and with different elements of emerging 'knowledge based economies' must respond to the different demands on the networks of capital and labour. The rescaling of both living and working spaces in developed economies during the last 100 years has led to cities regions which no longer fit easily into the new networks of production.

Despite the ability to conduct business from remote locations, cities remain central to economic activity. Dobbs et al. (2011) show that the largest 600 global cities already contain 1.5 billion people, and are projected to accommodate 25 % of the global population by 2025. Asian megacities have populations larger than many smaller nation states and their reputational resources are equivalent to those of many nations. However, second- and third-tier cities and less central regions are joining the competition to attract domestic and international inward investment. A UK government-commissioned report has identified 274 Chinese cities with a population of more than 1 million people as sites of potential inward investment (China Britain Business Council 2008). The report identified a shortlist of 35 considered to be sufficiently well developed in terms of infrastructure and institutions to warrant immediate attention. There is a danger that lack of differentiation between the offers from different locations, coupled with intensifying internal competition could lead to suboptimal outcomes.

Due to these demographic and technological shifts, numerous cities of the first and second industrial revolutions which have been relegated by neo-liberal narratives to the category of 'rust belt' are in fact the end product of complex sequences of migration, aggregation and innovation. While some argue that development should be left entirely to market forces which will ultimately render these locations irrelevant and unpopulated (Leunig and Swaffield 2008), others see continuing value in the history and resources of older urban agglomerations.

However, in federal systems of governance, it is possible for suboptimisation of industry and investment policy to emerge from the often contradictory claims of adjoining territories. In has been argued that the United States consists of 50 foreign direct investment policies, one for

each state, in the smaller economy of Australia it is still possible for interstate competition to advantage the investor over the recipient community.

The UK has seen decades of debate over devolution of decision-making and regional governance. A relatively centralised state is evolving into a de facto federalised one. Most recently, regional development agencies have been dismantled by central government in favour of unfunded local enterprise partnerships and 'city regions' which aggregate a mix of local and decentral government functions under a directly elected US-style mayor bringing similar dangers of dysfunctional local competition.

In Japan, prefectural governments have been bypassed by the more successful city regions in direct negotiations with the national government (Purnendra 2000) and moves towards restructuring the smaller, less populous prefectures into larger regional authorities seem to have stalled in the aftermath of the 2011 'Triple Disaster' of earthquake, tsunami and nuclear meltdown in Tohoku, itself a region of depopulation.

China's provincial system has been described as a de facto form of federalism (Zeng 2006) and the success of leading cities and regions under this policy has led to adjustments under the current and preceding five-year plans which are intended to redress the issue of uneven development.

Aspiring locations wishing to compete alongside established cities need first to develop a routine portfolio of standard facilities including infrastructure, accommodation and communication. However, while such facilities are a necessary precondition to the attraction of inward investment and expansion of economic activity, they are not sufficient and by themselves may even diminish the distinctive features of a specific location. The concept of mass customisation from manufacturing (Pine 1993; Lampel and Mintzberg 1996) offers the prospect of some differentiation, without sacrificing the economies and scale of the established routines expected by incomers and visitors. However, even when historic resources, such as waterfront areas and historic buildings are prioritised as part of the portfolio of urban renewal, without effective stakeholder engagement there can be a flattening of distinctive features and commodification of local culture which compromises the authenticity of these efforts (Vermeulen 2002; Kavaratzis 2012).

Florida's (2002) insight into the role of creative sector within conurbations and its value in attracting a qualified and diverse workforce has

itself led to a commodification of these sectors by administrations anxious to improve the attraction of their location. Nevertheless, Markusen and King (2003) demonstrate the validity of the social and economic dividend of artistic activities. With an awareness of added value, innovation can proceed not only from the application of scientific and technical invention but also from by the creative synthesis of new principles into attractive products and services delivered via the entrepreneurial contribution of innovative business models. It can be argued that a secondary helix comprising scientific and technical skills in interaction with creative sectors and entrepreneurs positions the 'creatives' not as a basis of a milieu attractive to high-value workers and investors (Florida 2002) but as a core component of the capacity to add value and develop competitiveness.

Conclusion

The forms of connectivity and mobility delivered by newer ICTs and smarter transport systems mean that cities and regions must capture their share of the global flows of people and resources described by Manuel Castells by either attracting intellectual capital to their location or linking to it via ICTs (Castells 1989).

However, MacNeill and Steiner (2011) argue that simple formulations of 'new economic geography', 'knowledge-based economy' and 'innovation' place an emphasis on network and clusters which require careful management and a distributed approach to leadership in order to create a strong institutional base. They illustrate their argument with an examination of the roles and stages in the restructuring of industry clusters in the Austrian region of Styria/Steiermark leading to increased specialism and higher added value in established sectors. Such 'smart specialisation' has become an objective of many locations seeking to revive or develop a local economy and innovative small and medium enterprises lie at the heart of this.

The 'triple helix' of government, industry and academy described by Etzkowitz and Leydesdorff (1998) and Leydesdorff (2000) characterises the nature of Mode 2 knowledge production set out by Gibbons et al. (1994) and Novotny et al. (2001) involving continuous cooperation and

interaction between theorists and practitioners. However, the effective operation of the 'triple helix' requires the place and path dependent sensibilities described by MacNeill and Steiner (2011).

Cai (2013) argues that the triple helix has been derived from experience in developed economies and requires adjustment for application in other contexts. The development in East Asia in general and China in particular offers an opportunity to build on European and North American experience. Just as 'Fordism' returned to its source as 'Toyotaism', so a new cycle of cross-inspiration between East and West offers new opportunities.

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Part II

Positioning Within Global Networks

6

Development Through Innovation: The Case of the Asian Apparel Value Chain

Kenta Goto

Introduction

Countries, industries and enterprises have become progressively integrated and embedded in transnational production and distribution networks (PDNs). These networks have evolved as a result of fragmentation dynamics, in which business processes and functions once vertically integrated in a particular country have now been sliced up into smaller units, and relocated to other countries according to technological attributes and factor intensities. The proliferation and intensification of such networks are particularly significant in Asia, driven by strategic business decisions of multinational enterprises, attempting to dynamically optimize overall network performance through offshoring and outsourcing of non-core processes and functions.

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Given this, competitiveness and growth opportunities of enterprises are now increasingly being shaped by their capacity to continuously redefine and upgrade their core competences. Innovation and knowledge creation must now take place within these evolving structures, where building capabilities to upgrade and move into skill and knowledge intensive business functions have become crucial. The concomitant challenges are new, however, and its effects to local industries and individual companies as well as policy implications are still not well understood.

While these are affecting enterprises in developed and developing countries alike, this new form of transnational economic organization poses different types of challenges for those in developing countries, as key parameters for participation into these networks are typically set by lead enterprises from developed countries.

In light of this, this chapter will discuss the challenges and opportunities of enterprises in developing countries in realizing innovation through undertaking skill and knowledge intensive functions in a dynamic and competitive global context. It employs the global value chain (GVC) framework to highlight the pertinent issues in concrete terms, and uses the Asian apparel value chain as the case of analysis. The apparel industry is important because it serves as one of the major non-resource-based manufacturing export sectors for many developing countries in Asia. The GVC framework is useful in looking at the dynamic potentials of local enterprises in this sector, because their opportunities and challenges in innovation and upgrading can only be usefully described and analyzed within this complex and asymmetric power structure, in relation to end markets and lead coordinators of the transnational PDNs in developed countries.

The chapter is structured as follows. The next section will introduce the notion of *upgrading* within the specific context of the global apparel value chain, and discusses *functional* upgrading in relation to innovation through shifting into business functions with higher skill and knowledge intensity. It will then outline the challenges enterprises in developing countries face with respect to gaining such capabilities in an increasingly competitive and complex web of PDNs. This will then be followed with a case study from the apparel sector in Vietnam,

highlighting how local enterprises are responding to the increasing need to realize innovation through functional upgrading. Based on this, the chapter concludes by further addressing its relevance in relation to the 'middle-income trap' which has been intensively debated in this region, and attempts to draw policy implications. It will suggest that while interaction with transnational networks provides local enterprises critical links to attain certain types of productive capabilities, domestic markets could play major roles in promoting innovation through undertaking riskier but higher value-added functions that are more skill and knowledge intensive.

The GVC Framework and Upgrading in the Apparel Value Chain

The GVC framework has become increasingly popular, and is now used in various sectoral studies of both developed and developing countries (Gereffi 2014). The GVC refers to successive links of economic functions connected through various types of inter-firm and intra-firm relationships, ultimately leading to the production of a particular product. To avoid confusion in terminology, however, in this chapter, the term 'GVC' will be mainly used to describe the analytical framework, and the empirical inter- and intra-firm relationships that connect enterprises and their functions across countries as 'PDNs', or for the particular case of the apparel industry, the 'apparel value chain'.

The apparel industry is highly prone to fragmentation dynamics, leading toward complex production networks connecting enterprises in different countries at different stages of the production and distribution processes, and is one of the sectors most studied with the GVC framework (see, for instance, Fukunishi et al. 2013; Goto et al. 2011; Gereffi 1999; Gereffi and Frederick 2010; Lopez-Acevedo and Robertson 2012; Nadvi and Thoburn 2004; Natsuda et al. 2010; Thomsen 2007). One of the key features of this framework is its focus on innovation by a concept termed as *upgrading*, which can be roughly classified into the following

types (Gereffi and Memedovic 2004; Kaplinsky 2005; Kaplinsky and Morris 2001; Palpacuer et al. 2005)[1]:

- *Process* upgrading: increasing technological efficiency levels through introducing and applying advanced technology and/or better management practices;
- *Product* upgrading: shifting toward the production of more sophisticated, higher value-added products;
- *Functional* upgrading: shifting into higher value-added functions.

Note that while both *process* and *product* upgrading refer to innovation *within* specific functional areas, *functional* upgrading is fundamentally different as it involves a shift from one functional area to another, underpinned by differences in factor intensity and technological attributes. Researchers have often defined upgrading in relation to innovation (Pietrobelli and Rabelotti 2005). Kaplinsky and Morris (2001) more explicitly define upgrading in relative terms; as a particular type of innovation that must occur ahead of their competitors. Another feature of the GVC framework is its emphasis on asymmetric power relationships of enterprises in the PDNs, and the way in which these enterprises are governed by their lead enterprises. These are important as they affect the types of upgrading they can expect in their networks.

As the apparel sector entails a highly heterogeneous set of functional areas, its PDNs typically consist from enterprises with varying characteristics from different countries. The term 'apparel' is used to describe the product entailing the entire vertical processes, with intangible cultural and artistic expressions embedded in brands and designs as well as in market positions, while the term 'garment' is used to simply denote the physical product itself. Therefore, a garment company is one that focuses almost entirely (or at least initially) on the labor-intensive assembly process, the sole function of which is to transform the textiles into garments, while an apparel company tends to be the lead coordinator of the production/distribution network with responsibilities in brand-

[1] A fourth type of upgrading, *intersectoral* upgrading, is sometimes also added as one particular type of upgrading, which suggests to switch from one production chain to another one, which is more technologically advanced (Kaplinsky and Morris 2001).

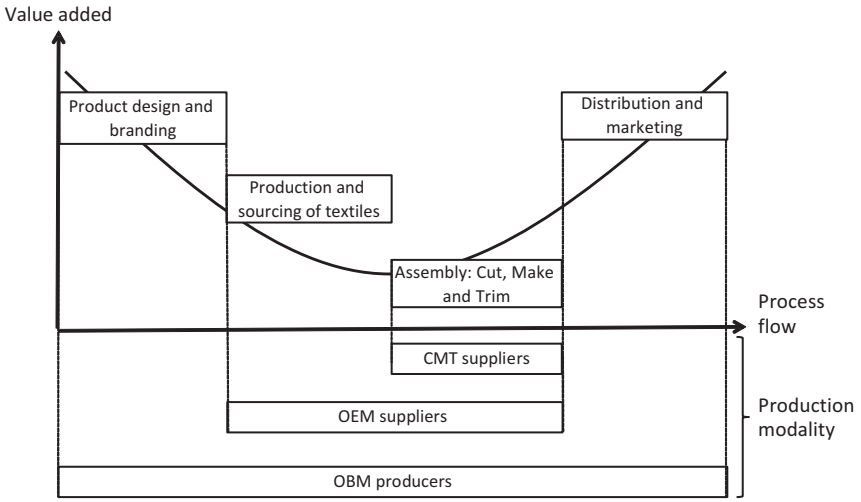

Fig. 6.1 The apparel smiling curve: functional hierarchy and production modality. *Source*: Modified from Goto (2014)and Goto (2015).

ing, designing, marketing, and ultimately structuring and organizing the network. Apparel companies typically do not have their own production (cut, make and trim or CMT) facilities.

Figure 6.1 summarizes the production flow and the associated relative value-added of each of the functional areas.

The apparel production process typically starts from product design and branding strategies. This is then followed by sourcing functions of input materials such as textiles and accessories, which is assembled into apparel products at garment factories.[2] The products are then distributed through strategic channels to major markets, mostly in developed countries. As the figure depicts, functions with the highest value-added contents in the entire process are 'product design and branding' and 'distribution and marketing', followed by 'production and sourcing of

[2] The level of division between textiles sourcing and 'assembly' (CMT) functions is dependent on product groups: while in the case of knitted-fabric-based garments (such as socks and some types of underwear), these two functions tend to be integrated and carried out by the same enterprise, while that for woven-fabric-based garments it is typically catered for by different enterprises.

textiles'. The assembly function, which is often called CMT, is a highly labor-intensive process, and generates the lowest value addition in the chain. These collectively make up a typical 'smiling curve', in which relatively higher value-added functions are concentrated at the initial and final stages of the production–distribution process (Goto 2014).

Apparel value chains are normally coordinated and led by foreign buyers including retailers, brand apparels, and trading companies from developed countries. Enterprises in developing countries participate in such global apparel value chains primarily through the CMT functional area. Inclusion into such transnational PDNs is important as it provides linkages to new technology and market opportunities, leading to possibilities to innovate through process upgrading. While the degree of technological transfer are dependent on export orientation and governance mechanisms of these PDNs, most local enterprises achieve process upgrading through these networks (Goto et al. 2011; Goto 2014). In addition, as the level of value-added of the products are conditional on their specifications determined by international buyers, and as its manufacturability are dependent on available local process technology, the level of innovation through product upgrading tends to also correlate with enterprises' degree in how much process upgrading has been achieved (Goto 2014).

Functional Upgrading and Innovation in the Apparel Value Chain

While both process and product upgrading-based innovation enable local garment enterprises in developing countries to become more competitive, these improvements happen more or less within one particular functional area, typically in the CMT process in the case of the apparel value chain. The CMT function is highly labor intensive with relatively standardized process technology and is therefore dependent on a large number of unskilled or semi-skilled workers. As economies grow and develop, new employment opportunities emerge in new sectors and general wage levels increase. Enterprises in the garment sector will face tougher labor market conditions as it becomes more difficult to recruit and retain the much needed workers and their ability to cope with this will be directly affected

by their levels of success in upgrading. However, innovation through process and product upgrading will eventually reach their limits, and unless enterprises are able to move into functions that are intrinsically of higher value-added (functional upgrading), enterprises would have no choice other than to maintain competitiveness through cost-cutting measures (Goto 2011). In this situation, enterprises may attempt to survive temporarily by relocating to less developed areas where cheaper labor is more easily available. However, this option will eventually be exhausted, and some companies that have no alternative option may resort to 'race to the bottom' type survival strategies, such as informalizing production and employment relationships (Goto and Endo 2014a).

To be clear, availability of workers does not guarantee nor automatically lead to competitiveness in the CMT process; access to new technology and the capacity to absorb it and adopt it to the local context is key, and this is exactly why connection to transnational PDNs is important. In addition, accumulation of tacit knowledge and skills that can only be achieved through experience make large differences in technological efficiency levels of CMT operations, which vary significantly among garment companies even in major exporting countries. Nevertheless, when wage levels rise to the extent that it becomes difficult to offset this with innovation in technological processes or products, then a fundamental shift in functions toward higher skill and knowledge intensity becomes inevitable.

As Fig. 6.1 depicts, companies catering primarily for the CMT function typically attempt to functionally upgrade by integrating higher value-added processes such as sourcing of textiles. The first step toward this is a shift toward a production modality often referred to as original equipment manufacturing (OEM). Under OEM, product specifications and configuration are still designated by foreign lead enterprises, and local garment companies are bound by their instructions and requirements; however, they become responsible for sourcing of fabrics and other key inputs. In many Asian garment-producing countries, this type of contractual arrangement is also referred to as an 'FOB' modality. This is derived from the trade term 'Free on Board', suggesting that buyers' payments include textile and material costs, while that under the CMT modality is essentially a process fee payment for the assembly function.

Many garment exporting countries attempt to facilitate an industry-wide shift from CMT to FOB, based on the premises that this would allow local garment enterprises to capture a greater share of the value-added in the production–distribution network. This can only occur when local garment companies genuinely cater for more skill and knowledge intensive functions related to input sourcing, and when they can manage the associated risks efficiently. However, as Goto (2007) notes from the studies of the Vietnamese garment industry, in reality FOB modalities tend to be almost identical to the CMT modality in terms of functions, as local garment companies are often restricted in sourcing decisions, following detailed instructions from lead enterprises and practically undertake no significant role in key dimensions of input sourcing such as product specification and quality control of the textiles, or in delivery management.[3] In addition, as FOB modalities require larger financial outlays and entail greater risks, some of the major exporting companies have intentionally and strategically restricted their operations to CMT modalities (Goto et al. 2011; Thomsen 2007).

In connection to this, another useful set of concepts in the GVC frameworks are *entry barrier* and *economic rent*. For potential entrants, for instance, entry barriers to the CMT function may arise depending on their ability to meet the particular requirements of lead enterprises such as product specification, quality standards, production volumes, price, and delivery conditions. As only garment companies that can meet these specific set of parameters can participate in transnational PDNs, this will to some extent insulate them from open competition, enabling them to accrue economic rents due to their advantages in enterprise specific CMT attributes. In the OEM modality, entry barriers in much higher proportions than those related to the CMT, and accordingly fewer number of local garment enterprises have the capacity to meet these requirements, even in major apparel exporting countries such as Vietnam. In the apparel value chain, entry barriers are highest in the 'product design and branding' and 'distribution and marketing' functions, which are still

[3] In Vietnam, quite a large proportion of interviewed garment companies note that the risks associated with input sourcing often outweigh the potential gains through undertaking the additional responsibility.

dominated by lead enterprises from developed countries, insulating them from cut-throat competition, and enable capturing the economic rents. It is important to note that accrual of such economic rent depends on enterprises' capacity to dynamically innovate through upgrading, as competitive factors change continuously, altering conditions underpinning entry barriers, and therefore eroding these rents. For enterprises catering for the CMT functions, this means that they must upgrade in processes and products as competitive factors change, and eventually must seek to upgrade into different functions. Lead enterprises are under pressure as well as they must also innovate in marketing and design strategies, while dynamically optimize their production–distribution network vis-à-vis other networks led by competing enterprises in similar lead positions.

The Case of Vietnam: Innovation by Functional Upgrading[4]

As described in previous sections, garment enterprises in developing countries will eventually have to innovate by upgrading into higher skill and knowledge intensive functions as broad-based development occur and industrial structures transformed. This section will describe how local enterprises in Vietnam have attempted to cope with this amidst increased competitive pressures.

Vietnam is the world's fourth largest exporter of apparel products, with a share of 3.9 % of world exports in 2013.[5] The integration of Vietnam's apparel sector into the world economy was made possible when the government decided to renovate and open its economy to the Western world by implementing the *Doi Moi* (renovation) policy in 1986. Significant export growth to European and Asian markets started in the early 1990s, particularly with exports through Japanese market-oriented PDNs, coor-

[4] For more details on enterprises specific cases, please see Goto (2014).

[5] Based on author's calculation using UN Comtrade database (SITC Rev. 3, code 84). It should be noted, however, that Bangladesh's export data has not been recorded in this database, and thus it is likely that Vietnam's ranking is in fact fifth. The largest exporter was China (including Hong Kong) with a 45.1 % share of total world exports, followed by Italy (5.4 %) and Germany (4.3 %). India ranked fifth, just below Vietnam, with a 3.8 % share in 2013.

dinated by Japanese trading companies. When the bilateral trade agreement between Vietnam and the USA came into effect in 2001, apparel exports to the USA soared, occupying more than half of all apparel exports from Vietnam in 2013.[6]

The government played a large role especially in the initial stages of Vietnam's apparel industry's integration into the global economy. When foreign buyers attempted to establish contacts in the early 1990s, much preference were given to large state-owned enterprises (SOEs) in contrast to private companies, particularly to those belonging to the central government SOE group VINATEX (Vietnam National Textile and Apparel Corporation) (Hill 2000; Goto 2014; Thomsen 2007). This sector has for some time been dominated by these large SOEs, until 'equitization' programs were implemented in the 2000s.Vietnam's participation into PDNs was almost entirely based on CMT modality contracts, where specifications and materials were designated and supplied by foreign buyers (Goto 2007; Goto et al. 2011). In some cases, the cutting functions were also conducted elsewhere, and Vietnamese garment enterprises received the precut fabrics, leaving them with even more limited functional scope (Thomsen 2007). Preassembly stages such as cutting are more capital intensive compared with the sewing process. Automation using computer-aided design/manufacturing (CAD/CAM) systems are widely used, whereas the sewing process still is very labor intensive as the scope of substitution between labor and capital is much more limited (Goto 2014).While its inclusion into PDNs accompanied these types of highly focused tasks according to vertical specialization, its industry achieved significant innovation through process upgrading from these arrangements (Goto et al. 2011; Nadvi and Thoburn 2004).

The level of process upgrading (and therefore to some extent product upgrading) depended upon which PDN those local garment companies were connected to, and through what governance mechanism. Taking the case of its two largest export markets, there was a significant difference between USA and Japanese market-oriented PDNs, while order

[6] Export share was 50.8 %, based on author's calculation using UN Comtrade database (SITC Rev. 3, code 84). Japan ranked second with a share of 13 %, followed by Korea (9.1 %) and Germany (3.8 %).

volumes for the USA was large with simple specifications, those for the Japan were much smaller, however, with more demanding requirements in specifications and quality. These led to different governance strategies of the two networks. For the US-oriented network, it became rational to structure their PDNs through arm's length relationships. Local suppliers were more or less selected through competitive procedures and contracts tended to be relatively short term and flexible. On the other hand, the Japanese sought a longer-term and much more stable relationship with their suppliers, as their product specification required them to transfer technologies to better meet the Japanese market demands. It was thus quite common for Japanese coordinating enterprises (trading companies) to dispatch their own technical staff to local garment companies at their own costs, and in some cases, they also provided advanced machineries for free. Such types of technological transfer and commitment were not typically observed in US-oriented networks. These practices for Japanese buyers were essentially a context-specific investment, and therefore, they preferred a long-term and stable buyer–supplier relationship, which governance type is closer to that characterized as 'quasi-hierarchical' (Humphrey and Schmitz 2000). These types of governance mechanisms allowed process-related technologies to be transferred with higher frequency and intensity than in arm's length relationships (Goto et al. 2011; Goto 2014).

The Vietnamese economy has developed rapidly since the implementation of the *Doi Moi* policy and particularly the 1990s, which trigged changes in its economic structure. New sectors have emerged with higher capital intensities in manufacturing, and the service sector has expanded drastically. This led to the emergence of new jobs, which lured workers away from garment factories. Relative wage levels of CMT operators have declined vis-à-vis that of other sectors, making jobs at garment factories no longer among the favored for workers. The export of apparel products has for a long time led Vietnam's export-based industrialization, and while export volume is still growing, Vietnam's top manufacturing export item is now being overtaken by electronics.

In this context, Vietnamese garment companies are facing serious challenges in how to further maintain and grow their businesses. Enterprises that cannot cope to upgrade in line with rising factor prices (both capi-

tal and labor) find themselves in an increasingly difficult position, and practically have no way other than to resort to downgrading strategies through cost-cutting measures, which in turn makes them even more vulnerable as they fail to attract and retain the workers they need. On the other hand, those that have been successful in innovation by process and product upgrading have been performing well; however, they too must seek breakthroughs by catering for higher value-added functions, particularly in branding, designing and marketing.

Given this, some of Vietnam's most competitive garment companies have adopted a series of new strategies, which essentially aims to attain innovation through functional upgrading by targeting the domestic market. The domestic apparel market in Vietnam has traditionally been catered for by private small and medium enterprises (SMEs) and by imports (some smuggled) mainly from China. These SMEs have a relatively vertically integrated production and distribution structure, where each undertakes the skill and knowledge intensive functions including designing and branding, input sourcing, assembly and marketing. Most own their own outlets in major markets in urban areas including in Hanoi and in Ho Chi Minh City. They are in effect their own coordinators of their PDNs, and sometimes the CMT functions extend beyond their own production facilities and go into informal subcontracting arrangements (Goto 2011). However, the products that they produce are typically of lower quality compared to those produced by export-oriented enterprises, and the designs, branding and marketing strategies tend to be imitations from other enterprise, making the market highly homogeneous (Goto 2013, 2014).

Nevertheless, some success cases have emerged in the early 2000s in the casual apparel subsector, where some apparel companies have grown rapidly by attracting the relatively wealthy in urban areas, operating retail outlets in major commercial streets in large Vietnamese cities. These products however were typically much more expensive than those sold in traditional market stalls, and their business performance depended heavily on demand cycles, which are easily affected by overall economic conditions. Moreover, process technologies of these companies lagged significantly behind the export-oriented enterprises, as they never had

any channels of similar technological transfer that could promote innovation in processes or products.

It is this market segment that traditional export-oriented companies turned their attention to in their attempt to functionally upgrade. These garment companies, which only had limited capabilities and knowledge in designing and marketing, hired designers and marketing professionals including foreigners, and established brand and product lines specifically designed for the domestic market. Some of the most competitive garment factories now derive a substantial share of their profits from this business. Some degree of refocusing from export to domestic seems to be happening, as entry barriers to functional upgrading have been much lower compared to achieving similar types of innovation in export markets; information is more easily available for the domestic market, and interpreting and transferring these into tangible and physical specifications is also easier due to geographical and cultural proximity (Goto 2014, 2015).[7]

The Middle Income Trap and Policy Implications

The case of Vietnam's apparel sector suggests that different types of innovation occur in different circumstances, and local enterprises' positions in these fragmented PDNs have strong implications on upgrading trajectories as these define their functional scope, market orientation and governance structures. The emerging strategy of major Vietnamese garment companies to refocusing on domestic market-oriented innovation through upgrading into higher skill and knowledge intensive functions is something that is observed in industries of other countries such as Thailand as well (Goto and Endo 2014b).

These trends may provide important implications to the middle income trap (MIT) phenomenon, which has recently been intensively debated by academics, governments and international organizations (ADB 2011; Cai 2012; Flaaen et al. 2013; Gill and Kharas 2007; Ohno 2009; Paus

[7] For more details on individual company cases, please consult Goto (2014).

2012; Woo 2012; World Bank 2010; Zhang et al. 2013). In its broadest sense, the MIT refers to a situation in which a middle-income country struggles to further grow and move into high income status. While research on MITs suggests wide variation of factors that contribute to this phenomenon, the key issue seems to be related to capabilities of workers, enterprises or governments (Goto and Endo 2014b).

As the case of the Vietnamese apparel sector suggests, when local enterprises' reach their peaks in process and product upgrading within their specialized functional areas in the export-oriented PDNs, it is often very difficult to realize innovation by undertaking functions of higher skill and knowledge intensity in the same PDNs as they tend to be coordinated and led by foreign enterprises. Structuring their own PDNs toward the local/domestic market will provide these local enterprises much larger leeway to innovate. As such skill and knowledge intensive functions will, almost by definition, inevitably expose them to higher levels of uncertainties and business risks, their success in functional upgrading will be conditional on workers' and enterprise-level capabilities to efficiently manage these. It will, however, also depend on the capabilities of governments to provide these enterprises better access to adequate skills and technical training opportunities as well as institutional support that would enable market mechanisms to function more efficiently.

Successful integration into the global economy has no doubts been the major drivers for economic growth in developing countries such as Vietnam, and related policies have in many cases prioritized export-orientated industrialization. Nevertheless, non-protectionist domestic market-oriented strategies can play increasingly important roles in the future, particularly in realizing innovation of local enterprises toward skill and knowledge intensive business functions.

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7

Breakthrough Innovations by Locally Embedded Start-Ups and SMEs in a Global Network

Ad Breukel and Henk Zeegers

Introduction

During recent decades, the attention on innovation in business practice and in the management literature has grown. Industries change continuously, caused by innovative developments of new entrants and by innovative efforts of established organizations ('incumbents'). These technological developments are at the root of economic performance; they form an engine of growth and so shape a nation's economy and employment (Soete et al. 2010). 'If you lead the innovation, you hold

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your future in your own hands' says Andrew McAfee in a recent interview in the Dutch newspaper NRC (Noort 2015b). However, more than 80 % of technological innovations in the Netherlands do not pass the valley of death (Witteveen 2014). This situation requires a new momentum.

This chapter examines breakthrough innovations caused by start-ups, and more generally small and medium enterprise (SME) companies, because they are main providers of these innovations; it is worthwhile to study their viability (Almeida and Kogut 1997). High-tech small-scale industries are not a homogeneous group of firms. They share, however, a common trait to develop radical new technologies without a direct application (and sales) in practice. Therefore, they need to apply a financial model based on venture capital, state support and loans, which makes them financially vulnerable. Their initial financial partners are often part of a regional ecosystem of the industry in which they function. This ecosystem may, however, not offer all supportive competences that a small-scale breakthrough company requires so they must reach for network partners in other regions. Such an effort to partners outside the own ecosystem asks for new competences that are related with 'the encounter with a stranger'.

Cluster-Based Innovations Within an Institutional Context

It has repeatedly been shown that especially small-scale companies contribute toward breakthrough developments and the following rise of new industries, while established large companies thrive on the exploitation and stepwise improvement of their existing knowledge base (Volberda 2015). In this section, we first describe radical and incremental innovation. Knowing that SMEs do not work autonomously but have a network of relationships with local and interregional actors, we subsequently deal with innovation at different levels of aggregation.

Stages of R&D

Innovations are implemented all over in industries and society. We do our banking electronically at home instead of visiting bank counters and

face a completely new era which impact goes beyond that of the ICT revolution, an era dominated by robot technology in many domains of society. Anderson and Tushman separated radical (breakthrough) innovations from incremental technical innovations. During breakthrough innovation something completely new is developed, often on the basis of fundamental research results. They typify the different stages of the research and development (R&D) process as follows (Anderson and Tushman 1990, p. 606):

- In the era of ferment, specific products are not yet discernable. The focus is at product groups, without a clear set of specifications, market potential and customers. Many types of skills of actors of the supply chain (including user-groups) are involved, and the competitors and the industry are not yet defined. We follow Ciborra's perspective (Ciborra 1999) who claims that the new technology should be typified as a 'stranger' or 'guest' who has a regular need of temporary support. This requires for tinkering (trial and error; bricolage).
- After the dominant design has been established, market segments come up and innovations evolve. This innovation stage needs fine-tuning and incremental change—new products are developed and existing products are improved based on applied research results and production, market and customer feedback.

In a subsequent paper, they zoom in on the 'ferment stage' and distinguish two stages, namely the 'era of substitution' and the 'era of design competition' (Anderson and Tushman 1991, p. 28). Munir and Phillips have built upon their work by stating that during the ferment stage the traditional definition of an industry does not apply. Newcomers from all kind of different industries mix with state agencies and existing industry incumbents and noncompetitive relationships come up. They prefer the concept of 'activity network' for this stage with a mixture of all kinds of companies and stage agencies (Munir and Phillips 2002, p. 280). In the era of substitution, state-supported development trajectories, such as universities and defense projects, have a major role (Mazzucato 2013). During the era of design competition, breakthrough SME companies have an opportunity to enter the competition because the state agencies

do not have a producers' role and incumbent large companies have high investments and client relations based on the existing technology that generates a locked-in situation.

Because SME companies work in cooperation with external partners, we describe their functioning at different levels: firms, clusters, networks and the institutional context.

Firm Level

In our definition, start-ups are new companies, often based on one (totally new) idea or concept only, whereas SMEs have running business and cash flow from operations. Properties of both successful SMEs and start-ups are:

- entrepreneurial, inventive and flexible;
- embedded in strong ecosystems: locally and sector-based;
- access to knowledge, technology and capital (venture capital, subsidies and loans).

These small high-tech companies (especially the start-ups) have the advantage that they will not need to change their knowledge background and are not yet framed by extensively known customer expectations during an era of ferment compared with larger incumbents if the innovation is radical (Sierzchula et al. 2012). Incumbents, on the other hand, may be in a better position if the innovation is incremental since they can use existing knowledge and resources to improve and renew their output.

Although it is recognized that high-tech start-ups and especially high-growth SME are very important for economic growth and employment, studies suggest that this is caused by a small number of high-tech companies (Zwan et al. 2013). Besides, many innovative start-ups never become successful because they lack access to capital (Clarysse and Bruneel 2007). Only 10 % of the starters in the Netherlands grow into a successful start-up company (ING Economic Bureau 2015). Cooperation with partners is a solution for this funding problem.

Cluster Level

New technologies are needed for future growth but cannot directly compete against established technologies (Soete et al. 2010). SMEs that develop new technologies cannot stand on their own and need protected spaces (niches or ecosystems) to experiment with technology, develop user practices and get access to funding (Schot and Geels 2008). If public institutions grant promising start-ups a solid financial position, private investment may follow (Shan et al. 1994). The relationships at the different levels with state agencies, large companies and universities form the lifeline SMEs depend on during the first years of their existence (Audia and Rider 2005).

Furthermore, tech-SMEs also participate in regional cooperation for reasons of knowledge transfer, which is fostered by regular contacts which, in turn, are stimulated by close proximity (Asheim 2012; Wal and Boschma 2011). Campuses have recently received much attention to reach this (Ingenieur 2015). Colocation also offers opportunities to governmental institutions to efficiently communicate with sector-based clusters and individual companies and to provide the support.

There is also a flipside to this cluster approach. Too much social capital may block radical innovations because of cohesion and conservative behavior (Engstrand and Stam 2002). A broader cooperation is important to absorb complementary competences. As a consequence, the role of sector-based networks is not to be underestimated (Wal and Boschma 2011).

Another backdraft of too much cluster-based behavior is the issue of scale: cluster-based specialization requires scale production of other non-regional partners to become viable in the long term—Berger applies concepts of Piore and Sable's Second Industrial Divide to comprehend the evolution of global networks of specialized producers that together enable innovation, flexibility and efficiency (Berger 2012). Langlois explains this rise of the network form and the demise of the Chandlerian form as a pendulum movement caused by further increase of specialization due to technological developments under the continuously present market forces (Langlois 2003).

Network Level

The need for new knowledge and scale can result in partnering outside a region, so that the region becomes part of a wider (global) network (e.g. outsourcing activities, open innovation) (Asheim 2012). Networks 'glue' partners in one sector and work over larger areas (e.g. a country, province or state) (Schot and Geels 2008). Companies in a network need to deal with the issues of bridging geographical distances. However, for effective cooperation, other distances also need to be bridged, namely informational or social, for instance, by copresence of people and connecting social networks (Go and Fenema 2006). Network creation with outsiders can be leveraged by seeing hospitality as an institution of security.

In the present era, local companies have the opportunity to be connected with all kinds of partners. The institutional setting may motivate big companies to grasp the important role of 'scalability of breakthrough start-ups (Acemoglu and Robinson 2012; Markides and Gersoki 2004). BMS for instance, a major pharma company, and the health care investment firm Life Sciences Partners (LSP), have formed a strategic collaboration in order to identify European breakthrough technologies. LSP aims at small pharma companies because they actually come up with breakthrough innovations. The origin of these breakthroughs is derived from university research after which small businesses (for instance, started by the postdocs) continue with design efforts. LSP invests in these companies after the first successful stage of animal testing, so before market success is visible (Berkhout and Nierop 2015).

Level of the Institutional Context

Although technology is the biggest factor behind productivity growth, it requires institutions such as a state, education, culture, finance, etc. (North 1991).

The Role of the State

US Governments have always invested heavily in the diffusion of breakthrough technologies by massive public spending in basic research

(Mazzucato 2013). Furthermore, Fligstein argues how societal and economic developments time and again have determined a changing context that defines legal corporate behavior. Laws concerning taxes, subsidies and regulations are policy instruments that governments may use to create a level playing field (Fligstein 1990). Therefore, the state plays a central role in the production of game-changing breakthroughs.

Societal Involvement

Frenken points out how social norms and regulations shift if new technology is introduced (Verdonk 2015). For instance, privacy norms and the diffusion of internet behavior are intertwined. The input from local target groups takes these issues early in the development into account which may, at a later stage, lower possible barriers for introduction and use. Strategic niche management is a strategy that states and firms apply to bring together producers, users, societal groups, universities, investors and so on (Schot and Geels 2008). Input from a local neighborhood not only provides legitimation toward new technologies but also creates new ideas (Kaplan and Tripsas 2008; Rosenkopf and Tushman 1998).

