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Institutional voids as a trigger for the emergence of born global production and innovation networks

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Abstract

The article complements the existing work on the evolution of global innovation networks (GINs) from a less developed innovation context by documenting that GINs can also be 'born global', rather than be the outcome of the gradual upgrading of global production networks into GINs. The article, focusing on two GINs (Skype and MXIT) that operate digital services, suggests the importance of institutional theory as a useful lens for understanding firms' actions. Both companies have emerged from countries with less developed innovation systems, Estonia and South Africa, and have developed GINs in response to the talent, product market and capital market voids of those countries. While the existing literature places a strong emphasis on firm capabilities, our evidence suggests that firms can internationalise their production and innovation also due to a lack of local capabilities.

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Keywords: institutional void; global innovation network; Skype; MXIT; capacities; alliances.

1. Introduction

This article documents the emergence of two global innovation networks (GINs) from a less developed innovation context. It complements the existing work on the evolution of GINs by documenting that GINs can be “born global”, rather than be the outcome of an evolutionary process, and suggests the importance of institutional theory as a useful lens for understanding firms’ actions.

A GIN can be defined as a globally organized web of complex interactions between firms and non-firm organizations engaged in knowledge production related to and resulting in innovation. Ernst (2002, 2010) has pioneered work on global production networks (GPNs) and GINs, and his work, focusing on multinational corporations (MNCs) in East Asia, suggests that there is an evolution

from GPNs to GINs. We contribute an understanding of another process through which GINs emerge: We document GINs from two countries with less developed innovation systems, Estonia and South Africa, that are “born global” (Knight & Cavusgil, 2004) not only in terms of their markets, but specifically in terms of their production and indeed innovation. We find that the global production dimension and global innovation dimension emerge at the time that firms are founded, and simultaneously rather than in sequence.

Both home countries of the firms we study have a number of institutions to meet the economic, technological and social needs of society, but as is typical of less developed contexts, those institutions are in many ways inadequate. The “institutional voids” – which is the situation in most emerging markets when specialist institutions and intermediaries are either completely absent or not functioning as well as they might (Khanna, Palepu & Sinha, 2005; Khanna & Palepu, 2010) – create both challenges and opportunities for firms. In this study of two digital service firms, Skype (from Estonia) and MXIT (from South Africa), we find evidence that firms from such countries respond to the institutional voids by developing GINs from the outset.

2. Literature review

This literature review is divided into two sections. First we discuss what is known about the emergence of GINs, linking our discussion not only to the globalisation of innovation, but also to the literature on “born globals”. Second, we discuss institutional voids, and how that body of literature relates to locational attractiveness.

2.1 The globalisation of innovation

In the international business literature, the highlighting of strategic asset seeking as a specific motive for internationalisation (Dunning, 1998) gave rise to an extensive body of work on how MNCs use their global spread to seek not only natural resources, efficiency or markets abroad, but also new sources of knowledge and innovation. Various strands of literature have been documenting the emergence of global innovation networks. Studies include work on the

internationalisation of R&D (Cantwell & Kosmopolou, 2002; Pearce, 1999) and more broadly innovation (Archibugi & Iammarino, 1999) and the literature on global production networks (Ernst & Kim, 2002; Henderson et al, 2002). The about two decades of intellectual engagement with the phenomenon has had different foci, but evolutionary theory has been the most important lens underlying these studies, allowing us to integrate the key themes from the existing body of work into a predominant view (see Figure 1).

[Figure 1]

One characteristic of the current literature is a fairly clear distinction between GPNs and GINs. This clear distinction is to some extent a function of the conceptualisation of innovation in much of the work on the internationalisation of R&D. A clear distinction between GPNs and GINs is useful to the extent that the Doing, Using and Interacting (DUI) mode of innovation that typically takes place during the production process is considered to be quite different from the Science, Technology and Innovation (STI) mode innovation that can emerge out of a formal R&D process (Jensen et al, 2007). The bias towards studying the STI mode of innovation is also likely to lead to a greater emphasis on MNCs from the technologically and economically most advanced countries, since they are the largest private R&D actors globally.

Because MNCs with their global reach can relatively easily orchestrate global networks, and are therefore more likely to be central nodes of the GINs than smaller or standalone firms, for long the bulk of research on the internationalisation of innovation emphasised the intra-firm networks of MNCs, i.e. their subsidiaries (Cantwell & Mudambi, 2005; Driffield, Love & Menghinello, 2009; Gupta & Govindarajan, 2000; Zander, 2002). As the field has evolved, there has increasingly been an interest in the many actors outside the MNC with which MNCs interact to innovate, and work increasingly also documents the contribution of non-firm partners of MNCs (e.g. Andersson, Forsgren & Holm, 2002; Chesbrough, 2006; De Jong, Kalvet & Vanhaverbeke, 2010; Frost, Birkinshaw & Ensign, 2002; Nell, Ambos & Schlegelmilch, 2011; Van de Vrande, de Jong, Vanhaverbeke & Rochemont, 2009).

Given that the networks that enable innovation are not necessarily intra-firm, but can also consist of various extra-firm and even non-firm partners, a GIN can in principle be initiated by standalone firms as much as by MNCs. The common equation of GINs with MNCs (e.g. Sachwald, 2008) is therefore not inherent in the definition of a GIN, but instead a result of the fact that relatively few stand-alone firms have the capabilities to coordinate production and innovation through a non-firm network. Moreover, it seems that when non-MNCs engage in GPNs/GINs, they follow a different process than MNCs do.

2.2 Born-globals and the development of business networks

The work on “born-globals” provides a useful lens to understand “born global production / innovation networks”. In their pioneering 2004 article, Knight and Cavusgil define born-globals as firms (typically with less than 300 employees) that generate more than 25% of their turnover from exports less than three years after inception. A number of studies highlight the use of networks as an important mechanism used by born-globals to access both markets and capabilities (Presutti, Boari & Fratocchi, 2007; Sharma & Blomstermo, 2003).

The emphasis of both the original Knight and Cavusgil paper and subsequent studies (e.g. Fan & Phan, 2007; Hashai, 2011; Lu, Zhou, Bruton & Li, 2010) has been on the globalization of markets, with the size and scope of the market abroad as the key indicator in defining whether or not a firm should be considered born global. However, we propose that a firm can also be born global in terms of its production and innovation functions. Such a firm is from the outset organised into a global network of partner organisations that help the firm to develop, distribute and innovate its offering. Such born global innovation networks often have highly globalised markets, but not necessarily. Instead, what characterises these firms is that they from the outset develop their offering through extra-firm networks.

The literature on born-globals, initially dominated by work on firms from high-income markets, is increasingly also concerned with firms from lower income countries (e.g. Lu, Zhou, Bruton & Li, 2010; Zhou, Wu & Luo, 2007). It is clear how similar processes could be at work in both:

The work on born-globals examines how firms with relatively limited resources manage to overcome that limitation, and finds that aspects like an international managerial orientation or business networks are important resources to amplify the reach of available capabilities. Since born-globals in countries with less developed innovation contexts are also resource-challenged, it seems likely that similar strategies could be employed by those firms.

2.3 Globally competitive firms from countries with less developed innovation contexts

In addition to the work on born-globals from less developed innovation contexts, the question of how firms from less developed countries emerge as significant competitors is also addressed in the growing body of research on “emerging multinationals” (Gammeltoft, Barnard & Madhok, 2010; Ravamurti & Singh, 2008). The view that firms initially internationalise to build capabilities and become more efficient, and only later in order to develop their technological strength and innovate better, is perhaps best captured in the title of Kim’s (1999) work “Imitation to innovation”. This perspective is useful to reflect the evolutionary process at work in firms, especially in the context of firms from countries with less developed innovation capabilities.

The literature on national innovation systems in less developed countries suggests that those countries are characterised by imperfect institutions rather than by the absence of institutions (Lundvall, 2007; Lundvall, Joseph, Chaminade & Vang, 2009). In particular, the linkages between firms themselves and the institutions charged with aspects like the facilitation or regulation of economic exchange are weak. Recent research on the importance of the evolution of the capabilities of firms from developing countries or emerging economies is increasingly complemented by evidence that those firms can extend their capabilities by improving linkages with different partners.

Thus recent research has examined how firms extend their networks internationally through both alliances and acquisitions (e.g. Gubbi et al, 2010; Mahmood & Zheng, 2009; Ping, 2009) and also through business groups (e.g. Garg & Delios, 2007; Tan & Meyer, 2010). Business groups operate mainly domestically, and compensate for underdeveloped institutions because they internalise numerous functions that are not adequately performed by markets (Chang & Hong, 2002;

Khanna & Yafeh, 2007). Business groups often struggle to overcome a strong domestic focus (Bhaumik, Driffield & Pal, 2010) and support internationalisation to the extent that they can develop a more global focus. Nonetheless, this body of literature provides evidence that not only advanced MNCs from high-income countries can initiate global business networks, but also firms that do not originate in a technologically or economically advanced context.

2.4 The advantages and disadvantages of being located in countries with less developed innovation contexts

The effect of home country limitations on firms' competitiveness has been recognised in the literature (Barnard, 2008), but a recent body of research reframes the limitations of those locations in a more nuanced way, as sources of both advantages and disadvantages (Cuervo-Cazurra & Genc, 2008; Khanna & Palepu, 2010). Thus Khanna and Palepu (2010) argue that the institutional voids that characterise less developed countries are both hurdles to economic success, and potential sources of opportunity. Cuervo-Cazurra (2011) provides examples of positive, neutral and negative influences of the home country environment on the firm, while Cuervo-Cazurra & Genc (2011) argue that non-market forces both advantage and disadvantage emerging MNCs relative to advanced MNCs.

In response to these mixed influences, firms can choose to disengage from their home country and its institutional voids, often going international in order to do so (Stal & Cuervo-Cazurra, 2011; Witt & Levin, 2007). Alternatively, firms operating in those markets can engage more fully with that context, for example by crafting new institutional arrangements (Mair & Marti, 2009) or by innovating products and business models in order to overcome those voids (Chakravarthy & Coughlan, 2011). We argue that firms from countries with a less developed innovation context may not want to make an either/or decision about location, because those firms have the mixed blessing of being at the same time benefited and challenged by their home country. Instead, it seems likely that firms will craft a mixed strategy: Firms will engage with their home country where it is to their

advantage, and will at the same time go international where their home country influences are negative.

We argue that firms in countries with less developed innovation context can craft such a nuanced response to institutional voids by retaining a base in the home country, and at the same time initiating a global network of partners to help innovate, produce and distribute its offering. Because environmental factors rather than firm capabilities are likely to be the main trigger for the development of such a network, it is less likely to follow an evolutionary trajectory (evolving from a global production network to a global innovation network). Instead, it is more likely to reflect institutional pressures and opportunities, whether in terms of production or innovation (or indeed other elements, like access to capital). Initiating and managing such a global network is complex, especially given that firms likely suffer the dual disadvantage of being relatively small in size, and from an economically and technologically less developed region. Elements like an international entrepreneurial orientation (Knight & Cavusgil, 2004) are therefore likely to be especially important. But provided that those elements are in place, firms from countries with less developed innovation context may well become the lead firms of global production and innovation networks.

[Figure 2 about here]

Chaminade and colleagues (2010) conclude that in less developed economies, innovation systems should be understood as emerging systems where only some of their building blocks are in place and where the interactions among the elements are still in formation. Those systems are characterised by capability problems (lack of engineering and design capabilities, lack of managerial capabilities, lack of learning organizations and less sophisticated customers), networking problems (weak linkages with customers and MNCs, insufficient provision of qualified human capital from universities to firms, lack of bridging organizations) and institutional problems (business regulation not friendly to innovation, weak or non-existing IPR regimes, and high levels of corruptions). Khanna and Palepu (2010) and Dhanaraj and Khanna (2012) highlight three types of markets in which the effects of institutional voids can be noticed: Product markets, capital markets, and talent markets.

Of the three, talent markets are perhaps the most consequential – Lundvall comments that “learning and innovation are not luxuries, but necessary and basic processes” (2007: 117). But product markets – e.g. how buyers and sellers know about each other, develop trust in each other, and develop strategies for redress in case of conflict – and capital markets – e.g. how firms access the funds they need to expand – are also critical. Firms from countries with less developed innovation contexts will be guided by these three critical institutional voids when they decide whether to use global networks to access capabilities that are best found abroad. In contrast to the evidence documented in the more traditional literature, there is not an evolutionary shift from global production to global innovation networks, because the primary trigger for the emergence of their global networks is firms’ need to address the voids in talent, product and capital markets. This means that networks are from the outset likely to source both production and innovation capabilities abroad.

The next section addresses the methodology used in this article, and examines two cases from countries with less developed innovation context, Skype from Estonia and MXIT from South Africa, to see how such integrated global production and innovation networks are established.

3. Methodology

This methodology section starts with a discussion of the use of the case method, before the choices of the two home countries, Estonia and South Africa, and two cases, Skype and MXIT are explained. An explanation of the data gathering and analysis strategies concludes this section.

3.1 The use of the case method

Previous studies on global production and innovation networks in developing countries and emerging economies have documented how firms from those countries are participants in global networks, rather than imitators of such networks, and have also documented an evolution from global production to global innovation networks (e.g. Ernst, 2002; Ernst & Kim, 2002; Ernst, 2010). However, examples are emerging where neither condition exists, suggesting that GINs may also

evolve along another trajectory. Although existing theory suggests that the uneven institutional context would play an important role in the emergence of global networks of economic activity, there is a need to identify and understand the mechanisms of how institutional voids trigger this other process.

Case research is particularly well-suited to the development of theory (Eisenhardt, 1989; Eisenhardt & Graebner, 2007; Yin, 2003). Because findings are anchored in rich empirical evidence, the case methodology enables the development of defensible constructs and the clear mapping of the relationships between them, i.e. the development of theory. According to the logic of case research, cases are chosen on “because they are particularly suitable for illuminating and extending relationships and logic among constructs” (Eisenhardt & Graebner, 2007:27). In this case of this study, this necessitated the choice of relatively small standalone firms from countries with less developed innovation contexts that have initiated and rely to a substantial degree on global networks of production and innovation. The goal of our approach is not to generate representative findings, but instead to advance our understanding of institutional theory by developing rich evidence of an alternative pathway through which GPN/GINs from countries with less developed innovation contexts can emerge. To make the findings more robust, a comparative case analysis was conducted, and two cases examined.

3.2 The selection of cases - home countries

The two home countries included in this study are Estonia and South Africa. They differ in many ways – Estonia is a small country (1.3 million inhabitants) and a member of the European Union since 2004, while South Africa is a mid-sized country (49 million inhabitants) that plays a strong leadership role among its much poorer neighbours on the African continent.

However, in terms of their technological capabilities, they are quite similar. Archibugi, Denni and Filippetti (2009) assessed a number of indicators, both those that rely on measures like direct technological input and output (e.g. patents, R&D spend by both business and government, academic articles and researchers) and more indirect measures of infrastructure (e.g. literacy rates,

enrolment in and graduates from secondary and tertiary education, internet connections, landlines and mobile phones). They consolidate the indicators for 45 countries, and it is clear that both Estonia and South Africa are towards the lower end of that group.