Cultural Context

The Netherlands have a risk averse attitude toward entrepreneurship compared to the USA, where missions such as 'a man on the moon' (Mazzucato 2013, p. 4) are articulated and guide a variety of entrepreneurial efforts with many failures but also with many long-term spin-offs. This requires crossover approach from key specific societal challenges, such as 'how do we turn to a carbon free society' in the cases of Solar energy or 'how do we deal with our aging society' such as in the case of health care. The adoption of such ideas is to be supported by symbolic meaning. New narratives offer new meaning to situations and opportunities and so may pave the road for new breakthroughs that otherwise would not be accepted. Such a new narratives evolves for by the influence of leading experts in a discipline—what accepted facts, values and goals (Abrahamson 1996)? Because of this question of legitimation, we study this issue by paying attention to non-economic values, such as meaning

and trust as applied in the interpretative school of thought that studies the development of cognitive frames (DiMaggio and Powell 1991).

A Diagnosis of Contemporary High-Tech Innovations by Small-Scale Companies in the Brainport Region in the Netherlands

Innovations at Firm Level

We discuss two cases in the health care and solar market that are both in the era of design competition. The first case describes the tele-operated care robot of Rose, a start-up company of the University of Technology, Eindhoven. The data are obtained by author Zeegers, who is a co-owner of Rose and has in-depth information about this case. The project started six years ago as an open innovation project of a consortium of ten partners representing the complete development chain plus customers and users and was supported by a subsidy of 1.45 million euro from the Dutch state. In total some 3.5 million euro had been invested in the project, of which 1.6 million are subsidies from the Dutch state and European Union, when Rose had to quit. The target was to bring the robots to the market. This market primarily consists of care organizations that operate elderly homes and support elderly people living at home. Major achievements were made in the software, three improved robots were built, of which two sold, three customer field labs were developed and a number of papers was published. Rose recently stopped its activities because it had not been able to attract sufficient investments and support to continue further development.

The second case is Smit Ovens. This company had developed competences in thin film technology that enabled them to produce equipment for the production of flexible copper indium gallium selenide (CIGS) and cadmium telluride (CdTe) flexible solar cells with a nice, aesthetic appeal and production efficiency prospects in comparison with the production of classical crystalline silicon. Competing technologies for the production of flexible solar cells next to the thin film technology are still

available (such as amorphous and microcrystalline silicon) so that it is not yet known which 'standard' will prevail. We have obtained data through interviews with the Product & Process Engineer S-ALD at Smit Ovens until February 2015, Mr. C.I.M.A. Spee (personal communication, October 2, 2015). In 2015, Smit Ovens has filed for bankruptcy and restructured its operations. The company continues by the name of Smit Thermal Solutions. The main problem was the relatively low demand and production volume caused by the market developments of their customers, that is, the flexible photo-voltaic (PV) producers. In 2009, the demand of the total PV industry slowed down followed by three years of limited capital spending with the consequence of struggling supply chain PV producers and their equipment suppliers. New orders were expected, but the equipment suppliers foremost required the financial means for manufacturing (Osborne 2015). Although flexible solar panels have the promise of relatively low production costs, compared with the classical crystalline panels, this promise can only be fulfilled if the production is scaled up to drive the unit production costs down. But thin layer PV equipment producers are not yet in a position to develop efficient mass production facilities since their derived demand requires a larger and steady market potential of flexible PV products.

Cluster Formation

Our case firms are based in the Brabant region. With a regional GDP of €80 billion the Province of North-Brabant (in the South of the Netherlands) is responsible for 15 % of Dutch GDP. In the Eindhoven region, high-tech and research-intensive services are over represented, giving the region a high innovation performance (Wijk 2010). The Eindhoven region also has an above average degree of radical innovation, 9.9 % more than the national average (Volberda 2015).

This tech cluster of the Brainport region has evolved by means of intertwined centralized and decentralized efforts. The top-down influence of the national government, for example, concerning the nationally selected priority sectors and R&D public spending, determines the regional setting. In setting and labelling the priorities, the selected national key areas

('sleutelgebieden') have influenced the choice and names of the priority areas at regional level. The general emphasis of the regional cluster is to improve the general conditions, infrastructure and position of the region. Lobbying at national and European authorities is an important activity of the Brainport network.

Next to the top-down state policy, the innovation system of North-Brabant is private driven. A rather large network of service providers are involved in innovation policy implementation, such as the North-Brabant employers' organization (BZW) and the Department for North-Brabant of the Dutch organization of SMEs (MKB Nederland) (Wintjes 2011).

The Brainport area has two important campuses that are also the center of sector-based activities: the Automotive Campus in Helmond and the High Tech Campus in Eindhoven. The first one is the former headquarters and R&D site of Volvo Car Corporation in the Netherlands and the second is the site of the Philips Physics Lab that has been opened up for other companies as well (High Tech Campus). The last two decades these shared facilities have been extended and modernized funded by public investments in order to attract important knowledge institutions—among which the national institute for applied research TNO—to the campuses. Besides these two campuses there is room for tech start-ups on the campus of the University of Technology in Eindhoven and the rapidly emerging industrial Strijp S site, especially popular with design start-ups.

How did this regional area evolve? By heritage, during twentieth century, the area has been strong in science, research and make industry but weak in finance, marketing and trade with the end customers. The international marketing of end products was mainly the role of the two big original equipment manufacturer (OEM)'s Philips and DAF but the largest part of the small companies in the area were business-to-business (B2B) suppliers.

The development of Philips is an exemplary case of European multinationals and the industrial dynamics of their home regions. During the twentieth century, Philips had developed into a fully vertically integrated company and evolved to a large, diversified international player in the electronic industry—a typical Chandlerian company. Then, when enough capable suppliers came into existence, it became a marketing

company that focused on product planning, R&D and marketing (Metze 2004). But Philips had to lay off thousands of employees in its *Operation Centurion* in 1990 because of growing Asian competition in manufacturing. It could not cope because it had become too diversified so it started to move production activities to low-income countries over several years. On top of that, it announced in 1997 that it would move its headquarters and international marketing departments to Amsterdam for reasons of the availability of marketing competences at that location. Since then, Philips has faced many years of competitive pressure, but due to its focus on design and production for a limited number of consumer and life sciences industries, it managed to thrive and has a multitude of manufacturing facilities and R&D facilities across many countries and sales and service operations in around in many more countries.

Philips' strategic choices had a major impact on the industry structure of their region. When Philips started to focus on their core products, ASML, a former spin-off from Philips, became the market leader for machines to manufacture chips, the so called 'wafer steppers' during the first decade of the twenty-first century. To a large extent, they took over the position of Philips in the region as the leading OEM in the electronic industry. The origin of the lithography technology for chip production lies in the laboratories of Philips that embarked on this technology for machines for their own production. ASML arose as a joint venture between ASML International and Royal Philips and became independent in 1988. In 1995, it went public and was listed on the Amsterdam Exchange Index (AEX) and National Association of Securities Dealers Automated Quotations (NASDAQ) stock exchange. On February 7, 2016, the market value of ASML (35 billion Euro) was over 60 % higher than Philips' value (21.5 billion Euro).

Other firms and institutions have also benefited since then. Philip promised to establish a center for advanced technology in Eindhoven next to its famous Philips Physics Lab as a compensation for the loss of the headquarters for the region. The development of the High-Tech Campus and the neighboring automotive campus was supported by state policies.

Furthermore, when Philips started the development and manufacturing of consumer products and professional equipment as core competence,

product design became increasingly more important. The need for professional designers grew fast, not only for the remaining Philips R&D facilities in the region but also for spin-offs of Philips and other firms and institutions. This focus on design had always been another major characteristic of the regional heritage. It is one of the main virtues of DAF Trucks (PACCAR) automotive, the other OEM in Eindhoven. This company needed good car designers for its trucks and the passenger cars which it had produced from the mid-1950s of the twentieth century. The growing focus on design has resulted in the annual famous Dutch Design Week (DDW) in Eindhoven in the previous factory buildings of Philips on Strijp-S where many young designers and other professionals work within short range.

Overall, we may conclude that changing conditions offered new business opportunities and an increasing entrepreneurial spirit of young professionals. The region now has many larger companies and SMEs as spin-offs from the big companies. These, by now established companies and corporates, develop new-to-the-world products. This positive development of the region was, in part, a consequence of the globalization of the operations of Philips and the withdrawal of the manufacturing facilities from Eindhoven in favor of globally distributed operations that, in turn, where necessary due to the rise of Asian competition. The regional development of the industry in the South Netherlands area is therefore part of the broader history of the interaction between the European Union (EU) and Asian economies.

Industrial developments have not stopped—the companies of the regional industries are still in a dynamic state. Several major companies have become less embedded in the region because of their shifts (e.g. Philips to Amsterdam) and face less lock-in (Engstrand and Stam 2002). But smaller local companies are still dependent of these major companies, especially if they are not active part of the global network. This imbalance can be lifted when tech SMEs import or develop networks for entrepreneurial skills, gain experience of international marketing and get much better access to investors and funding. However, we have not seen such bottom-up formation of alliances. Also attention to the selection and funding of SMEs with regard to their potential for breakthrough is lacking.

Rose illustrates this imbalance. This company was active in the high-tech cluster on the University of Technology in Eindhoven. But the sup-

port that the cluster of the university campus and the sector (HTSM) offered was limited. Neither was the overarching regional Brainport cluster delivering the support that the new technology and the start-up needed in order to develop. Alliances with the bigger companies to scale up after the design stage could not be established. So, taking into account the dominant role of major companies, the cluster has not provided sufficient knowledge and backing for the development of the robot breakthrough. The robot technology as seen by Rose was not welcomed as 'guest', using the vocabulary of Ciborra.

Smit Ovens, our second case, was in a different situation. For instance, it had extensive relations with the Solliance cluster. This cluster, with headquarters at the High-Tech Campus, focuses on thin film technologies with applications in solar cells and panels. The collaboration between all of the relevant stakeholders in this cluster (e.g. Energy Research Centre of the Netherlands (ECN), TNO, Holst Centre, Technical University Eindhoven, Imec Belgium, Forschungszentrum Jülich) is intended to fully support the whole chain of innovation. The cluster intends to be among the top five of thin film PV research institutes. Solliance views collaboration between different actors as essential to become a global player in the solar world. The strategy is based on the premise that if the markets get enthusiastic about these flexible applications, then more thin film production equipment is needed. This derived market has a cyclical nature, comparable with the market of the equipment manufacturers that produce for the semiconductor industry (with ASML as a leading company). Being a member of the cluster was not enough to allow Smit Ovens to buy sufficient time until the solar market could rise again. However, having recently gained a substantial new order for a CdTe production line, the successor company Smit Thermal Solutions may come in the position to benefit from improving market conditions.

Network Relations in Practice

The location of North-Brabant is close to the metropolitan Randstad region in the west of the country. An important future orientation of innovation policy is toward cross regional cooperation (Wintjes 2011).

Innovation increasingly develops in global networks between regions. In Amsterdam, for example, companies experiment with the artistic side of 3D printing, for example, in buildings, while in Eindhoven, one of the world's leading 3D printing company Shapeways is situated (Verdonk 2015).

Both Rose and Smit Ovens were active in (inter-)national networks.

- An important network partner for Rose was the health insurance company CZ that invested 0.5 million euro in Rose and was also instrumental in the acquisition of test organizations. In the European EUROSTARS scheme, it worked with Spanish partner PAL Robotics. In the application for other European schemes, Rose developed working relations with renowned European actors. Finally, Rose collaborated with US and Canadian partners in its supply chain. These efforts contained useful additional competences. Rose stopped its operations but did not file for bankruptcy and could determine the destination of its legacy. The developed software became open sourced. The robots were handed over to a Dutch partner in the Eurostars project and to health care providers that had partnered in the field lab projects. Therefore, new entrepreneurs who aim to further develop this class of robots may build upon the scientific and engineering knowledge that resulted from the work and efforts of Rose and its investors.
- Smit Ovens was not only involved in the Solliance cluster but also had international relations with Asian and American clients. It acted as a R&D partner to foreign CIGS and CdTe thin film technology PV manufacturers in order to develop efficient mass production. Based on its internally and cluster-based developed knowledge, it could codevelop engineering solutions for their foreign clients.

The Impact of the Institutional Context

The Role of the State in Practice

The Rathenau Institute calculated that the Netherlands have a medium position in total R&D spending (Steen 2015). With a 1.98 % expendi-

ture of total GDP in 2013, its 2.5 % target has not been reached (Centraal Bureau voor de Statistiek 2015). Public R&D is shrinking, but relatively in line with other countries; it ranks higher than the EU average (0.75 % vs. 0.68 %), but this number percentage is below the percentage of the best practice countries with which the Netherlands would like to see itself compared. In addition, companies do not offer sufficiently the additional investments required. The latter is confirmed by the Erasmus Innovator Monitor, which concludes that this worsens Dutch future innovation output (Volberda 2015).

In the region Brabant, the share of public R&D expenditures in GDP is relatively even lower. This weakness has been emphasized only recently, for example, in the recent 'Brainport 2020' report and program (Wintjes 2011). In addition to that, Prof. Nooteboom states that it is questionable if this public spending reaches the SMEs that really need these investments and exploit them properly (Witt Wijnen 2015). There is patchwork of subsidizing programs that offers serial support for SME so that these businesses time and again have to apply for new subsidy options. One of the examples is the Regional Action and Attention for Knowledge innovation (RAAK) funding scheme, launched by The Taskforce for Applied Research SIA, part of the Netherlands Organization for Scientific Research (NWO), which has the mission to stimulate the development of applied research at universities of applied sciences.

Societal Involvement of the Companies

The Netherlands is evolving into a participative society, which means that citizens are competent to shape their own life, that is, their jobs, income, their own care and that of their families, their education and so on. For instance, elderly people stay longer in their own homes (and so may need care assistance) and collections of households and businesses are expected to produce their own energy by means of solar and wind facilities (Rifkin 2011).

In the Brabant region, Brainport wants to involve citizens, customers, consumers, investors, designers and artists in the regional development

process. Rose has been active to involve users (in cooperation with CZ) to test their design. Smit Ovens invested in local communities by supporting educational institutes, for example, by supporting the Avans Solar professorship of Mr. Spee.

Guidelines for an Improved System that Supports Breakthrough SMEs

The cases of autonomous high-tech start-up and SME companies show that they are part of clusters but have not been able to develop or influence network relations and/or the financial stability to overcome their market position. Both companies cooperated with the local civil society to develop their products and to gain visibility but that was not sufficient to encourage the cluster partners to fully support the breakthrough initiatives. In this section, suggestions are offered as a guideline for strengthening the start-up's position in the local ecosystems.

Strategies for Breakthrough Companies

Basically, firms that produce innovations have three ways to market their products:

- In the medium term, breakthrough companies do not have a product to sell so they require long-term external funding. Therefore, a strategy of autonomously going to the ultimate product in one jump is very risky.
- These companies generally do not have the capabilities to combine breakthrough development with generating direct cash flow through intermediate or provisory products (Tushman and Murmann 1998).
- Therefore, we concentrate on a third strategy of developing a prototype, telling the story and partnering or selling it. This strategy is also not free of risk because when a potential partner or buyer is not found, the SME may still end up without support.

Cluster and Network Collaboration

Start-ups deliver during the ferment phase and 'engage' in a network by collaborating with large companies, who then take care of the next roll-out phase and scale up stage. This requires cooperation with new partners who deliver, based on the heritage of their companies and clusters, the relevant competences (Bartlett and Goshal 1989; Graham 2002; Zalan and Lewis 2006). SMEs should find ways to bottom-up enter the agenda of the large firms and governmental institutions, because only then will these main actors become receptive to these developments, and use the innovative potential of these smaller breakthrough companies. The subsequent pressure of the major companies that introduce these resulting innovations may turn it into a new direction, as the impact of Toyota on the diffusion of the hybrid electric vehicle shows, or the acceptance of Forest Stewardship Council (FSC) timber led by the efforts of IKEA (Diamond 2005).

In the case of the solar sector, local businesses and collectives of citizens could be involved as potential energy producers. Also, energy suppliers such as Essent and Eneco have knowledge of connecting actors. They may turn from producer toward service and knowledge provider, and develop smart grid intelligence—comparable with the transition of IBM (Rifkin 2011).

The cooperation for necessary marketing and finance competences should also be sought in networks across the different local clusters. Networks are incredibly important to small companies, whereas large companies have multiple options and plenty of resources to realize their innovation. It is therefore essential that the Brainport area more actively supports the SMEs in their challenge to become embedded in interregional networks for additional competences and financial support—in this way, the local tech companies will contribute to better valorization of the knowledge that has already been generated by its universities and physic laboratories.

Another opportunity for this ambition offers the foundation of StartupDelta (www.startupdelta.org), led by former European commissioner Neelie Kroes (Noort 2015a). 'The Netherlands actually is one big

hub and it should see itself as such' states Mrs. Kroes, referring to the short distances between the hot spots but also to the tendency of the clusters to compete with each other. So, regional clusters require good contacts with other regions to be successful. For access to contacts, knowledge and capital, the axis Eindhoven—Amsterdam is important (Verdonk 2015). And then cultural differences come forward, as a result of different regional heritages. Insights from hospitality studies, with an emphasis on the experience of the guest in a new context, may offer some guidelines for the encounter between professionals from different backgrounds, especially in an international context. Boundary liaisons, for instance from Netherlands Enterprise Agency (RVO), offer the opportunity to connect social networks of different regions.

Support by the Institutional Context

The awareness of the low public spending in the region Brabant is now seen as a major regional challenge also because it is important in order to attract top-researchers on a global scale. Strengthening public R&D is seen as a good option but the success of private R&D has created some myopia in the region for policy options regarding public R&D (Wintjes 2011).

Various sides now call for a bold and decisive attitude of the state as process manager (Zwaag 2015) or a venture capitalist (Witt Wijnen 2015).We follow Mazzucato's lead for the necessary long-term support to deliver promising breakthroughs in an ecosystem. However, we do not agree with her idea of direct pay back to the state as a return on investment. We fear that this will end up with a bureaucratic machine to collect the money. However, where the government is the only customer (e.g. health care) it is reasonable to tax the product because it is the direct result of state sponsored knowledge development (e.g. orphan drugs).

Start-up delta aims at changes in legislation (bankruptcy, tax) and finance. But an entrepreneurial state could go beyond such general improvements, and explicitly allocate a substantial part of its R&D budgets to potential winners (Kralingen 2015). But the overall evidence of a picking winner strategy based on previous innovative successes or finan-

cial results is negative (Baum and Silverman 2004; Nooteboom and Stam 2008). Decision makers rarely beat the market in selecting potential innovations, for example, by selecting too risky projects. Therefore, the state problem stays: who do we support? A difficult task, because the output and market success is not in sight during the breakthrough process.

The selection mechanism for public investors may take into account the past performance of the SME (Berger and Udell 1998). This is not yet the case in new tender evaluations of the RAAK projects. Private investors often study the track record of the entrepreneur, such as the reputation of the entrepreneur, a non-economic value of a start-up that as a company does not yet have a financial history. So instead of using only historical financial data as a leading criterion, a past performance analysis based on nonfinancial track record criteria could complete a project evaluation that is at present foremost based on an analysis of the potential technology and roll-out plans. Kirkels and Duysters have shown that public brokers with a long track record in SME networking in the Brainport become influential by diffusing innovation-related knowledge (Kirkels and Duysters 2010). These brokers may become part of a decision-making process on public subsidies by assessing previously delivered hard and soft entrepreneurial outputs because they have a fine-grained insight in the region. Also trend watchers and expert panels with independent members, especially from outside the South Netherlands region, could be involved in this selection trajectory in order to avoid groupthink due to too much insider vision. In this way, the state may organize a selection mechanism in which individuals (including public representatives) with state-of-the-art knowledge on different topics obtain an important change agent role to curb the present pathway of subsidies (Araujo and Harrison 2002; King and Pearce 2010).

Furthermore an SME, with its local nature and small size, can relatively easily introduce itself for collaboration with local civil partners to verify the value of the new breakthroughs and to foresee possible local resistance (Schot and Geels 2008).

We finish our guidelines with a narrative for change strategies for technological breakthrough that takes industrial and institutional elements into account:

Technological breakthroughs benefit from a strong position of the high-tech SMEs in a cluster with smaller, locally-based participants where all stakeholders have bottom-up influence and receive a fair share, supported by a network with global companies for scalability and policy makers for the funding of the technology development trajectory and regulations for a level playing field.

Conclusions and Practical Implications

This chapter simultaneously explores several elements which have not yet taken into account together, namely the importance of the start-up/SME for breakthrough innovations, the support from its heritage-based ecosystem (with a proactive role of the government) and the usage of hospitality concepts for strengthening its local and interregional relations.

We can learn from the approach of the Netherlands toward 'Sea and Land' because a major part of the country is below sea level. We are especially triggered by its poised cooperation between individuals, irrespective of their formal status (citizens, water boards, companies, governments) (Diamond 2005). Against this backdrop, we conclude by offering suggestions on how to engage the support of breakthrough SMEs in an international setting.

Guidelines for Individual Breakthrough SMEs in Their Region

- Our main strategy is 'go for the proven principle prototype only, tell the story and partner or sell it'. This strategy is based on a recognizable position in the local network.
- Firms can collaborate with local civil partners and client groups to gain a thorough understanding for the real needs in the society, take away possible resistance, focus on the collaboration with big companies for scalability, create start-up branch organizations that lobby public and private partners for innovation support and conduct proactive behavior to meet with partners of other regions in order to absorb competences beyond their own organizational and regional heritage.

Guidelines for Public Authorities, Institutions, Companies and Civilians at the Regional Cluster Level

- Cluster-based strategic niche management may have a role in the transition to another technological regime, in which users, producers and societal groups of a specific area together develop a new cognitive frame on current challenges.
- Investors often put considerable weight on the creditworthiness and reputation of the entrepreneur. These non-economic insights may shed a different light compared with purely economic indicators and create trust. Regional governments may develop a fine-grained insight by developing and training public brokers combined with the organization of an externally based expert panel.

Guidelines for National Policy

- A state can underline its innovative ambition for innovation with a conscious and structural choice for a challenge-driven direction of future economic and societal growth over the borders of the key areas. Associated public investments, level playing field considerations and a refined interest for local innovative developments support the efforts of all partners who are involved at developing breakthrough innovations.

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8

Setting a Benchmark for Excellence: A Case Study of a Chinese and UK Collaboration Based on the WorldSkills International Standards Model

Sally Messenger, Jenny Shackleton, and Emma Shackleton

Introduction

This chapter explores a major initiative in China to raise intermediate skill levels in support of the significant pace of economic development. In February 2014 Premier Li Keqiang set the agenda for a full political economy of skills. One strand of the new policy was focussed on deepening the integration between industry and education.

At the beginning of 2014 the UK began a partnership with the British Council (China) which was based on the relationship started in 2010 when China first participated in the WorldSkills Competition (WSC).

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The UK invested in the partnership through the Department of Business, Innovation and Skills (BIS), an International Standards Team (funded by the Skills Funding Agency [SFA]) and Shackleton Education Ltd. China invested through the Ministry of Human Resources and Social Security (MoHRSS) and the British Council.

Since 2010, China has proactively explored the space between its current practice and the standards embedded within the WSC. One very successful project has been the collaboration with the UK to deliver WorldSkills Roadshows, taking British WorldSkills competitors to engage with Chinese students, in major cities across China. The Roadshows involved 12 leading technical colleges, 100,000 students and 5000 teachers/trainers. In addition, over 20 policy dialogues were held with officials, employers and leaders. The key findings were following: significant potential and equally significant waste of talent, stunning training resources not fully exploited, and very high barriers to entry and progression within and across the education and training system. The UK competitors involved in delivering the Roadshows gained many benefits including honing their entrepreneurial skills and enhancing their understanding of other cultures and economies. Further projects have involved exchanges of WorldSkills Experts, support for college-to-college partnerships and using the WorldSkills International (WSI) standards to provide a benchmark for quality and a platform for measures to match the dynamism of the global market place.

Seventy four Member countries invest in WSI because it is a global hub for demonstrating high level industry/business-led standards. Depending on their character and circumstances countries use their membership to further their national, regional and international interests in many different ways including systematic and strategic. As stated by Song Jian, WorldSkills Technical Delegate for China: 'China is joining WorldSkills in order to connect with the global movement of skills and markets' (March, 2011).

Since 2012, WSI has worked collaboratively with the UK to research and develop high-level industry-/business-led skill standards. The theoretical underpinning was research undertaken by a team from Finland (University of Tampere), Australia (the Royal Melbourne Institute of Technology University) and the UK (University of Oxford). 'Modelling the Characteristics of Vocational Excellence' (MoVE) is a multidimensional model comprising three main explanatory factors: natural abilities, intrinsic characteristics and self-reflection, plus extrinsic conditions (Nokelainen et al. 2013).

The outcome of the WorldSkills collaboration was a suite of Standards Specifications. These played a pivotal role in the research programme with China, which had two key aims:

- develop a 'standards route' of progression to WorldSkills level
- develop curriculum and pedagogy to create individuals who meet the standards

The first workshop was held in May 2014 and the second in October 2014.

A significant finding from the first workshop was the need to generate skills for innovation, creativity, communication and problem solving. Such skills are features of high performers globally as identified by industry and business and yet in China there is little experience of growing these skills, since they sit uneasily with the dominant culture and practices of colleges and state enterprise.

This chapter illustrates the strategic direction China is taking, with the support of the UK, in seeking a global platform from which to drive its mission for excellence. In addition, the theoretical background to the WSI development of standards for excellence is provided.

A Profile of WSI

WSI is a not-for-profit membership association embracing agencies or bodies which have a responsibility for promoting vocational education and training (VET) in their respective countries/regions. The organisation operates worldwide and is politically and denominationally neutral. The aim is to develop and further international government and industry/business cooperation to achieve higher standards and status for VET on a worldwide basis.

The concept of an international skills competition was promoted by Spain and in 1954, the first Organising Council was established. During the past 60 years, WSI has grown and developed. It currently represents 50 skills with 74 Member countries/regions all working together with youth, educators and industries to help prepare the workforce and talent of today for the jobs of the future. Thirty-seven new members have joined WSI

in the past ten years; this is a significant indicator of the value that the organisation is adding to the international skills community. This growth, alongside the new Brand and strengthening focus on quality, has led to engagement with global partners such as the Organisation for Economic Co-operation and Development (OECD), United Nations Educational, Scientific and Cultural Organization (UNESCO), UNEVOC, European Centre for the Development of Vocational Training (EU/CEDEFOP) and the International Labour Organization (ILO).

Due to the success and recognition of their competition, the organisation is now increasing its focus on research, skills promotion, career building, education and training and international co-operation with a new vision, mission and position:

The vision	Improving our world with the power of skills
The mission	To raise the profile and recognition of skilled people, and show how important skills are in achieving economic growth and personal success
The position	The global hub for skills excellence and development

WorldSkills is becoming

- an organisation with an outward strategic view
- with professional and specialist management
- needing to respond to current global needs of VET
- needing to be research led
- positioning skills competitions as assets for greater purposes

Modelling the Characteristics of Vocational Excellence

Modelling vocational excellence (MoVE) was a WSI research initiative supporting

- skills improvement and skills competitions best practice
- international skills benchmarking, and promotion of vocational excellence to young people, employers and policy makers

The research team was a partnership between: University of Tampere, Finland; University of Oxford, UK; and Royal Melbourne Institute of Technology (RMIT) University, Australia, with support from Deakin University, Australia.

The data produced by the study offered a framework for international benchmarking on skills quality. Through the research reports, MoVE offers an opportunity to influence the global debate on VET, and to shift the orientation of VET research away from a 'deficit' framework to one which highlights benefits and opportunities.

MoVE is based on national-level research initiated in 2007 by Professor Petri Nokelainen at the Research Centre on Vocational Education at the University of Tampere, Finland, with the support of the Finnish Ministry of Education and Culture. The Finnish MoVE project was the first research project to address the individual attributes which characterise vocational expertise and support the pursuit of excellence. By focusing on quality vocational practice in skill competitions, MoVE departed from the mainstream of vocational research which has followed a deficit pathway, primarily concentrating on structural, economic and policy barriers to vocational participation and completion.

Data from the Finnish MoVE research have provided education authorities with strategies to improve vocational performance in skill competitions. The research also points to ways in which the quality and relevance of vocational outcomes can be enhanced by offering young people opportunities to develop the attributes and characteristics associated with excellence. Findings from this research have been reported in Finland and internationally (Nokelainen et al. 2008; Nokelainen and Ruohotie 2009).

In 2009, Professor Nokelainen presented his research at the Calgary WSC seminar series, and invited other WorldSkills member organisations to join the MoVE research project. WorldSkills UK and WorldSkills Australia became involved in the research, and formed partnerships respectively with the University of Oxford, UK, and RMIT University, Australia, to conduct national studies on key aspects of excellence in skill formation.

On behalf of WorldSkills UK, the UK Economic and Social Research Council (ESRC) Centre on Skills, Knowledge and Organizational

Performance (SKOPE) at the University of Oxford conducted a study into the workplaces of the 2009 WorldSkills UK Calgary team. The study explored the role of the learning environment within the workplace environment in the formation of high-level vocational expertise (Mayhew et al. 2009). In July 2011, the WorldSkills UK London squad completed an adapted version of the Finnish survey on the characteristics of vocational excellence (Nokelainen et al. 2013).

In 2010, RMIT University, WorldSkills Australia (WSA) and the Dusseldorf Skills Forum conducted a study of Competitors and Experts participating in WSA's national competition held in Brisbane in May 2010. In the study, both groups were asked about their WorldSkills journey and how this experience had influenced, and may influence, their careers. In November 2010, WSC competitors selected into the team for WorldSkills also completed the Finnish survey on the characteristics of vocational excellence, thus enabling international comparisons between the Australian and Finnish teams (Smith and Rahimi 2011).

Through the work undertaken in Australia and the UK, the overall MoVE research programme has expanded to include collecting narrative data which give voice to WorldSkills participants. Narrative data also support analysis of the benefits of competition on skills formation, and analysis of the influence of workplaces on competition outcomes. In addition to collecting data from WorldSkills Competitors, the MoVE research programme now includes data on Competitors from the perspective of the WorldSkills Experts, and data from the Experts about their own involvement in WorldSkills. By collecting and analysing data from Competitors and Experts participating in an international competition, MoVE aims to

- direct international attention to questions of quality in vocational skill
- explore how WorldSkills Competitors and Experts regard the impact of their experience on their skill development, and on their sense of identity as members of their trades/professions

With its focus on understanding the factors which promote development of high-quality vocational skills, rather than on barriers to skill development, MoVE also aims to promote a positive orientation towards vocational education and to encourage further research from this perspective.

Context of the Collaborative Project

In summer 2013 British Council (China) and the WorldSkills UK Standards Project Team, together with the RMIT, Australia, presented a paper at the 'Global Skills Marketplace' Conference at WSC Leipzig 2013. As a consequence, in November 2013, during a China–UK Roadshow, the proposed 'China-UK Standards Project' was presented to a multi-college audience of teachers and managers in Hangzhou, China. Three colleges subsequently joined the Project:

- Guangzhou Industry and Trade Technician College for web design, refrigeration and air conditioning
- Hangzhou Technical College for automobile engineering
- Shenzhen Institute of Technology for graphic design

Although these colleges showed initiative, they did so within China's strong vertical framework for development. Each college is rightly regarded as outstanding and a potential source of WorldSkills Experts and competitors. Each became a Team China Training Centre for WSC 2015.

The Challenge for China

China has a facility for setting and testing national occupational standards. However, the pace of China's economic development is placing great pressure on that facility to be current and relevant to the market. In February 2014, Premier Li Keqiang announced wide-scale developments amounting to a full political economy for skills. The headlines are to

- fully involve actors and resources from across society in vocational education
- ensure that the economic progress and technological development, transformations in the modes of production and public service are well adapted to each other
- deepen the integration between industry and education

There is an emphasis on the important position that vocational education holds within China's system of talent cultivation. The aim is to establish an environment in which specialist skills are valued and ability is not judged on where you obtained your degree. This aim is supported by the ambition to inspire young people to be enthusiastic about learning a specialist skill.

The delivery of vocational education is also being changed and new innovative models are being sought. More autonomy is being given to the colleges to enable them to be in line with industry needs. A credit transfer system is being introduced as part of curriculum development and traditional universities are being supported to move towards 'applied technical universities'.

A fundamental link has been made between market needs, occupational standards and the delivery relationship between education and industry. New initiatives include a dual qualifications system providing a college graduation certificate and a vocational qualification, apprenticeship piloting and highly skilled engineers and technicians from industry to undertake teaching.

Non-governmental investment in the delivery of VET is being encouraged. Steps are being taken to establish a diverse range of investment models and collaboration between state and private colleges.

For the past five years, China has proactively explored the opportunity to close the gap between its current practice and the WorldSkills standards. For many reasons, including scale, structure, organisation and culture, forging a full connection with the Worldskills Standards Specifications is particularly complex for China, which nonetheless has the capacity to succeed.

WSI Standards Development

Standards for VET must be derived from business and industry, relating directly to their purposes and occupations and set within a strong conceptual framework. The standards must be capable of assessment according to sound principles and indicate the nature of the skill developed.

Traditionally, standards tend to be carefully and slowly developed, strongly linked to qualifications and regulation, reflect work organisation and composition at the time, owned by particular parts of the education and skills system with special expertise, but often unable to keep up with the changes in markets, technology and changes in work organisation and composition.

In contrast the key features of the WSI standards are

- based on the knowledge of Experts across the world
- validated by global industry
- focused on excellence
- include high level (soft) skills
- weighted to reflect industry's priorities
- guaranteed to be updated every two years

The WSI standards were influenced by a collaboration with an international standards transfer project in the UK. Within the UK, as part of the WorldSkills London 2011 legacy investment, by the government, a project was commissioned by WorldSkills UK/National Apprenticeship Service (and subsequently inherited by Find a Future) with funding from the SFA to research how international standards could transfer and add value to the UK VET system. The aim was to raise UK standards and provide greater 'stretch' and aspiration for individuals and in turn benefit the wider skills system.

The natural alignment between the work of WSI and the aims of the 'International Standards' project facilitated close collaboration over 18 months culminating in the development of a suite of WorldSkills Standards Specifications (https://www.worldskills.org/what/education-and-training/wsss/) and a set of multi-agency case studies (https://www.worldskills.org/what/education-and-training/global-standards-bridging-skills-gap/) illustrating how the international standards can be integrated into the UK VET system. In addition, the Standards Specifications work chimed well with the redevelopment of apprenticeships being championed by the Department of BIS and as a consequence WSI is represented on the Ministerial Approvals Panel. UNESCO has also recognised the valuable work of WSI on standards development and assessment in

their recent report on level setting and recognition of learning outcomes (Keevy and Chakroun 2015).

As part of the consultation process on the draft standards, during summer/autumn 2013 interviews were undertaken in the UK with 38 industry representatives and stakeholders across

- construction and building technology
- manufacturing, engineering technology and transport
- information and communication technology
- social and personal services
- creative arts and fashion

The sample was a mix of micro, small, medium and large organisations, some of which operate internationally. In the main, the organisations selected had a strong reputation for investing in the development of their people and/or involvement in competitions at regional/national level and for having some experience of WSI. The individuals taking part in the interviews varied in terms of their experience in the workplace—there was a combination of senior executive, 'middle management' and 'new entrant' contributions.

The interviews were semi-structured to enable a rich discussion and lasted 60–90 minutes. There were two major areas of discussion: key features of outstanding performance and feedback on the draft international standards.

The themes generated from the discussions across the five major sectors resulted in the conclusion that 'outstanding performance' is about generic and transferable attributes and skills. Regardless of the sector/industry, to a greater or lesser extent the interviewees were 'of one mind'. The findings concur with the research commissioned by WSI (Modelling of Vocational Excellence, 2012).

'Commitment' and 'communication' were identified as the most significant features of 'outstanding performance'. Commitment was linked to learning, a desire to improve, create a product to a visibly high standard, pride, enthusiasm and relishing a challenge. The 'communication' themes were collaborative team working, good interpersonal skills, strong

customer relationships and an ability to coach and teach others—to simplify complexity.

Five additional features were identified as important: quality, work organisation and self-management, leadership, interpretation and analysis plus a deep technical knowledge. 'Quality' was considered to be about 'attention to detail' and having a pride in setting and maintaining high standards. There was a realisation that precision and detail 'make the difference' and that 'taking care' is an important underlying skill which relates to consistently producing excellent results. 'Work organisation' had a focus on meeting deadlines, targets and being productive, coupled with effective stress/pressure management. 'Leadership' took the direction of initiative, independence and entrepreneurial characteristics. Transparency, resolve, vision, creativity, risk-taking and being solutions-driven, all emerged within the leadership discussion. For 'interpretation and analysis', there was a high level of consistency around reading and understanding technical information with a strong underpinning of maths and problem solving. A 'deep technical knowledge base' was identified as critical for fast evolving/dynamic industries with the need to be able to communicate effectively with a wide range of stakeholders.