[Table 1 about here]

In fact, although Estonia and South Africa perform differently on individual indicators, seen overall – as reflected by the European Commission, UNCTAD and UNIDO indicators – they perform quite similarly. Estonia tends to outperform South Africa when general infrastructural elements like literacy rates and secondary school enrolment are deemed more important, while South Africa scores better when technological achievement (e.g. share of new-to-the-world innovations) is measured more directly. They are both middle-income countries (Estonia has an annual GDP/capita of \$19000, and South Africa of \$11000), and according to the Global Competitiveness Report of 2011–2012, Estonia and South Africa are positioned in innovation and business sophistication factors as 37th and 39th respectively (World Economic Forum 2011, p. 22).

In sum, the possibility of generating robust theory is increased by our selection of two host countries that differ in terms of apparent characteristics (e.g. region, population size, political power), but that are quite similar in terms of their technology-related institutional underpinnings.

3.3. The selection of cases - firms

With regards to the companies included in the study, two firms from the same industry were selected. Both Skype (from Estonia) and MXIT (from South Africa) are digital service firms. Table 2 compares the two cases along a number of dimensions. Although both firms need some physical infrastructure, in the case of Skype computers/mobile phones and increasingly televisions, and in the case of MXIT, mobile phones and to a lesser extent, computers, their offering is distributed digitally. This in principle allows them access markets in any country.

[Table 2 about here]

In a context without substantial local connectedness and where network effects can crowd out competitors, digital service firms easily find themselves in “winner-take-all” markets (Lee, Lee &

Lee, 2006) – consider Google and Facebook. At the same time, the marginal cost of delivering the service to another user is close to zero. Skype ensured large user numbers across the globe, in countries at all levels of development, with its business model, the so-called “freemium” model. This model, used by a number of Internet content providers, involves providing the basic service for free, while some users pay for extra services.

Skype’s founding entrepreneurs Zennström and Friis – Swedish and Danish respectively – worked with a team of four Estonian engineers to apply the disruptive power of their Kazaa peer-to-peer technology in the field of telecommunications. Skype’s software development team was from the very beginning located in Tallinn, Estonia, which became its largest office in terms of the number of staff. Skype currently employs 850 staff, with most of its engineers in Estonia, though its disparate operations include a Luxembourg headquarters, marketing operations in London and audio-visual engineering in Stockholm¹. Skype also has subsidiaries in Singapore and Hong Kong. Given its relationship with eBay, a Skype office was also set up in the United States close to eBay’s headquarters and the Skype office in the United States continues to operate as marketing, sales and support office servicing the Americas. Figure 3 gives insight into the global spread of the Skype operations.

[Figure 3 about here]

MXIT operates with a narrower focus on emerging markets, and within emerging markets, the (substantial) youth market. MXIT was originally intended as a gaming application, but the potential user base was very small because of the high cost of text messaging. MXIT was then repositioned as a chat service, but it retained a strong content focus. Because users use MXIT not only for low-cost communication, but also as a platform for content, one of the key drivers of competitiveness for MXIT is the extent to which it can provide compelling content for its user base. In late 2011, a 90% share of MXIT was purchased by a private technology and media investment

¹<http://www.ft.com/cms/s/2/f2cbcfee-2198-11e0-9e3b-00144feab49a.html#axzz1Q0AoeaMG>, accessed January 16, 2012

firm, buying out both the original owners and the 30% share of NasPers, a South African media company specializing in emerging markets.

To support its presence in less developed countries, MXIT has developed an offering that is especially robust and very sensitive to bandwidth requirements, which is often limited and very expensive in less developed contexts. This allows the service to differentiate itself from more bandwidth hungry competitors like Facebook.

MXIT generates revenues both from freemium type services (e.g. games or its dating service) and from advertisements. It has developed its own payment system, Moola, and that payment system is functional in its main market (South Africa), in Kenya, which is the only other country with access to the full range of MXIT features, as well as in Namibia, Indonesia and the UK. In addition to these main markets, MXIT officially also supports Nigeria (in Africa), Malaysia and India (in Asia), Brazil (in Latin America), the United States, and a range of European countries, especially those where large numbers of South African emigrants are found. MXIT's advertising partners include South African firms, MNCs from across the world, and multinational agencies like the United Nations Development Programme.

3.4. Data gathering and analysis

Interviews were conducted during 2010 and 2011 – five interviews at MXIT, and three at Skype. Interviews were conducted with the top management of each company, as well as division heads such as Sales and Product Development. The interviews were anchored in specifics, e.g. “explain your relationship with partners”, “how do you find the funds needed to grow the business”, and “how does your firm decide where to locate [a given practice]?” Interviews were conducted in English at MXIT and in Estonian for Skype. The interviews were transcribed, and repeated themes identified. Interviews were supplemented with archival data, including press releases, published interviews and online commentary. Common themes were compared across the cases, and structured along the three types of markets where countries with less developed innovation context experience institutional voids: talent, product and capital markets.

4. Results

Khanna & Palepu (2010) and Dhanaraj and Khanna (2011) identify three markets where institutional voids are consequential, and our evidence indicates that to the extent that Skype and MXIT experience those voids, they use global networks to overcome them. We discuss voids first in talent markets, then product markets, and finally capital markets.

4.1 Talent market voids

Although Skype and MXIT built successful businesses from disruptive innovations, both have struggled and remain sceptical about the capacity of their local education system to provide the needed capabilities domestically to support their on-going global growth.

Skype's cooperation with the educational system in Estonia has so far remained fairly limited because the public education system is slow to respond to changing needs (Kattel & Kalvet, 2006). In addition, executives express concern about the capacity of the Estonian education department to meet Skype's needs.

We expect our new employees to work with interdisciplinary teams in sixteen time zones and of dozens of nationalities, but Estonian education establishments do not prepare such people. This applies also to some specific fields crucial to our technology development.

(Tamkivi, 2010)

MXIT also expresses a deep concern about the education system in South Africa. The head of Sales explains:

There are some initiatives in Cape Town, they have tried to start a few times, but this is always very lacklustre, where we try to find laaities [colloquial for youngsters] and if they engage a little bit more on actually formalizing that kind of training a bit more. [...]

(Stemmet, 2010)

Given that the local context does not provide enough talent to support the firms' growth, it can be understood that firms will also cast their net abroad. And although Skype and MXIT follow quite different strategies to find the capabilities they need to support growth, both tap into global talent networks. In the case of Skype, networks are largely intra-firm, whereas MXIT externalizes as many activities as it can.

To a much greater extent than MXIT, Skype has been engaging in acquisitions in search of top talent. They purchased a Norwegian provider of voice technology for the Internet, Sonorit, in April 2006, and set up an office for the firm in Stockholm. In 2011, Skype acquired the US-based Internet video communications firm Qik.

Even before Skype's acquisition by Microsoft, general management of the Skype4Business business line was moved to the U.S., as the Americas are globally the largest market for enterprise communication. Because often the most suitably qualified (and experienced) managers are found in the United States, managers are also recruited in the US and seconded for 2-3 years in Estonia or another European office. The extent to which Skype innovates through a global network is further evident from its patenting – most of Skype's patents are assigned to its Irish office (Tiits & Kalvet, 2010: 38).