The outcomes of the analysis of what industry/business considers to be 'outstanding performance' contributed to the final design of the WorldSkills Standards Specifications by including a focus on work organisation and self-management, problem solving, innovation and creativity plus communications and interpersonal skills.

The Standards provide a basis for aspirational learning programmes/qualifications development, and within the UK provide a mechanism for 'closing the higher level technical standards gap'. The Specifications are designed to

- cover the specialist, technical and generic skills that comprise intermediate work roles across the world
- set out what a capable practitioner must know, understand and do
- are prepared, with guidance, by technical and vocational WorldSkills Experts
- are consulted upon and updated biennially with industry and business worldwide

- indicate the relative importance of each section of the standards, as advised by industry and business

The prime value of the Specifications is threefold:

- as the reference points for the WSC, they establish the baseline from which to grow and reward authentic vocational performance
- for WorldSkills Members and more widely they provide a benchmark for national and regional standards as economies and markets become increasingly international
- to support young people and adults to survive and thrive in a future uncertain and often volatile world

When designing standards, it is important to know their purpose. Regulation, safety, selection and elimination, design and organisation of work and market advantage are main reasons for the establishment of standards.

For each of the four specialisms, the objectives of the China–UK Collaboration Project were to

- develop standards at two levels, to offer steps towards the WorldSkills standard
- compare the standards to what exists and is used in China and the UK
- develop formative and summative assessment measures
- develop curriculum and pedagogy that can best create individuals who meet the standards
- pursue qualifications and recognition, as appropriate

The proposed outcomes were

- gap analysis of current arrangements and practice compared with internationally recognised best practice
- two sets of standards per specialism, with external reference points to industry in each country
- guidance on the design and implementation of formative and summative assessment

- identification of options for qualifications and recognition
- guidance on measures for quality assurance and updating

The Collaborative Project

Exporting standards and/or standards development processes to other countries and cultures has not always been successful historically due to over-complexity for the recipients, disconnection from actual need and markets and questionable value of the product being offered. In working with China, the key principles on which the Project was based were to work outwards from the Chinese standards, to ensure the standards were rooted in business and industrial growth, connected to global best practice, scalable, sustainable, flexible and covering the 'life cycle' of the standards—from purpose through delivery to quality assurance and review.

The Project started in January 2014 with an agreed format for obtaining and reviewing the Chinese standards. A template was designed for each Chinese college to use to set out its standards in a format to enable comparison with UK and international standards. The resulting standards were compared with the UK ones, in preparation for Workshop 1 in May 2014.

The immediate findings from the review of the Chinese standards identified that college practice tended to be based on an idea of industry and business rather than analysis; there was often a limited grasp of work roles and occupations beyond command structures.

Workshop 1 focused on the ways in which UK standards are realised through business, industry and colleges, training centres and universities. This was done to illustrate Premier Li's focus on the ingredients of talent development. It also served to explain what standards should comprise in terms of level descriptors and learning outcomes, and related the Chinese standards to international conventions for setting and communicating standards.

Teaching and learning methods that generate excellence in vocational performance were an important part of the workshop. Moving towards learner autonomy through interactive techniques, including coaching, is unfamiliar and 'counter cultural' for China. However, a personal sense

of 'agency' and efficacy is essential to the generation of knowledge, skills, values and self-reflection.

Workshop 1 comprised

- the creation and use of models and planning frameworks
- visits to industry, business, colleges, universities and training centres
- an introduction to the WorldSkills standard and its particular characteristics
- immersion in teaching and learning to create vocational excellence in modern work environments

The outcomes of Workshop 1 included

- the realisation that standards are more than a set of documentation
- greater understanding of the relationship between colleges, industry and business in standards setting and delivery
- recognition of the impact of good standards on assessment, curriculum and pedagogy

Notwithstanding any similarities in terminology, the technical and vocational education and training (TVET) standards of China and the UK are different, on account of the systems and contexts in which they operate. The situation is complex because modern pedagogy requires innovation which may cut across traditional methods, structures, relationships and approaches. Despite this, since technological innovation requires young people to contribute what only human beings can offer, for standards to deliver high-quality VET, modern pedagogy is an essential accompaniment to those standards.

The broad findings from Workshop 1 identified the need for China to address the culture that determines curriculum and pedagogy; move from external regulation and control to self-regulation and control as a route to accessing international recognition and progressively higher performance. In October 2014, ten UK participants met their Chinese counterparts in Guangzhou in order to build on Workshop 1. Using the same approach as for Workshop 1, industry visits explored the relationship between industry, the colleges' programmes and national and

international standards. Workshop 2 also developed the teachers' skills in delivering excellence in vocational performance.

The results of Workshop 2 were very positive. First, by showing an impressive capacity for hard work, robust action plans were generated for programmes that connected in clear ways to the WorldSkills Standards Specification, both in format and content. Across these plans distinctions between China and the UK comprised

- the prominence of government regulation in web design
- the conceptual strengths underpinning graphic design
- the scale of influence by particular companies on automobile technology
- in some instances a lack of detailed awareness of the occupations at which the programmes were directed

It was evident that the Chinese colleges were well on their way to connecting to global standards of best practice due to the pull of particular companies both private and state owned and the wholehearted use of WorldSkills as a performance indicator.

In contrast to the UK, and perhaps inevitable at this stage in China's development, the colleges took a selective and elitist, rather than inclusive, view of other parts of the economy and society.

High-level generic skills are embedded within the WorldSkills Standards Specifications and must be grasped if the standards are to be realised. The sessions on interactive learning to grow the personal attributes of vocational performance excellence were very popular and effective. Initially, the notion of generating a sense of personal responsibility, instead of imposing or accepting external controls, was hard for participants to grasp, as was the notion there might be 'no right way'. However, at the Workshop's conclusion, participants noted that 'leadership includes letting your group find their own answers'.

With firm action plans and a desire to embrace performance excellence through teaching and learning, the Chinese colleges are now moving forward. Since October 2010, the Chinese government has been fast and unswerving in its recognition and use of WorldSkills as a beacon for reform and development. This was most recently illustrated by the deci-

sion to bring all Team China's Experts to Guangzhou during Workshop 2 in order to build on the briefings received just three weeks earlier at the WorldSkills General Assembly.

The WorldSkills Standards Specifications and assessment methods appeared at a propitious time for China, giving it the tools that it needs in an accessible form. In adopting and adapting these there is every reason to believe that China will show that size need not be a barrier where and continuity of purpose.

Conclusions

This chapter has illustrated the power of global standards for governments as they seek to advance their nations. WSI has been the independent and trusted vehicle for the China/UK collaborative project. China's intelligence gathering enabled it to recognise the strategic importance of WorldSkills and its standards. Its challenge is to apply these standards through curriculum and pedagogy, including the delivery partnership with business and industry, and most of all to grow the attributes of self-regulation in a hierarchical society.

WSI is working strategically in the VET arena and has recognised Standards as a means of unlocking further evolution in its vision, mission and position, in partnership with global organisations that have complementary missions to achieve a measure of convergence across global VET. The ambition for WorldSkills is to become the global face of twenty-first century skills based on an investment in leading edge research.

Due to the investment by the UK government, following the hosting of the WSC in 2011, in a suite of VET projects designed to raise aspirations, the UK was selected as a partner by China to move their VET system forward. The significance of investing in VET research and development should not be underestimated for countries aspiring to have a place on the world stage, based on a reputation for standards of excellence.

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9

Seven Rules for Creating a Successful Global IT Service Organization

Ronald Israëls

Introduction

Ten years ago, a big Dutch IT service provider with many business units in as many Dutch towns (and sometimes even multiple units in one town) did want to work with one IT environment, one e-mail account, one (dual) datacenter, one service desk and of course with standardized applications to support the clients with one truth (finance, logistics, client information, etc.). After some years, they were successful, but it took time. This was not due just to the technical work—of course, this requires a tough roadmap for the technological and financial challenges—but also the management of change of this type of changes was complex. 'Where is the service desk located?', 'What will happen with obsolete employees?', 'Which environment is the best (and who has to change)?', 'What is the business case?' were some typical questions which were the tip of the iceberg. Resistance was also there and was articulated in sentences like

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'The clients won't accept this', 'I don't have time for this', 'I don't have the budget to support this' and 'I only will do this, when you do that for me'.

The story is repeating. Currently, global companies see the advantages of an integrated IT environment where all employees around the globe can work with the same information supported by effective and efficient IT services. All efforts of globalization and offshoring have to be cashed. By supporting those companies in their global journeys and analyzing what does work (and what not), it is possible to propose seven rules that did work for ten years on the national scale and can be applied for centralization on a global scale.

In this chapter, the reasons why many global companies need a global IT environment will be discussed along with which best practices can be used to realize this environment. We conclude with an illustrative case. In this chapter, the methods to realize or manage the IT itself won't be discussed. Best practices for Software and Infrastructure Development, Project Management, IT Service Management and Outsourcing are very useful in realizing a managed IT environment but are considered to be well known. This chapter is focused on the management of change that is needed to realize the required ecosystem and to keep all stakeholders aligned during the change journey. And of course, applying seven rules won't be enough to be successful in every case, and it will be possible to add seven more rules. But the described rules did work on both national and international projects.

Need for Global IT Service Organizations

We live in an era where globalization is an issue and opportunity for every company. 'The World is Flat' (Friedman 2005) is a metaphoric description of the new marketplace where each company can produce and deliver everywhere in the world. For the delivery of electronic services (like software or social media), this is already the truth unless the (electronic) infrastructure is lagging behind or the service is deliberately blocked by a government. This process is still accelerating through new technologies like 3D printing, cloud services and the 'internet of things'.

These technologies give rise to the thought that even new economic paradigms (Frank Diana 2014) will occur. Even a new Industrial revolution (Industry 4.0) is already predicted (German Government 2015) which will require a new way of organizing IT services (de Graaf and Israels 2015). The prediction is that 'Everything is IT or has an IT component, where all information about people, departments, organizations, and even chains will be available for all'.

Globalization is not a panacea but a need for many companies. Subramanian Rangan did write: 'a global strategy is no substitute for a good business strategy' (Rangan 2000). He also described seven (!) common myths about globalization including 'any company with money can go global', 'internationalization in services is different', 'distance and national borders matter no more' and 'globalization is here to stay'. Those myths can be interpreted as reasons to stop a globalization strategy, but it is wiser to read them as risks to a global strategy and that mitigating measures are needed in case the decision is made to globalize. As usual, each organization needs to be prepared and agile enough to change their strategies, tactics and operations when needed.

Globalization can also been read as method to deliver everywhere standardized products and services, an approach reflected in Ritzer's (1993) McDonaldization and the practice of Henry Ford ('Any customer can have a car painted any color that he wants so long as it is black', Ford and Crowther 1922), which is ironically also the first globally produced car (Ford Model T, Wikipedia n.d.). But the present technology supports also mass customization (Frank Piller n.d.) which can be the solution to deliver globally, to act globally and still retain diversity and authentic local habits and flavors.

The progressive rise of the importance of IT and the need for globalization will require that also the IT for global acting companies is delivered and organized globally. For this reason, we see that multi-national companies are creating shared service centers for their IT delivery. Those centers cannot be centralized in one country. This is because efficient 7/24 hours services require a support organization that is positioned in several time zones. Also, local support is still required for local computer devices and networks. Typical goals for a global IT organization are to realize

economy of scale and be process driven (to deliver uniform and predictable services), agile (acting on changing of the total company including mergers and divestments) and resilient (acting on changing local circumstances like earthquakes and political tensions). The rules we describe in this chapter are the means to realize those goals.

Rule 1: Have an Agile and Resilient Strategy

The process of standardization and globalization is very time consuming since many actors are involved in decision making. At the same time, the operational side of the business has to go on. During the years that will be needed to implement a global IT service organization, we suppose many business changes will take place, including mergers and acquisitions, the need for restructuring the business, strategic alliances to stimulate the growth in one market segment and reduce involvement in other less attractive market segments and the introduction of new business services that are now hardly to predict. Nevertheless, the process of globalization of IT services must be sufficiently flexible to accommodate all IT changes that are required to support a company's primary business functions.

In all the proposed changes, the IT service organization won't be top priority, because it only has to support the primary process. This has the effect that the priority in most organizations will be on the primary processes, products and services and not on the change of the IT organization. Therefore, a clear strategy ('why' and 'what') to implement a global IT service organization is essential, that is understood and supported by senior management and is agile and resilient enough to overcome the many hurdles that will be found while implementing the global organization.

This rule has great similarity with the third step of the often practiced eight steps for change management (Kotter 1996) 'create a vision and strategy'. But in this case, the strategy also has to generate short-term wins (step 6) and consolidate gains and produce more change (step 7) because the sense of urgency (step 1) will change during the implementation. For this reason, the agility and resilience of the required strategy are underlined.

Rule 2: Define Your Business IT Services

For most companies, the first hurdle in globalizing their IT services is to know what services they actually deliver at each location. They even don't know which business processes are supported by IT. Out of experience, we know that creating global IT services will be impossible if the relationship between IT services and business processes is not clear. Global IT services require knowledge of the business processes and the interconnection of those processes with all elements of the IT environment.

The logical first step in standardization of IT services is to acquire firm knowledge about one's IT capacity and capabilities to deliver on the promise made to the client. This raises a question of importance: which business processes have to be supported and by which type of (automated and mediated) information? A global service catalogue (Israels and de Boer 2014) with the IT services the enterprise already delivers to the internal or external users or wants to deliver everywhere across the organization in the future can serve as the starting point to advance understanding what aspects of IT services have to be globalized. The Ownership, Business Processes, Applications, Systems, Hardware and Infrastructure (OBASHI) methodology (APMG 2010) can be used to define which business processes should be appropriately linked to the IT services environment, and subsequently OBASHI model and their relationships. This makes the dependencies clearly visible and makes it possible to determine what the strategic IT services are and which of the IT services can be standardized through the global company.

The real knowledge and not just the data (Davenport and Prusak 1998) about these relationships and their strategic value is imperative to support the decision-making process which services require in-house support and which ones could be outsourced to providers who possess better capabilities and/or command scale economies that yield greater efficiencies than one's own company could muster (see rule 4). When organizations know which business IT services they need and which ones they want to operate internally, they are ready to organize their company's shared service centers.

Rule 3: Use One Service Management System and Process

At the start of the creation of the global IT organization, getting knowledge of the present IT delivery processes and their actual performance tends to be very difficult. Which processes are defined and really implemented (instead of working only as paper tiger)? What is the real performance of those processes? Is the 'sense of urgency' of an incident defined differently in business unit A as opposed to business unit B? Is it possible to compare and learn from each business unit? In most cases, service management systems and processes tend to be insufficiently defined. We found this even in organizations that had an ISO qualification for the total company. Registration of incidents and changes was done in many different local systems and even in only local accessible Excel sheets.

The use of one (global) IT service management system and its adjacent process is a big step forward in realizing a global IT service organization. Such system yields multiple benefits. These are, first, the entrepreneur gets a compliant measure of his company's IT services at its multiple locations: the metrics, key performance indicators and the detailed insight in the IT assets of in each country and/or business unit. This makes it possible to measure, compare and improve the quality and effectivity of the different supporting organizations. Second, with one system, service management can be conducted at a global scale: somebody in Singapore can act as the service desk for your employees in China, to resolve an incident with the enterprise resource planning system in Romania or Mexico depending on the time of the day. The whole IT family is connected and can work with one common dataflow. Finally, working with one service management tool and service process makes that everybody learns to speak the same 'service' language and can learn from each other by comparing their performance. This requires proper governance to prevent comparing apples and oranges.

Rule 4: Define and Execute Your Sourcing Strategy

The change to a global IT service organization is complex and will be hard to conduct in isolation. Many companies require additional resources in times of change to continue the work where the current employees have

limited capabilities and/or time. Other companies want to start regional or global hubs to deliver services regional or global. And some realize their globalization by outsourcing specific or even all IT services (see rule 2) (Armes et al. 2015). This requires a specific sourcing (or supply chain) strategy stipulating which IT resources, applications, systems, hardware and/or IT Infrastructure have to be realized 'in house' and which of these should be delivered by vendors. Put in more common IT terms: which services should be retained and which ones should be outsourced? (Herz et al. 2011). Here it must be noted that for each service a specific service provider should be selected.

Outsourcing requires in most cases real partners (Israels et al. 2012) who collectively serve as a support system for the entrepreneur. But the turbulent business environment, wherein entrepreneurs operate, dictates that in all cases they should be prepared definitely to switch from their existing technologies, suppliers and even business partners either suddenly or in a planned fashion when the circumstances require this, either during the globalization journey or in its wake. Sourcing strategy involves possibly a local partner, or may be a global service provider that the entrepreneur selected with great care. But in practice, these were unable to meet the enterprise's business demands and therefore failed the test of 'perfect match' at a certain point of time. In sum, entrepreneurs should guard their flexibility by defining beforehand a clear exit strategy so as to avoid from being held 'hostage' through a 'vendor lock in' arrangement.

Rule 5: Balance Between Business Goals and People Goals (and Even Planet Goals)

Of course, the existence of each company depends ultimately on its financial stakeholders. If the company spends too much money on IT, it won't survive. But spending as less as possible on IT might result in most cases in dire consequences of delivering bad service to the business, instead of IT serving as an enabler to enhance business performance. The role of people in delivering good services has been well documented (like Barney and Wright 1997 and Kotter 1996). There is in the main a growing sense of urgency to pay attention to all stakeholders and resources on which a company depends. In this respect, the so-called Triple Bottom

Line (Elkington 1997) served as a driving source to compel enterprises to implement an ISO norm (ISO 26.000 n.d.). These concerns are also valid for the IT services.

At the start of the IT globalization of the cases we examined cost reduction was not the primary goal of entrepreneurs. More often, business-oriented IT services and connection improvement drivers served as mechanisms to realize important business goals such as: improving business support and improving time-to-market of new (IT and business). While the Triple Bottom Line is presently a less commonly used business goal, it is expected that its importance will likely grow in future. Questions such as 'is it good to concentrate IT services in a low wage country', 'is local employability important', 'is it important to reduce the use of natural resources' and 'are work conditions of employees (and of the vendors of the vendors) important' are also likely to increase in relevancy. With reference to earlier observations (see rule 1), entrepreneurs should aim to maintain a balance between business goals and social goals, for example, through the incorporation of both these elements in their globalization strategy. In the examined cases, the care for people tended to be present, but often blurred due to the fear for resistance. Here an overlapping participatory relationship paradigm arises between the entrepreneur who initiates change and those people affected by change or development. What will it take for the latter to accept change? The answer to this question can be found under the following Rule 6.

Rule 6: Be Transparent and Honest

Implementation of a global IT organization requires a lot of challenging and sensitive decisions that will impact the people involved. This renders the process of creating global IT services rather complex as they require in most cases the attention of a total cast of actors in many different countries (at least at the start) with different backgrounds, from a wide range of disciplines as well as national and (local) organizational cultures. Hofstede (Hofstede et al. 2010), among others, has advanced our understanding of cross-cultural differences. Nevertheless, there are so many different variables involved, just consider geographical distance,

different managerial styles, time zone and infrastructural as well as technical differences, so that the pursuit of global integration has a high probability of being confronted somewhere in the middle of the process with a clash of cultural dimension. The chance of this is increased by the fear of resistance that often dominates the arena of the globalizing process. Out of fear, people tend to hold back information which also hampers the change process.

Authentic behavior of the managers in charge will be the most lasting method for the implementation of the globalizing process. However, the managers' authentic behavior tends to be perceived differently from the perspectives of different cultures. For this reason, it is advisable for entrepreneurs to be transparent and honest about what they seek to achieve, also in the mid-to-long term, and to practice what they preach. It is also important to communicate that in this kind of changes not everything is clear in the beginning ('who can predict everything, can better go to the stock exchange market') but that you will share this when you have decided and are open for ideas of your environment.

Remember always that the people in your environment are not stupid, blind and deaf. They can think for themselves, read the internet and hear any conversation. Act like your room, mail and phone is constantly tapped by everybody in your environment. Each mail and phone conversation will be read and heard by everyone. Sure, this sounds like a nightmare, but it contains a core message. Only with clear and not overpromising messages, with a value for every stakeholder (even if it is not the favorite value) that can openly be communicated, you will be trusted. And change management starts with trust.

To support this communication, we advise consideration of the media richness theory which states that understanding and performance are better when communication is done through the use of richer media (Daft and Lengel 1986). This complies with the best practice we see in global projects (like offshoring) and organizations where managers build a personal relationship with their team members by visiting them on location and spending time (also outside the office) before they use e-mails and conference calls to manage the work. They seem to build trust and calibrate the nonverbal communication with this strategy which can be used during the time they have to work on greater distance and with less rich

media. This can also be described as using the Human Moment (Hallowell 1999). Nevertheless, the media richness theory is also criticized, mainly because its effectiveness is hard to prove (Dennis and Kinney 1998).

Rule 7: Prepare Your People

The biggest assets of each service organization are the people that deliver the services. Without them, the service won't be delivered and the change won't happen. Even in the case when they are not needed at all in the (near) future or when the number of employees on specific locations will be reduced. In all cases, at least people are needed in the meantime. Also, it is important to consider if the present capabilities are the future capabilities, do the people need other knowledge and behavior? And can they get these capabilities without support?

It is important to prepare your people for the future, especially when this future is uncertain (Peter Schwartz 1991 and Kees van der Heijden 2005). This starts with making them to think about the future (see rule 6) and to plan their own future. Do they want to be Unix engineer forever or are they willing to broaden their knowledge and experience? You also have to provide them with possibilities to learn and get a new experience. For long-term employability and fit-for-purpose, training in technical knowledge, international standards (so they can communicate with their international colleagues), languages and soft skills is essential. For this reason, a communication and training plan will be of value for all involved.

Case description

Harmonizing IT Process Standards for a Global Organization

Project scope

The objective of ASIA Harmony project was to increase efficiency and quality through harmonization of IT processes across several of Telenor Group's Business Units (BUs) in Asia (Bangladesh, Malaysia, Pakistan, Thailand). The project did focus on basic IT processes, necessary to ensure efficient and high-quality IT for the business and vendor relationships. The

project was managed by Telenor Group IT (Group) and Quint Wellington Redwood (Quint) was contracted to assess the initial situation and to define the master plan and High Level Design and to support the BUs during implementation with best practices, support to the Management of Change and operationalizing the Group governance. The execution was done by a combination of Chinese, Dutch, Indian and Malaysian consultants.

Initial situation and design of improvement

The project started with an initial assessment of the processes in the respective BUs (in two weeks). Findings from this assessment were both encouraging and yet many challenges lay ahead:

- There was a perceived high level of process maturity by local BUs of their IT processes.
- Although there were different process maturity levels and knowledge of Information Technology Infrastructure Library across BUs, many possible benefits for each BU were found.
- The project was viewed as a Group initiative, not a regional or BU driven project. Thus, there were differentiated levels of buy-in and acceptance to change from the BUs.
- Asia is experiencing strong economic growth, and the Telenor's Asian BUs prioritized projects to capture this growth higher than the ASIA Harmony project. This project was deemed as lower priority relative to business growth and capturing market shares for the BUs.
- The BUs had some form of processes in place (at different maturity levels) but the culture was typically not process oriented. IT departments often did whatever worked to get the job done as requested by the Business.
- IT was reactive to Business demands, and there were limited planning and forecasting done with the Business that may have an impact to IT.
- There was no Group governance on the definition and outcome of the processes.

These findings and internal circumstances caused to an implementation which started with Grameenphone in Bangladesh, followed by Digi in Malaysia and then dtac in Thailand and Telenor Pakistan (both at the same time). This approach made it possible to learn from the initial implementation projects. These were identified through regular project reviews and in turn applied for the other BUs.

The High Level process Design (HLD) was worked on centrally through a series of Workshops with all BU representatives (in two months). The Low Level process Design (LLD) was considered while implementing on-site at each BU location as first stage of the implementation. Implementation of 4–6 processes (not all the processes were implemented in each country)

took 4–6 months guided by the process consultants and afterwards inheritance and maturity to the high-level processes continued to grow. The central governance (also designed in the high-level design) kept the momentum.

Results and outcomes of Asia Harmony

ASIA Harmony has realized both tangible and intangible benefits for Telenor Business and IT since its process implementation. The tangible benefits were:

- Increased service quality (reduced resolution time of incidents, reduced rework of changes)
- Increased user satisfaction
- Fact-based prioritization of work (maximize achievement of business value)
- Increased control and insight (cost controls and resource utilization)

The Business experienced improvements in how their business demands are managed and delivered by IT. A strong IT translates to faster resolution of incidents and rework of changes, thus minimizing impact to Business (downtime), greater speed-to-market and more efficient cost control. All these mean the Business can be more efficient and agile.

Key learnings and experience from the Asia Harmony project

The positives and benefits gained by both Telenor Group and the BUs are (for this case description, the learnings are related to the proposed seven rules):

- The project was about 'Harmonization', not necessarily 'Standardization'. Since every BU is different and operating in different markets, there are some differences in the way the processes are practiced. The approach was for processes to be harmonized across BUs at HLD, and customization allowed at LLD, to achieve the intended objectives and benefits. R1[1]
- There was some level of deviation in the implementations depending on local BU setup and requirements, thus strong alignment between the implementations was important and necessary. Alignment workshops and sessions allowed for such deviation to be managed within the overall framework and HLD. R1
- With the implementation of prioritization process, there was an increased transparency between IT and Business on value of IT services delivered. This gave a mindset change for the BUs that will allow them a more effective management of business demands in terms of prioritization and tracking. R2

[1] The code R*n* relates to the defined rules, R1 relates to rule 1.

- The Service Catalogues (of IT Business services) delivered, increased IT's alignment with business on performance of Business Services and ability to improve this performance in accordance with business needs. There is also better clarity on the service levels, capacity and availability of the Business Services defined. Now the BUs have a better understanding of the information they have, or do not have, to fulfill those Business Services (as described in the Service Catalogues). R2
- ASIA Harmony also brought about some changes on tooling (or workflow). Now there is a single point of truth where multi-channels and interfaces are streamlined to provide a single solution (single point of contact (SPOC), ticketing system, etc.). R3
- There was a need to have an overall Process integration 'map' as it was key to provide a basis for the process design and understanding by the BUs. R3
- There was an increased awareness on the importance of good process practice and governance. This was evident in one of the BUs, where it improved their ability to manage and negotiate with vendors on Business Process Outsourcing and Managed Services arrangements. R3, R4
- There were many challenges faced along the way, but the BUs adopted the spirit and developed solutions to resolve or work around those challenges. R5, R6
- ASIA Harmony has also encouraged cross learning and the sharing of information between teams/divisions and between BUs, which is important as this experience was new and challenging for them. R6, R7

During a mid-term evaluation of the project, some areas were discovered which could have been executed better (and were input for further improvements):

- As this project is more of an organizational transformation with process implementation, strong project management and governance is needed to overcome the management of change and aristocracy in the respective BUs. R1
- It typically takes some time for process improvement initiatives to bear fruit, and the benefits are realized some months or years later. Collaboration between the BUs can accelerate the improvements and benefits realization. R1
- Both Telenor Group and the BUs underestimated the complexity, effort and change management required for this project. High level of commitment and involvement at Senior Management level were required to ensure the effectiveness of the project and subsequent sustainability. R1, R5

- Most of Telenor Group's previous engagements with vendors were mainly based on a 'sourcing' contract. The contract for this Project with a consulting company described all the requirements from a sourcing engagement perspective, but it was not necessarily appropriate for organizational change type of projects like ASIA Harmony is. This led to some challenges in explaining to the BUs later on what the value and objectives of the Program are. R4
- The contracting and financial arrangements with Quint were signed with the different BUs individually. This led to complicated payment arrangements within the different countries, and receipt of payment for vendor was delayed. R4
- Effect realization (and sustainability of this effect) was higher in the business units with the right focus, capacity and competency. The mix of resources was just as important as the capabilities of single people, both from Telenor and Quint perspective. R7
- Most Asian project members of Telenor were used to a way of work where consultants come in and do the work for them. In this project, the role of Quint was on coaching and seducing them to do the actual implementation. The Asian consultants were also less experienced to this way of working compared to the Dutch consultants. In several cases, this created culture shocks. R7

Epilogue

On a hot summer day, we had a conversation with an Information Manager in the government of a large Dutch town. He described the difficulties encountered in creating a single financial system for this municipality out of the many available on the market. In his practice, he was confronted with so many different departments with such substantial differences that the Information Manager for the department which he leads, did not succeed in integrating the multiple municipal departments within one common system to comply with a uniform type of administrative practice. We did discuss this situation and agreed that the rules set out in the present chapter could also be applied in his very local case, where rule 1 was perceived to be dominant. The local government of the municipality in question hung on for a long time to a decentralized approach, and it was due to this tradition that introducing a centralized 'regime' to boost the agility and resilience of their organization took over five years.

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Part III

Creating Value in Chains and Networks

10

India–EU Industry Value Chains: Perspectives and Evidence from Textiles and Software Industries

Amitendu Palit and Deeparghya Mukherjee

Introduction

In a world of changing production architecture, most products are now 'made in the world'. With comparative advantages becoming increasingly enterprise-specific and defined according to abilities to perform specific tasks in global value chains, conceptualisation of international trade has also changed. Cross-border exchange of goods and services are now being visualised more from the vantage points of value addition and intermediate trade, rather than through movement of final products.

The European Union (EU) has been a prominent hub of global value chains that cut through developed and emerging economy markets. Production networks involving producers from several countries have connected to the EU member markets, through exchange of both intermediate and final products. India is not an exception.

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This chapter examines two specific Indian industries that are prominent examples of the value chains running through Europe and India and serving as larger instances of supply chain evolutions between the EU and Asia. These industries are textiles (including apparels) and software. Belonging to manufacturing and services respectively, the two industries provide interesting contrasts of value chain integration between developed Organisation for Economic Co-operation and Development (OECD) markets and emerging economies. Looked at from the global perspective of Indian firms emerging as 'integrated' producers by taking on a series of functions across value chains, software and textiles serve as important examples.

An important focus of the chapter is on identifying the role of innovation as a major source of firm-specific comparative advantages in influencing value chain integration processes for Indian textiles and software industries. Insights on the growth and evolution of both industries provide illustrations of how firms from both have responded to global developments combinations of 'creativity' and skilled human resources. The chapter concludes by summarising some salient lessons emerging from experiences of both industries and the challenges that successful firms from both need to be mindful of.

Software

The software industry in India formed the backbone of economic progress that the country has experienced over the late 1990s till date. Under amiable policies and a relatively non-interventionist government (Arora et al. 2001), the sector has become a world leader enjoying tax holidays on exports up to 2011. The tax breaks were initially supposed to expire in 2009. However, pressures from the IT lobby extended the deadline till 2011 by which time the government established special enterprise zones which were used by IT companies to recoup the tax benefits that were lost due to the end of tax holidays (Bakshi 2014). India promoted the software industry by setting up Software Technology Parks of India as early as 1991 allowing tax holidays for a period of ten years (Bajpai and Shastri 1998). This, coupled with the Indian Information

Technology (IT) Act (2000) (later amended in 2008) and further extension of tax holidays till 2011, helped the formation and growth of the Indian IT industry.

Globally, the software industry has structured itself into a value chain spread across continents. While China has integrated itself well with the value chain in most manufactured products such as electronics, India has come to be a major player in the value chain of software and related products and services. Over time, India has integrated well as an offshore service provider of firms set in the USA and EU to begin with and finally emerged as innovators in software development. For example, Infosys Technologies which is a world leader in consulting, technology, outsourcing etc. developed a software called Finacle which is today an industry leading universal banking solution used by banks across 84 countries serving 16.5 % of the adult banking population in the world. Additionally, the increasing incidence of EU multinational enterprises setting up core research and development (R&D) centres in India is recognised in the literature (Jha et al. 2015). The typical stages in any software development can be broadly described as represented in Fig. 10.1.

India's entrance into the world of software was primarily fuelled by the presence of the Indian diaspora in the USA which translated

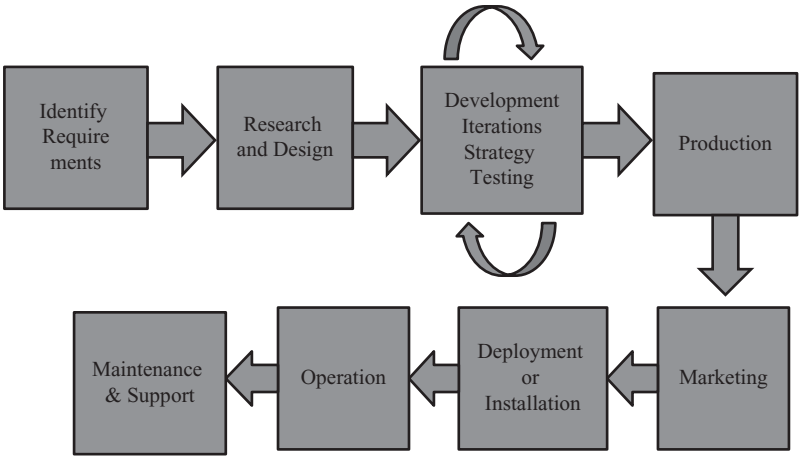

Fig. 10.1 Example of a software value chain

into the formation of Indian companies like Infosys which were initially engaged in the stages of support and maintenance of software which are at the lower end of the value chain and least skill intensive (D'Costa 2003). At the same time, the usage of IT in production activities increased exponentially in the West and most Western countries were faced with a shortage of qualified IT professionals. India's massive pool of English-speaking IT engineers filled the skill gap that resulted. This helped the formation of various IT companies in India like Infosys, Wipro and Tata Consultancy Services (TCS) and further to grow steadily starting from the lower end of the value chain. Over time, contractual arrangements of maintenance and support moved towards fixing bugs and, in the next stages, developed into successful professional partnerships. And over the last decade, Indian companies have even acquired Western IT companies increasing the ability of Indian companies to tap into the higher stages of the software value chain. HCL Technologies (HCLT) acquired AXON Group plc in 2011. TCS acquired Pearl Group in the UK in 2005 and the ALTI SA in France in 2013. Currently, Indian firms have moved up the value chain of software products and have been contributing to the chain through abilities of innovation mastered through partnerships with foreign counterparts.

In contrast with other industries, the software industry apart from having its own value chain and being a product in itself also adds into other industries increasing productive efficiency in the said industries. In fact, the Indian advantage in software products is leveraged by other companies producing different products where a software is an input in production. India's software industry has been engaged in developing software applications aiding the banking, manufacturing, retail distribution, government, insurance, hotels and transportation sectors (Wogart 2008). Embedded software is an integral part of such products, and without the software, the products may lose attributes that significantly increase their marketability. Indian firms have developed capabilities in embedded software especially in areas of network monitoring and access (Bhattacharya and Lal 2010).

India's emergence as an innovator in software and IT industry occurred through two major channels: first, through working in partnership with

EU companies like Volkswagen, Boeing, Toyota, Bosch, Deutsche Bank, BMW, Siemens etc. and second, through mergers and acquisitions of European companies by Indian firms which used the acquired resources as well as human capital for development of software products. Multiple case studies may be cited to support the case of Indian IT professionals facilitating and finally being instrumental in developing innovative solutions in the software industry aiding business delivery in a variety of sectors. In this respect, partnership with EU companies has also been significant. A pertinent example is the Indian firm HCL's co-development of a control chip for the Boeing 787 (Bhattacharya and Lal 2010).

Through the decade of 2000–2010, the principal growth drivers of Infosys technologies have been the EU market. Infosys is a crucial participant in the Automotive Open Systems Architecture (AUTOSAR). This is a network of global automotive manufacturers working towards research on software for auto electronics innovation. Finacle, a banking software produced by Infosys, has been in high demand in the banking industry with Deutsche Bank being a major technology partner of Infosys apart from many other banks in the world.

Cranes Software International created a risk analysis software called Predica in 2008. A series of acquisitions and gain of knowledge about statistical softwares in the process was important in Cranes ability to develop the software. HCL was helped to enter the SAP market through its acquisition of UK-based Axon group in 2008. HCLT developed key know-how in the area of airborne avionics systems and ground-based systems. Partnerships with Airbus facilitated the development of an embedded chip for air-to-ground communication. The company also has a patent on a GPS-based navigational tool for finding a potential fishing zone. Sasken Comminications Technologies had focused on R&D since its inception and had clients like Nokia, Philips, Samsung and Vodafone. Sasken has been Philips software development partner. Further acquisitions of Botnia Hightech (Finland), Nokia's adaptation software R&D (Germany), in 2008 strengthened Sasken's innovations potential (Bhattacharya and Lal 2010).

Overall, there is a clear trend that Indian companies are integrating at an increased level in the global production system through the software industry and this is also reflected through the Foreign Direct Investment

(FDI) that India has received in R&D in this sector alone which outpaces the same in any other sector consistently. The share of FDI in R&D activities has been consistently growing for the software industry in India through 2003 till 2011 as expressed in the chart below:

The software and IT sectors have been the single largest recipient of FDI in R&D activities in India and, as seen in Fig. 10.2 above, has commanded a share of at least 50 % each year till the 2009 global recession. A number of these investments are by firms in the EU. While 50 % of the FDI in R&D in India from 2003 to 2009 came to the software and IT sector through multinational companies, about 44.5 % was concentrated in Bangalore, Mumbai, Pune, Delhi, NCR, Chennai and Hyderabad (Mrinalini et al. 2013). Amongst others, German software giant SAP established its second largest R&D unit in India (EBG 2012).

The software and IT industry in India thus provides a strong case of how a developing country entered an industry in the relatively less skill-intensive segments of its value chain and through linkages formed with the EU worked its way emerging as an innovator and responsible stakeholder in the more skill-intensive stages of R&D or conceptualisation of the product. In addition to this, it may also be pointed out that many Indian firms came into existence because of such linkages, and even today, experienced software professionals in Bangalore are taking the entrepreneurial plunge in this sector building their own companies.

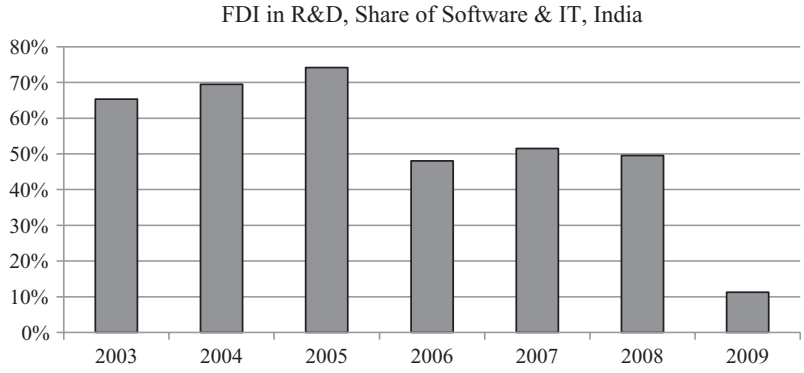

Fig. 10.2 Share of FDI in R&D India software and IT sector. *Source*: Constructed by the author using statistics from Mrinalini, Nath & Sandhya, (2013)

Incubation centres like the N.S. Raghavan Centre for Entrepreneurial Learning housed at the Indian Institute of Management Bangalore, India, have also come up to help young entrepreneurs develop their idea into successful businesses. Hence, the India–EU linkage may have had a constructive influence in inspiring both innovation and entrepreneurship in the Indian software industry.

Textiles

Textiles have been a significant industry in India for centuries. Indian textiles have gained a global reputation since the ancient periods for their exquisite design and use of natural fibres (e.g. silk and cotton). In the contemporary era as well, Indian textiles retain a significant presence in global markets and maintain their niches in the world of modern fashion. Textiles are also critical for India's domestic economy given that they are among India's major exports with export proficiencies noted across a large and diverse variety of items including raw materials and finished garments. They are also one of India's largest employment providers and sources of livelihood for significant sections of India's moderately skilled, and largely unskilled, workers.

India emerged as one of the topmost global exporters of apparel after the abolition of the Multi Fibre Agreement (MFA) in 2005. The MFA, which had quotas imposed by developed countries—particularly the USA and EU—on exports of yarn, fabric and clothing from developing countries, was a major market access barrier for Indian textile and garment exports in the advanced economy markets. The MFA was abolished from 1 January 2005 as part of the Agreement on Textiles and Clothing adopted by the World Trade Organization. During the period 2005–2011, Indian apparel exports increased by more than 60 % (in value terms) to occupy around 3.5 % share of total world exports of apparels (OECD 2013), making India the third largest developing country exporter of apparel. Indian apparel exports increased from US$8.7 million to US$14.4 million during 2005–2011 attaining a growth of 64 % from the base period. This led to their achieving 3.5 % share in the global apparel market worth US$412 million in 2011. This, though, was far lower than China's share of 37 % of global apparel exports, followed

by Bangladesh's corresponding share of 4.8 %. See OECD (2013) for more details. The rising share in global apparel exports has been accompanied by deeper penetration in the USA and European markets. At the end of 2011, India was the fifth largest apparel exporter to the USA, after China, Vietnam, Indonesia and Bangladesh; and the third largest apparel exporter to the EU, following China, Turkey and Bangladesh (OECD (2013), Tables 5 and 6). These stylised facts, while pointing to the rising importance of Indian textiles and apparels in the world market post-MFA, also underline the greater market share captured by China and Bangladesh in the American and European markets. Both China and Bangladesh, along with other major emerging market apparel exporters such as Indonesia, Cambodia, Vietnam, Pakistan and Sri Lanka, have generally been more competitive than India in the relatively more unskilled and labour-intensive segments of the apparel value chain. Rising wages in China are making it increasingly uncompetitive in apparel production compared with Bangladesh and Cambodia.

Though textiles and apparels are often used interchangeably for referring to the same industry, they are significantly different despite interlinkages. The differences arise from the variations in their factor-intensities, including capital, skill and technology. The textile industry is often more capital- and technology-intensive than apparels; these characteristics are particularly noticeable in production of synthetic fibres (e.g. polyester, nylon) given the linkages with chemical industries. Modern methods of producing natural yarn and fibre like cotton and silk have also become significantly capital- and technology-intensive over time with greater introduction of state-of-the-art scientific methods in spinning and weaving.

Countries that are leading producers of fibre—natural, or synthetic, or both—have greater comparative advantages in the upstream segments of textile value chains. Downstream investments in scientific methods and efficiencies in dyeing and related functions can help them in obtaining identical advantages across the entire length of the value chain. A detailed illustration of different segments of textile and apparel value chains can be found at OECD (2013).

India has taken impressive strides as a producer of natural fibres, particularly cotton, and is poised to upstage China as the world's larg-

est cotton producer. At the same time, while still well behind China, which is the world's largest producer of synthetic fibres accounting for around 65 % of global production of the latter, India has become the second largest producer of synthetic fibre, ahead of Taiwan and the USA, through rapid expansion in installed capacity for producing polyester. The synthetic fibre industry in India has strong backward linkages with the chemical industry and has benefitted from capital investments. The expansion in domestic supply of synthetic yarn has enabled the growth of firms specialising in production of polyester fabric. At the same time, large-scale capital investments have increased capacity and technological proficiency of spinning mills leading to massive increases in production of raw cotton, which has also become one of the major exports for the country.

The positioning of Indian firms in global textile value chains is noticeable at the upstream segments as producers of both natural and synthetic fibre. Apart from exports, domestic demand for fibre has also been high acting as an additional driver for expanding capacity. The abundant availability of fibre has been utilised by several firms for building downstream efficiencies through specialisations in spinning, weaving and designing for producing fashion fabric and becoming integrated textile manufacturers. Major Indian firms producing fashion fabric and exporting to the USA and Europe include Nandam Denim, Digjam, Ruby Mills, Richa Fabric, Welspun India, Bombay Dyeing and Arvind Mills. All these medium and large textile producers have become major sourcing points for global retailers catering to consumers in the USA and Europe.

As far as Indian firms integrating into apparel value chains (particularly production of finished readymade garments) are concerned, they are distinguishable from the integrated textile manufacturers in size. Several integrated textile manufacturers are of large size and capable of exploiting advantages of scale, both in upstream production of fibre as well as downstream activities of weaving and fabric design. Apparel producers, however, are not necessarily integrated and are of relatively smaller sizes. One of the main reasons for the smaller size is the historical reservation of readymade garments for small-scale industries in India. In a legacy running for several decades, since the 1960s and

1970s, India followed a policy of reserving several manufactures for exclusive production by small enterprises. Defined in term of monetary value of total investments in plant and machinery, large and medium enterprises were prohibited from setting up operations in several industries. Readymade garments were one of the major ones among these. The reservation deprived garment manufacturers of the benefits of scale and investment for a long time. As a result, notwithstanding the upstream advantages of large endowments of fibre and a skilled workforce capable of executing intricate designs, particularly embroidery, Indian firms were unable to dominate apparel value chains as much as China could, given the latter's greater comparative advantages of scale, quick turnaround and large batch productions.

Apart from scale diseconomies that have constrained several Indian firms from integrating more deeply with global markets, particularly in the USA and Europe, many Indian apparel exporting firms also suffer from relative comparative disadvantages vis-à-vis its competitor countries in certain other functions in the value chains. Major developing country garment exporters competing with Indian apparels in the US and European markets—Bangladesh, Cambodia, Sri Lanka and Vietnam—are often able to deploy greater amounts of cheap labour in relatively unskilled assembling operations in the apparel value chains (Fig. 10.1; assembling operations imply cutting, tailoring and sewing functions). While India possesses a large workforce encompassing various categories of relatively unskilled operations in the apparel value chain, the ability of Indian apparel producers to mobilise them fast for responding to bulk global orders entailing quick deliveries has been less compared with their Asian counterpart competitors. As a result, major global apparel retailers source more from these countries, often after passing on fabric and apparel designs to the assemblers, compared with India. Garment assemblers from these competitor countries of India dominate the middle segments of the apparel value chains: typically, these more unskilled labour-intensive functions in the value chains are less value additive compared with design, branding and product development. Countries with greater comparative advantages in the former arising from lower marginal costs for labour focus more on delivering larger volumes.

There are, however, interesting structural characteristics imbibed by certain groups of Indian apparel firms that have enabled them to significantly neutralise comparative disadvantages on scale and labour costs. While many Indian apparel firms handle labour-intensive assembling tasks in the value chains, and where they compete with their counterparts from Bangladesh, Cambodia and Vietnam, there are other firms including those from clusters like Tirupur and Ludhiana that handle various functions in the value chain in a composite fashion. (Tirupur and Ludhiana are two well-known garment-manufacturing clusters located in the states of Tamil Nadu and Punjab respectively. While Tirupur specialises in cotton garments, Ludhiana has developed strong niches in woollen and winter wear.) These entail their acting as 'full package' suppliers including relatively upstream functions like sourcing of fabric along with prominent downstream and relatively larger value-added functions demanding innovation and creativity such as product design (Karmakar and Tiwari 2014). This is characteristically similar to many textile firms from Turkey and Eastern Europe and represents an interesting blend of activities arising from comparative advantages generated by access to fibre, skills in producing fabric and creativity in design. In the context of innovations enhancing productivity across value chain functions, several Indian textile firms have imbibed design skills that are complemented by their use of skilled tailors for executing complicated designs.

Innovation in the Indian textile industry at the enterprise level has been fuelled by major shifts in global fashion trends and consumer tastes and preferences. The key development in this regard has been the emergence of 'fast fashion'. The development has introduced a different structural dynamic in the global apparel industry by making it respond to a new pattern of consumer demand in addition to ready-to-wear styles and products (both for budget and affluent customers) and exclusive high-end designer *couture* products.

For several years, particularly during the last couple of decades of the last century, the more high-end ready-to-wear and designer products were considered the forte of producers from Europe and the USA. This was natural given that the European and American markets typically had the maximum number of affluent buyers of apparel. Producers and designers

based in these markets (e.g. Italy, Spain, Turkey in Europe) were better placed to gauge the developments in high-end tastes and preferences. More affordable budget apparels for these markets were sourced mostly from developing countries of Asia and Africa. The trend changed with the emergence of fast fashion and growth of fashion trends with much shorter life cycles, while being exclusive in design, and capable of reaching consumers across the world fast in small batches for retaining the exclusivity in design. This has had a marked impact on the pattern of outsourcing by global retailers with considerable sourcing now taking place from countries and producers capable of responding to the demands of fast fashion. Several Indian textile and apparel producers have been successful in becoming parts of this new trend in sourcing.

Major US and European retailers catering to fast fashion—Zara, Mango, H&M, Benetton, Gap, Club Monaco—have found Indian producers, along with those in Turkey and Morocco, as capable of responding to the fast fashion's demands of exclusivity and shorter cycles. The specific advantage of Indian firms in this regard has been their abilities to come up with new designs (Tewari 2006; Tokatli 2008). Indeed, product development and design have revealed the strikingly innovative abilities of Indian producers in the context of fast fashion and creation of niches in global markets. Major retailers like Zara are sourcing extensively from India due to their abilities to meet the demands of high quality along with flexibility, and the competencies shown by Indian firms in this regard (Tokatli 2008). Embroidered women's garments are among the most expensive garments sold by Zara. Innovative designs have been vital in Indian textile firms emerging as 'full package' suppliers given their abilities to create and execute designs on fabric agreed upon in consultation with sourcers, thanks to presence of talented designer, skilled tailors and craftspeople.

Conclusions

This section summarises some of the distinct conclusions emerging from the experiences of software and textile industries in India from the perspective of their deeper integrations in global value chains.

Textiles and software are interesting examples of Indian industries having integrated into global value chains on the basis of their structural characteristics generating distinct comparative advantages along value chains. Looked at in conjunction, they are industries reflecting both India's historical tradition of manufacturing (textiles) and modern services that have flourished with the gradual opening up and greater global integration of the Indian economy (software). The Indian textile industry's linkages with the developed country markets, particularly in Europe, began from the ancient era, through the flourishing cross-continental trade in textile products and garments running through the silk route connecting India with Europe. Software, on the other hand, symbolises the modern Indian economy's proficiencies in production of IT and IT-enabled services and the global reputation acquired by India as an efficient producer of these services.

Both software and textiles have benefitted from commercial partnerships with collaborators, vendors, clients and customers based in Europe and the USA. Europe and the USA are hubs of several global value chains: with respect to software and textiles, they are usually the end destinations as markets for final demand. Major global software developers and leading global retailers of apparel have been working closely with Indian software firms and textile manufacturers for several years now and the future prospects of the partnerships appear bright.

Innovation has been a key driver of deeper penetration in global value chains for both software and textile firms. Firm-specific comparative advantages have arisen from 'creative' inputs provided by textile designers, and software developers, in the final design and structuring of their respective end-products: fabrics and apparel for textiles, and core business solutions for software. Clients for both categories of firms have been looking at Indian producers for 'full package' solutions, which encompass multiple functions across the respective value chains. At the same time, firms from both industries have established lasting credibilities for providing 'high value' products, and services, leading to brand recognition.

The correlation between innovation and firm size appears to be largely positive for both industries. Major Indian software firms that have gained global recognition for their innovative solutions have made large investments in R&D. Similar large investments in capital-intensive techno-

logical capacities are also noticed for integrated textile manufacturers. Though the historical legacy of small-scale reservation has hindered growth of scale for many garment firms, gradual liberalisation of the policy is producing results with emergence of integrated firms in apparel post-MFA and growth of fast fashion. The broader consensus in the academic literature on the positive correlation between innovation and firm size, flowing from the abilities of larger firms with 'deep pockets' to successfully pursue innovation in the medium and long term, resonates in India's software and textiles industries as well.

It is also interesting to note the structural heterogeneities among Indian firms in both industries with respect to their integration into global production networks. Firms combining innovative capabilities with economic efficiencies, arising from the deployment of skilled human resources at competitive rates, and therefore emerging winners in global markets, co-exist with those that are far more marginal actors. Such examples include firms surviving purely on proficiencies in low-cost and relatively unskilled activities like garment enterprises engaged in sewing, trimming and assembling operations for apparels, and back-end business process functions carried out by call centres for IT services. However, all these firms competing on the basis of their ability to keep marginal costs of production as low as possible, are increasingly losing out to more efficient global competitors. Indian textile firms are losing their cost advantages to producers from Bangladesh, Cambodia and Vietnam, while the Philippines, and East European countries like Poland, have become major threats for many IT process outsourcing firms from India.

The challenge for India's software and textile firms, both established and upcoming, would be to ensure sustenance of their comparative advantages in low costs and niche products. These have been the defining characteristics of firms from both textile and software industries with respect to their deeper penetrations in global value chains. With costs in relatively unskilled operations no longer the distinct advantage for Indian firms, it is imperative for them to keep innovating products and processes for staying put in world markets. It is also important to complement innovation with a matching well-trained skilled workforce—a challenge that notwithstanding the demographic dividend of a young population, India might find difficult to address in the absence of adequate skill development capacities.

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11

A Dynamic Perspective on Innovation and Business Model: A Case Study of the Inkjet Printer Industry

Masatoshi Fujiwara

Introduction

This chapter analyses how business models evolve over time. Research on business models has developed since the 2000s, but the term is still treated as a buzzword regardless of its importance. Based on a review of literature on the business model, the author looks into the development processes of business models in the inkjet printer (IJP) industry, which is well known for its consumables business model. The industry is very informative and significant for analyzing the dynamic processes of business model development, because major players in the industry are facing a serious threat from non-genuine consumables, and they have shown interesting reactions to the threat.

This chapter is organized into four sections: Introduction, Literature Review, Case Analysis, and Conclusion. In the second section, the author

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conducts a literature review on business models to understand the development of the research and set the framework of my analysis in this chapter. In the third section, the author examines how Hewlett-Packard (HP), Canon, and Epson in the industry created, changed, and developed their own business models. These three companies developed IJPs that changed the printing world dramatically, and they have been evolving their business models. It is interesting that there are strategic interactions not only among the existing players on this issue but also with new potential players such as companies producing non-genuine consumables. Among HP, Epson, and Canon, Epson suffered from the threat most seriously due to its technological selections. However, it has exhibited very interesting strategic behavior in reaction to the non-genuine players by imitating them. In analyzing these processes, the author discusses some implications for future research and suggests a dynamic perspective in the fourth section.

Research Question and Methods

Research Question

"Business model" is a term we often use these days. This concept was originally introduced following the development of information and communication technologies (ICTs) (Magretta 2002). As researchers such as Timmers (1998), Mahadevan (2000), Afuah and Tucci (2001), and Zott and Amit (2008) point out, ICTs have actually opened up many opportunities to entrepreneurs and intrapreneurs (Pinchot 1984) to design various business models that could not have been envisaged without ICTs. Research on business models has gradually been developing at the firm level (Chesbrough and Rosenbloom 2002; Chesbrough 2010) and industry level as well, analyzing industries other than ICT industries such as the biotechnology industry (Fisken and Rutherford 2002; Greiner and Ang 2012). One reason the concept of business model has prevailed among many industries is thought to be its broad definition; "business model" is a functional device that fills the gap between technologies and business performance. This is sometimes confusing,

because the notion of strategy also functions to fill the gap between technology and business. It seems that some literature just rephrases the term "strategy" and uses "business model".

In Japan, the term "business model" is treated as one of the most critical strategic terms. This is basically because Japanese firms have said their technologies are quite advanced but that they are not good at making profits based on them. The average profitability of Japanese firms has been declining for 30 years (Mishina 2004), and some management researchers in Japan think developing business models will be significant for leading technologies to higher profitability (Sakakibara 2005; Yonekura et al. 2010).

This prior research on business models has put its emphases exclusively on developing a profit model. Teece (2010) insists that, "the essence of a business model is in defining the manner by which the enterprise delivers value to customers, entices customers to pay for value, and converts those payments to profit." It is interesting that this focus on making a profit model, on the other hand, sheds light on the following other aspects of a business model.

First, some researchers insist that a business model contains not only a profit model but also a business system, that is, the strategic manner by which to internalize more valuable activities and outsource less valuable activities to other players (Nishino 2006; Johnson et al. 2008). This implies that one needs to think about designing a profit model and business system simultaneously.

Second, some researchers think that firms should develop and change their business models as the competitive environment changes (Fujiwara 2013a, b). The model should be dynamic to establish sustainable competitive advantages. Thus, they look at the dynamic aspect of business models regardless of whether the models indicate a profit model and/or business system. They are interested in how business models evolve over time. For this research interest, two points are considered important. First, it is critical to explore learning mechanisms within firms: what and how firms learn once they establish their own business models (Itami and Nishino 2010). Second, it is also critical to look at interactions between firms and other players such as competitors and customers, because they react to firms' business models for their own purposes

(Zott and Amit 2009). To sustain their advantages, firms need to keep a careful eye on customers and competitors' reactions. In sum, research on business models has developed on these three points: (1) designing profit models, (2) broadening the concept of business models, and (3) dynamic analysis of the interactions within firms and among firms, customers, and competitors.

Among these three points, this chapter looks at the dynamic aspects of business models, that is, the external impacts of a profit model and feedback effects on firms. This is because designing profit models is considered quite essential for firms but prior research has not analyzed what kind of dynamic impacts a profit model can exert on other players. Thus, this chapter examines (1) how a profit model affects other players' behaviors, and (2) how these players' reactions in turn affect the firm's behavior when building its profit model.

For this research goal, this chapter undertakes a case study concerning the IJP industry. Little research on learning mechanisms led by a business model has been accumulated so far, and a deep case study can contribute to the existing research by exploring mechanisms. The IJP industry is a case that deviated from our ordinal impression of the razor-and-razor-blade-model. We normally tend to assume the razor-and-razor-blade-model will be successful, but that is not always true. The IJP industry is one of the rare industries that faces a crisis because of its business model. Therefore, this case study on this deviated phenomenon is thought to be a good research strategy (Yin 1994; Seawright and Gerring 2008). In addition, this industry covers almost whole shape of product life cycle as shown in the Fig. 11.1. It allows us to look at the entire historical process, that is appropriate to the research purpose.

Overview of the Inkjet Printer Industry

To understand the current situation of the consumables business model in the IJP industry, the author will begin by examining the percentage of non-genuine ink cartridges in the industry. According to Interwatch (2009), the average percentage of non-genuine ink cartridges from

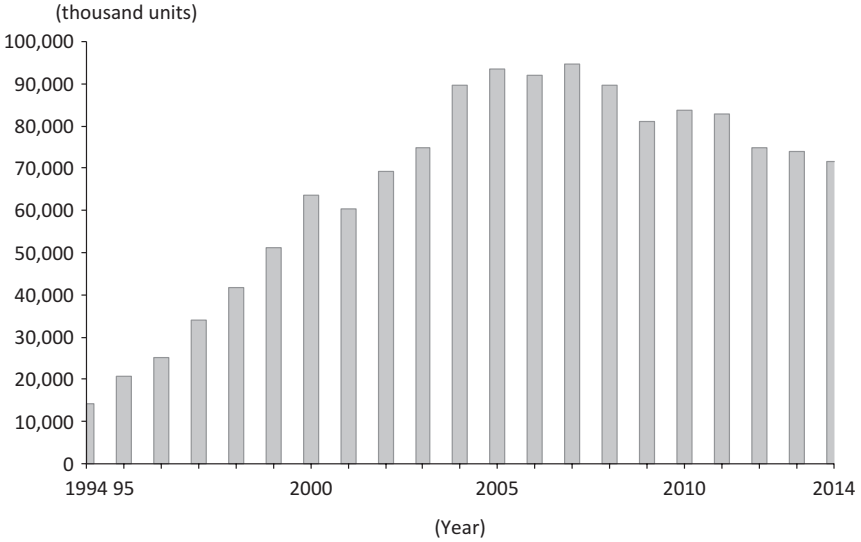

Fig. 11.1 Worldwide market size of inkjet printers. Source: Yearbook on printer (Japan Business Machine and Information System Industries Association)

2004 to 2008 is 23.0 %.[1] This percentage looks reasonable because Hanaoka Seiji, former president of Seiko Epson, mentioned in 2006 that "the percentage of genuine ink cartridges is 80 per cent in the U.S. and mid-60 per cent in the Europe and Asia."[2] However, it should be noted the percentage would be higher if the following three points are considered:

First, the data are based on production. Considering that there are non-genuine ink cartridges, the actual number of genuine cartridges sold would be lower than the number produced. Second, there are many non-genuine cartridge shops, and it is still difficult to accurately follow the manufacturers and count their number. This leads us to assume there are more non-genuine ink cartridges than the data report. Third, players

[1] Average percentage of non-genuine ink cartridges = (Total number of non-genuine ink cartridges from 2004 to 2008) × 100/(total number of all the ink cartridges from 2004 to 2008). The percentage for each year is 21.0 % (2004), 25.5 % (2005), 25.3 % (2006), 22.3 % (2007), and 21.1 % (2008). The fact there is statistical data implies that non-genuine players cannot be neglected.

[2] *Nikkei Kin-yu Shimbun* (29 June 2006) 7.

selling genuine cartridges may have incentives to claim a lower percentage of non-genuine cartridges. Therefore, it is reasonable to conclude that 23.0 %, the average percentage of non-genuine cartridges, is likely to be underestimated.

Furthermore, we should be careful to note this database is basically for non-genuine ink cartridges themselves, and only partially includes refill ink. In fact, the refilling business also is seriously threatening printer manufacturers, yet it is not well counted in the database. The refilling business takes two forms. One is a business that refills genuine cartridges with cheap non-genuine ink. In this case, customers take empty cartridges to shops and ask the shops to refill them with non-genuine ink. This business exists not only in developing countries but also in developed countries like Denmark (Fujiwara 2011). There are a variety of non-genuine inks in a shop that are customized for different types of IJPs. Such shops even have a device to check whether cartridges have enough ink inside. These customized non-genuine inks and checking devices mean this non-genuine business has been developing surprisingly quickly.

The other business involves placing a large non-genuine ink-tank outside a printer and refilling it with non-genuine ink. In this case, there are players who manipulate genuine ink cartridges inside a printer, and link them to large non-genuine cartridges outside the printer using tubes. This arrangement, called a continuous-ink-supply-system, helps a customer use large quantities of ink for a longer period. This setup is also referred to by names such as continuous flow system, bulk feed ink system, or off-axis ink delivery system. This business has been seriously threatening printer manufacturers.[3]

In sum, IJP manufacturers have indeed been facing the three kinds of non-genuine business, which are selling genuine ink cartridges with non-genuine ink, refilling business, and manipulating business above. This indicates again that the IJP industry has developed in a different manner from other ordinal industries with consumables business models.

[3] *Nihon Keizai Shimbun* (12 August 2008) 3; *Nikkei Sangyo Shimbun* (27 November 2009) 8. I have also heard about this situation many times through my field interviews.

Therefore, this chapter takes IJP industry as a deviated case and conducts a deep single case analysis.

Methods

The author principally used two methods to collect data and information. The first was to collect secondary data in the form of industry reports, press releases, and newspapers. This has two major merits: anyone can trace and check the data, and it avoids retrospective bias, which could be caused by asking interviewees about what happened and what was planned in the past. On this second point, it is hard for us to understand exactly what individuals really considered, and in what way, at that moment. However, secondary data gives us such information at that time. Interview data in past newspapers, magazines, and press releases are especially helpful for the analysis. There is certainly a debate regarding whether secondary interview data are fully trustworthy, because they can be manipulated. Thus, it is better to use such interview data with the information the author collected more recently through my own interviews.

The second method was to conduct interviews with business people. Interviewees were in three categories: (1) individuals in the R&D or sales divisions of HP, Seiko Epson, Canon, and Brother who are involved in the IJP business; (2) individuals at shops of businesses selling non-genuine ink cartridges and/or refilling non-genuine ink; and (3) customers who use non-genuine consumables. Thirty-six interviewees were in the first category, and 21 in the second. Counting the number from the third category is not meaningful, as it is quite easy to find printer users. The author conducted field research not only in Japan but also in the following countries:

US (13–14 August 2008),
Denmark (24–26 September 2010; 30–31 April 2011; 8 June 2011),
Indonesia (3–4 October 2007),
India (25 April–2 May 2010),
the Philippines (1–3 October 2007),
Vietnam (24–25 June 2009),

Brazil (18–20 May 2008),
Argentina (21 May 2008),
China and Hong Kong (23–26 July 2007; 11–14 November 2007; 12–15 November 2008; 22–23 June 2009; 22–25 March 2010), and
Taiwan (13–15 April 2009).

To avoid possible biases, I adopted a semi-structured interview format and interviewed informants from various levels within companies. It is less likely that other researchers will check the primary interview data, and I prefer to use the secondary information as long as my interview data coincide with it. In doing so, I expect that I can avoid possible biases and others can re-examine the analysis as well.

Case Analysis

Trends in Consumables

This section examines the trends of consumables in the IJP industry. The first issue concerns the difference in terms of price between genuine and non-genuine cartridges. The mean production prices from 2004 to 2008 are 1113 yen (genuine) and 406 yen (non-genuine).[4] On average, a genuine cartridge is three times as expensive as a non-genuine one. This does not change if the data are calculated by year: 1110 yen (2004), 1142 yen (2005), 1023 yen (2006), 1099 yen (2007), and 1090 yen (2008) for a genuine cartridge, compared with 535 yen (2004), 348 yen (2005), 348 yen (2006), 383 yen (2007), and 417 yen (2008) for a non-genuine one. Consumers prefer non-genuine cartridges due to this wide gap in price. In fact, a survey shows that consumers are most unhappy with the high cost of genuine consumables.[5]

If so, it seems rational that printer manufacturers would lower the price of consumables to compete. Thus, the second issue is how genuine manufacturers respond to non-genuine players in terms of price.

[4] Calculated by the author using the data of Interwatch (2009).

[5] *Nihon Keizai Shimbun* (28 October 2010) p. 37. This survey shows 65 % of the respondents complain about the price of consumables.

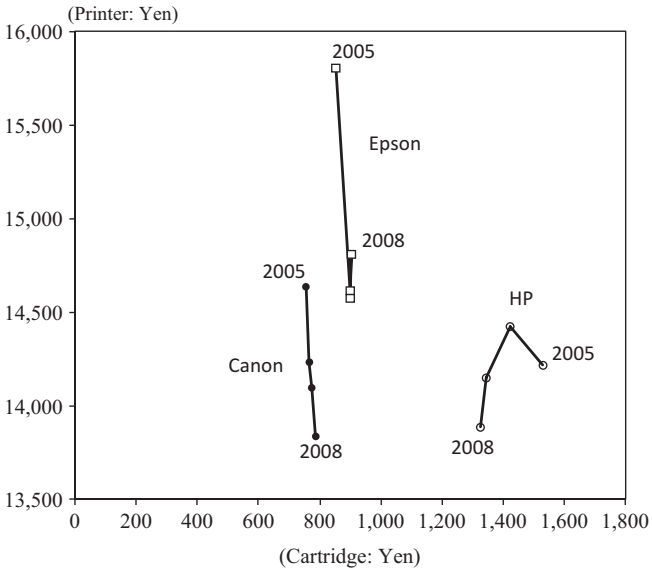

Fig. 11.2 Price of printer and cartridge 2005–2008. Source: Calculated by the author based on Interwatch (2009)

Figure 11.2 shows the prices for printers and cartridges of HP, Epson, and Canon from 2005 to 2008. The horizontal axis shows prices of consumables, while the vertical axis shows prices of actual printers. This figure tells the following three points.

The first finding concerns printer prices. The average prices of Epson printers certainly decrease, but are still higher than other two firms' prices. This coincides with the strategic intent of Epson, which mainly pursues the high-end segment in the IJP market. Toru Ogouchi, a former leader of the IJP business, stated in 2007 that "we have built very rigorous competitive advantages over other players in the high-end segment for professionals and amateur but veteran users." Compared with Epson, Canon and HP are competing in the lower price segment.

The second finding is about the direction of change. All the firms move almost vertically from high to low. This means that only printer prices have been declining. Only HP shows upward movement from 2005 to 2006, but this was exceptional. Looking at the figures carefully, Epson and Canon move down and slightly to the right. This movement means

that consumables prices increase while printer prices come down, which is precisely the razor-and-razor-blade business model.

The third finding pertains to consumables prices. The prices of HP's consumables are relatively higher than the prices of the other two players. For instance, the average prices of consumables in 2008 were 786 yen (Canon), 900 yen (Epson), and 1323 yen (HP). This comparison indicates HP is more eager than the others to develop its business model.

Pitfalls of the Razor-and-Razor-Blade Business Model

The trends found in the last section indicate the basic policies of IJP manufacturers have not changed. This raises the next question to analyze; why do they keep consumables prices high? One possible hypothesis is that they can still maintain good profitability even though non-genuine consumables have developed their businesses to this extent. The profitability of genuine cartridges certainly is high. However, as mentioned above, the difference in price motivates consumers to purchase non-genuine consumables, and it is thought the share of non-genuine cartridges will not stop growing unless the price gap narrows. One interviewee strongly says that she will not buy genuine cartridges as long as the prices stay high.[6] Therefore, it is reasonable for genuine players to set the prices more flexibly.

The genuine players have been trying to deal with the erosion caused by non-genuine players not by price but by design and warranty policy. Design means that they make a more elaborate cartridge design and attempt to keep non-genuine players away from imitation. They even attach IC chips to ink cartridges to recognize how much ink a cartridge still contains. Warranty policy here refers to the fact they do not warrant any printers that use non-genuine inks. Printer manufacturers seek to forge strong loyalty in their genuine product customers, but unfortunately, for them these actions do not work well. Although these actions have not been so successful, they still keep prices of cartridges much higher than those of non-genuine players. This implies the possibility

[6] Interview (22 April 2011).

that genuine players understand what they should do, but that they are unable to implement actions due to a kind of dilemma they face. If so, this chapter must analyze what kinds of mechanisms are at work behind their decision not to set prices of consumables more flexibly. Figure 11.3 shows the pitfall mechanism of the consumables business model uncovered by the study.

In this mechanism, the starting point is the firms' preferences for the consumables business model. They set their product prices lower, but set their consumables prices higher, which is indicated by the arrows from #1 to #2 and #1 to #3. By diffusing their own printers more quickly than other players, they expect to make profits from their cartridges. Their logic is easy to understand, and this price policy is obvious in the market, as Fig. 11.2 illustrates.

Their lowering of prices has expanded the market (#2–#4). The consumables business model played a role not only in enabling printer manufacturers to raise profitability but also in stimulating market growth. For instance, Canon reported that sales of its consumables accounted for only 10 % of the sales of its IJP business from financial year 1989 to 1992, whereas about 20 % in 1995, and more than 30 % in 1997.[7] It is also reported that over 60 % of its profit came from consumables in the mid-2000s.[8] A calculation says that the gross margin rate of consumables is at least 50 %, which is a very good business for printer manufacturers.

However, this worldwide market growth motivated non-genuine players in terms of the following two points (#4–#5). First, the expanded market size itself alerted non-genuine players to the market's existence. Second, the higher prices of genuine consumables let non-genuine players anticipate a space to enter. In short, the market growth with higher consumables prices motivated non-genuine players to recognize the market was open not only for genuine players but for non-genuine ones as well. In addition to this growth-related motivation, the design of ink cartridges

[7] *Nikkei Business* (24 August 1998) p. 21.

[8] *Nihon Keizai Shimbun* (16 June 2005) p. 1; *Nikkei Sangyo Shimbun* (1 February 2006) p. 15; *Nikkei Kin-yu Shimbun* (26 October 2006) p. 7. It is estimated that sales of consumables account for over 60 % of sales in the business machines business (*Nihon Keizai Shimbun*, 30 September 2008, p. 7).

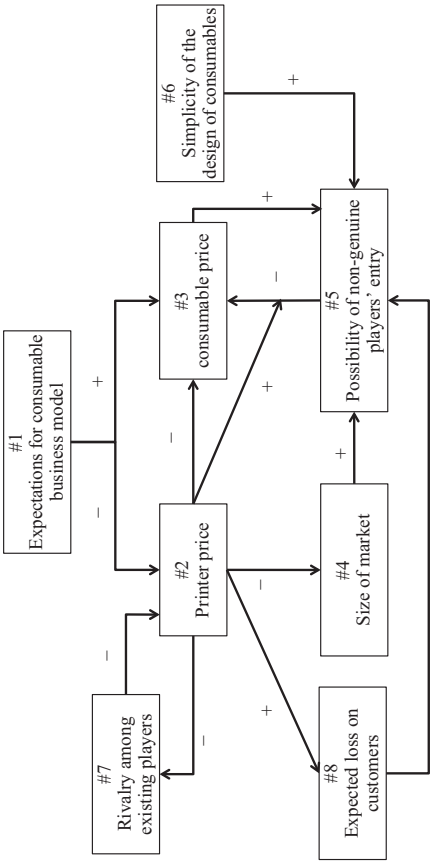

Fig. 11.3 Mechanism of the consumables business model pitfall. Source: Prepared by the author

was not so elaborate, and non-genuine players could refill the ink easily. This technological space further drove their entry activities (#6–#5).

Indeed, the entry and development of non-genuine players started during this growth period of the IJP market.[9] In Japan, recycle assist started refilling non-genuine ink for Canon cartridges around 2000. Acoria was founded in July 2003. As a result of their entry, the percentage of recycled cartridges rose to 5 % in 2006 and 10 % in 2007.[10] Katsuichi Shimizu, a director of Canon, admitted in 2007 that Canon's sales of consumables did not grow as expected and speculated this is the case not only for Canon but also for the other major genuine players.[11]

Customer Learning and the Dilemma for Genuine Players

While non-genuine players have developed their positions, genuine players have not reacted actively to their behavior in consumables prices. This means that the action from #5 to #3 has not been realized. There are three possible logical reasons behind this invisibility. The first is the genuine players believed in the razor-and-razor-blade business model and were not willing to stop lowering printer prices while keeping their consumables prices higher. This logic was mentioned in the previous section. This section explains the remaining two logical reasons.