Although it is generally inclined to internalise its network, Skype has adopted a very accommodating policy towards the actual location where employees are based. Skype initially recruited staff like engineers from Estonia, but by 2007, it was no longer able to find suitably qualified labour in Estonia. Its second engineering centre, in Prague, is unusual in the sense that teams are truly cross-national. An executive describes:

We have successfully implemented a management model where the various multidisciplinary teams operate indeed in most cases within Skype, but on a trans-country basis. For example, the Prague engineering centre operates today largely as a satellite of the primary engineering centre in Tallinn. The Prague-based developers report to the team leaders who typically are located in Estonia. It is also quite common for the product managers and other mid-level managers who are in charge of development to be located part- or even full-time outside Estonia, for example in London or elsewhere.

(Lind, 2011)

Indeed, for a long time, a newly recruited person had the choice of starting work in any of two or three key locations. There are virtually no functional teams within Skype where the team itself, the head of the team, and that person's senior are all located in the same country. As the business has grown, it has become more important to allow for greater synergy between the staff members and to simplify the management. Skype has therefore started to streamline its HR

strategy, and is increasingly applying a competence-centre model with the aim to concentrate specific competences typically into no more than two offices.

In contrast to Skype that has built a globally distributed intra-firm network, MXIT's employees are almost all located in South Africa. MXIT has identified its core function quite narrowly as having "a messaging system and social network and to build all the hooks and the billing engines and the transaction engines and that sort of stuff" (Heunis, 2010). It manages to find South Africa-based employees to fulfil those functions, although the market is thin and it takes on average four months to fill a position. However, the key differentiator and need for MXIT is to create compelling content, and it does not attempt to do that on its own. Instead, it leverages relationships with both large organizations and independent developers.

Because MXIT has unique access to a large but underserved market, it attracts large organizations willing to sponsor the creation of content. One important relationship is with its advertisers. MXIT limits advertising to a single "splash screen" per user per day, and engages with large MNCs like Nike and Adidas to develop targeted and interactive splash screens, often involving games. In addition, they seek out partners that can develop socially responsible content. For example, Nokia sponsored the development of a game with mathematics content and assessment exercises, while the United Nations Development Programme (UNDP) co-developed an interactive "Red Card against child exploitation" campaign with MXIT. The executive in charge of socially responsible content comments:

The partners I have I am quite proud of; they are quite high level – Nokia Finland, Shuttleworth Foundation, BBC. Be Smart is a partner in the UK and they recruit a lot of the donors and funders and civil society internationally. And then the UN agencies, UNDP, Unicef NY, Washington and South Africa.

(Hallam, 2010)

Another strategy used by MXIT is to tap into the capabilities of individual developers. MXIT recognises that labour markets in Africa often malfunction, and that there are many talented developers in countries like Kenya. Following the successful launch of a game called Moonbase by a

small Cape Town company, MXIT has decided to launch an API² for external developers to develop software on MXIT. The founder explains:

We are not paying them, but we share revenue with them, and we share I think quite fairly. We give them 70% of the revenue, and we take 30%. [...] That is a very important part of our future, to make sure that we create a system that is beneficial to these sort of people, because face it, there are far more creative people out there than us.

(Heunis, 2010)

In planning for the future, the CEO does not expect there to be systematic improvements to a flawed institutional infrastructure. Instead, he plans to structure his company so that it functions as a system that will attract talent from a variety of contexts. The strong emphasis that MXIT places on managing external relationships suggests that the firm sees these relationships as an important complement to internalised capabilities.

[Table 3 about here]

4.2 Product market voids

Digital service firms like Skype and MXIT require a limited physical distribution infrastructure for the delivery of their service. However, they still require reliable delivery platforms and payment facilitators to ensure the safe and uninterrupted delivery of their offering. By examining how Skype and MXIT develop networks to address voids in product markets, it is clear that they rely heavily on global networks, although different types of institutions matter in different types of markets.

The network Skype uses to address product market voids reflects that Skype serves a substantial user base in technologically and economically advanced countries. Although MXIT relies to a certain extent on partners in the developed world, it cannot always find appropriate partners. This is because of MXIT's emphasis on technologically less developed markets: It operates in a market with far fewer pre-existing service providers, and existing service providers cannot always meet its needs.

Both Skype and MXIT actively seek to leverage the user base of other online service providers. Skype is leveraging the Facebook client base by building a fully functional Facebook client

² APIs are application programming interfaces that specify the rules and specifications that software programs can follow to communicate with each other

(including Facebook chat) into Skype. Along with its own standard protocol, MXIT can also connect to Facebook, Google Talk, Yahoo, ICQ, AIM, and Windows Live Messenger. Skype has extended its own coverage of various computing platforms, including mobile telephones and TVs. Indeed, as the number of different software and hardware platforms that Skype seeks to support continues to increase, Skype has started to open up its platform for selected third-party developers, e.g. flat screen TV or car manufacturers. The recent Skype-enabled TVs from Samsung and Panasonic are perhaps the most prominent examples of such partnerships. MXIT has more modest partnerships, but ensures that it is available on more than 6000 mobile phones, including Blackberry and iPhone.

However, Skype and MXIT's different target markets have an effect on their global networks. One example has to do with the handling of data. Skype from the outset used a peer-to-peer network architecture. This meant that Skype had a highly scalable service, was not reliant on a local infrastructure and was able to serve a rapidly increasing number of users. By using a global (cyber) network, it eliminated the need for huge centralised server farms. In contrast, when MXIT launched, the mobile phones used by its young and often rural user base were very basic. This, together with its earlier history as a gaming application, has resulted in the MXIT service being hosted. However, hosting could not be done cost-effectively from South Africa. MXIT argues that both "good infrastructure and good laws" were inadequate in the local context:

And our interconnection in South Africa, because of Telkom [the state telecommunications near-monopoly], it is really expensive. [... explaining that about 10.5 terrabytes of data must be moved monthly] So it is quite a bit of data, and you are looking at over one million Rand³ for that, to move about a kilometer. And it is just because of the rules, it is starting to change now but you need good infrastructure and good laws.

(Stemmet, 2010)

Although its target market was in less developed countries, for hosting of the backbone of its offering, MXIT turned to a technologically advanced country. In 2007, it commissioned a European Data Centre in Frankfurt, Germany to take over most of the international traffic from South African servers⁴.

³The Rand/dollar exchange rate is variable, but R 1 000 000 would be more than US\$ 140 000

⁴This was before the use of virtual servers and server farms had become common industry practice.

The payment system of the two organisations also reflects their differing main markets. Skype relies on existing organisations, often based in the U.S., like credit card companies and Paypal to facilitate payment for its services. However, MXIT cannot use those partners in its (less developed) markets without excluding a substantial proportion of its possible customer base. To support business in its markets, it instead developed and manages its own “currency”, Moola. This not only requires MXIT to assign scarce talent to managing that function, but also slows down the pace at which it can internationalise, as the firm can convert regular users into premium users in far fewer countries than where it is active. To enable transactions in another country, MXIT has to enter into a partnership with a mobile provider from that country (e.g. Safaricom in Kenya and Telkomsel in Indonesia). Skype also has partnerships with regular telephone service providers in its major markets to extend its revenue base, but the networks of partners of the two firms are quite different.

It is clear that both firms rely on global networks of partnerships to extend their reach, deliver their offering, and facilitate payments. However, because of its focus on emerging markets, MXIT can rely to a lesser extent on strong pre-existing networks.

4.3 Capital market voids

The evidence about how the two firms access capital markets further suggests that the globalisation of the production/innovation network can be driven by institutional voids rather than by firm capabilities. Skype has been financed almost exclusively by foreign funders, whereas MXIT has been funded entirely by South African capital. The explanation for the difference can be found in the nature of the capital markets of the two countries.