The second is that they could not raise their printer prices as a tacit agreement because the top three players, HP, Canon, and Epson, were competing very tightly (interaction between #2 and #7). This severe rivalry might stem from the lowering of printer prices due to their faith in the business model, and from their hard competition for market share. It is thought that this rivalry was self-enforcing and led the genuine players to lower their product prices continuously, a situation that never gave them space to raise their prices. Toshio Kimura, a former vice president of

[9] *Nikkei Business* (6 November 2006) pp. 117–120.

[10] *Nikkei Sangyo Shimbun* (19 October 2006) p. 24; *Nikkei Sangyo Shimbun* (27 November 2007) p. 13.

[11] *Nikkei Sangyo Shimbun* (28 June 2007) p. 11.

Epson, said in 2005 that, "they cut down the printer prices because of the expectation of high profitability of consumables. This unwilling behavior was pursued first by a player in the single-function printer segment in the US in the late 1990s. The player stopped cutting prices for a while, but resumed the same price strategy in the multi-function printer segment in 2001. The prices of multi-function printers have been declining by 10 % annually."[12]

The expectation for the consumables business model and tight competition among the top three players that resulted in lower printer prices made it extremely difficult for them to raise printer prices and reduce consumables prices (#2–#3). To secure a profit, they needed to keep their consumables prices high to compensate for the losses produced by selling printers at low prices. Here is a reason for them not to react to non-genuine players in terms of consumables prices (arrow to the relationship between #5 and #3). In contrast to the genuine players, non-genuine players were able to set consumables prices very flexibly because they did not have printers that generated losses.

The third reason pertains to customer learning. The high prices of consumables motivated customers to reject genuine consumables and buy cartridges with non-genuine ink (#3–#5). Moreover, falling printer prices mitigated customers' expected losses from printers damaged by the use of non-genuine ink (#2–#8). Customers began viewing the purchase of a new replacement model as a reasonable option if they damaged their printers by using non-genuine ink, because printer prices are nearly equal to the price of consumables. For instance, Canon's Paxus iP2700 costs 5200 yen, whereas its ink cartridge (Black + Color) costs 4265 yen. The iP2700 was launched in 2010, but in fact, customer learning based on this kind of price comparison had already begun in the mid-2000s. In 2005, Kimura said, "the business model of inkjet printers is to make profit from consumables and the printer itself is sold at a loss. Customers have noticed the model, and started avoiding expensive genuine consumables." This shows that customers started learning about printer makers' strategies and began reacting to them rationally.

[12] *Nikkei Kin-yu Shimbun* (7 December 2005) p. 7. This player in the USA is thought to have been HP.

Customers' reactions are quite understandable and convincing. The product cycle has been shortening, and customers can buy a new, better model at lower prices every year. Their hesitation to use non-genuine consumables has gradually lessened, which in turn has stimulated more potential non-genuine players to enter the market (#8–#5). Genuine players certainly have tried protecting their consumables by attaching IC chips with codes to cartridges, or providing warranties to users who use only genuine ink. In spite of their endeavors, the codes were broken within half a year from the launch of a new model. Regardless of whether it is illegal in a country or not, non-genuine players have developed their business because there are customers who prefer their cheap consumables.

Evolving a Business Model

Introduction of Genuine Big Tank

Epson is a company that has been suffering from non-genuine consumables but showing an interesting counteraction. It was reported in 2006 that Epson's non-genuine ratio was said to be about 30 %, while Canon's non-genuine ratio was about 10 %, a variance that arose because of the difference in printing technology; Epson has adopted the piezo technology, which is more durable even for non-genuine ink than the thermal technology Canon adopted.[13] Non-genuine ink can be used more easily for piezo technology for two reasons.

First, piezo technology is expensive, and difficult for Epson to produce in a way that makes the technology disposable. If it were possible to attach a printing head to the ink cartridge, the design would be much more elaborate and non-genuine players would find it more difficult to use their own ink. Furthermore, for users, the expected loss from using non-genuine ink would be higher as well, because they would have to buy a new ink cartridge with the printing head, which costs more than the ink cartridge itself. This technical difficulty means there is ample space for non-genuine players to enter the consumables markets, notably against Epson.

[13] *Nikkei Sangyo Shimbun* (3 April 2006) p. 9.

The second reason is that a printing head using piezo is tough and durable (Fujiwara 2002; Aoshima and Kitamura 2008). It is ironic that even this durability contributes to the use of non-genuine ink. This also lowers the expected loss, and drives users to prefer non-genuine ink. In contrast to piezo technology, a thermal technology printing head is vulnerable to non-genuine ink, which raises the expected loss.

Sakakibara (2005) points out making a printing head more durable might lead to the inflexibility of consumables design. Adding to his point, this chapter's analysis implies that longer printing head durability makes the head more expensive, simpler in design, and finally more durable even for non-genuine ink.

Epson has shown interesting and unique behaviors in reaction to this threat. In China, it introduced its ME model printers in 2004, which cost more, while simultaneously reducing the price of its consumables. It also started the EC project in 2006, and launched multi-function printers with five years' worth of ink in China in 2008, which is equal to the longevity of printer itself.[14] Epson introduced these printers in Taiwan and European countries in 2010 as well.[15] In Indonesia in 2010, it launched a new printer with a large tank, imitating the non-genuine players' strategies. These behaviors imply that Epson has been striving to develop its traditional business model. This strategy has been working well so far, and other genuine competitors are now following the company's strategy. This exiting mechanism from the dilemma should be analyzed in the future.

Conclusion

This chapter analyzed the mechanism of the pitfalls of a consumables business model through a case study of the IJP industry. The main mechanism is summarized as follows.

Firms with expectations for the consumables business model lowered their printer prices and raised the price of consumables, which moti-

[14] *Nikkei Business* (13 December 2010) pp. 30–31.

[15] *Nikkei Ecology* (September 2010) p. 76.

vated potential non-genuine players to enter the consumables market. Difficulties have arisen as two mechanisms began working. The first mechanism is that price competition for printers among genuine printer manufacturers goes so far that they have no option other than keeping the prices of consumables high in order to make a profit, which enables non-genuine players to develop their businesses and causes printer customers to prefer non-genuine consumables. The second is that lowering printer prices reduces the expected loss from damaged printers, leading customers to consider the use of non-genuine consumables a rational choice because they can buy other, better models at a lower price even if they get their printers are damaged by using non-genuine ink. The key in these two mechanisms is the learning process among existing players and among customers. What is more serious is that even if genuine players attempt to abandon their consumables business models, it will still be difficult to halt the price drop mechanisms because these two learning processes will remain. It is a kind of vicious circle as shown in Fig. 11.3, and it is rather difficult for genuine players to escape from this circle.

The contributions and implications of this research are summarized as follows. First, it is important for researchers to look at learning processes caused by a business model. Previous studies have focused mainly on the components in designing profit models, and were less interested in how a business model stimulates other players such as competitors, potential third parties, and customers. However, this chapter has clarified it is vital for firms to consider this aspect, for otherwise they might lose their critical source of profits.

Second, it is also important to look at mechanisms rather than just categories (Kusunoki 2010; Numagami 2009). This chapter casts doubt on the simply categorized assumption that a consumables business model can bring firms a profit. It is critical to look at how that business model spurs other players' reactions. Future research should shed light on exploring and examining the mechanisms driven by designing business models.

Third, this chapter adds one important point that makes a consumables business model work well. That is, when a firm seeks to design a consumables business model, it needs to establish a high

entry barrier for consumables, looking at other players' possible strategies. Otherwise, the firm will suffer a loss selling devices and lose its source of profit due to serious attacks by potential third parties. The way in which a firm designs its consumables model will determine how other firms behave.

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12

Leveraging the Changing Value Chain Structure of the Mobile Gaming Sector: A Case Study of Gameport Hong Kong

Teresa Shuk-Ching Poon and Sam Chin-To Chan

Introduction

The mobile gaming sector has grown fast in some 20 years of development to become one of the significant segments of the electronic gaming industry. In 2014, mobile devices overtook other platforms to become the most preferred platform for electronic games playing. In 2015, the global revenue of mobile games reached US$34.8 billion, significantly higher than that of US$29 billion for PC and Mac Games and US$18.5 billion for home game consoles (Takahashi 2016). While the markets in the Western countries have become more or less mature, there has been

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a recent surge in the growth of mobile gaming in emerging markets as a result of an impressive rate of smartphone penetration, buttressed by advances in broadband technology and affordable 3G and 4G broadband service subscription fees. The Asia Pacific became the world's largest mobile game regional market, generating US$13.6 billion or 55 % of the total market revenue in 2014 (Global Mobile Game Confederation 2015). In 2015, China became the biggest market and earned US$6530 million in revenue, representing 21.7 % of the share of global revenue (Newzoo 2015). Growth in the China market for the mobile gaming sector is expected to continue.

A review of the historical development of the mobile gaming sector shows clearly that significant changes occurred in its value chain structure and in the roles played by major chain actors in driving development of the sector. These changes have come about as a result of significant technological and infrastructural advancement in telecommunications, upgrading of mobile handset hardware and software, and also more diversified media and entertainment content. Controlling power within the value chain has also been shifted from that located with featured mobile handset manufacturers, through mobile network operators, to various types of companies operating App store platforms. The popularity of multiple App stores operated by a range of companies with different technical requirements and payment gateways has created a very fragmented market, presenting great opportunities for innovative companies to add value by resolving emerging problems in the mobile gaming sector. How an innovative start-up in Hong Kong has leveraged changes in the value chain structure and in the location of power along the mobile gaming value chain to create value will be examined in detail.

This chapter consists of five sections including this introduction. Next, a brief review of the historical development of mobile gaming will be given, followed by an examination of how the value chain structure of the mobile gaming sector has changed over the years and the ways in which controlling power has been shifted among various key actors operated within the value chain. The chapter will then portray a detailed case of an innovative start-up in Hong Kong known as Gameport which has successfully leveraged the changing value chain structure of mobile gaming

to create value by addressing significant gaps identified within the chain. The chapter concludes with a brief summary of the Gameport case, highlighting important lessons learnt.

Historical Development of Mobile Gaming

The history of mobile gaming can be traced as far back as in 1995 when the first mobile game was installed on Hagenuk MT-2000, a mobile phone manufactured by a German company which later sold its business. However, the mobile game more generally known to the public is the Snake game preloaded on Nokia 6110 in 1997 which became a pervasive hit on Nokia's mobile handsets, attracting up to 350 million gamers (Entertainment Software Association 2014). Mobile games in those days were handset-specific and free to play as they came as a value-adding service (VAS) to boost the sales volume of mobile handsets produced by mobile phone manufacturers. Restricted by the limitations of handset hardware and the low penetration level of mobile phones, early mobile games were mostly simply 'one-button' free titles embedded in monochrome mobile handsets.

The popularity of the Snake game fueled the development of the Wireless Application Protocol (WAP), a technology containing a set of rules that govern the transmission and reception of data to mobile devices from remote servers. In 1997, the WAP forum was formed, releasing for the first time a mobile browser called Up.Link (Mobile Game Forum 2016). Through mobile network operators' WAP browsers, Internet services subscribers could download games to their own mobile devices from the operators' or third-party portals after paying a one-time fee via a premium short message service(SMS). Games at that time were developed not specifically for any particular handsets but to follow the WAP requirements for mobile connectivity. Because of the limited graphical and processing power of the handsets, most mobile games in those days were just simple single-player board games or word puzzles (Feijoo et al. 2012). However, gamers could start playing multiplayer titles on their mobile devices as they were able to receive game-related data from remote servers.

The turn of the millennium saw the arrival of Java 2 Platform, Micro Edition (J2ME), a Java programming language that is able to create fast-moving sprites embedded in mobile game titles. This development, coupled with the support of color screen displays on mobile devices and improving chip technology, has contributed to the upgrading of the quality of mobile games. In 2001, Riot-E released The Lord of the Rings for mobile WAP phones, marking the arrival of the first of a subsequent wave of big game titles used to be played on consoles (Mobile Game Forum 2016). However, game developers were faced with both technological and infrastructural support problems. Mobile handsets of various designs come with different keypad types, screen sizes and operating software, presenting developers with a fragmented platform difficult to handle. Game developers were also faced with the grave issue of distributing and promoting their games to end consumers as they have no control of how the mobile network operators handled their games (Feijoo et al. 2012). Notwithstanding these challenges, Nokia took a brave attempt in 2003 to release N-Gage, a hybrid of mobile phone and handheld console, pioneering a device for gamers to play multiplayer games using Bluetooth. Such an attempt eventually failed as a result of a number of reasons, not least because of the awkward screen size, bad functionality, and poor collection of games (Toor 2014).

Development of the mobile gaming sector has taken a big stride since 2007 when Apple released the iPhone operated on its iOS operating system and launched the App store a year later. Advanced mobile device technology fueled the development of mobile device hardware, showcasing handsets with high-pixel-density touch screens, fast-speed wireless Internet connection, and multiple-core processors (Haggerty 2012). The upgrading of mobile hardware features, coupled with the availability of iPhone Developer Programme and Apple's permission for using the software development kit (SDK) to write iPhone-approved third-party applications, has made Apple's App store (running on its iOS) a simple and reliable platform for game developers, particularly independent (indie) ones, to market and distribute their games (Entertainment Software Association 2014; Mobile Game Forum 2016). 'Angry birds', a multi-million-dollar hit game released in December 2009, is a telling

example demonstrating how even small teams could make hit games if they successfully attracted huge rate of downloading from consumers via the App stores. However, it is worth noting that Apple restricts its users to download Apps only via its App Store, making the iOS a closed system to developers who could have missed gamers using other handsets and platforms. Nonetheless, Apple's App store has provided developers with a unified platform where publishing, marketing, and distributing of their games to end consumers were all handled and, most importantly, with payment collected, hence freeing them to devote their full energy in creating mobile games.

The popularity of Apple's App store on its iOS platform drove its competitors to develop other App stores operating on their own version of mobile OS. In 2008, Google launched Google Play, its own version of App store on Android mobile OS developed by members of the Open Handset Alliance. As an open system, Android OS was supported by many reputable manufacturers whose mobile handsets either came with Google Play or were preloaded with other App marketplaces compatible with the Android system. There were also App stores running on other notable mobile OS, examples of which included Apps+Games Store running on Microsoft's Window OS and Blackberry App World on phones using Blackberry OS (Haggerty 2012; Entertainment Software Association 2014; Mobile Game Forum 2016). Even network service operators such as Orange and independent companies such as Amazon, Barnes & Noble, and GetJar launched their own App stores via the Internet (Noyons et al. 2011). These various App stores were launched at a time when there was an increasing level of penetration of mobile devices, an improving capability of wireless networks to handle broadband transmission and a significant reduction in broadband subscription fees (Soh and Tan 2008). The availability of high-end smartphones such as phablets (with at least five-inch screens), faster and cheaper 4G LTE broadband services, and interesting games listed on various App stores have tempted game players, even casual ones, to download mobile games for entertainment. Such a lucrative market attracted even big entertainment software companies such as Electronic Arts (EA), and other companies such as Disney, Viacom, and USA Network to join the mobile gaming business, making the sector increasingly com-

petitive (Haggerty 2012). In 2014, brands and big-name movies also found the mobile game platform attractive and joined the race (Mobile Game Forum 2016).

Fierce competition has bred the emergence of a new revenue-making model in the sector. Gamers are used to make upfront payment for downloading a game. Now they can download games for free but are lured to make in-game/in-app purchases after downloading to get new level packs, upgraded items, or outfit changes for game characters. Downloadable content (DLC) makes micro-transactions a good source of revenue for popular games, alongside in-app advertising placed by media companies or brands (Haggerty 2012). Such a freemium (vs. paymium) model is becoming dominant as around 80 % of the iPhone's top games generate revenue using this model (European Games Developer Federation 2013). The popularity of such a model has resulted in an increase in the number of casual game players, making it exceptionally important to raise the games' visibility to capture audience awareness. As the monetary value of in-app purchase is usually small, it is important to target for volume sustained by a larger base of gamers. A higher rate of downloading for popular games is also an important metric to attract more in-app advertising. Game developers are now striving to come up with mobile games that can make their way to the top of the ranking charts of various App stores for a lengthy period, commanding mass appeal to attract further downloads.

With the popularization of the freemium model, there has been a gradual shift of mobile games from being a product to becoming more like a service (Games as a service, Gaas). Rather than consuming games as finished products, gamers are now seeking rich, connected, personalized experiences through playing games, either solo or interactively with one another (Kelly et al. 2014). Through digital distribution, game developers can keep their games fresh by adding DLC, releasing patches, and updating titles to prolong their games' life cycle. In this free-to-play (F2P) era, retention of players is of critical importance as it is the only means through which high customers' lifetime value (LTV) can be achieved and game monetization be realized. The name of the 'game' is to deliver valuable features to keep gamers engaged, make 'quality hook' to incentivize gamers to buy downloadable items, and make the games an interactive

entertaining experience for targeted communities the members of which are usually candidates for hard-core players (Keller 2015).

Changing Structure of the Mobile Game Value Chain and the Shifting Power of Major Chain Actors

In the early years of mobile gaming development between 1995 and 2000, game developers created games which were sold to mobile handset manufacturers as value-adding products to boost the sales of mobile handsets. Basically, no revenue was generated after a mobile game was published as it was just an embedded feature of mobile handsets, not separately marketed and distributed. There was no direct relationship between game developers as content providers and gamers as end consumers.

From 2001 to 2006, the newly emerged WAP technology enabled consumers to download games through Web browsers to their mobile devices from mobile network operators' or third-party portals. Mobile network operators played the role of being distributors of mobile games which had their own existence independent of the handsets and other mobile devices. Revenue was generated when consumers paid a one-time fee to purchase the games distributed through various network operators' or third-party portals. With more game developers joining the sector, there sprang up new actors to play significant roles within the value chain. Publishers emerged to provide resources to fund part or all of the development costs of a game and to market and distribute the game after its completion. Developers, particularly independent ones, needed financial support to be able to create different versions of a game to suit the technical requirements of various mobile network platforms and the diverse features of handsets supported by different network operators. Aggregators, on the other hand, took completed games created by developers and helped distribute these games through various channels. Their role as game developers' retail representatives was significant as mobile network operators normally chose to establish long-term agreements with just a limited number of publishers and aggregators, refusing to deal

directly with a huge number of independent game developers. Putting in investments and bearing a higher level of risk, publishers usually got a higher percentage (90 % or more) of developers' share of revenue, compared with the percentage (50 %) obtained by aggregators (Noyons et al. 2011). However, network operators retained the greatest proportion of the revenue generated because they almost monopolized the distribution and payment ends of the mobile gaming value chain. In this operator-centric stage of mobile gaming development, developers were rather powerless, and they had to bear with low-quality distribution services, non-transparent deals, and often a significant cut from the revenue generated (Noyons et al. 2011; Feijoo et al. 2012).

From 2007 to 2010, the release of iPhone running on Apple's iOS and other handsets supporting Google's Android system and the launching of various App stores on mobile and other devices revolutionized the mobile gaming sector by changing its value chain structure and the power possessed by various actors in the chain. With the distribution of mobile games digitally through various App stores becoming increasingly popular, game developers were able to connect directly with gamers as end consumers. Under this new model of digital game distribution, even indie developer could choose not to use publishers or aggregators as their retail representatives because they could directly negotiate with App store operators to list and market their products to gamers via these stores. Many developers were therefore self-publishing, and publishers became super-developers creating and publishing their own games. To distribute games through Apple's App stores, for instance, game developers paid an annual fee of US$99.00 to open a developer account and agreed to a ratio of 30 (for Apple): 70 (for the developer) profit split in return for the right to have their games listed for downloading and billing through this platform (Mobile Games Forum 2016). The App Store platform therefore performed multiple roles of marketing and distributing of games and getting payments through various billing means from end consumers. Operators of these mobile platforms took great control over the types of payment solutions to be used in their systems. Apple, for example, only allowed end consumers using credit cards to pay for games downloaded from its App Store. Google, on the other hand, opened its system for billing by mobile network carriers and for payment by major credit cards (European Games Developer Federation 2013).

Since 2010, game developers, particularly independent ones, have been faced with fierce competition among themselves and with big entertainment companies. While the barriers to entry into the mobile gaming sector as developers are not high, there is no successful recipe for developers to create a hit game. With Apple, Google, and other companies using various OS in different types of handsets with non-standardized technical features, game developers had to come up with differently coded versions of the same game. Such market fragmentation comes with a cost to developers who could spend as high as 50 % of the total game project costs to address this problem (Noyons et al. 2011). Development costs can be exceptionally high if developers target to market their mobile games for the global market, including the world's biggest market in China. With the conspicuous absence of Google's App store (Google Play) in China, companies such as Baidu, Tencent, mobile network carriers, and smartphone manufacturers are all eager to introduce their own App stores and using, for some of them, third-party billing partners to charge end consumers. It is therefore highly complex and very costly for developers to market and distribute their mobile games in China (iResearch Consulting Group 2014). Even if a mobile game commands a high rate of downloading, it does not mean that revenue will come pouring in because of the dominance of the freemium model in the market. A high downloading rate of a game is just a precondition for revenue generation which comes only after gamers have made the often low-margin in-app purchases and micro-transactions of DLCs in a high volume for a long period of time. A high downloading rate is also important to attract in-app advertising placed by media companies or brands to generate a significant stream of revenue. This model of revenue generation has therefore made the visibility of games and the length of the games' life cycle very important elements to generate and sustain revenue. Marketing has therefore become highly significant to drive the success of a game as the App stores have a notoriously bad reputation as a platform for developers to market their products or simply get their new games known. Publishers and aggregators have increasingly shifted their role from being game retailers to becoming marketing experts to help increase the visibility of the mobile games. Often unconventional form of marketing such as social media will be used to capture a larger base of audience. Publishers will help negotiate licensing agreements for game developers to use

characters/brands with new or established intellectual property (IPs) in creating their mobile games to attract existing fans who are always more than happy to support these IP characters/brands (Noyons et al. 2011; European Games Developer Federation 2013).

During this period, more new players have emerged to assume novel roles which, until recently, do not exist within the mobile gaming value chain. To help game developers address the problem of having to create multiple versions of the same game for various App store platforms, some companies have emerged to provide cross-platform development tools, game engines, and other software used to help developers to shorten the time of their products to market. Other companies sell advertising inventory to help developers or publishers without the necessary expertise to place in-app advertisements. As media companies and brands need information such as game downloading rates, usage information, and other metrics to make in-app advertising decisions, some other companies have emerged to provide tools for developers to track this important information to convince potential clients of their games' success. As games could hardly become hit games if they are not visible and not commanding mass appeal, social discovery companies have therefore emerged to enable games to be 'discovered' by gamers who can play and compete with friends by using the social and multiplayer tools provided. By adding a social dimension to the games, these tools enhance gamers' experience and simultaneously enable developers to promote their new social games to an existing community of gamers who are connected by playing with one another these games (Noyons et al. 2011). Middleware, advertising, metrics, and social discovery companies are all relatively new players emerged to provide the needed services required by existing actors including developers and publishers. Notwithstanding the emergence of new players in the mobile gaming value chain, platform operators can still appropriate the greatest power as they are in strict control of game distribution and of end consumers' subsequent payment for various types of purchases and micro-transactions. Platform operators are also powerful as they are in control of the useful data of end consumers, including their personal profile, consumption pattern, and purchasing behavior, which is the critical information that can be used to shape the future direction of development of the mobile gaming sector.

Hong Kong Gameport: A Case of Innovative Start-Up Creating Value in the Mobile Gaming Value Chain[1]

Hong Kong Gameport Company Limited (hereafter called Gameport) was established in 2014 as an innovative start-up which aims at developing mobile application and providing a business-to-business (B2B) platform for the gaming industry in Hong Kong. Based on the characteristics and network requirements for games to be played on different platforms, including TV, network-based, smartphones, and motion sensing, Gameport initially aimed to provide services to help various types of gaming companies to expand into the international market. With the mobile platform for games picking up quickly in Hong Kong, Gameport had gradually focused more on the mobile platform to offer game developers one-stop services from developing, publishing, and distributing of, to obtaining payment for playing, mobile games.

Before setting up Gameport, Mr. Frankie Tsoi, CEO of the company, had been running another company for some time which offered a portfolio of information technology and business process outsourcing services to clients in different industries. As a hard-core gamer himself, Frankie had determined to contribute to the development of the Hong Kong gaming sector by supporting local, particularly indie, developers to go beyond the Hong Kong market into the much bigger international markets of China and other Asian countries. Leveraging the data center services operated under his IT service company, Frankie was able to offer game developers infrastructural and technical support through the provision of reliable, secure, and high-speed Wi–Fi network services for creating and the subsequent playing of their games. Knowing too well that many local developers run on a rather tight budget, Frankie offered game developers flexible data services support on a pay-as-you-consume

[1] The Gameport case is written based on two in-depth interviews carried out by the first author with Mr. Frankie Tsoi, CEO of the Hong Kong Gameport Company Limited, on 11 May 2015 and 11 May 2016 respectively. The second author was present in the second interview. The authors would like to thank Mr. Frankie Tsoi for the information about Gameport and for sharing his views about the development and challenges of the mobile gaming sector in Hong Kong.

basis. Developers did not need to subscribe to a comprehensive service plan as they could always be able to upgrade their system environment as and when it was required.

In the early days of the company's operation, Gameport employed several in-house game developers to create mobile games published by the company which also distributed games written by third-party independent developers. However, after some time, Frankie found that instead of pouring money into developing in-house games, resources could have been better used to raise the visibility and attract audience awareness of third-party games created by indie developers. Gameport was also initially involved in offering training to game developers. The company became a member of the Hong Kong Branch of Developers' Club of China Mobile and participated in June 2014 in the organization of the Club's first ever training seminar in Hong Kong. Local game developers lacked the knowledge on what kind of data were useful to help market their games to different platforms. Gameport's training courses for developers therefore focused on the provision of this significant information and the sources through which such information could be obtained.

With the increasing popularity of App stores as the preferred platform to market and distribute mobile games, Frankie came across many young and passionate individuals in Hong Kong, who invested much of their time and energy into developing mobile games for this emerging sector of the gaming industry. However, without the required expertise to liaise with various App stores on how best to market and distribute their games, these local 'indie' game developers faced immense difficulties in creating popular mobile games that could attract huge downloads by a large audience base. Many of the mobile games developed and listed on App store platforms were quickly forgotten as there were literally tens of thousands of mobile games uploaded each day, making it difficult for gamers to be attracted to a particular game without some serious form of marketing to raise the game's visibility.

Gameport saw the opportunity to create value in this App store distribution era by addressing such a marketing gap through bringing together local game developers and intellectual property (IP) holders of established and yet-to-establish brands or characters. One example was the successful licensing of the right from an animated company in China called BlueArc Animation to develop a mobile game by Hong Kong develop-

ers using established characters in a popular animated cartoon called Fruity Robo. This popular animated cartoon had been shown on paid TV and network TV in China for a year (52 episodes), targeting children between 7 and 12 years of age. In this case, the mobile game developed based on the cartoon characters and distributed through App stores was able to attract existing fans of the animated cartoons for downloading. Alternatively, migration of the cartoon from the offline TV platform to the online mobile platform was able to help sustain the popularity of the animated programme.

Another recent example was the successful licensing by Gameport of the right to use Brother Cream, a famous British short-hair neighborhood cat kept by the owner of a 24-hour convenience store in Hong Kong, as a character in a mobile game. It was much less expensive to license characters whose IP rights were yet-to-be established, as in the case of Brother Cream, but were nonetheless no less popular than established characters. Cute, chubby Brother Cream rose to fame and attracted many fans, both within and outside Hong Kong in places such as China, Taiwan, Korea, and Japan. Brother Cream had a Fans Club, was featured in television advertisements of famous brands, and even set up (by his owner) the Cream Bro Foundation to raise public concern for the protection of animal welfare. Based on forecast popularity, Gameport support indie developers in Hong Kong who were eager to develop a game featuring Brother Cream with a minimum guarantee (MG) fee. 'Triangle 180' was successfully published by Gameport and listed on both Apple's and Google's App Store in April 2016. Forecast information of the game's downloading rates was also used as a metric to convince operators of various App stores to accept the listing of the game. In a stage of mobile gaming development when visibility of games is of critical importance as a result of the dominant freemium model of revenue generation, Gameport had successfully helped to obtain the IP rights of popular brands or characters which were written by third-party indie developers into their mobile games to increase their appeal to existing fans and other audience.

Besides addressing the marketing gap, Gameport was able to create value by acting more than just an aggregator, particularly for the China market. Independent developers in Hong Kong, many of whom with ready games titles, were desperate to seek assistance to help market their titles to App stores run by operators coming from a diverse range of back-

ground in China. By leveraging the company's relationship with operators of various Chinese App stores, Gameport acted as a retail agent for local indie developers to get their games listed on these App stores as distribution channels to reach end consumers in China. A high rate of downloading of games in China could be used as a record to prove the popularity of the games, luring advertisers to invest in sponsoring the development of updated game versions. More than being just an aggregator distributing Hong Kong-developed games in China, Gameport was also involved in the monitoring of the developers' share of revenue received from various Chinese App stores. As most of these App stores used third-party billing partners in receiving payments from the gamers, there were problems in monitoring the actual number of game downloads, in-app purchases, and micro-transactions because billing was separated from the distribution role assumed by App store providers. Here Gameport successfully created value by playing a critical role to help game developers check and collect their fair share of revenue from App stores operated in China. Different types of value created by Gameport along various value-adding stages of the mobile gaming sector are illustrated in Fig. 12.1.

While not always able to convince his customers on how best to collaborate to achieve competitive advantage for all the parties concerned, Frankie was adamant in pointing out that such a challenge was inevitable as customers located in different segments of the mobile gaming value chain might have dissimilar perspectives based on their own business priorities (F. Tsoi, personal communication, May 11, 2016). Whatever future challenges might come up, Gameport will continue to evolve, in line with new developments in mobile gaming, to seize emerging opportunities by positioning itself as a significant player to create and add value for the main actors operating in the Hong Kong mobile gaming sector.

Conclusion

Setting against the background to examine the historical development of mobile gaming, this chapter portrays an innovative start-up in Hong Kong which has successfully leveraged recent changes

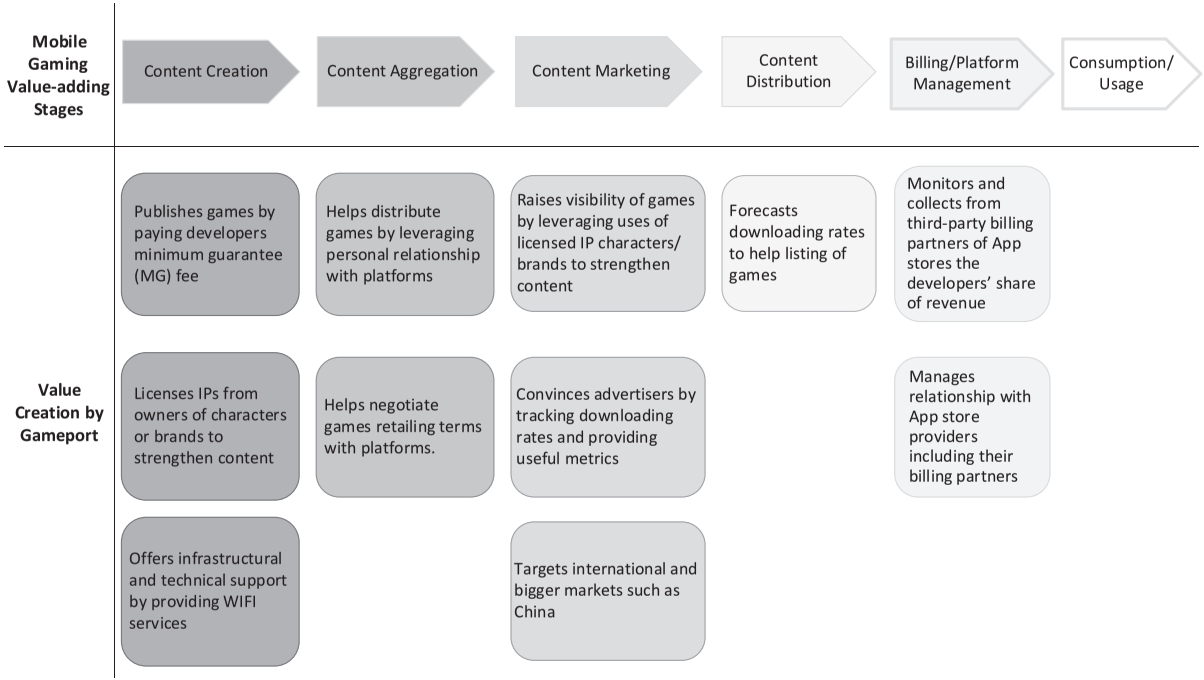

Fig. 12.1 Value creation by Gameport in the mobile gaming value chain

in the value chain structure and seized opportunities to create value within the mobile gaming value chain. Gameport has been able to fill a significant marketing gap emerged as a result of the App stores providers replacing mobile network operators to control the distribution end of mobile gaming. In this freemium era when visibility is of critical importance to attract initial downloading of games, even for free, Gameport has been able to bring licensed IP characters or brands into the game creation process to help attract audience awareness. Gamport has also invested in publishing and marketing the games created by local indie developers. Gameport has been able to help open distribution channels for ready game titles by liaising with and providing forecast downloading information to help listed these games on various App stores, particularly in China. For the highly fragmented market in China, Gameport has been able to create value by acting more than just an aggregator as the company has also helped monitoring and collecting from third-party billing partners of China's App store platforms the Hong Kong developers' fair share of revenue. In the fast-changing and highly competitive sector of mobile gaming, it is of paramount importance that innovative companies be able to follow closely the development trend, identify significant emerging problems, and seize opportunities to leverage their resources to create value by resolving important problems identified.

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13

Re-developing Knowledge Creation Capability: Innovating in Indian Pharmaceutical Industry under the TRIPS-Compliant Patent Regime

Dinar Kale

Introduction

With the advent of globalisation, the pace of social, economic, and regulatory transformations appears to be accelerating and the resulting pressure to change is mounting. As a result, the ability of firms, enterprises, or countries to develop appropriate responses to change by transforming capabilities has emerged as one of the central areas of research in management science. In the globalised era, the ability of firms to renew or reconfigure existing competencies and create new knowledge for innovation has emerged as a strategically important capability (Dosi 1988; Pavitt 1991; Teece et al. 1997).

Several firm-level empirical studies of renewal of capabilities involving different learning processes and mechanisms of knowledge creation have emerged during the past two decades. Some of these studies have drawn

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on the traditional 'organizational learning' literature (e.g. Simon 1991; Hedberg 1981; Levitt and March 1988). These studies argue that knowledge is the foundation of capability and source of performance differences amongst firms in their industry (see, for instance, Nonaka and Takeuchi 1995; Leonard-Barton 1995; Kogut and Zander 1992; Teece et al. 1997; Henderson and Clark 1990). This literature, mainly concentrating on firms from advanced countries competing at the technology frontiers, addresses the firm's capabilities—and knowledge creation in industrialised economies with reference to maintaining and renewing existing strategic innovative capabilities (Cohen and Levinthal 1990; Prahalad and Hamel 1990; Kogut and Zander 1992; Nonaka and Takeuchi 1995; Spender and Grant 1996). In contrast, the literature focused on developing countries has mainly addressed the process of capability accumulation in firms and industries (see, for instance Dahlman et al. 1987; Bell and Pavitt 1993; Lall 2000, 1992; Katz 2000; Hobday 1995). Most of these studies have been based on long-term descriptions of capability accumulation in industries from developing countries. This tradition has concentrated on the learning process involved in building essential minimum knowledge base to engage in innovation activity. Therefore, these studies have not yet paid enough attention to the capability transformation or capability renewal in developing countries' firms. Also despite the emergence of more comprehensive firm-level studies during the mid-1990s (e.g. Kim 2000; Figueiredo 2003), comparative analysis of learning and capability accumulation in firms from developing countries or newly industrialising countries has still been absent in this research stream. In the case of firms from developing countries, the economic, political, and social complexities make the transformation of capabilities a challenging and difficult process. In this context, the Indian pharmaceutical industry provides us with informative case studies to explore the development of innovative process capabilities by resource-constrained firms operating in emerging countries.

Over the years, the Indian pharmaceutical industry has developed wide-ranging capabilities in the complex field of process development and production technology. On the basis of innovative process R&D capabilities, some Indian firms have established dominating presence in pharmaceutical generic markets in advanced as well as in developing

countries. The Indian pharmaceutical industry is well ahead of other developing countries in terms of process R&D capabilities and the range of technologically complex medicines manufactured. In the 1990s, the Indian pharmaceutical industry faced twin challenges of economic liberalisation and strengthening of regulatory regime. Indian firms responded to these twin challenges by entering small-molecule generic markets in advanced countries and focusing on development of innovative product R&D capabilities. In the post-2005 period, the Indian firms encountered stagnating generic markets in advanced countries, regulatory hurdles in the form of US Food and Drug Administration (USFDA) notifications, and aggressive entry of MNC firms in domestic markets. As a response to these critical challenges, Indian firms have started targeting emerging markets of biosimilars. Biosimilars are generic versions of biologics—a therapeutic drug category comprising large complex molecules. The complexity of biological drugs and evolving regulations create new challenges and opportunities for developing country firms (Huzair and Kale 2015). Using the Indian pharmaceutical industry's response to economic and regulatory changes, this chapter shows that within this shifting policy context, different learning processes played a key role in the development of innovative technological capabilities. This chapter shows the key role of managerial vision, the influence of MNCs, linkages to knowledge sources outside firms, and the entrepreneurial facility with which Indian firms have moved from imitators to innovators. This chapter concludes by arguing that evolution of innovative technological capabilities, albeit behind the frontier, has blurred the gap between imitation and innovation and resulted in resolving some of the challenges associated with providing inclusive healthcare all over the world.

This chapter briefly reviews the literature focused on the role of imitation strategies in innovative capability development in developing countries. It then explains the salient features of the Indian pharmaceutical industry and highlights R&D, market, and regulatory challenges threatening the survival and growth of the Indian industry. It then tracks the challenges and opportunities of the biosimilar sector and details the data collection methods and the three Indian pharmaceutical firm case studies that are used to illustrate the evolution of firm strategy and biosimilar R&D capability. It presents findings on the evolution of creative imita-

tion and learning processes employed by Indian pharmaceutical firms in response to market opportunities and concludes with an examination of the implications and lessons for policy.

The Indian Pharmaceutical Industry

The Indian pharmaceutical industry is the 13th largest in the world in terms of market output, accounting for a market of about US$ 2.5 billion (Ramani 2002). Today, it is ranked as the most advanced pharmaceutical industry amongst developing countries and one of India's best in science-based industries. The Indian pharmaceutical industry has shown remarkable growth in recent years and it is now known as the 'pharmacy of the world'. The pharmaceutical industry in India is comprised of public and private sector units in organised sector and small-scale units in the unorganised sector. It represents a successful high-technology-based industry, which has witnessed consistent growth over the last three decades. It is characterised by a low degree of concentration; a large number of firms with similar market shares; and, by international standards, relatively low-level R&D intensity and a high level of brand proliferation. There are two types of firms in the Indian pharmaceutical industry, those in the formal and informal sectors. The growth of the Indian pharmaceutical industry has involved different learning processes and stages, which are captured by the 'imitation to innovation model' (Kale and Little 2007). This model reveals that the industry has moved from basic R&D capabilities to advanced-level R&D capabilities by undertaking different types of activities. These activities have also involved R&D processes such as duplicative imitation, incremental imitation, and creative imitation.

Evolution of Innovative Capabilities and Key Learning Processes

The Indian pharmaceutical industry's journey from being an import-dependent industry to becoming a global supplier of pharmaceuticals has

been a long and eventful one. Kale (2005) presents a model of dynamic learning processes involved in technology capability development in the Indian pharmaceutical industry. It shows that the industry has followed the trajectory of starting with duplicative imitation followed by creative imitation to rise up the value chain of pharmaceutical R&D and finally, as a result of change in patent law industry is undergoing learning to develop capabilities in innovative R&D.

Duplicative Imitation: Reverse Engineering R&D (1970–1990)

The growth of the Indian pharmaceutical industry was very slow till 1970. The Patents Act of 1970 and government investment in the drug industry infused life into the domestic pharmaceutical industry. The increasing opportunities due to weakening of the patent law led to the entry of a number of manufacturers who set up production units of different sizes. Indian pharmaceutical firms focused on adapting technology to firm and country specificity, and efforts in these directions fostered the development of a knowledge base. These firms used reverse engineering or duplicative imitation as the main mechanism for knowledge acquisition, and built basic capabilities in process R&D. Gradually, Indian pharmaceutical firms moved into the area of manufacturing formulations and followed with backward integration into production of bulk drugs. The availability of trained manpower, the comparative ease of imitation, and a strong chemistry base in Indian research institutes supported local manufacturing and gave the Indian pharmaceutical industry its current profile. By the beginning of the 1990s, the Indian pharmaceutical industry had emerged as the chief exporter of cheap generic drugs to the Commonwealth of Independent States (CIS), Latin America, the USA, the UK, and Africa. By the end of the 1990s, out of the top ten firms, in terms of market share, six were Indian firms, a situation quite different to the 1970s when the list was dominated by the subsidiaries of foreign multinationals (OPPI 2001).

Incremental Imitation: Small-Molecule Generic Markets in Advanced Countries (1990–2005)

In the 1990s, the Indian government liberalised the economy and delicensed the pharmaceutical sector. The new Drug Policy allowed foreign direct investment (FDI) to 74 % in 2000 and raised to 100 % in 2002. In parallel, the regulatory environment also underwent a significant change. With the signing of the World Trade Organization (WTO) agreements, specifically Trade-Related Aspects of Intellectual Property Rights (TRIPS) in 1994, the industry and market structure began to change. This twin changes forced the Indian firms to search for new sources of growth and reconfigure existing capabilities. Indigenous growth model and internationalisation were the strategic responses of firms in the industry to the pressure from these dual institutional changes (Chittoor et al. 2008). Firms identified productive R&D to deliver patentable innovations as a new source of growth. Strategies forming the part of 'indigenous growth model' include firms entering generic markets of advanced countries using process innovations, offering services to MNC firms, importing innovations, and investing in new drug discovery research (NDDR; Kale et al. 2008). While in the past firms were primarily engaged in the development of new processes for manufacturing drugs, now and in parallel they are also involved in R&D for new chemical entities (NCEs) and modifications of NCEs to develop new formulations and compositions (Kale and Wield 2008). Generic product R&D involved creating non-infringing processes or invalidating an existing patent. The knowledge base for this builds on organic and synthetic chemistry skills (accumulated through reverse engineering). Some firms have used these to add a patentable innovative element that provides value through leveraging process R&D capabilities. However, the Indian firms faced capability challenges in targeting generic markets in advanced countries and drug discovery R&D. In case of advanced country generic markets, the Indian firms lacked understanding of regulatory systems in advanced countries, expertise in management of manufacturing as per good manufacturing practices' (GMP) norms, and strong sales and distribution set-up. In the case of drug discovery, Indian firms required investment in build-

ing a difference in knowledge base and organisational capabilities. Indian firms responded to these challenges by internationalising their operations, hiring Indian scientists working with MNCs, and acquiring firms in advanced countries. These strategies delivered strong results and the industry also grew rapidly in the 1990s, about 15 % for bulk drugs and 20 % for formulations (Kale et al. 2008). By 2015, the Indian pharmaceutical firms accounted for more than 40 % market share in the US generic markets and had the largest number of USFDA-approved manufacturing plants outside the USA.

In the decade after the introduction of the TRIPS agreement, the Indian pharmaceutical industry achieved significant success in advanced country generic markets and emerged as one of the dominant players competing with MNCs and other generics firms. But gradually emerging R&D, market, and regulatory challenges threatened the growth of the industry and signalled that the post-2005 era was one of uncertainty.

Creative Imitation: Biosimilars (Post 2005)

Indian pharmaceutical firms' 'imitation and innovation model' as a response to the TRIPS agreement formed the template for ambitious pharmaceutical firms from other emerging countries. In the last decade, however, business models based on this template suffered severe setbacks in India and other emerging countries. This was caused by shrinking market share in domestic markets due to increased competition and aggressive acquisitions of emerging country firms by MNCs. In the case of Indian firms, this challenge was accentuated by the decline in traditional generic markets, regulatory hurdles in advanced country markets, and failures in progression of new chemical entities, creating uncertainty about potential sources of survival and growth for leading Indian firms.

A biologic or biological drug is a large complex molecule that has been sourced from a living cell, for example, insulin. They are too complex to manufacture in the same way as simple small-molecule drugs (e.g. aspirin). Biosimilars are biological drugs designed to have active properties similar to ones that have previously been licensed. The growth in the biosimilar market and the subsequent disruption to the market

for small-molecule generics and its players are driven by a number of factors such as original biologics coming off-patent, pressure on governments all over the world to reduce healthcare costs, development of regulatory guidance in key markets around the world, and saturation of markets for small-molecule generics. The global market size of biologics was estimated at US$134 billion in 2009, and with patents for top-selling biologics expiring between 2012 and 2019, biosimilars are poised to acquire a significant share of the generics pharmaceutical market (Wechsler 2011).

Competency Gaps and Challenges in the Biosimilars Market

Switching to biosimilars is not an easy, minimum-risk strategy, but a decision that requires considerable financial and organisational investment in developing regulatory, technical, and scientific capabilities (Fig. 13.1).

In the case of biosimilars, these firms need expertise to reverse-engineer biologics and develop stable, therapeutically active cell lines. They also need to develop manufacturing processes to meet specifications and to invest in new infrastructures for controlling living cells, purification, and producing biologic products consistently at commercial scale (Lee et al. 2011). The main constraint for Indian firms is the lack of knowledge in particular areas of medicinal chemistry and biology pertinent to biosimilars and expertise with regard to quality, safety, and efficacy (Interview, senior scientist, Serum Institute of India, 2013). This was compounded by the demand by regulatory authorities of extensive clinical data requiring clinical trials over a longer period for approval of biosimilars. For resource-constrained Indian firms, this significant shift in global generics markets required a new set of R&D, regulatory and distribution infrastructure, and capabilities.

Research Methodology

The Indian biosimilar market is worth around $200 million, and there are seven to nine companies with capabilities in the manufacture of recombinant products (Ariyanchira 2010). Some Indian firms have evolved

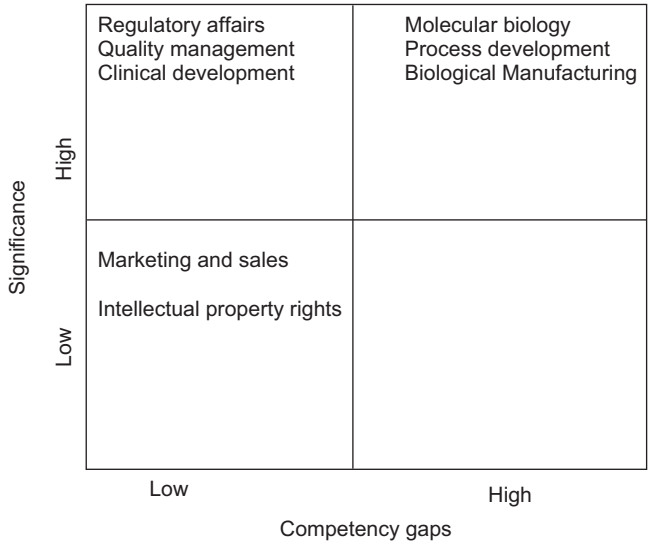

Fig. 13.1 Competency gaps in the Indian pharmaceutical industry

capabilities for the development of biosimilars and introduced biosimilar products to the Indian domestic market and other emerging countries (see Table 13.1) (Frost and Sullivan 2011).

Primary data for the case studies was collected through interviews with R&D presidents, senior scientists, and heads of biotech R&D in the six firms. In parallel, we conducted interviews with a key member of the Indian pharmaceuticals industry association and with a senior sector specialist journalist. This data was triangulated by using information in annual reports, analysts' presentations, and articles in the business press. A semi-structured questionnaire was used with questions focused on the response of Indian firms to the emergence of biosimilar market opportunities and evolving regulations. Interviews focused on firm strategy, challenges, and organisational learning activities involved in the acquisition of new knowledge required for biosimilar capability development. It also covered questions regarding the relevance of existing pharmaceutical R&D and manufacturing in the development of biosimilar capabilities.

Table 13.1 Indian companies marketing biosimilars in India (Jayaraman 2010, Annual reports)

Company	Active substance	Therapeutic area	Year of launch
Dr Reddy's laboratories	Filgrastim (G-CSF)	Neutropenia, cancer	2001
	Rituximab	Lymphoma, leukaemia, rheumatoid arthritis	2007
	Darbepoetin alpha	Anaemia, cancer, chronic kidney failure	2010
	Pegfilgrastim	Cancer, neutropenia	2011
Biocon	Erythropoietin (EPO)	Anaemia, cancer, chronic kidney failure	2006
	Nimotuzumab		2006
	Filgrastim (G-CSF)	Neutropenia, cancer	2007
	Streptokinase	Acute myocardial infarction	
	Itolizumab	Psoriasis	2012
	Human insulin	Diabetes	2003
	Insulin Glargine	Diabetes	2013
	Transtuzumab	Breast cancer	2013
Reliance life sciences	Erythropoietin (EPO)	Anaemia, cancer, chronic kidney failure	2008
	Filgrastim, (G-CSF)	Neutropenia, cancer	2008
	Interferon alpha-2b	Chronic hepatitis B, chronic hepatitis C, cancer	2008
	Epoetin alpha	Anaemia	2008
	Tissue plasminogen activator	Myocardial infarction	2009
	Follitropin alfa	Female infertility	2010
	Chorionic gonadotrophin hormone r-hcg	Fertile infertility	2011
	Interferon beta-1a	Multiple sclerosis	2011
	Abciximab	Angina cardiac ischemia	2013
Intas	Filgrastim (G-CSF)	Neutropenia, cancer	2004
	Pegfilgrastim (G-CSF)	Neutropenia, cancer	2007
	Interferon alpha-2b	Chronic hepatitis B, chronic hepatitis C, cancer	2007
	Erythropoietin (EPO)	Anaemia, cancer, chronic kidney failure	2005
	Epoetin alpha	Anaemia, cancer, chronic kidney failure	2005
	Follitropin alpha	Female infertility	2013
	Rituximab	Lymphoma	2013

Table 13.1 (continued)

Company	Active substance	Therapeutic area	Year of launch
Wockhardt	Erythropoietin (EPO)	Anaemia, cancer, chronic kidney failure	2001
	Epoetin alpha	Anaemia, cancer, chronic kidney failure	2001
	Human insulin	Diabetes	2003
	Insulin glargine	Diabetes	2009
Cipla	Etanercept	Rheumatoid arthritis, psoriatic arthritis	2013
Shantha biotech	Interferon alpha-2b	Chronic hepatitis B, chronic hepatitis C, cancer	2002
	Streptokinase	Acute myocardial infarction	2004
	Erythropoietin (EPO)	Anaemia, cancer, chronic kidney failure	2005
Serum	Erythropoietin (EPO)	Anaemia, cancer, chronic kidney failure	2011
Ranbaxy	Epoetin alpha	Anaemia, cancer, chronic kidney failure	2001
	Erythropoietin (EPO)	Anaemia, cancer, chronic kidney failure	2013
Cadila	Erythropoietin (EPO)	Anaemia, chronic kidney failure	2010
	Interferon alpha-2b	Chronic hepatitis B, Chronic hepatitis C, cancer	2011
	Filgrastim (G-CSF)	Neutropenia, cancer	2013
Lupin	Peg filgrastim (G-CSF)	Neutropenia, cancer	2013
	Filgrastim (G-CSF)	Neutropenia, cancer	2013

Analytical Framework

This chapter employs a novel analytical tool (a 'technology—market' capabilities matrix) to map and investigate renewal of technological and organisational capabilities in the biosimilar sector. In this matrix, R&D capabilities include capacities for clinical trials, pharmacokinetic/pharmacodynamic (PK/PD) studies, preclinical research, biological characterisation, physiochemical characterisation, and development of processes to improve manufacturing efficiency. Manufacturing

capabilities are linked with the ability to scale up R&D processes to commercial level, capability to handle several stages of cell culture and purification processes, and management of cost associated with building bio-manufacturing units. Regulatory handling capabilities are concerned with preparation of clinical trial data, specifically efficacy studies and pharmacodynamics data in a format required by regulatory authorities. It further involves demonstrating that their manufacturing methods are satisfying prescribed guidelines.

Market capabilities will be required to ensure successful introduction of a product into the market and are concerned with global distribution channels, network of sales representatives, and create key partnerships. These capabilities are closely linked with regulatory and technical capabilities in that advanced country markets have more stringent regulatory requirements relative to emerging and developing countries. Therefore, firms operating in advanced country markets or a significant number of other emerging markets show superior marketing as well as technological capabilities. Market capabilities will also involve making decisions such as setting up own sales and distribution infrastructure or creating local partnerships to facilitate entry into diverse markets.

Discussion and Analysis

The technological capability and market matrix (Fig. 13.2) helps to map differences in capabilities, market, and business models of firms in the study.

Quadrant 1: High-Technology Capabilities—Advanced Markets (First Mover)

This quadrant is occupied by the firms close to innovation frontier representing strong technological, regulatory, and market capabilities. In the case of the Indian pharmaceutical industry, Biocon provides an example of a firm with strong R&D, regulatory, and market capabilities. Biocon

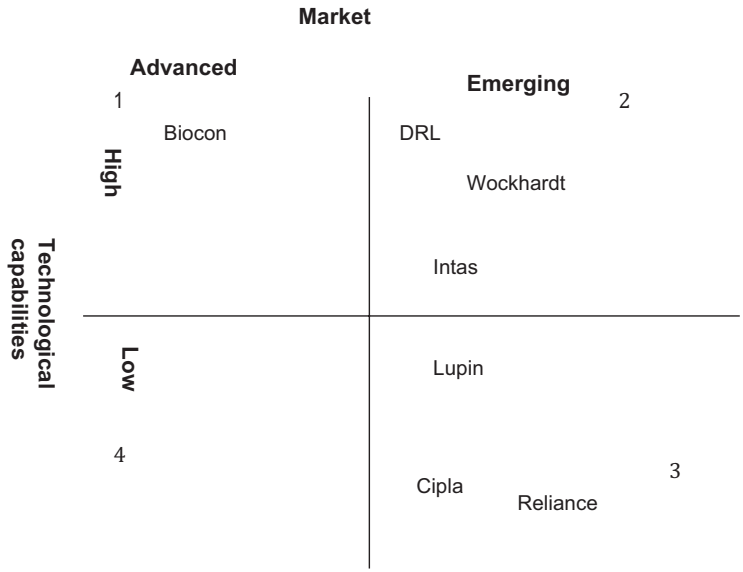

Fig. 13.2 Innovation frontier: Biosimilar capabilities

was the first company to identify the opportunity offered by the emerging biosimilar market. The company was a biotechnology company from the beginning and set up a clinical research organisation, factors that created path dependency and complementary competencies. Biocon entered advanced country markets using partnership models, set up clinical research organisations (CRO), and hired Indian biotech scientists to strengthen technological capabilities.

Quadrant 2: High-Technology Capabilities—Emerging Markets (Early Entrants)

The quadrant 2 represents firms which are close to innovation frontier but yet to enter advance country markets. Few Indian firms such as DRL, Intas, and Wockhardt occupy this quadrant. These firms have shown strong technological capabilities in biosimilar R&D evidenced by their product portfolio and have focused on emerging country markets.

Quadrant 3: Low-Technological Capabilities—Emerging Markets (Late Entrants)

Significant number of Indian firms are currently occupying quadrant 3 which suggests low-level technological capabilities and entry into emerging markets. These firms are late entrants in the biosimilar sector and currently investing in the development of R&D, regulatory, and market capabilities. This category exemplifies Reliance, Cipla, and Lupin as firms that utilise a low investment, low-risk, and low-profit margin pathway. Both of these firms have in-licensed biosimilars from overseas firms and are strengthening marketing and distribution networks in emerging and advanced countries.

Quadrant 4: Low-Technological Capabilities—Advanced Market

Currently, there are no firms that represent this quadrant but it's clear that firms such as Cipla and Lupin are moving to occupy this quadrant. These firms lack experience of reverse engineering large and complex molecules but are driven by strong cash flow, ambitious leadership, and well-established marketing networks in advanced countries. These firms are compensating for a lack of R&D capabilities by in-licensing technology and products from overseas firms. These companies aim to use complimentary assets and a partnership or acquisition model to build their biosimilar business. For example, Lupin entered into collaboration with Yoshindo Inc. to access the Japanese biosimilar market, while Cipla has acquired the business of its Croatian distributor.

Key Role of State: Industrial and Regulatory Policies

Case study analysis suggests influential role played by the Indian government's industrial and regulatory policies in shaping the evolution of the technological capabilities in the pharmaceutical sector. In 1970, the Indian government altered the patent regime to allow domestic firms to

reverse engineer the patented products. This allowed firms to develop and improve technological capabilities in the process R&D and formed base for advanced innovative capabilities. Similarly, in the biosimilar sector the Indian government adopted the regulatory framework that was appropriate to local conditions and not influenced by advanced country regulatory norms. This allowed Indian firms to develop and sell biosimilars in the domestic as well as other emerging country markets at prices affordable to low-income populations.

Key Role of Strong Leadership

The 'firm-specific managerial vision' and strong leadership played an important role in shaping firm-level technological learning in the Indian pharmaceutical industry. Majority of the Indian pharmaceutical firms are family-owned businesses and leadership provided by the owners has proved a key driving force. The vision of Yosuf Hamied that Cipla could be a significant global player in biosimilars led to change in the management team and drove the company's ambitious acquisition strategy. In a similar vein, Biocon is guided by the ambition of Kiran Muzumdar Shaw to draw global recognition for Indian firms in the biotechnology sector. Her unique vision has guided Biocon's transition from an industrial enzymes company to an integrated biopharmaceutical company on the cusp of entering biosimilar markets in advanced countries.

Diaspora Connections

Indian pharmaceutical firms have extensively hired Indian scientists working overseas in the laboratories of foreign MNCs to help them develop innovative R&D capabilities. Firms have also targeted returning postgraduates and postdoctoral students trained in areas of medicinal chemistry and biology from overseas universities. These firms were mainly attempting to fill knowledge gaps by hiring Indian scientists who specialised in medicinal chemistry and biology.

Significance of Complimentary Capabilities and Path Dependencies

The presence of leading Indian firms in small-molecule generics markets all over the world including advanced countries has created significant complimentary capabilities (Teece 2000) and path dependencies (Table 13.2). This has provided the Indian firms the experience of managing innovative R&D and an opportunity to generate financial resources required to fund biosimilar capability development and set up R&D and manufacturing facilities. Further, over the years superior process R&D capabilities in the Indian firms have led to collaborations with MNCs that provided a strong basis for biosimilar collaborations of the Indian firms with MNCs (Interview data).

The Indian firms have established a strong marketing and distribution presence in small-molecule generic markets all over the world including advanced countries. This has created an in-depth understanding of overseas markets and experience of working regulatory authorities, facilitating the entry of Indian firms into international biosimilar markets. Similar to the entry into small-molecule generics markets, in the case of biosimilars, Indian firms started with a focus on the Indian domestic and other emerging country markets. This allowed Indian firms to de-risk their investment and helped in collection of clinical data required for approval of products in advanced countries.

Table 13.2 Significant complimentary capabilities

	Nature of complimentary capabilities	Firms
1	Financial resources created through exploitation of small-molecule generic markets	Biocon/DRL/Cipla
2	Sales, marketing, and distribution networks in advanced and emerging markets	DRL/Cipla
3	Innovative R&D management experience and mindset	DRL/Biocon
4	Managing collaborations with MNCs	DRL/Cipla
5	Dealing with regulatory systems in the advanced and emerging countries	DRL/Cipla

Conclusion

The liberalisation of the Indian economy and the strengthening of patent law changed the strategic orientation of Indian pharmaceutical industry and forced Indian firms to pursue the alternative technological innovative trajectories. Some leading Indian firms have responded to these challenges by targeting the set of opportunities presented by the emergent biosimilar segment in the global generics market as a new source of growth and survival. Evidence from the case studies suggests the development of the biosimilars technological capabilities is shaping the evolution of new capabilities and strategies in Indian pharmaceutical firms. Due to differences in knowledge base, significance investment of financial resources, and challenging regulatory requirements, entering biosimilar markets for Indian firms involved higher level of risks, rewards, and technological capabilities. The Indian firms had to invest in building biological R&D, regulatory and manufacturing facilities, and develop deeper understanding of biological R&D and regulatory processes. As a result, entering biosimilar market involved development of higher-level capability development and that has placed the Indian firms at the technological frontier in the generic business. This research also points out that small-molecule generics strategies of Indian firms have created complimentary capabilities and path dependencies. These complimentary capabilities have facilitated entry of Indian firms into international biosimilar markets and provided financial resources to fund the development of biosimilar capabilities.

The findings from this research have implications for innovative pharmaceutical firms based in other emerging and developing countries. The learning mechanisms like incentive policies, top management commitment, and emphasis on collaboration and networking differed across the firms. This influenced the creation of environment that facilitates the development of collective knowledge. Therefore, it emerges that movement of a firm from imitative R&D to innovative R&D is neither linear nor automatic and requires an intensive effort from firms to invest in different mechanisms of learning.

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Part IV

Maintaining Identity as a Resource

14

How Classical Orchestras in Europe Adapt to a Changing Environment

Stefan Rosu and Edbar Zaman

Introduction

Classical music has formed an essential part of Western culture for more than four centuries. Every day of the year, many thousands of live-performances are given worldwide by musicians, who perform the music of Bach, Mozart, Beethoven, Brahms, Mahler, and other icons of that art form, to their live-audiences. Many more millions of listeners enjoy classical music today by using a still growing number of different electronic devices and digital channels. At the beginning of the twenty-first century, classical music has become a global phenomenon maintaining worldwide audiences.

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Classical music cannot come to life without musicians who play what has been notated by the composers. One of the strongholds of classical music therefore is the classical orchestra.

Tab 1: The Orchestra

Orchestras come in various sizes: as a huge philharmonic group with more than 100 players, a chamber orchestra with about 30 or 40 players, or as an intimate consort of around 10–15 players. Some orchestras specialize in a certain repertoire and style, while others cover the whole range of the repertoire. Some orchestras work with a base of permanent players, while others choose different musicians for every project. Orchestras are traditionally seen as artistic bodies with the genuine artistic value of the orchestra produced by the musicians on a platform. The traditional task of the administration is to support the musicians in that process.

Traditionally, governments in most European countries subsidize orchestras because of their artistic value and their role in preserving the cultural heritage as well as in keeping it alive. With that financial support, orchestras have been able to focus their activities on music making on a dedicated platform for many decades. They have been able to thrive on the development of artistic quality by investing in players, conductors, instruments, and concert-halls.

Major Challenges for the Stronghold of Classical Music

In the twenty-first century, classical orchestras are faced with some major challenges that endanger this traditional way to operate. It is a matter of fact that classical music—although widely spread and accessible—has lost its eminent position as the leading music-culture. Also consumer behavior is changing at a very fast pace. As a result, orchestral performances today are competing for a public with a big number of other cultural offers and an even higher number of other high-quality leisure activities. Another major challenge for many orchestras is the growing difficulty in securing

sufficient funding for the orchestra. Dramatic cuts in public spending on culture intensify the existential threat for the orchestras. Faced with a fast-changing environment, shifts in consumer behaviors, and a decline in political support, orchestras have to reconsider their business model at the beginning of the twenty-first century.

Tab 2: Facts and Figures

In Germany, about 90 % of the professional orchestras' budget comes from public sources. Performing arts are predominantly supported by local governments rather than federal government or states. More than three-quarters of total subsidies for theaters and music come from local communities or municipalities, only 0.6 % is provided by the federal government (Schulze and Rose, 1998: 228 quoting Kreissig 1990), in the Netherlands, public funding in 2013 was about 68 % (OCW 2014, p. 158ff)). And in the UK for financial year 2012–13, public funding covered about 34 % of the orchestra budgets (ABO 2014, p. 7 excluding the orchestras funded by the BBC national broadcaster). However, only 4–6 % of the total population in these countries attends orchestral concerts.

This chapter describes how orchestras can react and how they can survive without giving away the central qualities of their culture. It shows developments by using the example of two very different European orchestras. Let us now introduce you to these two orchestras.

Die Deutsche Kammerphilharmonie Bremen

Among some of its many peers based on size and reputation and those who follow the same philosophy of thinking, Die Deutsche Kammerphilharmonie Bremen (DDKB) (Germany) is one of the most unique orchestras in the world. The orchestra was established in 1980 on the basis of absolute equality and self-governance. The founding members' free spirit and democratic thinking was the core foundation of the management style and vision of the orchestra. Back in 1980, the musicians wanted to break new musical ground while remaining independent

of the expectations of the established market, and to this end they were and still are willing to make a considerable personal investment and also to assume absolute financial responsibility.[1]

The DDKB gained worldwide reputation through its outstanding interpretation of the Beethoven symphonies. In the last decade, it has established itself as one of the world's leading orchestras with touring activities throughout the world. The DDKB orchestra has won numerous awards, such as two German Record Critics Award, seven ECHO—Deutscher Musikpreis Klassik awards, one Deutscher Gründerpreis award, and many others. His Excellency the German Federal President Joachim Gauck stated: It quite simply has to be said that The Deutsche Kammerphilharmonie Bremen is the only orchestra of its kind in Germany.

The DDKB is a limited corporation, which is owned and governed completely by the 40 permanent musicians of the orchestra. There are in total 29 staff employed but among them 18 are permanent full-time positions. Average full-time equivalent (FTE) is about 24 employees. The orchestra is based in *the Free Hanseatic City of Bremen*, which is located in the northern part of Germany and near the North Sea. The annual budget of the DDKB is approximately 6 million Euros. The funding from the city of Bremen is about 31 % of the annual budget. The rest 69 % of the budget is self-generated. The DDKB orchestra has been able to achieve this self-earning revenue status through various innovations in strategic business development. One of the unique products they have is the "5 Second Management training" program. Besides this, DDKB have also created other musical and cultural education programs which are as innovative as the management training model. All these nonclassical music products have helped diversify DDKB's brand image and get additional funding from nontraditional sources. These products will be introduced and discussed in more depth later in this chapter.

The orchestra is managed by the Managing Director who is also a former DDKB musician and one of the owners of the orchestra. There are six department managers within the Management team.

[1] For more information about the history of the DKKB, see http://www.kammerphilharmonie.com/index.php/en/2013-09-27-05-24-23/history.

The management of this orchestra is divided into two segments, one is the Musicians segment and the other is the Management (office staff) segment. The management of the orchestra from the musicians prospective is very democratic. Key decisions on musical issues—particularly in relation to programming—are therefore made democratically by all the musicians and with final approval of the Managing Director. However, the style of the Management (office staff) segment is strictly hierarchical. The tricky issue is how to manage these two very different sets of management styles within the orchestra as a whole.

The orchestra's financial policies are also jointly determined. Every member of the orchestra is a shareholder. The DDKB musicians take full responsibility for the success and failure of the financial aspect of the orchestra. The earnings of the musicians fluctuate on a yearly basis because their income is directly related to the success of the orchestra.

The South Netherlands Philharmonic

The South Netherlands Philharmonic (SNP) is a new orchestra that has been created through a merger between two existing orchestras in Brabant (Eindhoven) and Limburg (Maastricht) in the south of the Netherlands. The initiative to this merger was taken by Mr. Halbe Zijlstra, the State Secretary of Culture from 2010 to 2012, who as a member of the liberal party (VVD) induced a decision by the Dutch parliament in 2012 to cut the government's budget for the arts and culture by more than 20 % (or 200 million Euros a year) as of 2013.[2]

The mode of operation, duties, and targets of the new orchestra were developed on behalf of the ministry by Ms. Winnie Sorgdrager, a politician and former president of the ministry's advice board "Raad voor Cultuur". According to this plan, the new orchestra should play around 240 concerts a season in the three southern provinces of Noord-Brabant, Limburg, and Zeeland. Next to concert and opera activities in the region,

[2] Staatssecretaris van Onderwijs, Cultuur en Wetenschap; for more information on his vita and the party, see http://www.vvd.nl/mensen/13/halbe-zijlstra and http://www.vn.nl/Archief/Politiek/Artikel-Politiek/Halbe-Zijlstra-Niet-Raad-voor-Cultuur-maar-publiek-moet-bepalen-wat-goede-kunst-is.htm.

educational activities should become a focus of the new orchestra. The orchestra should also continue to take part in regional traditions, for example, playing carnival concerts and collaborating with local amateur groups.

The SNP started to operate in September 2013. The orchestra has got the legal status of a foundation and is led by a board and an intendant (Director General and Artistic Director). The orchestra's musicians (110 FTE) and staff (28 FTE) are employed by the foundation. The orchestra operates from two different cities. It has offices, rehearsal rooms, and storage rooms in Eindhoven and Maastricht. Due to the scale and extent of its activities, the SNP appears simultaneously at different venues throughout the region.

The SNP has become not only the largest regional orchestra but also one of the largest orchestras in the entire country. In 2014, the orchestra produced a total of 391 artistic activities, including chamber music concerts and educational activities. With its region of 10,000 square kilometers, the orchestra provides orchestral services for 25 % of the Netherlands' total national territory. This makes the orchestra unique worldwide.

In the year 2014, the SNP operated with a budget of 13 million Euros. A total of 84 % of this was provided by the State, the provinces of Brabant and Limburg, as well as the cities of Eindhoven and Maastricht. A total of 1.8 million Euros (or 16 % of the overall budget) was self-generated income from ticket-sales and sponsoring as well as the financial support of its friends association and private donators (Stichting Philharmonie Zjuidnederland 2015, p. 36).

The orchestra aims at two targets: making the classical repertoire available on a very high artistic level and bringing additional value to the people in its region. The first two years have been remarkably successful for the orchestra. The orchestra has established itself not only as an orchestra of good quality with improving standards but also as a cultural institution that brings the whole wondrous history of music within arm's reach of a broad population (Table 14.1).

Although very different in mission, structure, and assignment, the authors discover striking similarities in both orchestras' approach to innovation and entrepreneurship. Some of these are set out below:

Table 14.1 Comparison of the two orchestras

	Die Deutsche Kammerphilharmonie Bremen	South Netherlands Philharmonic
Founded in	1980	2013
Musicians are	owners	employed
Based in	Bremen (GER)	Eindhoven and Maastricht (NL)
Permanent musicians in 2014 (FTE)	40	95.11
Permanent staff in 2014 (FTE)	24	23.25
Yearly budget (2014)	EUR 6,000,000	EUR 13,000,000
Percentage public funding	31 %	84 %
Income from concert-revenues	37 %	12 %
Income from sponsoring and private support	32 %	4 %
Number of concert-performances (2014)	150 (Approx)	200
Number of opera performances (2014)	2	24
Number of educational concerts (2014)	6–12	103
Number of workshops for education (2014)	10–15	64
Total number of activities (2014)	200 (approx., includes others activities)	391

Economic Constraints

Orchestras are expensive structures. For a traditional concert, a professional orchestra does not only need a large number of musicians. It also needs additional human resources to prepare, organize, and market the event. Income from concert activities is basically coming from consumer markets and business-to-business (B2B) markets through ticket-sales, patrons, and sponsoring deals. In the second half of the twentieth century, the players in the orchestra earned substantial additional income from recordings and radio broadcasts. However, this source of income has eroded over the last one and a half decades due to the deterioration of the CD market and the price decline for recorded music at large. The uncomfortable truth in the orchestral sector, however, is that every concert usually costs more money than

its producers can possibly earn. In the twenty-first century, even a fully sold concert-hall no longer covers the costs the orchestra incurs in presenting that concert. The figures in Tab 3 show that even the DKKB cannot cover more than 68 % from its self-generated income which includes cross-financing income.

The general economical dilemma that is concealed behind the attractive and shiny world of the live performing arts was first described by Baumol and Bowen in 1966. They discovered that the productivity of the performing arts cannot be increased at anything like the general rate. As a result, costs go up, while revenues cannot keep pace. And this is exactly what we see today also with the symphony concert as the classical orchestra's central activity. Even with the help of substantial subsidies as part of their overall income, orchestras are facing increasing financial challenges in making ends meet.

Tab 3: The Stagnation of Productivity

When Beethoven wrote the first string quartet for Prince Rasumowsky in the year 1806 in Vienna/Austria, it took four string players to premiere the piece in about 30 minutes' time. Two hundred years later, it still takes the same amount of players and the same time to perform the piece. According to Baumol and Bowen (1996), it is the rise in productivity in other sectors of our economic system that enables national economies to grow. Costs of work go up and can be compensated through growing productivity. But in the performing arts, there is no compensation. Manpower and time necessary to make the product are unchanged. And this static productivity is one of the main underlying financial problems in the live performing arts.

The Need to Diversify

In most industries, diversification of products is a necessary and crucial strategy for the survival of companies, especially in this new age of fast-moving information between competitors. The same goes for the music

industry and the orchestras. They need to diversify their products to become more attractive to their customers. There is no doubt that classical music is a major core product but it also needs other forms of products to attract different sets of investors.

In the classical music industry, the fact is that the products of many classical orchestras in the world have largely been unchanged for a century. Many well-established orchestras still present only classical symphonic works to their audiences. This is despite the fact that their future audience, generations X, Y, and Z may have a dramatic change in the content of the music they are interested to listen to compared to the previous generations. Between 1982 and 2011, US audience numbers for classical music declined by 29 % with the sharpest fall from 11.6 % to 8.8 % of the population, in the period 2002–08 (Woodcock 2011). Other US-related research shows that both taste in music and the age factor are impacting on the current attendance rate of the classical orchestra with the largest declines in the middle-age groups—those who have historically attended at some of the highest rates. Between 2008 and 2012, the attendance rate by 35–44-year-olds dropped from 8.9 % to 6.4 %. 45–54-year-olds also declined in attendance, from 10.2 % to 8.2 % during that same period (Novak-Leonard and Brown 2011).