Estonia, a small transition economy, does not have developed capital markets, and its founders looked to the U.S. for venture capital (VC) from the outset. After a number of pitches, the firm acquired seed financing from Silicon Valley-based Draper Fisher Investments. Skype established its corporate headquarters in Luxembourg and an office in London, and financial affairs were conducted from those locations. It has been purchased by two U.S. MNCs, eBay (in

2003 a 100% acquisition, reduced to 30% in 2009) and Microsoft (a 100% share) in 2011. In other words, although Estonians played a key role in developing Skype's intellectual property, its funding came from abroad.

In contrast to Estonia, the capital market in South Africa is well developed. The stock exchange is almost 120 years old, and in the top twenty worldwide in terms of market capitalisation⁵. A large number of South African multinationals exist, with 23 of the Forbes Global 2000 being South African. There is a small but active community of VCs, organised into the South African Venture Capitalist Association. In a survey conducted together with KPMG⁶, South Africa was ranked twenty-first worldwide in terms of aggregate investment activity in 2010, with about R100 billion (US\$ 14 billion) under investment. Moreover, the survey documents that VC investment is concentrated around the Western Cape from where MXIT hails.

When Heunis, the founder of MXIT, initially sought funding, he spoke to a number of VCs in the U.S., including Roelof Botha, a South African at the prominent Silicon Valley-based VC firm Sequoia. However, Heunis ultimately sold 30% of the firm to a South African media MNC, Naspers. Eventually Naspers decided that MXIT was not a strong enough strategic fit, and Heunis decided that he wanted to concentrate his efforts on developing a new venture. A range of possible buyers were interested, but Heunis accepted the offer of a South African VC firm, World of Avatar. Heunis's comment was that he felt that the South Africans had a better understanding of the type of market in which MXIT operates.

In terms of capital markets, the difference between Skype and MXIT is that Estonia suffers from a much deeper institutional void than South Africa. MXIT, unlike Skype, did not need to access capital abroad, and although MXIT was clearly aware of the international VC community, it chose to engage with local funders. As a result, MXIT did not develop a global capital network, whereas Skype did. MXIT probably gained a number of benefits from being funded by entities that were not only

⁵<http://www.jse.co.za/HowToInvest.aspx>, accessed January 28, 2012

⁶<http://www.savca.co.za/downloads/SAVCA%20KPMG%20Private%20Equity%20Survey%20for%202010.pdf>, accessed January 28, 2012

South African, but also located within driving distance from the firm. A local network is likely to introduce fewer complications in terms of coordination challenges and possibly costly misunderstandings. However, it is noticeable that Skype has a much more international orientation than MXIT, and it is possible that a more international funding base would have challenged MXIT to more aggressively explore other markets. This raises important questions about the costs and benefits of global production and innovation networks.

4. Discussion

Skype's very rapid globalisation experience has been, for the most part, about securing access to talents, marketing channels, strategic partners and venture capital that have collectively allowed this firm to become such a success. Skype's success story became a reality thanks to its international management and start-up financing, which all came together at the right time, namely the disruption VoIP technologies brought to the telecommunications industry. World-class management and strong venture capital backing also allowed Skype to select the right global spots for its different activities, overcoming in this way many of the institutional voids in its initial key locations in Estonia and Sweden.

The MXIT story is more modest. It has a much smaller user base, a smaller R&D operation – six full-time employees – and is focused on a niche market: Mobile applications for youth in emerging markets. However, it also relies on visionary leadership and innovation, both technological and in terms of business models, in order to overcome the disadvantages of its home location. In contrast to Skype, it has no fully-fledged subsidiaries in the rest of the world, although it does have a few “listening posts” abroad.

The evidence from these two cases contributes to three literature streams: the work on born-globals, institutional theory and how our findings relate to the better documented work on the evolution of firms from global production to global innovation networks, and finally, locational attractiveness.

The work on born-globals so far has focused on firms that enter international markets early on, but we document that not only the “demand” side, but also the “supply” side element can be born global. A global market and global supply base can but do not always co-occur: In contrast to Skype, where both its market and its various production and innovation partners are global, MXIT’s largest market remains in South Africa. However, MXIT works with production and innovation partners from across the world.

Many of the drivers for “supply side” born-globals seem the same as for market-oriented born-globals. The Skype/MXIT evidence confirms previous work (Freeman & Cavusgil, 2007; Knight & Cavusgil, 2004; Kuivalainen, Sundqvist & Servais, 2007) about the important role of a founding entrepreneur with a global orientation. Our evidence also confirms the importance of business networks (Saxenian, 2002; Sharma & Blomstermo, 2003) as mechanisms to facilitate internationalisation.

Extant born-global literature also suggests that firm capabilities play an important role in triggering and shaping the process of internationalisation (Hashai, 2011; Lu, Zhou, Bruton & Li, 2010; Sapienza, Autio, George & Zahra, 2006; Zou & Ghauri, 2010). However, in contrast to the strong emphasis on firm capabilities in the born-global literature, our evidence suggests that firms internationalise their production/innovation due to a lack of local capabilities, more than because of the strength of their own. This apparent contradiction requires further discussion, especially because the bulk of the literature on global production and innovation networks (Coe, Dicken & Hess, 2008; Ernst, 2002; Mackinnon, 2012; Murphy & Schindler, 2011) also emphasises firm capabilities. Especially when networks in countries at lower levels of technological development are studied, the importance of firm capabilities and an evolutionary perspective on their development are key themes.

Of course, both firms in this study have unique capabilities – for example, both are characterised by an intense awareness and desire to understand new technological developments. But however important those and other capabilities are with regard to managing global networks,

they do not seem to be the drivers for Skype and MXIT's initiation of those networks. Instead, a key explanation seems to be the fact that both Skype and MXIT built businesses to take advantage of disruptive technologies.

Skype's global focus was facilitated by disruptions in telecommunications technology, and the firm built a business model around a proprietary version of a system that allows the rapid build-up of a massive global client base. MXIT recognised the potential of mobile phones, increasingly regarded as the key access point for the digital world in Africa, before 2005. Both businesses stem from typical disruptive innovations, as defined by Christensen (2007): Because they were small, they could afford to engage with smaller markets. Indeed, they could take the risk of entering a market that, because it did not yet exist, could not be researched. Christensen comments that a firm's capabilities will also "define its disabilities" (2007:xxii) – in other words, that because of the power of path dependence, incumbents may struggle to develop new capabilities when a new technological and business model becomes feasible.

Skype and MXIT on their own did not have all the needed capabilities to successfully exploit emerging opportunities, but this did not disadvantage them relative to competitors. First, Skype and MXIT operate in new and somewhat turbulent market segments, where leadership positions are not yet cemented to the same extent as in industries like electronic components. Second, when firms operate from countries that are characterised by less developed educational and research institutions where institutions are generally slow to respond to the changing needs of industry (Chaminade & Vang, 2008), they probably know from the outset that they should engage in a global search for appropriate partners. Finally, given inadequacies in their home locations, the possible benefits of engaging in a global network (e.g. accessing higher quality and more reliable capabilities) were more likely to outweigh the costs (e.g. of coordination and control). In short, global technological and market opportunities, and the institutional voids of their home location act as triggers driving firms to become lead players in global networks.

We therefore propose the use of institutional theory when looking at the global production and innovation networks of firms based on disruptive technologies. However, we do not deny the importance of firm capabilities, and recommend further work to understand how firms develop not only the awareness, but also the capability to initiate and manage global networks. For example, a useful avenue for future research would be to examine to what extent and under what conditions firms that are born global in terms of their markets will also source production and innovation capabilities globally, and vice versa.