The value proposition for current orchestras must therefore change accordingly to the changes that can be observed in the lifestyles and buyer behavior of their customers. However, having said that, this does not at all mean that the orchestras have to change radically and offer brand new products. The core of all classical orchestras is classical music. Orchestras should not abandon their core competences, rather these should be embraced as will become clear later on in this chapter. What is necessary is that the augmented products need to be more diversified according to their customers' needs and preferences of their society.

At the DDKB, the introduction of education programs has proven to be a successful way to reach more levels of the societies around the orchestra. Diversification into education programs is one of the core strategies for DDKB.

Tab 4: The Future Laboratory at the DDKB

The DDKB has been very innovative to capture different age groups by creating a strong cultural education department within the "Zukunftslabor" (The Future Laboratory). Two of the programs which they have been doing consistently for more than eight years are the "Melodie des Lebens" (Melody of Life) and the Stadtteil-Oper (The Community Opera). Through these programs, a permanent partnership among the orchestra, the local school, corporate sponsors, and the city itself was formed on a long-term basis. Almost all government branches within the city, the business community, the residences of the city from all religions, race, and diversity are directly involved in these programs.

The impact on the community has been enormous. More and more entities within the city are now engaging openly among themselves and the impact of it is a much more improved situation in both economic(al) and social terms. These two programs have attracted not only the younger audience but also the business community as DDKB's financial sponsors. Corporations are now much more eager to sponsor DDKB than in the past because DDKB offers more to society than just high-end classical music. Corporate sponsors want to be more visible in the local communities and help society, which can now be done though the cultural education programs of the orchestra.

The SNP is following similar approaches in their line of educational work. But the orchestra also initiated innovative approaches to develop new formulas for the presentation of classical music. Some of them specifically designed for a young audience.

Tab 5: Spicy Classics at SNP

In order to become relevant for the 18–25 age group, the SNP started a new concert-series called "Spicy Classics—grab a bite of music" in the season 2014–15. The orchestra wants members of this youthful group to experience that classical music fits to their living environment. "Spicy classics" combine social encounter with a unique concert experience. It starts with a location that is part of the age group's natural habitat.

The orchestra issues dinner invitations and presents an eclectic choice of works in a highly informal setting: The orchestra sits on a flat floor with the audience around. Musicians are casually dressed and there is interaction between the players and the audience on all levels. The evening finishes with drinks for both the orchestra and the young audience.

The dates and places of the events are only communicated a short time in advance and via social media and networks that are used by the target groups in the area. Spicy Classics have been developed together with members of the target group and will be presented in the three bigger university cities in the orchestra's region: Maastricht, Tilburg, and Eindhoven. The project is part of a bigger investment of the orchestra to develop new formats for its younger publics.

Another striking example of diversification comes from the DDKB. As part of the *orchestra*'s diversification process, the DDKB has introduced a unique consulting model called the "5 Second Model Management training" model.

The model is explained in more detail at the end of this chapter. It is described in Scholz and Schmitt (2011) and is based on academic research conducted by Schmitt who is the Managing Director of the orchestra and by Prof. Dr. Christian Scholz, Chair of Business Administration at Saarland University in Saarbrücken. Prof. Scholz is an expert in organization, high-performance teams, human resource, and information management. Together, they analyzed how the orchestra consistently produces top-quality performances despite being under immense pressure to succeed.

The DBBK offers management training with this unique tool for personnel and team development. In this way, the DKKB has established itself not only as a world-class orchestra but also as a very successful business consulting organization.

Branding

The branding of a business entity is one of the most important assets any organization can have. It is vital to the success of any organization regardless of the nature of the business they are in. Many orchestras may not

yet realize what the greater effect of brand position means to their future. Our thesis is that orchestras are not only musical entities but also business entities. They must act as a business as well as a musical institution.

Brand positioning essentially describes how your product is perceived in the minds of your consumers. "The goal is to create a unique impression in the customer's mind so that the customer associates something specific and desirable with your brand that is distinct from the rest of the marketplace" (Bueno and Jeffrey 2015). Brand identity is different from brand image which is derived from the words that come to mind when someone is describing your brand. Simply put, it is how your brand is perceived by others. Brand Identity is actually what you want the customers to see you as, through any audio or visual element which allows people to easily recognize your brand name.

Tab 6: The DDKB Brand Identity

The DDKB's brand identity is all about the "High Performance Team". Every single step that the orchestra takes in all affairs related to classical music, business consulting, cultural education, public relations (PR), and marketing is always related to a "High Performance Team" strategy. The musicians themselves are extremely competitive and that spills over to all the programs of DDKB. The audiences and the clients can also see this spirit in all the programs DDKB presents to the public.

For the DDKB, a proper branding with no risk of confusions about the message sent to customers and the broader public is of high importance. The orchestra has been highly successful to present its brand identity by being strictly consistent, for example, on how their logo is presented. The orchestra has three dedicated employees and two musicians who deal with online and print materials and who also monitor all brand communications.

Tab 7: Working with Amateurs

The brand identity of the SNP is based on quality and accessibility. The story the orchestra wants its brand to communicate is that they are an institution that has a broad range of musical offers and that whatever

the customer takes will be of high quality. It is an artistic quality when the orchestra is performing a concert. It is the quality of interaction and participation when a musician gives a workshop for the young ones in a school. The SNP is always approachable. The customer shall never have the idea of an orchestra that locks itself up in an ivory tower.

An example may illustrate that approach. The south of the Netherlands is well known for the quality of its brass and wind players. The SNP has started to cooperate with local fanfares and wind orchestras. The collaboration includes the training of the wind orchestra's conductor and a joint concert at the wind orchestra's home. This project itself establishes the brand: It is quality, accessibility and the joy of experiencing music together.

Social Media

Social media are part of today's world, but whoever makes use of its advantages has to accept that it is impossible to be in control of the exchange of ideas that evolve. For the brand image, social media can therefore represent a risk. As it is far harder to control the brand image than to create it, it can be a significant reputational risk. On the other hand, people do connect via social media extensively and an orchestra without social media presence is not present in the life of those people interested in keeping abreast of the classical music scene.

The DKKB has so far been reluctant to be a part of or use any social media. Unlike other orchestras who have flocked to social media, DDKB does not yet have a Facebook page nor do they have any Twitter accounts. For the DDKB, there is too much to lose if just one "out of content sentence" is posted online. The orchestra refers to research that has shown that using these new online social media tools is not always productive for organizations (McCabe 2013). But although the orchestra is cautious, it has recently formed a committee to look into this matter more in depth.

The SNP has a more open approach. It makes heavy use of social media and is present on Twitter and Facebook. Communication with clients and the broader public is more important for the young orchestra than the protection against possibly negative comments. The orchestra employs a staff member in the marketing department who specifically

deals with social media several times a day. He also encourages musicians and members of staff to communicate via posts and tweets. With the SNP performing mainly in the Netherlands, the main language of communication so far is Dutch.

Orchestras Are Enterprises

As we have seen earlier, orchestras focussed on the production of their product for more than a century. It was the concert on the platform or the opera performance that was their main product. Since the beginning of the twentieth century, they have played a key role in introducing public radio to markets worldwide. Later, they recorded their repertoire for gramophone records and CDs. And all the time, it was the repertoire and the quality of playing that was the key to the individual orchestra's success.

A closer look at the orchestra as an institution today teaches us that a successful orchestra needs a lot of non-artistic expertise as well to make ends meet. Operational management of programming, marketing, and funding has already become an essential part of the traditional concert activity. For new activities like educational work or other outreach activities, the orchestras need an even wider range of expertise and human resources.

Tab 8: Non-artistic Staff at SNP

The SNP in 2014 employed 23.25 FTE non-artistic staff (which is a fifth of the orchestra's permanent manpower). Out of those employed, 6.8 FTEs of that staff are working in marketing. The orchestra employs a member in the marketing team who is specialized in the analysis of client's data in order to meet the customer's requests. Producers and stage managers make sure that the daily logistics of orchestra, which often has many production in the different parts of its territory, run smoothly. Programming matters are dealt with by three persons in the planning department. A controller with his team makes sure that all financial mat-

ters are taken care of and that the director and the board have sufficient insight in the financial future of the organization. Sponsoring deals are pursued by a specialist in the marketing team. And the friends associations—organized in a separated legal entity—make sure that every one of the individual friends of the orchestra enjoys special care. With more FTE, the association also runs programs to link smaller companies and wealthy individuals to the orchestra in a way that has provided the orchestra with EUR 350,000 of additional income in 2014.

A similar overall picture is shown by the DDKB's organization.

Tab 9: Non-artistic Staff at DKKB

As previously mentioned, the DDKB employees 29 full non-artistic staff. These staff members are divided among multiple departments such as the Artistic department, Marketing dept, Sponsorship dept, Events dept, Communications dept (online and print media), PR dept, Finance dept, Customer Service dept, and the Zukunftslabor division. Among these 29 staff members, 18 are full-time staff, 8 part-time, and 3 project-based part-time staff members. The part-time staff positions are for 20 hours, some fewer. On average, the FTE numbers are 24. The number of Management staff is almost three-quarters of the total number of permanent musicians in the orchestra. The ratio is 1:1.3. This is a huge amount compared to other orchestras similar to the size of DDKB. However, DDKB is not a regular orchestra. The only reason the orchestra can maintain self-earned revenues of 68 % of its budget is because it engages as a business entity. And in order to do an adequate job, it needs proper staffing. According to the managers of DDKB, to have this strategy fully realized, the management needs to hire more employees. The orchestra also has a "Circle of Friends" group who supports the orchestra on various levels, in terms of both financial support and professional business consulting. The goal is to now create an international group of "Circle of Friends".

The examples given above show clearly that the orchestra of the twenty-first century is no longer simply an artistic body. It has become an enterprise. And this has changed the scope of orchestral management. The orchestra manager of the past has been a producer. The orchestra

manager of the future is a businessman with roots in classical music. But there's another aspect to it: It is very difficult for the traditional orchestra players to accept the fact that the successful orchestra of the twenty-first century is built not only on artistic qualities but also on the capability of the organization to meet market demands and secure funding. Orchestral management today has therefore also to concentrate on developing the understanding of the players of what the orchestra of the future is. They need to develop entrepreneurial thinking. An active change-management program needs to focus on the mentality of musicians and office staff, the empowerment of entrepreneurship, and the development of leadership qualities.

The Concept of Core Competencies

Strategic issues are about survival. And survival means adaption to the environment. Survival has always been dependent on alertness and constant surveillance. It helps to survive to know where to look. It also helps to survive if measurements are taken that sufficient resources are available when a situation needs a fast response. Change is a constant part of survival. This is true not only for every living creature of the world and every organization but also for the professional orchestras.

Although the ability of an organization to survive is closely connected to the quality of its strategic management, strategic thinking has not been part of the professional orchestra's management for many decades.

One model that can be extremely useful for the development of classical orchestras in order to adapt to the changing environment is using Prahalad and Hamel's strategic concept of core competencies. Their groundbreaking article "The core competence of the corporation" (Prahalad and Hamel 1990) described core competencies as "the collective learning in the organization, especially how to coordinate diverse production skills and integrate multiple streams of technologies (…) Core competence is also about the organization of work and the delivery of value (…) Core competence is communication, involvement, and a deep commitment to working across organization boundaries". Prahalad and Hamel argue for the development of new services and products out

of those core competencies. They use the image of a tree: The company grows from its roots. The roots are the core competencies. The core products (the trunk) are nourished by the core competencies and engender business units (the branch), whose fruits and leaves are end products.

Interestingly enough, this idea has had no impact whatsoever on the world of the classical performing arts so far. This is even more surprising as this model can be a starting point also to the professional orchestra to examine how the new order of business is likely to transform business, management styles, organizations, and lifestyle cultures. A recent publication of one of the authors of this chapter in late 2014 is the first one in which the concept of the core competencies has been applied to the classical orchestra (Rosu 2014 p. 69ff). Rosu describes a fictitious orchestra with four core competencies (Table 14.2).

And out of those core competencies, he develops a surprising amount of core products and new business-units. The orchestra in that view is not limited any longer in its activities to its work on the platform because it is thinking from the core competencies rather than the existing line of products and services.

Table 14.2 The core competencies of the orchestra

Core competencies	Content
Art of music	– Individual instrumental skills—artistic skills of the musicians, individually and collectively—traditions of style of the orchestra
Producer's know-how	– Organizational capacity to create a marketable product out of the potentials of the orchestra – Ability to rate the attractiveness of a product to its markets – Organizational skills to use resources in a sensible way – Ability to focus on the essential
Highly social team	– Extraordinary qualification to work in teams – Multinational cooperation in multigenerational groups – Hierarchic position does not coincide with age or experience
Classical values	– High individual and collective service capability – Extraordinary level of personal performance through sustained training – Value system based on classical education

Tab 10: Core Competencies at SNP

The concept of core competencies is also an important part of the management of the SNP. In the first months of the orchestra's existence, the management wrote a paper in which the critical factors of success for the next few years have been worked out. The orchestra considers a wide range of educational activities of great quality, the support of local talent, and the engagement with regional characteristics as equally important as the achievement of high-quality playing on the platform. Musicians and members of the administration work together by using all their capacities in order to achieve these goals. The results after two years are promising. The orchestra scores growing support from the region's public at large and its concert audiences grew by 3 % in 2014. There is much more demand on a wide range of the orchestra's activities than the orchestra can possibly handle. And there is a strong political support for the orchestra.

Another and most striking example of the concept of core competencies has already been described above: The "5 Second Model Management training" is a perfect example of a new line of business drawn from the DDKB's core competencies.

Tab 11: The 5 Seconds Model

The "5 Seconds Model" is a new form of management training model. "A second" is the smallest interval between two notes in Western music. It serves as a metaphor for a state of tension that encourages performance, releasing energy and creativity.

The DDKB is not an example of a strict hierarchy.

But rather offers companies a vivid model for the virtuosic combination of individual and group performance. Usually, the norm for most organizations is to work in harmony. Most of us are afraid of breaking the silent code of our harmonious relationship among our peers and subordinates. However, this can be one of the biggest mistakes within an organization. This is especially true in the case to become a "High Performing Organization".

What DDKB derived from their years of research of the orchestra is "Contradictions". Unlike normal traditional harmonious concepts, they thrive on contradictions. One of their core foundations to the success of the orchestra to becoming one of the highest performing orchestras in the world is by managing these contradictions. High performance in their view does not succeed despite dissonance; instead, dissonance becomes a prerequisite for high performance. It also sees discipline as the highest principle, combined with structure and creativity, passion, enthusiasm, and the ability to handle conflict.

The model is based on five pairs of contradicting concepts; they are called the "5 Seconds":

- Necessity and Sense,
- Hierarchy and Democracy,
- Perfection and Adventure,
- Energy and Concentration,
- Success and Fun.

When these 5 Seconds are all balanced, they provide the decisive force necessary for outstanding achievements within an organization (Scholz and Schmitt 2011).

Looking Ahead

Looking to the future, the authors advise orchestras to collaborate more as a group within the industry rather than individual organizations to develop and secure their future position. Orchestras should collaborate and form join coalitions and share resources to form a strong voice. Unlike many existing orchestra unions who only seek funding from the government to run their daily operation of the orchestras, the new philosophy should be "how can we collaborate to form a strong voice to create better diverse products". The question for individual orchestras is not how to find money but more of "how do we promote our vision and the benefit of our products to society as a whole". How can we create a demand for classical music and other services?

Both the DDKB and the SNP are examples of best practice to orchestras who want to be more diverse and create products and services which benefit society at large. The age-old philosophy of entitlement for funding from local and federal governments can no longer be into the equation of yearly income of the orchestras. More and more governments and societies are frowning upon the huge amount of funds that goes into classical orchestras which benefits only a smaller segment of society.

In order to get rid of this stigma, orchestras have to slowly move their thinking from providing only music to becoming educators. Orchestras have to rebrand themselves on their value proposition. This can be done through music education either in cultural education or in other fields which they see fit for the region they are in. There also needs to be a huge change in the expectations of musicians in all classical orchestras. Musicians must change their mentality to become more like entrepreneurs. They must envision their positions as business owners and not as that of a salaried employee.

In the end, there needs to be a whole shift in the way professional orchestras conduct business as a musical entity, and the mentality needs to move more toward that of an innovative entity, which understands how to combine the strengths of the performing arts with a business-like approach.

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15

Legacy of Hallmark Events: Cross-Cultural Analysis Among Emerging Destinations

Remco M. Beek and Frank Go

Introduction

Hallmark events enable intercultural encounters of people within destinations, between destinations, as well as among organizations with different cultures and structures. Hofstede and Hofstede (2005) related the rules of the social game to different minds with common problems, the related cultural differences of nations (e.g. region, ethnicity, religion, gender, generation, and class) and different organizational cultures. Related to the context of hosting hallmark events, the latter may refer to organizational cultures of both the event organizations (e.g. IOC and FIFA) and the related partners of the event (e.g. sponsors and gov-

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ernmental institutions). The influence of communication technologies and language as well as political and economic dynamics is suggested to be of relevance in the stakeholder dialogue of hallmark events (Gold and Gold 2009 and Minnaert 2012). The shift of hosting international hallmark events in emerging destinations such as China (2008 Beijing Games), India (2010 Commonwealth Games), South Africa (2010 FIFA World Cup™), Russia (2014 Sochi Winter Olympics and 2018 FIFA World Cup™), Brazil (2014 FIFA World Cup™ and 2016 Rio Games), and Qatar (2022 FIFA World Cup™) raises challenges on the alignment with modernization and neoliberal globalization approaches. As stated by Hofstede and Hofstede (2005, p. 2), 'the world is full of confrontations between people, groups, and nations who think, feel, and act differently'. They suggest that these people, groups, and nations are exposed to common problems in which cooperation among the actors involved is required. Relevant for the understandings of decision making is indicating the differences in the ways leaders and their followers think, feel, and act. The aim of this chapter is to contribute to the identification of patterns and structures in effects and consequences of the implementation of the variety of hallmark events hosted in emerging destinations that can serve as a basis for mutual understanding. Moreover, by building and testing theories of hallmark event legacy, this chapter describes trends in developing a framework for comparison of hallmark event legacy among emerging destinations.

Hallmark events are seen as facilitators in the process of business and social leveraging, as well as to enlarge the reputation of destinations in the international place-branding competition (Magala 2011). By means of hosting hallmark events, destinations aim to improve their reputation by showcasing their identity, driven by authenticity and heritage (Kotler and Gertner 2002). To what extent does the context matter in the decision-making process, the governance, and evaluation of hallmark event legacy? In addition to the suggested effects of the hallmark event on the host destination and their stakeholders, the reversed impact of the destination and partners on the hallmark event is worth considering as well (Henseler et al. 2007). The image transfer process is mostly referring to the translation of the event image (e.g. Olympic Games) on the brand image (e.g. host destination and sponsoring brands); however, the opposite effect might be

relevant as well. With respect to destination marketing, transferring the image from the hallmark event and stakeholders to the destination is suggested to be most relevant in case of hallmark events in developing destinations. The second causality, the strong image and reputation of a destiny that attracts an hallmark event, is suggested to occur most in developed destinations (Kotler and Gertner 2002). Especially with hallmark events hosted in emerging destinations, mutual interaction should be considered in the process of governance of hallmark event legacy. Such integrative approach to the relationships among stakeholders presents opportunities for host destinations in terms of a better conceptualization of expected synergies and conflicts. The approach in question also brings new challenges in the process of linking the objectives of sustainable social and economic development with marketing communications. This process of value co-creation raises questions considering the interplay of political, economic, and social cultural dynamics and the role of hallmark events in optimizing value for the stakeholders involved. This chapter contributes to these understandings by identifying relevant dilemmas in these domains as a result of a comparative investigation of hallmark events hosted in Brazil, Russia, India, China, and South Africa (BRICSA).

Theoretical Background

As hosting hallmark events could be defined as megaprojects, the process of governance is key in order to facilitate a stakeholder dialogue to optimize value for the stakeholders involved. An integrative approach of partnerships with hallmark events is suggested to be desirable for all parties involved (Seitanidi and Ryan 2007). Despite the paradigm shift from the transactional toward an integrative approach of value co-creation (Vargo and Lusch 2008), the tendency arises that 'even today most citizens, politicians, and academics in any country in their heart feel that their country is the middle one and they act correspondingly' (Hofstede and Hofstede 2005, p. 11). In line with the predominantly positive tonality of impact studies of hallmark events, cross-cultural studies are dominated by the bright side of cultural synergy. However, 'studying culture without culture shock is like listening to only the foreigners who are from here'

(Hofstede and Hofstede 2005, p. 11). In both the literature on cross-cultural dynamics as in the literature on legacy of hallmark events, there is a need for a more holistic examination of its bright and dark sides. The Olympic Games gave London's reputation a boost but left also a number of redundant locations and financial problems. Cities like Sevilla or Barcelona are still coping with their hallmark events (international exhibitions). This chapter sheds light on the cross-cultural dynamics in the context of hosting hallmark events by the integration of the understandings of legacy studies in the context of the BRICSA destinations.

Hallmark Event Legacy

Ritchie (1984) indicated seven types of hallmark event categories: (a) world fairs/expositions, (b) unique carnivals and festivals, (c) major sports events, (d) significant cultural and religious events, (e) historical milestones, (f) classical commercial and agricultural events, and (g) major political personage events. Similar to the dominance of sponsorship relationships with sport events, research about hallmark event legacy shows parallel the tendency of sport events being subject in the majority of previous research undertaken. Especially major sports events like the Olympic Games and FIFA World Cup™ are the unit of analysis in case studies and research papers published in international academic journals. As legacy research and impact studies comprise multiple domains and facets, there is a high level of variety and heterogeneity of previous investigations and their outcomes about the investigated aspects of the effects of hosting hallmark events.

Several researchers have contributed to the categorization of the hallmark event legacy. First, each legacy as the main driver of a hallmark event is a complex and mutable network of reputations and institutional memories. Based on this theoretical background, 11 domains of hallmark event legacy are identified: (a) economic, (b) infrastructure, (c) information and education, (d) social, (e) political, (f) cultural, (g) psychological, (h) social memory, (i) environmental, (j) sport, and (k) event legacies (Ritchie 1984; Cashman 2006; Preuss 2007; Sparvero and Chalip 2007; Leopkey and Parent 2012). Hallmark event legacies within the stated 11

categories differ among event characteristics as previous research indicated ambiguous outcomes comparing the legacy of several international hallmark events (Fourie and Santana-Gallego 2011; Gold and Gold 2009; Sterken 2006). The second driver of hallmark event legacy is the level of stakeholder support, referring to both the social and financial support (Sparvero and Chalip 2007; Misener and Mason 2006). Third, event management is key as driver of hallmark event legacy, including expectation management and the fulfillment of aspirations (Kissoudi 2010; Manzenreiter 2010; Olds 1998). In order to optimize value for all parties involved through an integrative approach, the process of governance of the hallmark event legacy is crucial to balance the outcomes by the stakeholder dialogue.

Cross-Cultural Dynamics

Previous international management studies are mainly about cross-cultural interaction and are usually devoted to the comparison of managerial behavior in countries around the world (Adler and Graham 1989). These studies have often implied that business people behave similarly when dealing with their domestic colleagues as well as with their foreign counterparts. It is suggested that behaviors in cross-cultural negotiations were found to differ in some important ways from those in intra-cultural negotiations (Adler and Graham 1989). Gaps in global distribution are suggested to be caused by geographic distance, time zone differences, governance, culture, and infrastructure (van Fenema 2002).

The process of globalization and the way we think about globalization is correlated to dimensions of places, spaces, times, scale, and networks (Sheppard 2002). Time and space are suggested to be irremediably locked together with a lack of understanding due to the limited interpretations of time and space emphasizing either eternal (e.g. economics, sociology, and political science) or episodic geopolitical (e.g. history and anthropology) aspects (Wallerstein 1998). The characteristics of economic and cultural development, set out in previous studies, are relevant in defining the process of the hallmark event legacy. Despite economic development being 'associated with shifts away from absolute norms and values toward

values that are increasingly rational, tolerant, trusting, and participatory', cultural change is suggested to be path dependent (Inglehart and Baker 2000, p. 19).

In addition to the more traditional perspectives used to make sense of organizational change including the behavioral and cognitive views, Tsoukas (2005) defined why language matters in the analysis of organizational change. The level of complexity, accountability, and uncertainty increased the cognitive effort expended to make attributions, which is suggested to attenuate their extremity (Lee et al. 1996). Moreover, attributional styles are affected by the attributor's culture, inferential goals, and level of cognitive processing. Fenema (2002) identified four dimensions of the coordination process: work-based coordination, technology-based coordination, interpersonal coordination, and coordination by organization design. He stated that this process is about integrative communications and balancing the level of interdependency, complexity, and predictability, which is closely intertwined with contingencies, coordination, and control. Moreover, structural mechanisms and media are related to the reduction of uncertainty and equivocality, which are relevant in the process of governance and evaluation of hallmark event legacy. This contributes to the underlying fundamental problems of societies suffering from 'culture's consequences' as defined by Hofstede (1983), who models their differences in four dimensions: the power distance, uncertainty avoidance, individualism–collectivism, and masculinity–femininity.

Despite growing overlaps, heterogeneity among knowledge management styles is likely to continue due to 'differences in histories, cultures and institutional forces, which render a universal concept of knowledge management unrealistic, counterproductive and undesirable' (Zhu 2004, p. 67). Relevant to the collaboration process of hosting hallmark events among cross-cultural dynamics are the problems of information dispersion and mutual knowledge as defined by Fenema (2002). These four themes, namely the failure to communicate contextual information, difficulties in communicating the salience of information, unevenly distributed information, and interpreting the meaning of silence, contribute to the failures in communication. It is important to question why failures occur in the hosting of hallmark events. The management process of diversity and stakeholder dialogue generates possibilities for value change

(Kersten 2000). Information and innovation occurs on the intersection of the material world and spatial world on the one hand and of the individual and community interaction on the other hand (Go and Fenema 2006). Moreover, knowledge management is suggested to benefit from 'an interactionist strategy that facilitates the construction, connection and sharing of cross-cultural contexts, through which cultural differences and diversity are important sources for knowledge management competence rather than obstacles to be overcome' (Zhu 2004, p. 67).

A paradox has become a common socially constructed label for the organizational complexity, ambiguity, and equivocality accentuated by change and is the product of actors' daily discourses (Luscher et al. 2006). It is suggested that 'an understanding of paradox does not solve problems, but rather opens new possibilities and sparks circles of even greater complexity' (Luscher et al. 2006, p. 491). It seems relevant to question whether we are able to distinguish vicious and virtuous circles in this matter. The understandings of the process of storytelling as expression of culture are important to make sense of unfolding changes and intervene in the cross-cultural dynamics (Boje 1991; Boyce 1996; Ragsdell 2000). Luscher et al. (2006) indicated the interplay of the paradoxes of performing (i.e. mixed messages), paradoxes of belonging (i.e. recursive cycles), and the paradoxes of organizing (i.e. system contradiction). The related social construction of reality, organization symbolism, metaphors, and myths are especially relevant in the context of hallmark events and the understandings of the related legacy. Graham (1998) found the relation between information technologies, space, and place on the co-evolution and parallel process of social productions of geographical space and electronic space. These interactions cause potential gaps in reality dimensions among real place and virtual space, and failure to account for them threatens the communication processes.

The history of collective memory and understanding patterns of meaning in memory is a relevant aspect in the complex process of cultural production and consumption for understanding the persistence of cultural traditions, ingenuity, interests, and behaviors (Kansteiner 2002). It is the interaction of past time and present place which drives the dynamics of the landscape about people's needs, preferences, and memory (Lowenthal 1975). Collective memories are multimedia collages that help to construct

and transmit knowledge and feelings about the past which rely on various combinations of discursive, visual, and spatial elements (Kansteiner 2002). These multimedia collages are continually under construction and very often the tentative construction emerges among public debates and controversies.

A number of methodological and conceptual issues arise in cross-cultural comparative research, as defined by Gibbs (2001), including, for example, the importance of adopting a culturally appropriate research methodology. The phenomena of interpersonal orientation, similarity, communication problems, reciprocity, interactional synchrony, and acculturation appears to be more complex, and we must be quite careful when we interpret and suggest implications of comparative studies (Adler and Graham 1989).

Cross-Cultural Dynamics of Hallmark Events

Few comparative research approaches in the context of hallmark events and tourism have been conducted (Horne and Manzenreiter 2006). However, focusing on sporting events, Kay (2003) contributed to our understanding of cultural dynamics by indicating cross-cultural research issues in developing international tourist markets for cultural events. Previous studies in other contexts contributed to the understanding of the implications of mega-collaboration, defined ways to overcome barriers, and structured the process of the needs, exchanges, and dimensions of relevant information streams (Newlon and Faiola 2006).

In line with the globalization of economies, hallmark events and their allied legacy are facilitated by increased media coverage and technological developments. Related to the sport industry, relevant factors are the geographical spread of the sport economy and the globalization of professional sports. The interplay of economic, political, and socio-cultural dynamics drive the stakeholder dialogue and the hallmark event legacy. Hallmark events could be seen as intense collaboration projects among the levels of geographical dispersion of collocation, regional distance dispersion and global distance dispersion (Fenema van Fenema 2002).

Several cross-cultural analyses have contributed to understanding of strategy in emerging destinations (Hoskisson et al. 2000); however, no comparative approaches were undertaken to measure, identify, evaluate, and critically assess cross-cultural tendencies among BRICSA destinations from a holistic perspective nor related to hosting hallmark events. Cross-cultural analysis in other contexts were undertaken, which sheds a light on the methodology for such comparative research designs (Oishi 2002; Pheng and Leong 2000; Reisinger and Turner 1998; Triandis et al. 1988), and cultural perspectives on megaproject management have also been scrutinized (van Marrewijk 2007). Moreover, considering of these perspectives as defined by Hofstede and Hofstede (2005) is relevant since all people arguably consider their destination to be the center of the world. Key methodological issues of cross-cultural research designs include the development of the research question, the alignment of the research contexts, and the validation of the research instruments (Schaffer and Riordan 2003).

Global competition can be regarded as ferocious, and developing long-term partner relationships becomes a potential source of significant competitive advantage (Singhapakdi et al. 1999). In order to co-create value and optimize value for the stakeholders involved, an integrative approach is required (Vargo and Lusch 2008). Relationships of hallmark events interact among political, socio-cultural, and economic dynamics surrounded by the dimensions of efficiency, effectiveness, and ethics. By means of marketing communications, organizations attempt to inform, persuade, and remind consumers and establish a dialogue to build relationships with and among them in a direct or indirect way (Kotler and Keller 2009). Relationships comprise loyalty, attachment, involvement, and community engagement of the stakeholders with the hallmark event. This community formation process is about intrinsic and situational self-relevance (Celsi and Olson 1988) among the phases of *bridging*, *bonding*, and *belonging* (Go and Trunfio 2012). These stages are parallel to the foreign-familiarity continuum, ranging from *foreign*, *familiar*, and *favorite* phases of stakeholder's attitude and involvement.

The cross-cultural validation of relationships marketing orientation is defined by Sin et al. (2005) who suggest six components: bonding, communication, shared value, empathy, reciprocity, and trust. Several studies

investigated whether culture and cultural norms influence the decision maker's choice, decisiveness, and risk adjustment (Tse et al. 1988). As an individual's culture is assumed to affect the ethical decision making, there is a need to account for the effects of differences in culturally based ethical values (Singhapakdi et al. 1999). Five dimensions of skills for project managers in the international marketplace are identified: effective communication skills, effective leadership skills, good interpersonal skills, adaptability and flexibility, and functional and technical strengths (Pheng and Leong 2000).

Three main types of literature relevant to cross-cultural hallmark event legacy research have been identified: (a) hallmark event legacy studies in general (e.g. conceptual, general review, and literature review), (b) legacy studies in developed destinations hosting hallmark events (e.g. general review, research paper, and case study), and (c) legacy studies in emerging destinations hosting hallmark events (e.g. general review, research paper, and case study). This chapter presents a comparative analysis of these research projects.

Methodology

By comparing research on previous hallmark events, cross-cultural tendencies in the process of value optimization—as conceived by researchers so far—can be identified. The aim of this chapter is to identify the cross-cultural dynamics through an overview of relevant aspects of the interaction of the parties involved in order to clarify the legacy of a hallmark event in emerging economies in detail. To draw out tendencies among the outcomes of previous research about the legacy of hallmark events hosted in BRICSA destinations, a comparative multiple case study design is applied in this research (Yin 2002). Based on these patterns and structures and the integration with an overview of international hallmark events hosted in BRICSA destinations, we identify knowledge gaps and a framework for future research.

A content analysis has been applied to define tendencies of hallmark events in the emerging destinations subject to this research. This multiple case study integrates the results of previous research in the contexts

of BRICSA destinations. A thorough investigation of the studies in the English language from multiple international journals in diverse research fields is provided to summarize the outcomes of legacy studies on hallmark events in these emerging destinations. This research approach results in

- an overview of hallmark events hosted in the emerging destinations.
- a content analysis of previous research undertaken on emerging destinations hosting international hallmark events.
- differences and similarities set out to clarify future research directions based on comparative study designs in contribution to the outcomes of the present investigation.

Results

From the content analysis, 71 relevant studies on hallmark event legacy in BRICSA destinations were identified based on thorough investigation of the online databases of various international journals in the English language before 2016. The first study undertaken was published in 1998; however, most studies were published in the previous five years. The characteristics and contributions of these studies on the understanding of hallmark event legacy in BRICSA destinations are summarized in Table 15.1.