For policymakers and practitioners, what does the emergence of global networks of business from economically and technologically less developed countries mean? Global production and innovation networks have a complex set of consequences, as they seem to result in a more international orientation (with the promise of bigger markets), but are harder to coordinate for the firm (with cost and governance implications). Firms from technologically and economically less developed contexts may be able to transfer some of their capabilities for the management of domestic business networks (Khanna & Yafeh, 2007) to the management of global networks, but this may not be enough to ensure a lasting competitive advantage. Both to the extent that global networks are active in relatively stable industries, and as best practices for the management of global networks emerge, it seems likely that firms will need to develop focused capabilities to initiate and manage those networks.

The possibility of forging global production and innovation networks means that the link between the success of a firm and the munificence of its location is not as strong as before. Leading firms like Skype and MXIT can emerge from locations where there are serious institutional shortcomings. However, this does not mean that location becomes less important – on the contrary. The possibility of global production and innovation networks means that firms can choose to access the capabilities they need from wherever in the world they are located (see also Chesbrough, 2006).

This is especially consequential for technologically less developed small states. Evidence suggests that smallness is a source of multiple constraints on innovation and economic development

in general (e.g. Armstrong and Reid 2003; contrast with Easterly and Kraay 2000). Small states do not have the financial capabilities or human resources to invest much into cutting-edge science, research, and development. Second, almost by definition, small states (and more so the less developed they are) have small home markets that limit the possibilities for economies of scale and geographical agglomerations. Also, their small home markets and the subsequent dependence on exports threaten them with over-specialization, lock-in, and low diversification of the economic structure (Kattel et al., 2010). Thus, theory implies that the institutional voids in small states are even stronger compared to larger states. Although research is available on a general level on the globalization of the innovation systems of small states (e.g., Edquist & Hommen, 2008), more research is needed on the possible implications of participation in global production and innovation networks for small local innovation systems.

There is an extensive body of work on why MNCs may decide to not engage with underdeveloped institutional contexts, and instead locate elsewhere (Lall, 2001; Meyer, Mudambi & Narula, 2011; Narula & Dunning, 2000). The emergence of global networks from technologically less advanced contexts suggests that not only foreign MNCs, but increasingly also local managers will consider the availability of capabilities internationally, rather than simply in the home country, when making location choices. The emergence of born global production and innovation networks from technologically less advanced contexts therefore once again highlights the long-documented risk (Nachum, 2000; Zaheer & Manrakhan) that knowledge-intensive activities may be concentrated in locations with an enabling institutional environment and rich human resource endowment, resulting in only limited learning opportunities in less developed locations.

References

- World Economic Forum. 2011. *The Global Competitiveness Report 2011–2012*. Geneva: SRO-Kundig. http://www3.weforum.org/docs/WEF_GCR_Report_2011-12.pdf, accessed January 28, 2012
- Andersson, U., Forsgren, M., & Holm, U. 2002. The Strategic Impact of External Networks: Subsidiary Performance and Competence Development in the Multinational Corporation. *Strategic Management Journal*, 23: 979-96.
- Archibugi, D., Denni, M., & Filippetti, A. 2009. The technological capabilities of nations: The state of the art of synthetic indicators. *Technological Forecasting & Social Change*, 76: 917–31.
- Archibugi, D. & Iammarino, S. 1999. The policy implications of the globalisation of innovation. *Research policy*, 29: 317-36.
- Armstrong, H. W., & Read, R. 2003. The Determinants of Economic Growth in Small States. *The Round Table*, 368: 99–124.
- Barnard, H. 2008. Uneven knowledge bases and the success of foreign firms in an advanced host economy. *Research Policy*, 37: 1674-83.
- Bhaumik, S. K., Driffield, N., & Pal, S. 2010. Does ownership structure of emerging-market firms affect their outward FDI? The case of the Indian automotive and pharmaceutical sectors. *Journal of International Business Studies*, 41(3): 437-50.
- Cantwell, J. & Kosmopoulou, E. 2002. What determines the internationalisation of corporate technology? In Havila, V., M. Forsgren, & H. Håkanson, editors, *Critical Perspectives on Internationalisation*. New York: Pergamon.
- Cantwell, J. & Mudambi, R. 2005. MNE Competence-Creating Subsidiary Mandates. *Strategic Management Journal*, 26: 1109-28.
- Chakravarthy, B. & Coughlan, S. 2011. Emerging market strategy: innovating both products and delivery systems. *Strategy & Leadership*, 40(1): 27-32.
- Chaminade, C., Lundvall, B-A., Vang-Luiridsen, J., Joseph, K.J. 2009. Innovation policies for development: towards a systemic experimentation based approach. In: Lundvall, B-A., Joseph, K.J., Chaminade, C. and Vang, J. (eds) (2009) *Handbook of Innovation Systems and Developing Countries* Edward Elgar, 360-379.
- Chaminade, C. & Vang, J. 2008. Upgrading in Asian Clusters: Rethinking the Importance of Interactive Learning. *Science Technology Society*, 13(1): 61-94.
- Chang, S. J. & Hong, J. 2002. How Much Does the Business Group Matter in Korea? *Strategic Management Journal*, 23(3): 265-74.
- Chesbrough, H. 2006. *Open Business Models: How to Thrive in the New Innovation Landscape*. Boston: Harvard Business School Press.
- Christensen, C. M. 1997. *The Innovator's Dilemma*. Cambridge MA: Harvard Business Press.
- Coe, N. M., Dicken, P., & Hess, M. 2008. Global production networks: realizing the potential. *Journal of Economic Geography*, 8: 271-95.

- Cuervo-Cazurra, A. 2011. Global Strategy And Global Business Environment: The Direct And Indirect Influences Of The Home Country On A Firm's Global Strategy. *Global Strategy Journal*, 1: 382–86.
- Cuervo-Cazurra, A., & Genc, M. 2008. Transforming disadvantages into advantages: Developing country MNEs in the least developed countries. *Journal of International Business Studies*, 39 (6): 957-979.
- Cuervo-Cazurra, A. & Genc, M. E. 2011. Obligating, Pressuring, and Supporting Dimensions of the Environment and the Non-Market Advantages of Developing-Country Multinational Companies. *Journal of Management Studies*, 48: 441-55.
- De Jong, J. P. J., Kalvet, T., & Vanhaverbeke, W. 2010. Exploring a theoretical framework to structure the public policy implications of open innovation. *Technology Analysis & Strategic Management*, 22(8), 877-896.
- Dhanaraj, C. & Khanna, T. 2011. Transforming Mental Models on Emerging Markets. *Academy of Management Learning & Education*, 10(4): 684–701.
- Driffield, N., Love, J. H., & Menghinello, S. 2009. The multinational enterprise as a source of international knowledge flows: Direct evidence from Italy. *Journal of International Business Studies*, 41(2): 350-59.
- Dunning, J. H. 1998. Globalization, Technological Change and the Spatial Organization of Economic Activity. In Chandler, A.D., P. Hagstrom, & Solvell, O., editors, *The Dynamic Firm: The Role of Technology, Strategy, Organization and Regions*. New York: Oxford University Press.
- Easterly W. & Kraay, A. 2000. Small States, Small Problems? Income, Growth and Volatility in Small States. *World Development*, 28(11): 2013–2027.
- Edquist, C., and Hommen, L. 2008. *Small Economy Innovation Systems: Comparing Globalisation, Change, and Policy in Asia and Europe*. Cheltenham: Edward Elgar.
- Eisenhardt, K. M. 1989. Building Theories from Case Study Research. *Academy of Management Review*, 14(4): 532-50.
- Eisenhardt, K. M. & Graebner, M. E. 2007. Theory building from cases: opportunities and challenges. *Academy of Management Journal*, 50(1): 25-32.
- Ernst, D. 2002. Global production networks and the changing geography of innovation systems: Implications for developing countries. *Economics of Innovation and New Technology*, 11(6): 497-523.
- Ernst, D. 2010. Upgrading through innovation in a small network economy: insights from Taiwan's IT industry. *Economics of Innovation & New Technology*, 19(4): 295-324.
- Ernst, D. & Kim, L. 2002. Global Production Networks, Knowledge Diffusion, and Local Capability Formation. *Research Policy*, 31(8-9): 1417-29.
- Fan, T. & Phan, P. 2007. International new ventures: revisiting the influences behind the "born-global" firm. *Journal of International Business Studies*, 38(7): 1113-31.
- Freeman, S. & Cavusgil, S. T. 2007. Toward a Typology of Commitment States Among Managers of Born-Global Firms: A Study of Accelerated Internationalization. *Journal of International Marketing*, 15: 1.

- Frost, T. S., Birkinshaw, J., & Ensign, P. C. 2002. Centers of Excellence in Multinational Corporations. *Strategic Management Journal*, 23: 997-1018.
- Gammeltoft, P., Barnard, H., & Madhok, A. Emerging multinationals, emerging theory: Macro- and micro-level perspectives. *Journal of International Management*, 16(2): 95-101.
- Garg, M. & Delios, A. 2007. Survival of the foreign subsidiaries of TMNCs: The influence of business group affiliation. *Journal of International Management*, 13(3): 278-95.
- Gubbi, S. R., Aulakh, P. S., Ray, S., Sarkar, M. B., & Chittoor, R. 2010. Do international acquisitions by emerging-economy firms create shareholder value? The case of Indian firms. *Journal of International Business Studies*, 41(3): 397-418.
- Gupta, A. K. & Govindarajan, V. 2000. Knowledge flows within multinational corporations. *Strategic Management Journal*, 21: 473-96.
- Hashai, N. 2011. Sequencing the Expansion of Geographic Scope and Foreign Operations by "Born Global" Firms. *Journal of International Business Studies*, 42(8): 995-1015.
- Henderson, J., Dicken, P., Hess, M., Coe, N., Wai-Chung Yeung, H., 2002. Global Production Networks and the Analysis of Economic Development. *Review of International Political Economy* 9, 436-464.
- Jensen, M. B., Johnson, B., Lorenz, E., & Lundvall, B. A. 2007. Forms of Knowledge and Modes of Innovation. *Research Policy*, 36(5): 680-93.
- Kattel, R. & Kalvet, T. 2006. *Knowledge-Based Economy and ICT-Related Education in Estonia: Overview of the Current Situation and Challenges for the Educational System*. Tallinn: Praxis Centre for Policy Studies.
- Kattel, R., Kalvet, T. & T. Randma-Liiv. 2010. Small States and Innovation. In Steinmetz, R. & Wivel, A. editors, *Small States in Europe : Challenges and Opportunities*. Aldershot, England: Ashgate.
- Khanna, T., Palepu, K., Sinha, J. 2005. Strategies that fit emerging markets. *Harvard Business Review*, June 2005, 63-76.
- Khanna, T. & Palepu, K. 2010. *Winning in emerging markets: A road map for strategy and execution*. Cambridge, MA: Harvard Business Press.
- Khanna, T. & Yafeh, Y. 2007. Business Groups in Emerging Markets: Paragons or Parasites? *Journal of Economic Literature*, 45(2): 331-72.
- Kim, L. 1999. *Imitation to Innovation*. Harvard MA: Harvard Business School Press.
- Knight, G. A. & Cavusgil, S. T. 2004. Innovation, Organizational Capabilities, and the Born-Global Firm. *Journal of International Business Studies*, 35(2): 124-41.
- Kuivalainen, O., Sundqvist, S., & Servais, P. 2007. Firms' degree of born-globalness, international entrepreneurial orientation and export performance. *Journal of World Business*, 42: 253.
- Lall, S. 2001. *Competitiveness, technology and skills*. Cheltenham, UK: Edward Elgar.
- Lee, E., Lee, J., & Lee, J. 2006. Reconsideration of the Winner-Take-All Hypothesis: Complex Networks and Local Bias. *Management Science*, 52(12): 1838-48.

- Lundvall, B.-Å. K. 2007. National Innovation Systems-Analytical Concept and Development Tool. *Industry and Innovation*, 14: 95-119.
- Lundvall, B.-Å., Joseph, K., Chaminade, C., & Vang, J., editors. 2009. *Handbook of innovation systems and developing countries: building domestic capabilities in a global setting*. Cheltenham: UK: Edward Elgar.
- Lu, Y., Zhou, L., Bruton, G., & Li, W. 2010. Capabilities as a mediator linking resources and the international performance of entrepreneurial firms in an emerging economy. *Journal of International Business Studies*, 41(3): 419-36.
- Mackinnon, D. 2012. Beyond strategic coupling: reassessing the firm-region nexus in global production networks. *Journal of Economic Geography*, 12: 227.
- Mahmood, I. P. & Zheng, W. 2009. Whether and how: Effects of international joint ventures on local innovation in an emerging economy. *Research Policy*, 38(9): 1489-503.
- Mair, J. & Marti, I. 2009. Entrepreneurship in and around institutional voids: A case study from Bangladesh. *Journal of Business Venturing*, 24(5): 419-35.
- Meyer, K. E., Mudambi, R., & Narula, R. 2011. Multinational enterprises and local contexts: the opportunities and challenges of multiple embeddedness. *Journal of Management Studies*, 48(2): 235-52.
- Murphy, J. T. & Schindler, S. 2011. Globalizing development in Bolivia? Alternative networks and value-capture challenges in the wood products industry. *Journal of Economic Geography*, 11: 61.
- Nachum, L. 2000. Economic geography and the location of TNCs: Financial and professional service FDI to the USA. *Journal of International Business Studies*, 31(3): 367-85.
- Narula, R. & Dunning, J. H. 2000. Industrial Development, Globalization and Multinational Enterprises: New Realities for Developing Countries. *Oxford Development Studies*, 28(2): 141-67.
- Pearce, R. D. 1999. Decentralised R&D and strategic competitiveness: globalised approaches to generation and use of technology in multinational enterprises (MNEs). *Research policy*, 28: 157-88.
- Ping, D. 2009. Why do Chinese firms tend to acquire strategic assets in international expansion? *Journal of World Business*, 44(1): 74-84.
- Presutti, M., Boari, C., & Fracocchi, L. 2007. Knowledge acquisition and the foreign development of high-tech start-ups: A social capital approach. *International Business Review*, 16(1): 23-46.
- Ravamurti, R. & Singh, J.V. 2008. editors, *Emerging multinationals from emerging markets*. Cambridge: Cambridge University Press.
- Sachwald, F. 2008. Location choices within global innovation networks: the case of Europe. *Journal of Technology Transfer*, 33(4): 364-78.
- Sapienza, H. J., Autio, E., George, G., & Zahra, S. A. 2006. A Capabilities Perspective on Effects of Early Internationalization on Firm Survival and Growth. *Academy of Management Review*, 31(4): 914-33.