An overview of hallmark events hosted in BRICSA destinations is provided below. As indicated in the outcomes of the content analysis, major sporting events dominated as the unit of analysis in previous research on the hallmark event legacy. The study of Deng and Poon (2011) is the only exception to this tendency. They investigated the hallmark event legacy of Expo 2010 hosted in Shanghai. With the tendency for international major sports events to be hosted in BRICSA destinations in the upcoming decade, a detailed overview of the major sports events hosted in these emerging destinations is provided. We argue that these sports events are a relevant unit of analysis for future investigations in which trends could be identified in a multiple case study design across hallmark events of the past, present, and future. The hallmark sport events hosted in BRICSA

Table 15.1 Content analysis of hallmark event legacy studies in BRICSA destinations, 1998–2015

Author (year)	Type of study	Type of event	Destination(s)	Legacy dimensions discussed
Alekseyeva (2014)	Research paper	Winter Olympics	Russia	Image construction through mega-events
Allmers and Maennig (2009)	Research paper	FIFA World Cup	France, Germany, South Africa	Economic impacts on overnight stays in hotels, national income from tourism, retail sales
Beig et al. (2013)	Case study	Commonwealth Games	India	Environmental: air quality
Black (2007)	Case study	Major sports events	South Africa, Delhi (India), Vancouver (Canada)	Symbolic politics
Bob and Swart (2009)	Research paper	FIFA World Cup	Cape Town (South Africa)	Resident perceptions
Bohlmann and Van Heerden (2008)	Research paper	FIFA World Cup	South Africa	Predicting economic impact
Byrne (2014)	Research paper	Commonwealth Games	India	Diplomatic interplay between event and host city
Cha (2013)	Research paper	Asian Games	China	Politics, diplomacy in Korea, China, and Russia
Chate et al. (2013)	Research paper	Commonwealth Games	India	Environmental pollutants, air quality
Chen (2012)	Research paper	Summer Olympics, World Expo, Asian Games	China	Branding national images, image transfer

Table 15.1 (continued)

Author (year)	Type of study	Type of event	Destination(s)	Legacy dimensions discussed
Close (2010)	Case study	Summer Olympics	Beijing (China)	Social space, society, community
Cornelissen (2011a, b)	Case study	FIFA World Cup	South Africa	Sport development programs, sustainability
Cornelissen (2010)	Case study	Major sports events	Emerging destinations (BRICSA)	Outcomes and success of the events in terms of hosts' initial political strategies
Cornelissen (2004)	Case study	FIFA World Cup, Cricket World Cup	South Africa	Motivations and objectives underlying bids and outcomes, economic, political
Cornelissen and Maennig (2010)	Research paper	FIFA World Cup	Germany, South Africa	Intangible elements, feel-good effect, sense of communal wellbeing, political and socio-cultural processes
Curi et al. (2011)	Case study	Pan American Games	Rio de Janeiro (Brazil)	Social and economic security, transport system, ecology, education, health care and housing, resident attendance
Da Cunha et al. (2014)	Research paper	FIFA World Cup	Brazil	Health issues, food safety

(*continued*)

Table 15.1 (continued)

Author (year)	Type of study	Type of event	Destination(s)	Legacy dimensions discussed
De Almeida et al. (2015)	Research paper	FIFA World Cup	South Africa, Brazil	Impact by rationales; rhetoric and realities
Deng and Poon (2011)	Research paper	Expo 2010	Shanghai (China)	Governance, sustainability, risks
Dimeo and Kay (2004)	Case study	Cricket World Cup	India, Pakistan, Sri Lanka	Image projection in international media
Ding et al. (2015)	Case study	Youth Olympic Games	Nanjing (China)	Environmental impact, air quality
Dolles and Söderman (2008)	General review	Major sports events	Asia	Society, business, management
Gaffney (2010)	Case study	Mega-events	Rio de Janeiro (Brazil)	Urban development, socio-spatial dynamics, infrastructure
George and Swart (2012)	Case study	FIFA World Cup	South Africa	Tourists' perceptions of crime risk and travel intentions
Gibson et al. (2014)	Research paper	FIFA World Cup	South Africa	Psychic income and social capital among residents
Gibson et al. (2008)	Research paper	Summer Olympics	Beijing (China)	Destination image, tourism
Heere et al. (2013)	Research paper	FIFA World Cup	South Africa	Influence on national identity on social value of residents
Hiller (2000)	Case study	Summer Olympics	Cape Town (South Africa)	Olympic bid, human and urban development

Table 15.1 (continued)

Author (year)	Type of study	Type of event	Destination(s)	Legacy dimensions discussed
Höglund and Sundberg (2008)	Research paper	Sport events	South Africa	Social cohesion, identity
Jinxia and Mangan (2008)	Research paper	Summer Olympics	Beijing (China)	Intentions, (un) certain outcomes, (in) tangible, (un) intended
Kaplanidou et al. (2013)	Case study	FIFA World Cup	South Africa	Perceived satisfaction, quality of life, support of residents
Kaplanidou (2012)	Research paper	Summer Olympics	Atlanta, Sydney, Athens, Beijing	Long-term effects in local societies, residents' quality of life
Kassens-Noor and Kayal (2016)	Case study	Commonwealth Games	Delhi (India)	Urban development, transport system
Kaushar et al. (2013)	Case study	Commonwealth Games	India	Environment, air quality
Khan and Tamandehrou (2015)	Case study	Cricket World Cup	India	Media coverage of country and event
Knott et al. (2013)	Research paper	FIFA World Cup	South Africa	Nation-branding legacy, tourism legacies for nations
Knott et al. (2012)	Research paper	FIFA World Cup	South Africa	Stakeholder reflections of tourism and nation-branding
Leung et al. (2012)	Research paper	Summer Olympics	China	Tourism, social network analysis, movement patterns

(*continued*)

Table 15.1 (continued)

Author (year)	Type of study	Type of event	Destination(s)	Legacy dimensions discussed
Li and Blake (2009)	Research paper	Summer Olympics	Beijing (China)	Olympic-related investment and expenditures
Li and Kaplanidou (2013)	Research paper	Summer Olympics	China	Destination brand perception by American leisure travellers
Liu et al. (2013)	Case study	Asian Games	Guangzhou (China)	Environmental impact, air quality
Maharaj (2015)	Research paper	Major sports events	India, Brazil, South Africa	Social and economic impacts
Malhado et al. (2013)	Research paper	FIFA World Cup	Brazil	Sustainable mobility, infrastructure, transport
Manzenreiter (2010)	Research paper	Summer Olympics	Beijing (China)	Image, destination branding, global perceptions, diplomacy
Minnaert (2012)	General review	Olympic Games	Atlanta, Nagano, Sydney, Salt Lake City, Athens, Turin, Beijing	Non-infrastructural outcomes, socially excluded groups
Mishra (2012)	Research paper	Commonwealth Games	India	Reputation, media attention, tendency of media coverage
Mountjoy et al. (2015)	Research paper	Youth Olympic Games	Nanjing (China)	Athlete health, antidoping, medical care
Ndlovu (2010)	Case study	FIFA World Cup	South Africa	Culture and policy

Table 15.1 (continued)

Author (year)	Type of study	Type of event	Destination(s)	Legacy dimensions discussed
Newton (2009)	Case study	FIFA World Cup	Cape Town (South Africa)	Urban development, beautification, discourse
Osborne et al. (2016)	Case study	Commonwealth Games	India	Western media interpretation of the event
Peeters et al. (2014)	Case study	FIFA World Cup	South Africa	Attraction of foreign tourists, tourist arrivals
Pereira and De Conto (2015)	Research paper	Pan American Games	Brazil	Environmental impact
Pereira et al. (2014)	Case study	Pan American Games	Rio (Brazil)	Environmental impact, planning process
Persson and Petersson (2014)	Research paper	Winter Olympics	Sochi (Russia)	Political impact, myth-making
Pillay and Bass (2008)	Research paper	FIFA World Cup	South Africa	Poverty reduction, urban development
Preuss and Alfs (2011)	Research paper	Summer Olympics	Beijing (China)	Symbolic capital, destination image
Ren (2008)	Case study	Summer Olympics	Beijing (China)	Stadium, venues, architecture, infrastructure
Rogerson (2009)	Case study	FIFA World Cup	South Africa	Small enterprise development, shared growth
Rowe (2012)	Case study	Summer Olympics	Australia, China	Politics, social, global cultural politics
Sarkar (2014)	Case study	Commonwealth Games	India	Media impact

(*continued*)

Table 15.1 (continued)

Author (year)	Type of study	Type of event	Destination(s)	Legacy dimensions discussed
Schreiner and Go (2011)	Research paper	FIFA World Cup	South Africa	National image in international media
Steenveld and Strelitz (1998)	Case study	Rugby World Cup	South Africa	Politics, media, social
Van der Zee and Go (2013)	Case study	FIFA World Cup	South Africa	Tourism destination image, travel experiences
Walker et al. (2013)	Case study	FIFA World Cup	South Africa	Social responsibility, event image, destination benefits
Wang and Theodoraki (2007)	Case study	Summer Olympics	Qingdao (China)	Policy development, public health
Wilson and Chen (2014)	Research paper	FIFA World Cup	Brazil	Health risks among travellers
Xiong et al. (2010)	Case study	Asian Games	China	Infrastructure, transportation, traffic safety
Xu (2006)	Case study	Summer Olympics	Beijing (China)	National identity, politics, cultural exchange
Zeng et al. (2011)	Research paper	Summer Olympics	Beijing (China)	National image in international media
Zhang and Zhao (2009)	Case study	Summer Olympics	Beijing (China)	City branding, city's identity
Zroback et al. (2014)	Case study	FIFA World Cup	Cape Town (South Africa)	Impact on pediatric injury and traumatic injury

Table 15.2 Hallmark sport events in BRICSA destinations, 1930–2019

Destination	Hallmark sport event	Destination	Hallmark sport event
Brazil	Confederations Cup (2013) CONMEBOL Copa América (1989, 2019) FIBA Basketball World Cup (1954, 1963) FIFA Football World Cup (1950, 2014) FIVB Volleyball World Cup (1993, 1995, 2002, 2008) Pan American Games (1963, 2007) Summer Olympic Games (2016)	China	Asian Games (1990, 2010) East Asian Games (1993, 2013) Summer Olympic Games (2008) Summer Youth Olympic Games (2014) World Games Sport (2009)
Russia	Confederations Cup (2017) FIFA Football World Cup (2018) FIVB Volleyball World Cup (2006) Summer Olympic Games (1980)[a] Winter Olympic Games (2014) World Championship Ice Hockey (2000, 2007)	South Africa	CAF African Cup of Nations (1996, 2013) Cricket World Cup (2003) FIFA Football World Cup (2010) Rugby World Cup (1995)
India	Asian Games (1951, 1982) Commonwealth Games (2010) Cricket World Cup (1987, 1996, 2011) Hockey Asian Games (1982) Hockey World Cup (1982, 2010)		

[a]*The Olympic Summer Games of 1980 held in Soviet Union, Moscow*

destinations are identified in Table 15.2, including hallmark events from 1930 to 2019.

In addition to the content analysis and overview of hallmark events hosted in BRICSA destinations, the emphases of the outcomes of previous research are indicated. The contributions of this research within the domains of hallmark event legacy are integrated to identify differences and similarities of outcomes. According to our content analysis, only one author(Alekseyeva 2014) presented case studies in the context of Russia, reflecting the limited hosting of such events in the past. Studies of recent events such as the 2014 Sochi Winter Games may be published in future

along with those of other upcoming events. More contributions were found relating to China and South Africa as they recently hosted the 2008 Summer Olympics and the 2010 FIFA World Cup, respectively.

Brazil

Curi et al. (2011) assessed the social legacy of the 2007 Pan American Games in Brazil. They expanded social confrontation as a major question for the analyses of hallmark events since despite vast differences in wealth, power, and social status, the socially and culturally distinct groups nonetheless utilize common public spaces. Moreover, referring to the interaction of reputational objectives and social isolation, Curi et al. (2011) stated that a 'big wall' around the stadiums has been constructed, which turned these places into islands of excellence to be shown in the media by hiding the unsightly parts of the city, that is, poor neighborhoods and *favelas*. They suggested that these 'walls' could be seen as the BRICSA way of organizing hallmark events.

Gaffney (2010) indicated a discernible shift in the ideologies that drive the production of hallmark events in Rio de Janeiro. These logics have discursively and materially shifted from more localized expressions of notions of social inclusion and industrial democracy in the mid-twentieth century to reflect the socio-spatial exigencies of capital in a period of accelerated globalization. Moreover, hallmark events are defined as massive projects in their scope and scale, costing many billions of public dollars and leaving behind ambiguous legacies. Some recent studies monitored the impact of the 2007 Pan American Games and the 2014 FIFA World Cup by researching environmental and health issues (Da Cunha et al. 2014; Pereira and De Conto 2015; Pereira et al. 2014; Wilson and Chen 2014), social and economic impacts (De Almeida et al. 2015; Maharaj 2015), as well as infrastructure and mobility issues (Malhado et al. 2013).

India

Black (2007) defined key commonalities in the narratives destinations seek to deploy and the subtexts they embody. These commonalities revolve around a paradoxical blending of inclusive, transcendent, or cosmopoli-

tan narratives on the one hand and competitive, differentiating narratives of world class aspirations and achievements on the other. Dimeo and Kay (2004) mentioned the dominance of negative press coverage despite the objective to promote a positive image in trying to use hallmark events to counterbalance the underlying stereotypes and criticisms of South Asian cultures. They showed that the 1996 Cricket World Cup had a troubled background due to the shift of power within cricket toward the subcontinent and the consequential commercialization of the sport, causing some dissension among traditionalists. The studies of Khan and Tamandehrou (2015) assessed the media coverage of the country and the event during the 2011 Cricket World Cup, while Mishra (2012), Osborne et al. (2016) and Sarkar (2014) contributed findings from studies of the 2010 Commonwealth Games. Furthermore, Byrne (2014) indicated the diplomatic interplay between the organization of the 2010 Commonwealth Games and Delhi, the host city. Finally, some contributions were made on the environmental impact, especially the air quality, during the 2010 Commonwealth Games and 2011 Cricket World Cup (Beig et al. 2013; Chate et al. 2013; Kaushar et al. 2013).

China

An examination of the history of mega sporting events hosted in Asia is provided by Dolles and Söderman (2008) as they linked the topic to the growing importance of sports and the interest shown by national governments and urban environments in staging sporting events in Asia. An ephemeral hallmark event is seen as a strategic megaproject in which the construction of convention, sports, and cultural and recreational flagships often takes center stage (Deng and Poon 2011). Cha (2013) contributed by stating the impact of the 2010 Asian Games on the political scene and diplomacy between China, Korea, and Russia. The dilemma between nationalism and global consumerism has led state politicians and bureaucrats to opt for a global architectural language to narrate national ambitions (Ren 2008).

What appears more important in East Asia and the Asia-Pacific region is the prevailing and rapidly growing competition from political economy players in other regions, including India in South Asia, Brazil in

South America, and South Africa in southern Africa, and the advantages of confronting this competition in a collective, organized manner (Close 2010). Jinxia and Mangan (2008) indicated that China seeks to use the Olympics to embrace both the 'national village' and the 'global village'. Even in the wake of the problem becoming 'globalized', related research is tangential, sporadic, and reactive, which puts emerging mega-event hosts in a disadvantageous position (Deng and Poon 2011).

Scenario analysis could be used in the analysis of hallmark events to take uncertainties into account (Li and Blake 2009). Contributing to governance process of hallmark event legacy, Deng and Poon (2011) suggested that host destinations should ask questions of *whether*, *why*, and *how* before using a high-risk approach to host hallmark events. Hosting mega sport events, especially the Olympics, demands an extensive engagement with global civil society, given the voluntary highly mediated exposure of host cities and nations to the world (Rowe 2012).

Kaplanidou (2012) mentioned the influence of time on legacy outcome evaluation in terms of how important these outcomes were for the quality of life for host destination's residents of the Summer Olympics from 1996 to 2008. Wang and Theodoraki (2007) stated that although urban residents largely have access to the new facilities, they come at a high cost that many cannot afford, and those in rural areas are disadvantaged further. The use of mega sporting events to achieve social goals for socially excluded groups is heavily contested. However, comparative evidence regarding the effects of hallmark events on non-infrastructural legacy is scarce (Minnaert 2012). Above all, the value of hosting an Olympic Games in East Asia, the Asia-Pacific, or any other region, such as South America or southern Africa, is seen as lying in how the games put all competition, rivalries, and anxieties in perspective, in particular in comparison with and in relation to each another (Close 2010).

China used the Olympic Games to signal primarily to potential business partners and investors; however, China's success in signaling positively was weakened by several negative news reports (Preuss and Alfs 2011). China's engagement with the Olympic Games has exacerbated the communication gap, disclosing some fundamental paradoxes that confront inter-cultural and cross-cultural dimensions (Manzenreiter 2010; Xu 2006). The impacts of hosting hallmark events on the destination

image and the intention to visit China as a result of the 2008 Beijing Olympic Games is investigated by Gibson et al. (2008), who indicated positive tendencies in the short term. Despite these outcomes, destination branding is a long-term process in which the branding goals cannot be effectively achieved through a single event, even if that event itself is high profile and can generate worldwide attention and global influence (Zhang and Zhao 2009).

In addition, the impact of media and branding on the national image were explored in case studies during the 2008 Beijing Olympics (Chen 2012; Li and Kaplanidou 2013) and by studies defining the impact on tourism through social network analysis and movement patterns (Leung et al. 2012). The environmental and health impact on Nanjing during the 2014 Summer Youth Olympic Games was studied (Ding et al. 2015; Mountjoy et al. 2015) and in relation to the traffic safety and infrastructure issues during the 2010 Asian Games by Xiong et al. (2010). The branding opportunities provided by an international hallmark event constitute an important but only fractional part of the entire process. It is suggested that the investment for hallmark events can only be justified if wider economic, social, and environmental goals are reached (Minnaert 2012).

South Africa

Black (2007) indicated differences in the implications of hosting hallmark events for destinations of developed and developing worlds, indicating the relevance of socio-cultural, economic, and political contexts. Hiller (2000) set out the ethical dimension with the imbalance of millions of local people lacking adequate housing, food, and other subsistence needs. Preparing for a 'circus' when people have unmet primary needs will always appear inappropriate. Moreover, he indicated that hosting hallmark events is linked to the revitalization of city centers for purposes of leisure, entertainment, and consumption based on specifically postmodern urban traits. The study of Newton (2009) also clarified the process to deal with the housing backlog of 400,000 houses in the urban environment as the long-term legacy of hosting hallmark events; how-

ever, not all is as positive and hopeful as the marketing campaign wants to make the residents believe. Additional contributions on the impact on residents were made with regard to social capital (Gibson et al. 2014), the perceived satisfaction, quality of life, and support (Kaplanidou et al. 2013; Knott et al. 2012; Zroback et al. 2014). Moreover, the suggested reconciliation through sports is investigated by Höglund and Sundberg (2008) by linking the potential positive and negative aspects of sports in the process of peace building and social cohesion among residents.

Bob and Swart (2009) examine the perceptions of the residents toward the proposed stadia development and potential impacts of the 2010 FIFA World Cup. The findings reveal that there is considerable support and positive perceptions relating to South Africa's hosting of the 2010 World Cup. In addition to the high expectations of realizing the benefits obtained, the importance of the implementation of effective communication strategies is stated. However, there were several concerns raised in relation to the distribution of anticipated benefits and the impacts of the stadia on their lives. Bohlmann and Van Heerden (2008) contributed that the focus should rather be on investing heavily in supporting infrastructure, such as transport and communication services, than excessive stadiums with a low net worth after the event. These statements refer to the sustainability and timeframe of the infrastructural legacy domains. Moreover they stressed the importance of tax incomes and revenue generated from future economic growth and private investments in addition to other short-term outcomes. Allmers and Maennig (2009), while less skeptical about the potential beneficial long-term impacts of 2010 FIFA World Cup, indicated that overall hardly any World Cup Football and comparable hallmark events have short-run positive impacts on tourism, employment, or income.

The legacy impact on international media visibility, reputation, and destination image building has been the subject of research, in which short term effects appeared significant while the sustainability of the legacy was considerable (Heere et al. 2013; Knott et al. 2013; Schreiner and Go 2011; Steenveld and Strelitz 1998; Van der Zee and Go 2013; Walker et al. 2013). It has been argued that the success of the hallmark event will be measured not only in terms of how South African cities are made more competitively globally but in terms of how an undertaking to

the poor and indigent can be fulfilled (Pillay and Bass 2008). Moreover, they stated that a consensus-driven understanding by all stakeholders and constituencies was required so that the end result could be truly beneficial to the country as a whole and not just specific sectors. Another important contributory factor that underpins South Africa's cultural diplomacy for the staging of the 2010 FIFA World Cup was that since 1994, South Africa's foreign policy has been based on a vision of a 'better South Africa, a better Africa and a better world' (Ndlovu 2010). Cornelissen (2011a) examined the change in dynamics in the established sport which may shape the sector and the broader sports environment in the country in both positive and negative ways. In addition to the sport legacy, political aims are identified by Cornelissen (2004) who argues that in order to assess the tourism impact of hallmark events in the developing world fully, it is necessary to adapt existing methodologies.

Psychological and social legacy featured in these studies since the hopes for significant positive effects on tourism, income, and employment that were prominent before the FIFA World Cup were not realized. The feel-good effect seemed to be the largest and most obvious effect of the 2010 FIFA World Cup (Cornelissen and Maennig 2010; De Almeida et al. 2015). The symbolic imagineering is examined in the investigation of Cornelissen (2010), referring to the social memory dimension of hallmark event legacy. As previous research in the context of South Africa was dominated by ethical and equality questions on economic and social dimensions, scholarship on hallmark events has paid little attention to other dimensions as, for example, their implications for small enterprise development as recognized by Rogerson (2009).

Discussion

Evidence presented in this chapter suggests that content (i.e. type of hallmark event hosted), context (i.e. host destination), and process (i.e. governance of hallmark event legacy) matter in hosting hallmark events, optimize value for the stakeholders involved, and evaluate hallmark event legacy in a proper manner. However, some tendencies could be identified among hallmark events hosted in the BRICSA destinations investigated,

according to the applied content analysis perspective in previous case studies. These seem to indicate that there is a need for further investigations to draw valid and reliable conclusions. Moreover, previous research fails to specify the dilemmas in the process of hallmark event legacy comparisons. Comprehensive investigations including multiple hallmark events or among multiple destinations should be interpreted with some caution. As this chapter presents challenges for host destinations, opportunities arise for scholars to contribute to the understandings of the legacy of hosting hallmark events. There is a need for a more holistic examination of the process and outcomes of hallmark events among the various dimensions of legacy. With many upcoming international hallmark events to be hosted in BRICSA destinations, future research should aim to draw on the understandings of the cross-cultural dynamics. The question arises which aspects in such comparative study approaches are different and what could be defined as similar, since that might depend on the perspective applied. By stating these dynamics as extremes, the related dilemmas become clearer. Contributing to the matrix set out by Preuss (2007), future research cases are positioned in Fig.15.1 relating to hallmark events hosted in BRICSA destinations. According to the evidence from the literature about hallmark event legacy and cross-cultural

		HALLMARK EVENT	
		same	*different*
DESTINATION	*same*	**A** e.g. FIFA World Cup in Brazil (1950 & 2014) East Asian Games in China (1993 & 2013)	**B** e.g. Rio de Janeiro, Brazil FIFA World Cup (2014) and Summer Olympics (2016) Russia Winter Olympics (2014) and FIFA World Cup (2018)
	different	**C** e.g. FIFA World Cup in Brazil (2014) and Russia (2018) Summer Olympics in China (2008) and Brazil (2016)	**D** e.g. FIFA World Cup in Brazil (2014) and Winter Olympics in Russia (2014) Summer Olympics in Brazil (2014) and Summer Youth Olympic Games in China (2014)

Fig.15.1 Matrix of hallmark event comparisons for future research (inspired by Preuss 2007)

comparative study approaches, the following summary propositions provide guidance for further advancing legacy theory.

Quadrant I: Same Destination, Same Hallmark Event

The first stated dimension of comparative study approaches concerns the same hallmark event hosted in the same destination. Aspects of place and time in relation to hosting hallmark events should be seen in relation to discussions of the spatiality of globalization. Within the process of globalization, 'position within the global economy is frequently regarded as anachronistic in a shrinking, networked world' (Sheppard 2002, p. 307). Future research should therefore contribute to the clarification of the legacy of the same hallmark events hosted in the same destination in the context of the changing global landscape. As this dimension of comprehensive research approaches corrects for place, the other anachronistic aspect of time might be of relevance in the interpretation of hallmark event legacy. Both the changing context of the destination and the permanent development of the hallmark event organization cause difficulties in the identification of best practices and the predictive value of future hallmark event legacy.

Proposition 1 Comparative investigations focused on the same hallmark events that are hosted in the same destination could minimize the impacts of spatial dimensions; however, different conditions are shaped over time, which should be considered. The increased complexity of hosting hallmark events and its uniqueness might devalue case studies of previous hallmark events for measuring hallmark event legacy over time. This comparative research approach controls for the *place dynamics*.

Quadrant II: Same Destination, Different Hallmark Event

In order to minimize the aspects of fluctuations in both place and time, a research design could be utilized in which the legacy of different hallmark events hosted in the same destination is compared. In hosting hallmark

events in emerging destinations, different hallmark events will be hosted in the same destination. By so doing, the dynamics within the host destination and in the changing global landscape might be assumed to be minimized since this comprehensive approach largely corrects for both the place and time dynamics. Difficulties arise in the confrontation of the different hallmark events included in this study design. Scholars are challenged to indicate to what extent the legacies differ due to hallmark event characteristics in which the application of this research design is suggested. Differences might occur due the type of hallmark events and related infrastructural requirements, social support and interests, media exposure, planning, and event management, all of which are assumed to affect the hallmark event legacy. Moreover, synergistic effects in the legacy of a recently hosted hallmark event might act as a prerequisite for a subsequent hallmark event if there is relatively short period of time between the events.

Proposition 2 In order to minimize the level of the anachronistic domains place and time, future research might consider comparative investigations among different hallmark events hosted in the same destination within a relative short period of time. Differences among the organization of the different hallmark events included in this research design should be taken into account. Hallmark event legacy is suggested to fluctuate due to relevant cross-cultural differences among the units of analysis within this multiple case study approaches. This research design might be applied with the aim to control the *cross-cultural dynamics among destinations*.

Quadrant III: Different Destination, Same Hallmark Event

Due to potential legacy fluctuations among different hallmark events, future research might develop a multiple case study design in which the legacy of the same hallmark event hosted in different destinations is compared. Despite cross-cultural differences among the event organization being minimized in this design, cross-cultural differences

among destinations might occur. Furthermore, the confrontation of hallmark event legacy might correct for time aspects to some extent in this study design, however, not for place characteristics. Future research could apply this research approach to contribute to the understandings of the suggested differences in hallmark event legacy in different destinations.

Proposition 3 Future research should integrate the same hallmark events hosted in different destinations to clarify the differences in the dimensions of hallmark event legacy among the cases included in such comparative research designs. Cross-cultural dynamics among destinations might be clarified by this approach as *cross-cultural differences among hallmark event organizations* are minimized. Furthermore, fluctuations in hallmark event legacy might be caused by the impact of time and place dynamics.

Quadrant IV: Different Destination, Different Hallmark Event

This dimension of comparative study designs considers different hallmark events hosted in different destinations. However, while such a research approach is seen as irrelevant by Preuss (2007), it might be a useful design to correct for the anachronistic time dimension. Moreover, this methodology of conflicting multiple case study outcomes could clarify the differences in extremes. This might be useful in identifying the effects of the drivers of legacy and state the relevance of the stated 11 domains of hallmark event legacy.

Proposition 4 The comparison of case studies of different hallmark events in different destinations might contribute to the understandings of the domains of hallmark event legacy. Differences and similarities among outcomes of different hallmark events and different destinations should be interpreted with some caution due to the cross-cultural dynamics among destinations, cross-cultural dynamics among organizations, and the place dynamics. This research design might be applied to control the *time dynamics*.

Implications for Future Research and Limitations

Future research on hallmark event legacy could contribute to understanding through the application of the four comparative case study designs set out above. Comparisons of legacy among hallmark events and destinations should be considered with the different cross-cultural conditions and among the anachronistic dimensions of place and time. These 11 categories of hallmark event legacy contribute to the identification of the changing circumstances in the process of conflicting the outcomes of the multiple case studies on hallmark event legacy, which should be included in future research approaches.

This investigation is limited as the multiple case study approach is based on previous research, which lacks a balanced multidimensional approach. Future research should consider the legacy of hallmark events from the multiple perspectives of the stakeholders involved. These perspectives include views from the event organization, commercial partners of the event, governmental institutions, visitors, residents, and local businesses. By so doing, the investigation of the legacy of hallmark events will not be limited to the more tangible outcomes in the domains of economic and infrastructural effects. A balanced approach including also intangible, indirect, and unintended outcomes is required in the process of governance and evaluation of a hallmark event legacy. Future research might deepen the understandings of a particular domain of legacy or might develop methodological approaches to include multiple facets to draw a more holistic examination of the impacts of hallmark events. Moreover, previous impact studies are dominated by the context of mega sporting events like the Olympic Games and FIFA World Cup™. However, the legacy of organizing these comprehensive projects might be more significant and substantial compared to small-scale and non-sporting events. Existing literature lacks understanding of the impact of hosting non-sporting and non-mega-events which might also have a substantial impact on the stakeholders of the hosting destination. Local, regional, and national hallmark events might be to a lesser extent affected by cross-cultural dynamics compared with international, continental, and global hallmark events. In order to contribute to the understandings of cross-cultural dynamics, future research should not simply consider the

challenges and gaps arising in the global landscape because more local, regional, and national hallmark events might also contribute to cross-event understandings in a valid manner.

Furthermore, previous research about hallmark event legacy is dominated by North American and European perspectives, in both the unit of analysis and contexts subject in the study. Viewpoints from emerging destinations are relevant in understanding the interaction of the BRICSA destinations hosting international hallmark events like the Olympics and FIFA World Cup™, which are organized by the IOC and FIFA, respectively, organizations dominated by North American and European perspectives. As policy makers of destinations battle for winning the hosting of an hallmark event, the desired heterogeneous outcomes are expected to justify their actions (Hiller 2000; Malfas et al. 2004). Scholars are challenged to contribute to the foundations of the dynamics of organizational and national cultures within a methodological approach to not measure what could easily be conducted but measure what is important. The theme of cultural differences is not only, nor even primarily, of interest to social scientists but pertains to anyone who meets people from outside the narrow circle, which means virtually everybody in the modern world (Hofstede and Hofstede 2005). As hallmark events facilitate intercultural encounters, scientific fundamentals and practical implications are required in the process of value co-creation in order to optimize value for the stakeholders involved through hosting hallmark events.

This chapter specified hallmark events related to sport through an overview of international sporting hallmark events hosted in BRICSA destinations. The other domains of hallmark events as specified by Ritchie (1984) should be of consideration as well in future comparison studies on hallmark event legacy. Schaffer and Riordan (2003) identified best practices in cross-cultural methodologies for organizational research from their literature review. These are of relevance for future comparative research designs which examine cross-cultural dimensions among hallmark event legacies. Future research could be exploratory, explanatory, descriptive, and predictive among the temporal orientation dimensions of backward, current, and forward looking. Empirical research could be conducted in addition to the framing of literature to, first, develop single case studies and, second, draw cross-case analy-

sis in order to correlate the empirical and theoretical dimensions. The challenge for both scholarship and praxis is to contribute to the understandings of the dilemmas when stating the differences in extremes, as opposed to attempting to bridge the cross-cultural differences. By considering anachronistic time and place dynamics according to the preceding discussion and framework, comparisons could indicate tendencies on both differences and similarities to improve the governance and evaluation of hallmark event legacy in order to optimize value for the stakeholders involved.

Conclusion

This chapter contributes the correlation of the outcomes of previous studies among hallmark events hosted in BRICSA destinations. With the growing tendency to host international remarkable hallmark events in these emerging destinations, there is a need to contribute to the understanding of hallmark event legacy from multiple perspectives in order to optimize value for the stakeholders involved. The content analysis of previous research into hallmark event legacy indicated ambiguous outcomes among the different domains of legacy. Methodological approaches lack the framing to draw conclusions on the outcomes of previous research in a reliable and valid manner. This chapter stated the difficulties in comparison studies to indicate the relevant dilemmas. In addition to the matrix of Preuss (2007), four comparative research designs were identified. These might be applied to compare the hallmark event legacy among multiple hallmark events in future research. This framework indicates four types of research approaches which could support future research designs in order to draw tendencies for cross-cultural multiple case studies. The four research approaches control for the place dynamics, cross-cultural dynamics among hallmark event organizations, cross-cultural dynamics among destinations, and time dynamics. Future research is required to draw tendencies in differences and similarities of hallmark event legacy, especially applied, however, not limited, to the upcoming hallmark events in emerging destinations. Scholars are challenged to clarify the phenomenon of hallmark event legacy in a more holistic and

multidimensional approach. This will contribute to the understandings of the stated propositions in order to support praxis in the governance and evaluation of hallmark event legacy to fulfill the objectives of value optimization for the stakeholders involved.

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16

Conclusion

Stephen Little, Frank Go, and Teresa Poon

Introduction

The four sections of this book have set out the global context in which innovation and entrepreneurship must operate. Part I presented a range of perspective on the current context of global innovation and entrepreneurship. Succeeding sections have presented case studies of organisations and sectors, which illustrate the range of challenges and opportunities that confront stakeholders. It is a truism that the business school SWOT analysis matrix can be populated with the same issues in every quadrant

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as any aspect of the challenges currently facing public and private sector organisations can reveal both Strengths and Weaknesses and offer both Opportunities and Threats.

As this book entered production, the result of the UK referendum on European Union membership produced a profound shock to the global system, since eclipsed by the election of Donald Trump as the 45th President of the U.S.A.

In the U.K. those on the 'Leave' side of the debate chose to ignore the almost unanimous opinions of experts and trading partners, with government cabinet minister Michael Gove stating that 'people in this country have had enough of experts' (Financial Times 2016). However, the 'Remain' campaign remained unaware or ignorant of the depth of alienation within British society caused by the shifts in economic activity over 40 years of neoliberal policies. Poll analysis correlates lower levels of educational attainment with higher levels of hostility to membership of the EU, commentators may not recognise this as a reflection of the experiences of those without the appropriate skills and qualifications to access the benefits of membership while the free movement of skilled labour further reduces their prospects of decent employment.

Both votes, however, reflect a widespread disillusionment with the status quo in Europe and North America and a reminder that the interweaving of production and consumption also interweaves the winners and losers within a neoliberal project. In the immediate aftermath with established political parties in a state of disarray, it is necessary to acknowledge the widespread animosity to what is perceived as the political establishment. This is reflected in both the election of a traditionally left-wing leader by the British Labour Party mirroring the rise of a right populist UK 'independence' party and the widespread support for Senator Bernie Sanders from the left, which mirrored the support for Trump and made the mainstream candidates as the 'squeezed middle'.

The question put at the UK referendum divided both the country and the UK-based contributors to this book. Social media has played a prominent role before and after the actual vote, not least in revealing the strength of emotions aroused by the reduction of complex considerations to simplistic slogans. However, the predominantly right of centre British press focused on just two issues, sovereignty and migration. The former

attracted those with nostalgia for some golden age of national autonomy in a global era of complex interdependence described decades ago by Camilleri and Falk (1992). The latter focussed the despair of the excluded and dispossessed on incomers with predictable consequences for a multicultural society.

People of good faith on all sides of these debates need to respond to the recently revived Second World War slogan of the British government: 'Keep Calm and Carry On'. While this has been predominantly a reflection of the British sense of irony and has inspired a wide range of variants, it nevertheless offers good advice when considering the contributions from the academics and practitioners within this book.

Lead Indicators for a Fluid future

It is always worth recalling the words of Chinese Foreign Minister Chou En Lai when asked to assess the outcome of the French Revolution: 'It's too early to tell'. Indeed, the narrowness of the British and U.S. votes is just one aspect of conflicting views of national and international economic development. Economic inward migration and refugee flows are placing strains on social and policy cohesion across the EU member states. Major movements of humanity, described by Castles and Miller (1993), are taking place beyond those created by the current crisis on the Middle East, reflecting the relentless impact of climate change in Africa and elsewhere. This is leading to economic competition through the acquisition of agricultural land and resources by nation states perceiving future shortages, with, for example, major Chinese investment in Africa and Australia (Neales 2012).

Inter-state contestation in the South China Sea is one aspect of this growing global competition for resources, both material and intangible. Recent armed conflicts, both in the form of international interventions and separatist civil conflicts, have been attributed to contestation over oil and other strategic mineral resources. A Chatham House report published in 2012 (Lee et al. 2012) analyses the wide range of potential resource conflicts and proposes forms of international collaboration, which gives some prospect of reducing or eliminating these in the future.

However, resource-rich countries do not necessarily derive the most benefit from their assets, instead development can be distorted, even in a relatively developed economy like Australia where the most recent resources boom has been accompanied by a reduction in value-added manufacturing. Humphreys et al. (2007) address the 'resource curse' that blights development, and Shaxson (2007) argues that for African countries, oil brings often brings more political and social problems than financial benefits.

In some respects, the issue of human assets and resources presents even more problems. With the UK 'Leave' campaigners already arguing that their aim was to regain control of immigration policy and not to reduce in numbers, it is likely that Britain's former colonies in sub-Saharan Africa will once again be the target for the importation of skilled workers to health and other services in Britain to the detriment both of the national development of those countries and the marginalised, unskilled youth of the receiving country.

In the 1960s, as an Anglophone nation, Britain was concerned with the so-called 'brain drain', particularly of engineers and scientific researchers, to the USA. In the previous decade, a group of European nations created CERN, the European Centre for Nuclear Research, as a means of attracting many European scientists recruited to the Manhattan project by the US government to return. Both India and China have implemented policies to encourage the return of overseas citizens in order to incorporate their experience and knowledge into national development. In Africa, a continent of 54 nations, a range of initiatives is addressing the same issue, and there is a clear role for both governmental and non-governmental initiatives here.

While the intention of attracting returning overseas citizens is to multiply their value through mentoring and example, policies need to go beyond a zero-sum battle for talent. There are established initiatives which are concerned with the mapping and assessment of existing human and associated resources. These address both the highly skilled level of scientific and technical work and the broader issue of skills inherent to communities which otherwise might be regarded as failed. The pejorative terms of rust belt or sink estate are deployed frequently to justify inequalities created by economic forces beyond the control of the communities dismissed so simply by the likes of Leunig and Swaffield (2008).

The STAR Metrics initiative (https://www.starmetrics.nih.gov/) has been promoted in the USA by the National Institute of Health (NIH), National Science Foundation (NSF) and Office of Science and Technology Policy (OSTP), but it originated in Brazil as a means of identifying and mapping the nation's resources in science and technology. For the USA, it offers a means of identifying the precise economic impact of investment in scientific research by tracking every item of expenditure on both human and material resources. It also tracks, from the level of high school intern to Nobel prize-winning scientist, the movement of human capital and the interaction and collaboration between individuals and research groups. In contrast to the cumbersome assessments favoured by the UK and other countries, the system utilises data already routinely reported and is one example of the potential of so-called Big Data (Bertuzzi et al. 2011).

At the other end of the scale of the development is the so-called Community Asset Mapping (CAM), which seeks to identify the resources that exist in communities and find ways of using them to leverage limited government resources as opposed to simply measuring deprivation and absence. This approach, first formulated in the USA by McKnight and Kretzmann (1993), has been applied in both Western Europe, particularly in rural and urban areas of relative deprivation, and in sub-Saharan Africa where local authorities have at best minimal resources.

While these two frameworks address radically different sections of society, they share the objective of identifying resources and potential synergies. They both echo the role of knowledge mapping in knowledge management (Little and Ray 2005) and each provides the means to identify both space and resources for application of innovation and entrepreneurship. Through engagement with place and identity (Collinge et al. 2011; Go et al. 2014) they provide the means to identify opportunities for technical innovation and social entrepreneurship in support of those most disadvantaged.

The role of innovation and entrepreneurship has been widened rather than reduced by recent events, and this book offers insights and encouragement. It suggests that expertise resides not in some mistrusted individuals dismissed by Britain's 'Brexiters' but arises from the practical

and theoretical engagement with real world problems exemplified by the contributors to this volume.

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