- Saxenian, A. 2002. Transnational Communities and the Evolution of Global Production Networks: the Cases of Taiwan, China and India. *Industry and Innovation*, 9(3): 183-202.
- Sharma, D. D. & Blomstermo, A. 2003. The internationalization process of Born Globals: a network view. *International Business Review*, 12(6): 739-53.
- Stal, E. & Cuervo-Cazurra, A. 2011. The Investment Development Path and FDI From Developing Countries: The Role of Pro-Market Reforms and Institutional Voids. *Latin American Business Review*, 12: 209-31.
- Tan, D. & Meyer, K. E. 2010. Business groups' outward FDI: A managerial resources perspective. *Journal of International Management*, 16(2): 154-64.
- Tiits, M. & Kalvet, T. 2010. *Estonia - ICT RTD Technological Audit, Detailed Report*. Tartu: Institute of Baltic Studies.
- Van de Vrande, V., de Jong J.P.J., Vanhaverbeke, W. and M. Rochemont. 2009. Open innovation in SMEs: Trends, motives and management challenges. *Technovation*, 29(6-7): 423-437.
- Witt, M. A. & Lewin, A. Y. 2007. Outward foreign direct investment as escape response to home country institutional constraints. *Journal of International Business Studies*, 38: 579-94.
- Yin, R. K. 2003. *Case Study Research: Design and Methods*. Thousand Oaks: Sage.
- Zaheer, S. & Manrakhan, S. 2001. Concentration and Dispersion in Global Industries: Remote Electronic Access and the Location of Economic Activities. *Journal of International Business Studies*, 32(4): 667-86.
- Zander, I. 2002. The formation of international innovation networks in the multinational corporation: an evolutionary perspective. *Industrial and Corporate Change*, 11(2): 327-53.
- Zou, H. & Ghauri, P. N. 2010. Internationalizing by learning: the case of Chinese high-tech new ventures. *International Marketing Review*, 27(2): 223-44

Table 1: Comparison of technological indicators of Estonia and South Africa

	World Economic Forum			European Commission		World Bank	Archibugi	UNCTAD	UNIDO
	Technology Index	Technological Readiness Index	Technological Innovation Index	Global Summary Innovation Index	Summary Innovation Index	Knowledge Index	& Coco, 2004	Technological Activity Index	Technological Advancement Index
Estonia	13	14	26	28	18	21	30	25	34
South Africa	35	34	25	35	.	42	40	33	27

Source: Archibugi, Denni & Fillipetti, 2009: 925.

Table 2: Details of Skype and MXIT

	Skype	MXIT
Country of founding	Estonia	South Africa
Year of launch	2003	2005
Core business	Global telecom	Social networking service
Main offering	A suite of social networking offerings, including voice call, phone call, video call, instant messaging, desktop sharing and file sharing	A suite of social networking offerings, primarily instant messaging with services like file and photo sharing. Also offers an online currency for use in their e-commerce site for offerings such as participating in chatrooms or buying music.
Platform	Initially PC-based, now truly multiplatform, incl. mobile phones, TVs, etc.	Mobile-phone based
Competitors	Public telephone firms	Facebook, BBM
MNC ownership	Microsoft (US-based ICT company) 100% share bought in 2011 US\$ 8.5 billion In 2005 the US-based ICT consumer-to-consumer company eBay had purchased a 100% share in Skype, reduced to 30% in 2009.	World of Avatar (SA-based privately held ICT company) 90% share bought in 2011 Undisclosed amount, estimated at R500 million (US\$ 65 million) In 2007 the South Africa-based MNC NasPers had bought a 30% share of MXIT for an undisclosed amount
Number of employees	850	150
Current user base	200 million users ⁷	34 million registered users ⁸
Targeted user base	Global, general public	Emerging markets, youth

Table 3: Global networks developed by Skype and MXIT to overcome institutional voids

	Skype	MXIT
Talent market voids	<p>Preference for intra-firm global talent networks</p> <ul style="list-style-type: none"> • Complements the R&D capacity in Tallinn by developing a series of intra-firm R&D centres relatively close-by, e.g. in Prague and Stockholm • Shifts activities that can benefit from the large U.S. market and pool of talent • Uses acquisitions where possible • Encourages mobility through 2 – 3 year secondment periods, and provide more than one option for which work location an employee would prefer 	<p>Preference for extra-firm global talent networks</p> <ul style="list-style-type: none"> • Staffs only the quite narrowly defined core business from the home country • Leverages the resources of foreign MNCs and supranational organisations to develop content • Develops a business model that allows individual developers from any location to develop content
Product market voids	<p>Use of global extra-extra firm networks to extend and deliver offering</p> <ul style="list-style-type: none"> • Relies extensively on other providers to extend its offering, mainly from developed countries 	<p>Use of global extra-firm networks where possible; otherwise intra-firm activities</p> <ul style="list-style-type: none"> • Relies on providers from both more and less developed countries • Internalises functions when providers with specialised emerging market skills are not available
Capital market voids	<p>Activation of global network because no local capability exists</p> <ul style="list-style-type: none"> • Sources and manages funding from Europe and USA 	<p>Reliance on local rather than global network because there is a strong local capability</p> <ul style="list-style-type: none"> • Sources funding from South African investors

Figure 1: Evolutionary view of the emergence of GINs

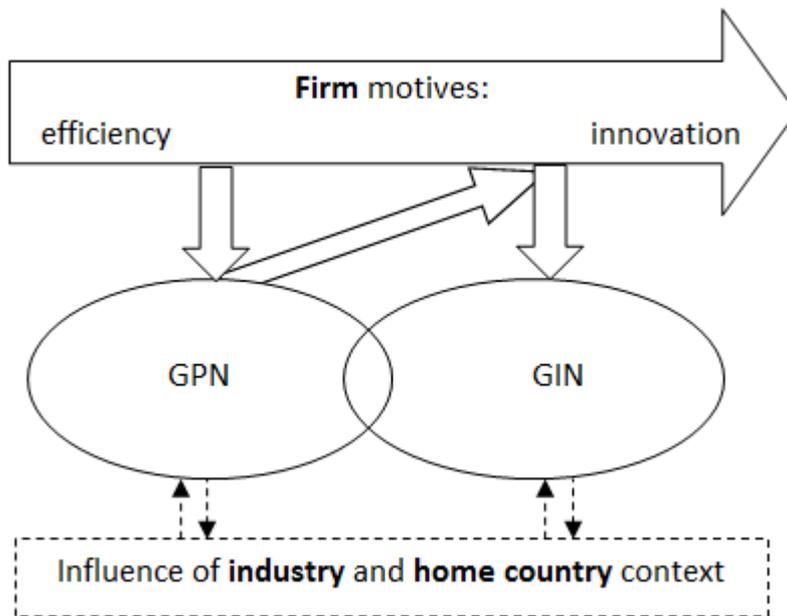


Figure 2: The emergence of an integrated GPN/GIN in response to institutional voids

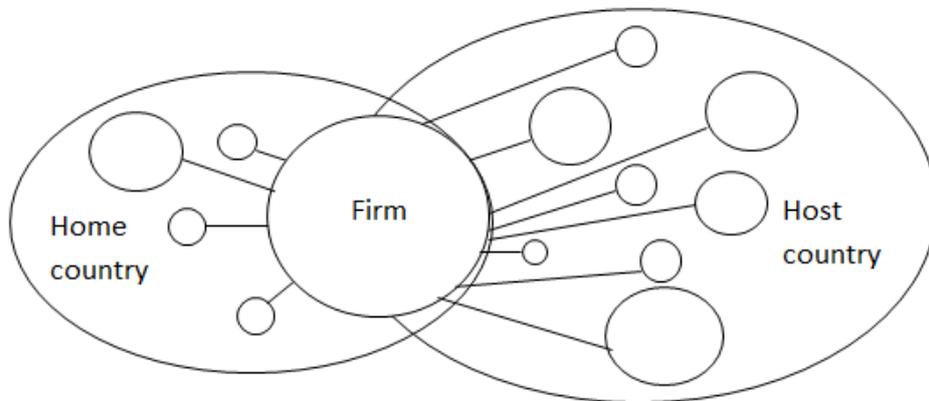


Figure 3: Skype's Global Innovation Network



Source: *Skype Jobs*. <http://jobs.skype.com/>, accessed January 28, 2012